

NOTES ON AUSTRALIAN DIPTERA. No. xiii.

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(Communicated by Dr. I. M. Mackerras.)

(Fifteen Text-figures.)

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In this paper I present descriptions of a number of species sent to me by Mr. A. L. Tonnoir, mostly from Tasmania, the type specimens of which are to be deposited in the Cawthron Institute, New Zealand. The paratypes, which I am permitted to keep, will be sent by me for disposition in some suitable Australian museum. In the paper I also present some keys for the recognition of genera and species in the Acalyptratae, the types of the new species in most cases being from material sent to me by the late Dr. E. W. Ferguson, and these will be returned to Australia later.

Family **Sapromyzidae**.

Though there are I believe some genera of this family still to be discovered in Australia I am presenting now a generic synopsis which will I hope permit students of the group to locate material they may become possessed of, provided it belongs to an included genus. About half of the genera are confined to Australia and most of the species are.

Key to Genera.

1. Hind tibia with two strong curved black apical ventral spines, the longest one over twice as long as apical diameter of the tibia; costa without short stiff black spines, fine haired from base to apex of fourth vein; hairs on cheeks, thorax, femora, and tibiae, long and bristly; anterior orbital bristles incurved 1. *Amphicyphus* de Meijere.
Hind tibia with, or without, one short, almost straight, apical ventral bristle, which is not longer than the apical diameter of the tibia; part of costal vein with short closely placed stiff black bristles 2
2. The short stiff black bristles on costal vein not extending to apex of third vein, gradually discontinued beyond apex of second 3
The short stiff black bristles on costal vein extending to apex of third vein where they cease abruptly, giving the costa the appearance of being slightly thickened to that point 15
3. Second wing vein unusually close to costal vein, the cell (marginal) between these veins therefore not one-third as wide just beyond apex of first vein as the one (submarginal) behind second vein 4
Second wing vein at the normal distance from costal vein, the cell between these veins just beyond apex of first vein usually as wide as the one behind second vein 5
4. Anterior orbital bristles incurved; basal segment of antennae quite evident in profile, at least as long as second, and with some fine hairs at apex below; inner cross-vein of wing at or slightly before middle of wing 2. *Steganopsis* de Meijere.
Anterior orbital bristles curved backward; basal segment of antennae not exposed in profile; inner cross-vein at about one-third from apex of wing 3. *Depressa* Malloch.

5. Posthumeral bristle not present on thorax 6
 Posthumeral bristle generally strong, always present 7
6. Anterior orbital bristles incurved; cheek bristled 4. *Trigonometopus* Meigen.
 Anterior orbital bristles curved backward; cheek haired 5. *Paranomina* Hendel.
7. Anterior pair of orbital bristles incurved 8
 Anterior pair of orbital bristles curved backward, or indistinguishable 10
8. Thorax with four pairs of strong dorsocentral bristles, the anterior pair in front of suture 9
 Thorax with two or three pairs of dorsocentral bristles, the anterior pair behind suture 6. *Incurviseta* Malloch.
9. Face glossy, quite prominently convex on upper half, depressed below; arista white except at base 7. *Poecilohetaerella* Tonnoir and Malloch.
 Face not, or but slightly shining, almost flat; arista entirely dark 8. *Poecilohetaerus* Hendel.
10. Frons with but one well developed pair of bristles, the anterior pair lacking or almost indistinguishable 11
 Frons with two distinct pairs of orbital bristles 12
11. Arista lanceolate on basal half, and with very short dense black hairs which give it a more thickened appearance; face quite prominently convex on upper half, with a median impression which is very distinct when seen in profile 9. *Ceratolauwania* Hendel.
 Arista not exceptionally thickened on basal half, and with normal pubescence; face not prominently convex on upper half, if convex then regularly so and not impressed at middle when seen in profile 10. *Paralauwania* Hendel.
12. Eye much, head slightly, longer than high, face receding below 11. *Trigonometopsis* Malloch.
 Eye and head not conspicuously longer than high, the former usually almost round 13
13. Face except the parafacials glossy black, and prominently, subconically, convex (Text-fig. 2) 12. *Melanina*, n. gen.
 Face not glossy black, and very little or not at all convex 14
14. Frons in profile projecting beyond anterior margin of eye about half as far as length of eye; basal antennal segment longer than second; ocellar bristles lacking 13. *Rhagadolyra* Hendel.
 Frons in profile projecting in front of eye much less than half the length of eye; basal antennal segment almost invariably much shorter than second 14. *Sapromyza* Fallen.
15. Mesopleura with a strong downwardly directed bristle near middle of disc, in addition to the one on hind margin 15. *Trypaneoides* Tonnoir and Malloch.
 Mesopleura with only fine hairs on disc, no strong bristle present 16
16. Face slightly or not at all convex; frons little if any longer than wide; lower part of occiput normal 16. *Homoneura* van der Wulp.
 Face with a prominent subconical central prominence; frons about three times as long as wide; lower part of occiput with a tumid spot close to eye on which there is at least one strong bristle 17. *Australina* Malloch.

1. Genus AMPHICYPHUS de Meijere.

I have recorded the occurrence of *reticulatus* (Dol.), the only species of this genus, in Australia (These PROCEEDINGS, 1926, p. 550). There are a few slight differences in the markings of the single Australian specimen I have seen and one I had from Java, but not sufficient to cause a doubt as to their identity.

2. Genus STEGANOPSIS de Meijere.

So far I have seen but one species of this genus from Australia, which I identify as *melanogaster* (Thomson).

I have a key to the known species of this genus now ready to send to press.

3. Genus DEPRESSA Malloch.

I erected this genus originally for the reception of one species, *atrata* Malloch. Mr. Tonnoir has sent me two additional species which I describe below, I present in the following key diagnostic characters of the three species.

Key to the Species.

1. Face glossy black, but slightly yellowish on upper margin, the black colour extending over anterior two-thirds of cheeks; fore coxae and bases of fore femora yellow, mid and hind femora fuscous; costal margin of wing narrowly hyaline from base to the hyaline preapical fascia, the costal vein pale yellow on same section; longest hairs on arista three or four times as long as its basal diameter *albicosta*, n. sp.
Face largely or entirely fulvous yellow; legs not coloured as above; costal margin not hyaline from base to preapical fascia; longest hairs on arista about twice as long as its basal diameter 2
2. Thorax almost entirely black; mid and hind femora and bases of their tibiae black; no conspicuous pale streaks along middle of cells of wings *atrata* Malloch.
Thorax yellow on lateral margins of mesonotum and entire pleura; mid and hind legs yellow; a conspicuous hyaline streak along middle of most of the cells of wings and one along costal vein from apex of first vein to the preapical hyaline fascia *striatipennis*, n. sp.

DEPRESSA ALBICOSTA, n. sp.

Male.—Head glossy black, centre of frons reddish in front, upper part of face slightly yellowish, occiput with a broad yellow streak from middle to lower margin of cheek behind each eye; antennae fuscous, third segment fulvous yellow; palpi black. Thorax black, yellowish round prothoracic spiracle and on pleural sutures, the pleura more shining than mesonotum, the latter and the scutellum quite distinctly shagreened or alutaceous. Abdomen shining black, not shagreened. Legs stramineous, mid and hind coxae, apices of fore femora and practically all of mid and hind pairs, fore tibiae except bases, and all of fore tarsi, black, bases of mid and hind tibiae slightly browned. Wings blackish, with a slightly diagonal fascia beyond middle just apicad of inner cross-vein and over lower extremity of the outer one much as in *atrata*, but there is a quite noticeable hyaline streak extending from the fascia along costal vein to humeral vein which is not evident in *atrata*, tips of wings hyaline, costal vein yellow from base to fascia. Knobs of halteres black.

Ocellar bristles microscopic; longest hairs on arista over half as long as width of third antennal segment. Thorax with three pairs of postsutural dorso-central bristles, the anterior pair weakest, a moderately long pair of prescutellar acrostichals, and four series of intradorsocentral hairs. Fore femur without an anteroventral comb; fore tarsus longer than fore tibia, and as thick as it. Venation as in *atrata*.

Length, 3.5 mm.

Type, Killara, N.S.W., 29th Oct., 1921 (A. Tonnoir).

DEPRESSA ATRATA Malloch.

This species is about the same size as *albicosta*, but has the head almost entirely fulvous yellow, only the ocellar spot being black, the antennae and palpi are entirely fulvous, the legs are more extensively blackened, there is no evident white or hyaline margin to the costa, and the dorsal surfaces of thorax and scutellum are not noticeably shagreened.

Originally described from Sydney, N.S.W. I have before me a specimen from National Park, Tasmania, 6th Dec., 1922 (A. L. Tonnoir).

DEPRESSA STRIATIPENNIS, n. sp.

Female.—Head fulvous yellow, glossy, ocellar region fuscous, along each margin of each orbital plate there is a brown or fuscous suffusion; parafacials white dusted as in the other two species; antennae fulvous yellow; labrum and a

large mark on each cheek entirely glossy black; palpi yellow at bases, black at apices. Thorax dull fulvous yellow, mesonotum and scutellum brownish or fuscous. Abdomen fuscous. Legs coloured as pleura, fore tarsi blackened except at bases. Wings fuscous, with the same oblique hyaline fascia as in the other two species, but there are narrow hyaline streaks along the middle of most of the cells, and one from apex of first vein to near apex of second along hind margin of costal vein. Halteres brown. It must be noted that the type specimen is teneral and in all probability mature individuals will have the thoracic, abdominal, and leg colours darker in part and more contrasted with the pale parts than is the case here.

Structurally similar to *atrata*, the hairs on arista not nearly half as long as width of third antennal segment, but the dorsal surfaces of thorax and scutellum are evidently shagreened.

Length, 4.5 mm.

Type, Mt. Wilson, N.S.W., 19th Nov., 1921 (A. L. Tonnoir).

4. Genus TRIGONOMETOPUS Meigen.

Some time ago I described a species which I placed in this genus. It does not agree with the genotype, but there are so many species in this immediate vicinity in the family that are distinguished by characters of chaetotaxy and structure of the head that I hesitate to add another genus to the list for the reception of one species. Consequently this species, *fuscifrons* Malloch, may be allowed to remain in this genus pending an elucidation of the family in this region.

5. Genus PARANOMINA Hendel.

I have not seen this genus, which was erected for the reception of one species, *unicolor* Hendel, described from Cape York.

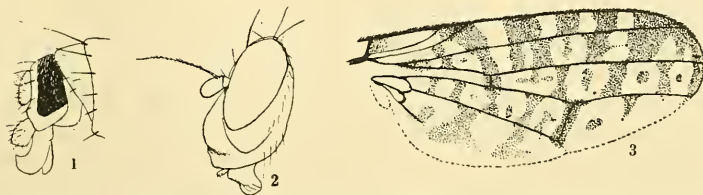
6. Genus INCURVISETA Malloch.

This genus was originally erected for the reception of *maculifrons* (Macquart), but there are many other species which, though not agreeing absolutely with the genotype in certain characters that might be considered as of at least subgeneric value, appear to find their closest affinities here. I present below a synopsis of the species now available to me, and indicate distinctions in structure, both in the synopsis and descriptions, which may justify further division of the group.

Key to the Species.

1. Frons yellow, with a pair of deep velvety black marks on the interfrontalia 2
 Frons either with only the ocellar spot black, the remainder yellow, or almost entirely black 4
2. Face prominently convex and glossy, central part readily visible in profile; entire antennae, arista, and palpi deep black *maculifrons* (Macquart)
 Face flat, or but slightly convex, not, or very slightly, visible in profile, the surface almost dull; antennae and palpi not entirely black 3
3. Apices of all femora and tibiae blackened, those of mid and hind femora very narrowly so *affinis*, n. sp.
 Apices of none of the femora and tibiae blackened *wilmoti*, n. sp.
4. Frons largely black, yellow only on the anterior portion of the triangle, orbital stripes and triangle glossy on their entire length and extending to anterior margin of frons, the narrow intervening and lateral areas velvety black; face prominently convex, readily seen from the side, and glossy yellow, the parafacials densely white dusted; wings luteous, quite noticeably infuscated at bases; thorax, abdomen, legs, except the bases of mid and hind tarsi, and the knobs of halteres, shining black *flaviceps*, n. sp.

- Frons yellow, only the ocellar region blackened, triangle and orbits not conspicuously differentiated on their entire length, and not extending to anterior margin of frons; face rarely convex; species not coloured as above, the legs more extensively yellow and the halteres usually pale coloured 5
5. Basal two segments of antennae yellow, third entirely deep black; thorax testaceous yellow, with two linear black vittae along the lines of dorsocentrals which extend from anterior margin to well beyond middle; intradorsocentral hairs in four series *vittigera*, n. sp.
Antennae not conspicuously bicoloured, third segment never deep black; thorax not coloured as above, if yellow then without linear black dorsal vittae 6
6. Intradorsocentral hairs in but two series and rather strongly developed; thorax and abdomen fuscous, with a pronounced green tinge, both greyish dusted, the thorax more densely so and with the humeral angles yellow; apices of palpi darkened; face quite noticeably convex and glossy in centre *biseriata*, n. sp.
Intradorsocentral hairs in at least four distinct series which are more or less regular, sometimes very short and fine 7
7. Thorax with three pairs of strong dorsocentral bristles, the anterior pair close to suture, and one pair of strong prescutellar acrostichals which are conspicuously differentiated from the very short and fine intradorsocentral hairs which do not closely approach them; halteres fuscous *tasmaniensis*, n. sp.
Thorax with two distinct pairs of dorsocentral bristles and sometimes a weak pair anterior to them which is not close to suture, the prescutellar pair of acrostichals sometimes not much longer than the hairs immediately in front of them, the latter usually quite prominent and approaching close to the prescutellars 8
8. Intradorsocentral hairs very fine and short, in six series; thorax fulvous yellow, shining, with a poorly defined greenish dorsocentral vitta which suffuses disc of scutellum also; palpi blackish at apices; anterior sternopleural well developed *fulvoviridis*, n. sp.
Intradorsocentral hairs in four series, usually quite long, and always rather conspicuous; thorax not coloured as above; palpi usually yellow 9
9. Thorax and legs entirely fulvous yellow, the former usually with one pair of the acrostichals in front of the prescutellar pair quite long and strong; anterior sternopleural bristle of moderate length; face slightly concave in profile; abdomen usually yellowish at base, metallic blue-green beyond *flavipalpis*, n. sp.
Thorax always largely black; legs usually partly blackened 10
10. Face quite conspicuously glossy and convex in centre; palpi yellowish testaceous *viridana*, n. sp.
Face flat or slightly concave, very slightly or not at all shining 11
11. Palpi brownish or fuscous; head not broader than thorax; abdomen brilliant metallic blue-green *viridula*, n. sp.
Palpi yellow; head distinctly broader than thorax; abdomen glossy black, without distinct metallic blue tinge *latifrons*, n. sp.



Text-fig. 1. *Incurviseta affinis*, apex of abdomen of male from side.
Text-fig. 2. *Melanina plebeia*, head from side.
Text-fig. 3. *Sapromyza ocellaris*, wing.

INCURVISETA MACULIFRONS (Macquart).

I have seen specimens which I refer to this species from various localities in Tasmania. The characters cited in the above synopsis ought to serve to distinguish it from the two next described species, which are similarly coloured and have the

distinctive frontal markings. The protuberant face of *maculifrons*, however, ought readily to identify the species. The hypopygium is similar to that of *affinis*, but the fore femora are sometimes entirely pale, and at best only browned, the mid and hind femora are not blackened at apices, the apices of all tibiae are black, as are the apices of mid and hind tarsi, and usually all of the fore tarsi.

Length, 3.4-5 mm.

Localities.—Magnet, Burnie, Mt. Wellington, Mt. Field, and Cradle Valley, Tasmania (A. M. Lea and A. L. Tonnoir).

INCURVISETA AFFINIS, n. sp. (Text-fig. 1.)

This is the species I previously identified and recorded as *maculifrons*.

Both species are testaceous yellow, with the ocellar spot, two large, elongate, and sometimes subtriangular, marks on frons, apices of tibiae and of tarsi, black.

In addition to the characters listed in the key *affinis* has the abdominal tergites each with a large black or fuscous mark on each side, including the apical one (Text-fig. 1), but sometimes, as in the Seaford specimen, the abdomen appears to be entirely blackened. The wings in both species are yellowish hyaline, and the arista in both are almost bare.

The close similarity of those two species and my evident misidentification of the one described by Macquart is but another argument against identifications of imperfectly described species except on the basis of type examination.

Length, 3.3-5 mm.

Type, Sydney, N.S.W., 30th Nov., 1924. Paratypes, Mooni, near Cotts, 14th Febr., 1925; Seaford, Victoria (G. F. Hill); and Burnie, Tasmania, 31st Jan., 1923 (A. L. Tonnoir).

INCURVISETA WILMOTI, n. sp.

This species is very similar to *affinis*, but the two black frontal marks are not so extensive, the black paired spots on abdomen are quite small and are confined to tergites 3 to 6 inclusive, and the legs are entirely yellow. Both these species have the four series of intradorsocentral hairs stronger and more regular than is the case in *maculifrons*, the outer two series in the latter being less complete and finer than the inner two. Only females of this species are available to me now.

Length, 3 mm.

Type and one paratype, Wilmot, Tasmania, 8th Jan., 1923 (A. L. Tonnoir).

INCURVISETA LATIFRONS, n. sp.

Female.—Head testaceous yellow, the frons more brownish and entirely shining, face white dusted, not shining; antennae and palpi testaceous yellow, arista fuscous. Thorax shining black, fulvous yellow on propleura, anterior margin, and on two vittae which extend along lines of dorsocentrals the whole length of mesonotum. Abdomen glossy black, with very faint indications of a bluish cast. Legs black, tarsi testaceous. Wings distinctly yellow, most noticeably on costa, the veins yellow. Calyptrae greyish, with black margins and fringes. Knobs of halteres black.

Head wider than thorax; frons about two-fifths of the head width and about as wide at vertex as long, slightly narrowed anteriorly; orbits not differentiated, anterior orbitals farther from eye than posterior pair; ocellars widely divergent, about as long as the postverticals; space between bases of antennae almost as great

as distance of either antenna from eye; third antennal segment not over 1.5 as long as wide; arista with very short pubescence; face almost flat; cheek with fine marginal hairs which extend some distance upward on sides of face. Thorax with two pairs of postsutural dorsocentral bristles, four series of intradorsocentral hairs, a pair of prescutellar acrostichals, two sternopleurals, and the propleural quite strong. Fore femur without an anteroventral comb; all tibiae with a distinct preapical dorsal bristle. Inner cross-vein at about two-fifths from apex of discal cell; ultimate section of fourth vein about 2.5 as long as penultimate.

Length, 5 mm.

Type, Wahroonga, Sydney, N.S.W., 31st Oct., 1926.

This species has the head wider, and the eyes more divergent below when seen from in front, than any other species of the genus now known to me.

INCURVISETA FLAVICEPS, n. sp.

Female.—Shining black, anterior extremity of central part of frons, the face, and cheeks, fulvous yellow, antennae a little darker; parafacials white dusted; bases of tarsi of mid and hind legs testaceous yellow. Wings brownish hyaline, slightly infuscated at bases. Calyptrae and halteres fuscous.

Frons a little longer than wide, triangle and orbits sharply differentiated, all three extending to anterior margin of frons, the triangle narrow and about parallel-sided on its apical third or more; postvertical bristles shorter than the ocellars; anterior orbitals a little farther from eye than posterior pair; face quite prominently convex in centre, glossy; cheek about as high as length of antenna. Thorax with the two pairs of postsutural dorsocentrals rather short, the series continued forward as rather strong hairs, the intradorsocentral hairs in two series and rather long, posteriorly but little shorter than the prescutellar acrostichals; anterior sternopleural present; scutellum slightly flattened above. Abdomen stout, very weakly bristled. Legs as in *latifrons*. Inner cross-vein a little beyond middle of discal cell.

Length, 3 mm.

Type, Cradle Valley, Tasmania, 20th Jan., 1923 (A. L. Tonnoir).

The very prominently convex face and high cheeks might justify one in erecting a subgenus for the reception of this species but there is nothing to be gained by adopting this course without a fuller knowledge of the group.

INCURVISETA VITTIGERA, n. sp.

Female.—Head testaceous yellow, ocellar region with a narrow fuscous triangle; third antennal segment and aristae black; palpi yellow. Thorax testaceous yellow, a little darker on dorsum, and with two narrow blackish vittae along the lines of dorsocentrals from anterior margin to the anterior pair of postsutural dorsocentrals. Abdomen discoloured in type specimen, more brownish yellow than thorax. Legs testaceous, apices of fore and hind femora and tibiae, and of all tarsi, blackened. Wings hyaline. Halteres yellow.

Frons a little longer than wide, orbits a little shining, the anterior pair of bristles farther from eye than posterior pair, all bristles of moderate length; face slightly convex; cheek fully as high as width of third antennal segment. Thorax with two pairs of postsutural dorsocentrals and a rather strong setula representing a third pair, four series of short intradorsocentral hairs, one pair of prescutellar acrostichals, and only one distinct sternopleural. No preapical dorsal bristle distinguishable on hind tibia. Inner cross-vein a little beyond middle

of discal cell; ultimate section of fourth vein about twice as long as penultimate section.

Length, 3.5 mm.

Type, Mt. Wellington, Tasmania, 9th Nov., 1922 (A. L. Tonnoir).

Structurally very similar to *maculifrons*, but the face is not so distinctly convex, and if the absence of the preapical dorsal bristle from the hind tibia is a normal character, the species is readily distinguished.

INCURVISETA BISERIATA, n. sp.

Male and female.—Head testaceous yellow, ocellar spot, upper half of occiput except on sides, arista, and apices of palpi, fuscous; frontal orbits very slightly shining; face very distinctly shining in centre, the parafacials dull. Thorax black, with a greenish tinge, humeral and propleural regions testaceous yellow, the entire surface with rather dense greyish dust. Abdomen coloured as thorax, but more noticeably green tinged, and less densely grey dusted. Legs testaceous yellow, blackened on most of fore femora, apices of hind femora and of fore and hind tibiae, less distinctly on mid tibiae, and on apices of tarsi, the fore pair almost all black. Wings hyaline. Halteres yellow.

Frons very slightly convex, all bristles distinct, the anterior orbitals closer together than the posterior pair; face quite prominently convex; cheek about as high as width of third antennal segment; arista with very short pubescence. Thorax with three pairs of postsutural dorsocentrals, the anterior pair short, the intradorsocentral hairs in two series, setulose and quite long, and the anterior sternopleural not developed; scutellum convex. Preapical dorsal bristle on fore and hind tibiae long and fine, the one on fore tibia fully as long as the basal segment of fore tarsus. Inner cross-vein very slightly beyond middle of discal cell and a little before apex of first vein; ultimate section of fourth vein twice as long as penultimate.

Length, 3.3-5 mm.

Type, male, and allotype, on same mount, and originally mounted in copula, Eaglehawk Neck, Tasmania, 15th Nov., 1922; paratypes, male and female, Launceston, Tasmania, 29th Oct., 1922 (A. L. Tonnoir).

INCURVISETA TASMANIENSIS, n. sp.

Female.—Head coloured as in *biseriata*, but the palpi almost entirely black. Thorax entirely black, shining, with a slight aeneous tinge, the dorsum slightly greyish dusted. Abdomen glossy black, with a more or less pronounced blue-green tinge. Legs black, knee-joints and bases of tarsi testaceous. Wings brownish hyaline. Knobs of halteres fuscous.

Head as in *biseriata*, but the face is slightly concave in profile, and the cheek is not as high as width of third antennal segment. Thorax with three pairs of outstanding postsutural dorsocentrals, the anterior one close to suture, and one pair of prescutellar acrostichals, the other hairs very short and fine, the intradorsocentrals in six series, but not continued to prescutellar acrostichals; both sternopleurals quite prominent; scutellum convex. Legs as in *biseriata*, but the preapical dorsal bristle on mid and hind tibiae shorter. Inner cross-vein usually a little beyond level of apex of first vein.

Length, 3.3-5 mm.

Type and one paratype, Cradle Valley, Tasmania, 17th Jan., 1923; two paratypes, same locality, 10th Jan., 1923 (A. L. Tonnoir).

INCURVISETA FULVOVIRIDIS, n. sp.

Female.—Head almost fulvous testaceous, frons slightly and almost evenly shining, the orbital stripes hardly distinguished, ocellar spot, arista, and apices of the palpi, fuscous; third antennal segment slightly darkened above. Thorax fulvous yellow, distinctly shining, and slightly whitish dusted, the dorsum with a faint greenish central suffusion or vitta which extends over disc of scutellum. Abdomen bright metallic blue-green. Legs fulvous yellow, slightly darkened on apices of fore tibiae and fore tarsi. Wings yellowish hyaline. Halteres yellow, knobs brownish.

Frons a little wider than long, anterior orbitals quite small and fine, and separated by less than twice the distance either is from eye; face quite noticeably concave in profile; cheek about as high as width of third antennal segment. Thorax with only two pairs of postsutural dorsocentrals, the anterior pair much shorter than the posterior, one pair of prescutellar acrostichals, six series of short fine intradorsocentral hairs, and both the sternopleurals strong; scutellum convex. All tibiae with a preapical dorsal bristle, the hind pair with the short hairs near apex on posteroventral side denser than usual, and erect. Inner cross-vein slightly before middle of discal cell and apex of first vein; last section of fourth vein not over 1.5 as long as penultimate section.

Length, 3 mm.

Type, Cradle Valley, Tasmania, 16th Jan., 1923 (A. L. Tonnoir).

INCURVISETA FLAVIPALPIS, n. sp.

Male.—Similar to the last preceding species in colour, the head, thorax, and legs being almost fulvous yellow, and the abdomen metallic blue-green. The antennae and palpi are, however, entirely pale, and there is no greenish central suffusion on the thorax.

Structurally the two species are very similar, but the frons is about as long as wide and more shining, the thorax has a short anterior third pair of postsutural dorsocentrals, all the hairs longer, the intradorsocentral series four in number and usually a pair of those in front of the prescutellar acrostichals quite long, while the anterior sternopleural is shorter. Inner cross-vein at or very close to middle of discal cell; ultimate section of fourth vein about twice as long as penultimate section.

Length, 3.3-5 mm.

Type, Geeveston, Tasmania, 7th Dec., 1922; paratypes; two, Eaglehawk Neck, Tasmania, 22nd to 27th Nov., 1922; one, Burnie, Tasmania, 5th Oct., 1922 (A. L. Tonnoir).

INCURVISETA VIRIDANA, n. sp.

Male.—Head fulvous testaceous, parafacials paler, dull; frontal orbits shining, face glossy; arista and ocellar spot fuscous. Thorax fuscous, with a greenish tinge, humeral angles, propleural and postalar regions, yellowish, the whole slightly grey dusted. Abdomen metallic blue-green. Legs fulvous testaceous, rather obscurely darkened on most of fore femora, apices of fore tibiae and tarsi, and apices of hind femora and tibiae. Wings hyaline. Halteres yellow.

Frons subquadrate; orbits a little differentiated, the anterior bristles quite long, separated by a distance about four times as great as that of either from eye; face quite prominently convex; cheek as high as width of third antennal segment. Thorax with two pairs of postsutural dorsocentrals and a weaker pair in front of

these; intradorsocentral hairs quite long, in four series, the outer two series not regular; anterior sternopleural bristle short but distinct. Outer cross-vein a little beyond middle of discal cell and distinctly before apex of first vein; ultimate section of fourth vein twice as long as penultimate section.

Length, 3.5 mm.

Type and paratype, Mt. Wellington, Tasmania, 25th Nov., 1922 (A. L. Tonnoir).

INCURVISETA VIRIDULA, n. sp.

Very similar to *viridana*, but the palpi are blackened at apices, the thorax has only two distinguishable pairs of postsutural dorsocentrals, and the four series of intradorsocentral hairs are quite regular and the hairs are short and quite even. The face is a little concave instead of prominently convex.

Length, 3.3-5 mm.

Type, Cradle Valley, Tasmania, 24th Jan., 1923; paratype, Fern Tree, 10th Nov., 1922 (A. L. Tonnoir).

7. Genus POECILOHETAERELLA Tonnoir and Malloch.

This genus was described for the reception of some New Zealand species and no representative of it has been seen from either Tasmania or Australia.

8. Genus POECILOHETAERUS Hendel.

This genus was originally erected for the reception of an Australian species, *decora* Schiner, which was renamed *schineri* by Hendel. The species was originally recorded as from New Zealand but it does not occur there. There is a second species referred here, *punctifacies* Tonnoir and Malloch, which occurs in New Zealand.

9. Genus CERATOLAUXANIA Hendel.

This recently erected genus contained originally only *tetanocerina* Hendel, but I have now before me a second species, from Tasmania.

The genus is very similar to *Paratauxania* as represented by the Australian forms, but is distinguished from it by the lanceolate arista, which is densely short haired.

I have not seen the genotype, but it is evidently distinct from the present species.

CERATOLAUXANIA TASMANIENSIS, n. sp.

Male.—Head fulvous yellow, glossy, much shrunken in the type specimen which is immature, but the following colour markings are evident: ocellar spot and orbital stripes darkened, a black spot between each antenna and eye, with white dusting below it; third antennal segment and arista fuscous. Thorax shining black, fulvous anteriorly. Abdomen shining black. Legs black, apices of tibiae, and the tarsi, testaceous yellow, fore tarsi apparently darkened from before tip of first to tip of fourth segment. Wings hyaline, bases narrowly black. Halteres black.

Ocellar bristles short; anterior orbitals lacking; third antennal segment not as much tapered as in genotype, almost imperceptibly narrowed apically, about three times as long as its basal width; vertical bristles long. Thorax with two pairs of postsutural dorsocentrals; scutellum convex. Inner cross-vein at middle

of discal cell and below apex of first vein; penultimate section of fourth vein about three-fifths as long as ultimate section.

Length, 4 mm.

Type, Mt. Wellington, Tasmania (A. M. Lea).

In *tetanocerina* Hendel the third antennal segment is browned at apex only, the thorax is blackened on dorsum only posteriorly, the legs are black-brown, with the tips of the tibiae and tarsi reddish yellow. This species was described from Victoria.

10. Genus PARALAUXANIA Hendel.

I have placed some Australian species in this genus because they agree with the genotype in having but one pair of orbital bristles. I have recently examined the genotype and though it is a duller coloured species than those from Australia it has no very striking characters by means of which it can be distinguished from them apart from colour and the presence of dusting on the face. I propose to retain the generic name for the two species already included in this genus from Australia and for some others now dealt with, but at some future time when the relationships of the species of the family are better known it may be that some other disposition may have to be made of the Australian species or some part of them.

Below I present a key to the species as I have aligned them.

Key to the Species.

1. Thorax fulvous yellow, with three black dorsal vittae, the median one continued to near apex of scutellum, the laterals not reaching posterior margin of mesonotum, and with only two series of intradorsocentral hairs, one on each lateral margin of the central vitta, the notopleural suture, and a large triangle on sternopleura blackish; abdomen metallic blue-green; legs yellow, fore femora, tibiae, and tarsi deep black, the fore tarsi thickened *atrimana*, n. sp.
 Thorax largely black, or if fulvous yellow then not marked with black vittae, and always with at least four series of intradorsocentral hairs; fore tarsi not noticeably thickened 2
2. Thorax fulvous yellow, slightly darkened on middle posteriorly, on disc of scutellum, and along notopleural suture, and with three pairs of strong postsutural dorso-central bristles, the anterior pair close to suture and without strong setulae in front of it; mid and hind femora dirty yellow *flavipennis*, n. sp.
 Thorax with the greater part of its surface blackened, and with two or three pairs of postsutural dorso-central bristles, when three pairs are present the anterior pair is much shorter than the others and quite far from suture, with some strong setulae in front of it 3
3. Mid and hind femora yellow; frons longer than wide, shining fulvous yellow, with narrow fuscous lines along both sides of the orbital plates, across anterior margin of frons, and down its centre *scripta*, n. sp.
 All femora deep black; frons of variable width, but never marked with fuscous lines as in above species 4
4. Frons distinctly longer than wide, shining, uniformly fulvous yellow, with only a black ocellar spot; no dark mark at upper extremity of each parafacial close to antennal bases, but a quite distinct one at lower extremity of each against the eye; ocellar bristles extremely small and fine; palpi entirely bright fulvous yellow *fulviceps* Malloch.
 Frons blackened on more than the ocellar spot; parafacials with a dark mark at upper extremity close to bases of antennae 5
5. Frons widest at anterior margin where it is about 1.5 as wide as its length at middle; ocellar bristles widely divergent and not half as long as the postvertical pair; parafacial with an upper and a lower black mark; wings quite conspicuously blackened across anal angles; fore metatarsus whitish, blackened at apex *elevata* Fabricius.

- Frons subquadrate; ocellar bristles quite large, as long as the postverticals; parafacial with a dark mark at upper extremity close to base of antenna, but without one at lower extremity; wings blackish at bases, but without a noticeable black mark across anal angles 6
6. Fore tarsi entirely black; palpi fuscous at apices *nigrimana*, n. sp.
 Fore tarsi black, basal three-fourths or more of the basal segment testaceous; palpi yellow *flavipalpis*, n. sp.

PARALAUXANIA ATRIMANA, n. sp.

Male and female.—Head fulvous yellow; frons glossy, ocellar spot black; face glossy, parafacials rather densely white dusted; inner mouth margin with a dark transverse line; antennae and palpi fulvous yellow; arista fuscous. Thorax shining fulvous or orange-yellow, with three black vittae, the central one carried over the scutellum almost to apex, the lateral pair not extending to hind margin of mesonotum, a blackish vitta along the notopleural suture, and a large triangular fuscous mark on the sternopleura. Abdomen brilliant metallic blue-green, the sternites yellowish. Legs concolorous with thorax, fore pair except the coxae deep black. Wings yellowish hyaline, faintly darkened at bases behind. Halteres dark brown at apices.

Frons a little longer than wide; ocellar bristles about half as long as the postvertical pair; anterior orbitals not distinguishable; face slightly convex, and receding a little below; antennae large, third segment tapered slightly to apex and over three times as long as its basal width; arista with extremely short pubescence; cheek about as high as width of third antennal segment. Thorax with two distinct pairs of postsutural dorsocentral bristles and a series of setulae in front of them, the posterior one of the series rather strong, one pair of strong prescutellar acrostichals, two series of intradorsocentral hairs, the anterior sternopleural very weak, and the propleural bristle minute; scutellum slightly elongated. Legs normal, but the fore tarsi much thicker than in any other species of the genus known to me, the basal segment fully as thick as apex of tibia. Inner cross-vein at middle of discal cell.

Length, 4.4-5 mm.

Type, male, Wahroonga, Sydney, N.S.W., 31st Oct., 1926; male paratype, Eaglehawk Neck, Tasmania, 23rd Nov., 1922; allotype and two paratype females, Cradle Valley, Tasmania, 11th, 13th, 16th Jan., 1923; one female paratype, Mt. Wellington, Tasmania, 29th Nov., 1922 (A. L. Tonnoir).

PARALAUXANIA FLAVIPENNIS, n. sp.

Female.—Head fulvous yellow; frons shining, ocellar spot black, subtriangular; parafacials white dusted, slightly browned opposite bases of antennae; face shining; antennae and arista black, third segment of former a little reddish at base; palpi black, yellow at extreme bases. Thorax shining fulvous yellow, slightly darkened in centre of hind margin and on disc of scutellum, and with a dark vitta on notopleural suture. Abdomen glossy bluish black. Legs fulvous yellow, apices of fore femora, most of fore tibiae, and all of fore tarsi, apices of hind tibiae, and of mid and hind tarsi, obscurely browned. Wings deep honey yellow, brown at extreme bases. Knobs of halteres brown.

Frons a little wider than long; ocellar bristles much longer than the postverticals and posterior orbitals; anterior orbitals represented by a pair of microscopic fine hairs; face rather sharply convex vertically; receding below in profile; cheek higher than width of third antennal segment; antennae not as long as in *atrimana*, the third segment tapered apically and about 2.5 as long as its

basal width; arista subnude. Thorax with three pairs of strong postsutural dorso-central bristles, the anterior pair close to suture, one pair of strong prescutellar acrostichals, the surface hairs quite short, the intradorsocentral series six in number, and the anterior sternopleural and propleural bristles long; scutellum semicircular. Legs normal, fore tarsi not noticeably thicker than the other pairs. Inner cross-vein close to middle of discal cell; outer cross-vein and ultimate section of fourth vein slightly sinuate.

Length, 4.5 mm.

Type, Cradle Valley, Tasmania, 17th Jan., 1923 (A. L. Tonnoir).

A stronger development of the anterior pair of orbital bristles might incline one to place this species in the genus *Sapromyza*.

PARALAUXANIA SCRIPTA, n. sp.

Male.—Head fulvous yellow; frons shining, with a central fuscous vitta which is widest behind, a fuscous line around the orbital plates except posteriorly, and one across anterior margin above antennae which connects with the dark mark on upper extremity of each parafacial; face shining; parafacial white dusted, with a dark mark at upper and another at lower extremities; antennae and palpi fulvous yellow; aristae fuscous. Thorax blackish, with a green lustre, becoming fulvous anteriorly. Abdomen metallic blue-green. Legs dusky fulvous yellow, the fore pair more obscured, but without sharply defined markings. Wings yellowish hyaline, more yellow anteriorly. Halteres fuscous.

Frons a little longer than wide; ocellar bristles widely divergent and about as long as postvertical pair; anterior orbitals represented by weak microscopic hairs; face convex above in middle, depressed near mouth; cheek about as high as width of third antennal segment; antennae smaller than *atrimana* and *flavipennis*, third segment but little tapered apically and about twice as long as its width at base; arista subnude. Thorax with three pairs of postsutural dorsocentrals, the anterior pair weak and short, well behind suture, four series of rather long and unevenly spaced intradorsocentral hairs, the anterior sternopleural and propleural bristles rather long.

Length, 4 mm.

Type, Cradle Valley, Tasmania, 23rd Jan., 1923 (A. L. Tonnoir).

PARALAUXANIA FULVICEPS Malloch.

Since describing this species I have seen additional specimens from Wahroonga, Sydney, N.S.W., 24th Oct., 1926.

PARALAUXANIA ELEVATA Fabricius.

Mr. Tonnoir has sent me a specimen of this species from Adventure Bay, Tasmania, 29th Dec., 1922. Originally the species was not definitely recorded from any locality, but Hendel gives it from Nova Cambria and New South Wales. I have seen only Tasmanian specimens so far.

PARALAUXANIA NIGRIMANA, n. sp.

Female.—Head fulvous yellow; frons shining, rather extensively blackened round ocelli and on anterior extremities of orbital plates; parafacials white dusted, with a brown mark at upper extremity of each; face shining; antennae largely infuscated, third segment palest below basally; arista fuscous; palpi black at apices. Thorax shining black, yellow on humeral angles and propleura, and with

slight greyish dust. Abdomen glossy black. Legs black, mid and hind tarsi testaceous at bases. Wings yellow, blackened at bases, the dark shade hardly showing on anal angle. Halteres black.

Frons slightly depressed near front, and about as long as wide, entirely glossy; ocellar bristles as long as postverticals; anterior orbitals represented by microscopic hairs; antennae as in *scripta*; face slightly convex; cheek as high as width of third antennal segment. Thorax as in *scripta*, but the four series of intradorsocentral hairs are shorter and quite regular. Inner cross-vein at middle of discal cell.

Length, 5 mm.

Type, Cradle Valley, Tasmania, 12th Jan., 1923 (A. L. Tonnoir).

PARALAUXANIA FLAVIPALPIS, n. sp.

Male and female.—Similar to *elevata* and *nigrimana* in general colouration, but the palpi are entirely yellow, and the wings are not conspicuously blackened at bases, the anal angle being almost without a dark suffusion.

Like *nigrimana*, a more slender species than *elevata*, with narrower frons, shorter third antennal segment, and the characters cited in the foregoing key to species. The anterior pair of orbitals are entirely lacking in this species.

Length, 4 mm.

Type, male, Wahroonga, Sydney, N.S.W., 31st Oct., 1926; allotype, same locality, 24th Oct., 1926; female paratype in poor condition, Jenolan Caves, Nov., 1910 (J. B. Cleland).

11. Genus TRIGONOMETOPSIS Malloch.

I have seen but one species of this genus, the genotype, *binotata* Thomson, which appears to be not uncommon in New South Wales.

12. Genus MELANINA, novum.

This genus is similar to *Sapromyza* Fallen in the thoracic and wing characters, but the head is of entirely different structure, the frons being more or less depressed in front, entirely shining, with the orbital stripes a little more highly polished, the anterior pair of orbital bristles is smaller than the posterior pair, and are backwardly curved, the other bristles are all present, the face is highly polished and very distinctly convex (Text-fig. 2), arista pubescent; thorax without any presutural dorsocentrals. Genotype, *Melanina plebeia*, n. sp.

Key to the Species.

1. Inner cross-vein of wing at about one-third from apex of discal cell; apical two segments and a part of third of mid and hind tarsi fuscous, the rest pale yellowish testaceous; frons quite broadly yellowish in front, the anterior pair of orbital bristles very small and weak; only one pair of prescutellar acrostichals developed; scutellum with microscopic pile on entire surface *major*, n. sp.
- Inner cross-vein of wing at or very close to middle of discal cell; only the apical segment of mid and hind tarsi fuscous, the basal four segments pale yellowish testaceous; frons usually almost entirely black or very narrowly yellowish in front, the anterior pair of orbital bristles distinct 2
2. Only one irregular series of bristles besides the acrostichal two series, i.e., the intradorsocentral hairs in four series; scutellum with microscopic pile on entire surface, not appearing highly polished on disc *quadriseriata*, n. sp.
- Intradorsocentral hairs in six series 3
3. Scutellum with microscopic pile on margin only, highly polished on disc; colour deep glossy black; thorax with one or two of the pairs of intradorsocentral hairs developed bristle-like in front of the prescutellar acrostichals *plebeia*, n. sp.

Scutellum with a shagreened or dusted appearance and not highly polished on disc, under a very high power lens appearing as microscopically pilose; colour metallic blue-black or greenish black, the dorsum of thorax noticeably greenish posteriorly, and the face distinctly purplish or violaceous when seen from above; all the intradorsocentral hairs short *aenescens*, n. sp.

All the species are very similar in colour and structure, being distinguished essentially by the characters cited in the foregoing key. The general colour is glossy black, sometimes with a metallic blue or green tinge, the legs are black, with bases of the mid and hind tarsi testaceous yellow, the wings are yellowish hyaline, sometimes with the bases more or less distinctly infuscated to apices of the basal cells, the knobs of the halteres are black, antennae entirely fulvous yellow, and the aristae and palpi fuscous. In the brief descriptions below only the differentiating characters are noted.

MELANINA MAJOR, n. sp.

Male.—Deep glossy black, the frons bright orange yellow in front, becoming brownish above middle, but the interfrontalia distinct from the glossy black orbital stripes and the ocellar spot on all parts when seen from in front. The intradorsocentral hairs are short and in six series.

Length, 3.25 mm.

Type, Wahroonga, Sydney, N.S.W., 24th Oct., 1926.

MELANINA QUADRISERIATA, n. sp.

Male.—A deep glossy black species, which is rather more slender than the others in the genus and has the frons almost entirely black. The other characters may be gleaned from the key.

Length, 2.5 mm.

Type, Wahroonga, Sydney, N.S.W., 17th Oct., 1926.

MELANINA PLEBEIA, n. sp. (Text-fig. 2.)

Male and female.—Similar in colour and general habitus to *quadriseriata*, but the intradorsocentral hairs are in six series, and the frons is distinctly yellow on anterior margin. The hypopygium of this and of the next species are similar.

Length, 2.5-3 mm.

Type and six paratypes, Wahroonga, Sydney, N.S.W., 17th to 24th Oct., 1926.

MELANINA AENESCENS, n. sp.

Male and female.—Distinguished from *plebeia* by the characters cited in the key. The frons is rather more distinctly yellowish on anterior margin and the third antennal segment is less than 1.5 as long as wide, while in *plebeia* it is rather more than 1.5.

Length, 2.5-3 mm.

Type and eight paratypes, Cronulla, N.S.W., December, 1925 (H. Petersen).

13. Genus RHAGADOLYRA Hendel.

This monobasic genus is unknown to me. The genotype is *handlirschi* Hendel.

14. Genus SAPROMYZA Fallen.

I have before me several undescribed species of this genus, but consider it is not an opportune time to present a new key to the species as I have but recently published one in These PROCEEDINGS (1926, p. 34). Under each species described in this paper I discuss the characters by means of which the species is separated

from the one to which it runs in the key, and believe that with these notes in hand students may be able to identify reliably such species as are already described. There are yet many species of the genus to be discovered and every lot received by me has in it species unknown to me, so that any key presented now will of necessity prove quite inadequate for the identification of a host of species occurring in Australia, and especially those from the west and north, which are very sparingly represented in the material available to me at this time.

SAPROMYZA PLUMISETA, n. sp.

Male.—Frons orange yellow centrally, orbits, vertex, and triangle, fuscous, whitish dusted; face and cheeks testaceous yellow, with greyish dust, parafacial suture slightly darkened, a dark spot between each antenna and eye; occiput fuscous, grey dusted; antennae fulvous yellow; aristae and the hairs black; palpi fuscous. Thorax fuscous, more yellowish on sides anteriorly, dorsum with dense grey dust, two practically complete submedian vittae between acrostichals and dorsocentrals, two narrow interrupted vittae laterad of the dorsocentrals, and two partial sublateral vittae behind the suture; disc of scutellum suffused with brown. Abdomen blackish, distinctly shining, faintly grey dusted. Legs testaceous, at least the fore femora darkened. Wings greyish hyaline, with a broad costal fuscous cloud which begins at apex of auxiliary vein and extends to tip of wing, becoming obsolete posteriorly in the submarginal and first posterior cells on disc of wing, and not connecting with the more conspicuous fuscous clouds over the inner and outer cross-veins nor the fainter one over bases of second section of third and fourth veins, but suffusing entire apex of wing to behind fourth vein.

Frons about 1.25 as long as wide; orbits well differentiated, anterior orbital bristles closer together than posterior pair; all frontal bristles long; third antennal segment about 1.5 as long as its basal width; arista plumose; face sharply convex. Thorax with 1+3 dorsocentrals and 1+4 acrostichals; scutellum flat above. Fore femur with an anteroventral comb; all tibiae with preapical dorsal bristle; mid tibia with two apical ventral bristles. Inner cross-vein at two-fifths from apex of discal cell, and noticeably beyond apex of first vein; ultimate section of fourth vein about twice as long as penultimate section.

Length, 3 mm.

Type, Woy Woy, November, 1921 (A. L. Tonnoir).

SAPROMYZA PETERSeni, n. sp.

Female.—Head testaceous yellow; interfrontalia brown, becoming orange-red at anterior margin; orbits, and sides of triangle behind, densely whitish grey dusted, the former as wide as interfrontalia in front and extending to eyes; a deep brown mark between each antenna and eye, and another on occiput behind each eye which does not descend below level of eye; upper part of cheek silvery white dusted; face with a slight dark mark in each antennal fovea; antennae testaceous, third segment and aristae missing in type; palpi fuscous. Thorax fuscous, yellowish on humeri, densely pale grey dusted, mesonotum with two narrow dark brown vittae between the acrostichals and dorsocentrals, which fuse at posterior margin and continue as one almost to apex of the scutellum, and two much broader sublateral vittae of same colour; pleura with a pale-dusted vitta extending backward from prothoracic spiracle. Abdomen fuscous, slightly shining, densely grey dusted, each tergite except the first visible one with a dark brown irregular basal fascia. Legs testaceous, fore femora, and a subbasal and apical ring on each tibia,

fuscous. Wings hyaline, with a blackish cloud from apex of auxiliary vein to tips which extends inward over second vein at base, then over third vein from beyond the cloud over inner cross-vein, connects with a fuscous mark on middle of apical section of fourth vein, and extends round apex of wing to fourth vein, but does not connect with the clouds on the cross-veins; a dark cloud over the veins above base of discal cell, and fainter marks in second posterior and anal cells. Halteres yellow.

Frons about 1.5 as long as wide; ocellar bristles almost as long as frons; anterior orbital bristles very little farther from eyes than posterior pair; frons protuberant in front in profile; face carinate above, slightly receding below; cheek a little higher than length of frons in front of eye; antennae broken off in type. Thorax with bristles as in the preceding species. Fore femur with an antero-ventral comb; all tibiae with a short preapical dorsal bristle; mid tibia with one apical ventral bristle. Inner cross-vein at about two-fifths from apex of discal cell.

Length, 3 mm.

Type, Cronulla, N.S.W., December, 1925 (H. Petersen).

This species, which is named in honour of the collector, is placed with some doubt in *Sapromyza* as the third antennal segment is lacking in the type. The specimen was received from Dr. C. F. Baker, of the Philippine College of Agriculture, in a miscellaneous lot of insects and fragments of flowers, etc., collected by sweeping and shipped dry in a mass in a tin box. A number of other species described by me were received in the same manner.

This and *S. plumiseta* belong to a group in which there are four pairs of strong dorsocentral thoracic bristles and distinct wing markings present. I have described only one such Australian species, *suffusa* (These PROCEEDINGS, 1926, p. 37), and from it these two may be distinguished by the presence of an antero-ventral comb on the fore femora, and the strong biseriate acrostichal setulae. Possibly both species have the arista plumose but it is impossible to say as to *peterseni*; *suffusa* has the arista pubescent.

SAPROMYZA HIEROGLYPHICA, n. sp.

Female.—Head testaceous, densely greyish yellow dusted; frons with a blackish brown spot at base of each bristle and a streak on each side from base of inner vertical to ocellar bristle which runs forward alongside of the narrow grey triangle to anterior margin, and then sends a branch diagonally backward to near eye between the orbital bristles; face with similarly coloured streaks on parafacial sutures, across lower margin, and on each side of central line of face, the two latter connected above and below middle; antennae testaceous yellow; arista and palpi fuscous, the latter pale at tips. Thorax brownish testaceous, slightly shining, with patches of dense whitish grey dusting on disc and pleura, those on disc outlining two broad submedian vittae and a number of connected markings laterad of them; scutellum dark brown, with a spot of whitish dust in front of base of each basal bristle. Abdomen shining testaceous, darker at bases of the tergites. Legs testaceous, fore femora largely brown, mid and hind pairs and all tibiae brown near bases and apices, third and fourth segments of fore tarsus fuscous. Wings yellowish hyaline, fuscous from bases to apices of basal cells and beyond humeral vein. Knobs of halteres fuscous.

Frons subquadrate, all bristles strong, anterior orbitals close to anterior margin and not farther from eyes than posterior pair; antennae normal; arista

pubescent; face flat. Thorax with 1+3 pairs of strong dorsocentrals, two intradorsocentral series of short closely placed hairs, a pair of strong prescutellar acrostichals, and two strong sternopleurals. Fore femur without a distinct comb; all tibiae with preapical dorsal bristle, mid pair with one apical ventral bristle. Inner cross-vein at about one-third from apex of discal cell; last section of fourth vein three times as long as penultimate section.

Length, 4.4-5 mm.

Type and one paratype, Donnybrook, W.A., 29th Aug., 1926 (E. W. Ferguson).

Belongs to the same group as *plumiseta* and *peterseni*, but closer to *suffusa*, the arista being pubescent, and the intradorsocentral hairs short and fine. It is distinguished from *suffusa* by the presence of fuscous markings on the wings being confined to the bases, and by the thoracic markings.

SAPROMYZA OCELLARIS, n. sp. (Text-fig. 3.)

Male and female.—Head testaceous, frontal orbits, face, and cheeks, densely white dusted, interfrontalia yellow, ocellar spot, a line along inner margin of each orbital stripe, and a triangular mark between each antenna and eye, velvety black; face with a pair of brown spots at middle; antennae, aristae, and palpi, black; occiput with a dark mark behind upper angle of each eye, and a brown streak on lower half. Thorax dull brownish, or testaceous yellow, densely grey dusted, dorsum with four dark brown vittae, the submedian pair fused behind and carried on to disc, but not to apex, of scutellum; pleura with the following dark brown marks; a streak on upper margin of mesopleura, another on its lower margin, a third one below sternopleural bristles, and two spots on centre of mesopleura. Abdomen coloured as thorax, tergites with a dark central vitta, and dark spots at bases of the larger bristles. Legs testaceous, femora sometimes brownish or fuscous, fore legs from near bases of tibiae, apices of mid and hind tibiae and tarsi black. Wings with many dark brown markings, many of them ocellate (Text-fig. 3). Halteres yellow.

Frons a little longer than wide, all bristles long, orbits broad and distinct; face in profile quite prominent above, with a transverse impression below; third antennal segment about twice as long as wide; arista with rather dense hairs, the longest less than half as long as width of third antennal segment. Thorax with three pairs of dorsocentral bristles, the anterior pair close to suture, the intradorsocentral hairs in four series, the inner two rather long, the outer two irregular, and the prescutellar acrostichal pair long; scutellum flat, rather long. Fore femur with a very weak anteroventral comb; mid tibia with three apical ventral bristles, one much weaker than the others.

Length, 3.4 mm.

Type, male, allotype, and one male and one female paratypes, Burnie, Tasmania, 24th and 27th Oct., 1922; paratypes, two, Adventure Bay, Tasmania, 27th Dec., 1922, and 1st Jan., 1923; one, Geeveston, Tasmania, 8th Dec., 1922; one, Eaglehawk Neck, Tasmania, 3rd Nov., 1922; one St. Patrick R., Tasmania, 30th Oct., 1922; one, Adelaide, S.A., 20th Oct., 1921 (A. L. Tonnoir).

This species runs to section 20 in my published key to the species of this genus, but is distinguished from any species in the subsequent part of the key, and in fact from any other Australian species, by the wing markings.

SAPROMYZA AVICOLA, n. sp.

Male.—Belongs to the group in which *regalis* Malloch occurs, running to this species in my published key. It differs from *regalis* in having the humeri normal,

not exceptionally prominent, with one long bristle and a few very weak hairs, and the hairs on adjoining region sparse and fine close to humerus, becoming more numerous and stouter beyond, but not so conspicuous as in *regalis*. The post-humeral bristle is quite short. Inner cross-vein at a point about one-fourth from apex of second costal division. Mid tibia with one apical ventral bristle.

Length, 6 mm.

Type, Eaglehawk Neck, Tasmania, 18th Nov., 1922 (A. L. Tonnoir).

SAPROMYZA TONNOIRI, n. sp.

Male.—Glossy fulvous yellow, entire frons shining; ocellar spot, two sub-triangular spots near centre of face, and usually one near each vibrissal region, fuscous; antennae and palpi yellow; arista fuscous. Abdomen glossy black on dorsum except the basal tergite. Legs and halteres yellow. Wings hyaline.

Frons broader than long, slightly convex, all bristles present, anterior orbitals much weaker than the posterior pair; face slightly convex; arista pubescent. Thorax with the dorsocentrals arranged 1+3, and usually a similar number of acrostichals, the latter rather irregular and not strong; sternopleurals 2; scutellum rather short and convex. Fore femur without an anteroventral comb; all tibiae with a preapical dorsal bristle, mid tibia with one apical ventral bristle. Inner cross-vein much beyond level of apex of first vein, and about two-fifths from apex of discal cell; ultimate section of fourth vein about twice as long as penultimate section.

Length, 2.75-3.25 mm.

Type, Launceston, Tasmania, 9th Oct., 1922; single paratypes, Wilmot, Tasmania, 8th Jan., 1923; Hobart, Tasmania, 4th Jan., 1923; and Zeehan, Tasmania, 7th Feb., 1923 (A. L. Tonnoir).

This species runs to section 5 in my published key to the species of this genus, but is distinguished from any species between that section and 8, in which all those with four pairs of dorsocentral bristles and unmarked wings are included, by the marked face, fulvous yellow thorax, and pubescent arista.

SAPROMYZA STRAHANI, n. sp.

Male.—Fulvous yellow, thorax and abdomen glossy. Frons with the orbital stripes a little more shining than remainder of frons, ocellar spot fuscous; face shining, whitish dusted on sides; antennae and arista black, third segment of former a little reddish at base; palpi yellow, darkened at apices. Thorax with a faint dark streak along upper margin of mesopleura. Abdominal tergites in type specimen slightly dark at apices. Legs black, all coxae, mid and hind femora except their apices, bases of mid tibiae, and basal segment of fore and hind tarsi, yellow. Wings slightly and almost evenly smoky, darkest along costa. Halteres yellow.

Frons a little wider than long, orbits slightly differentiated; ocellar bristles microscopic; anterior pair of orbitals about half as long as posterior pair, much closer together than these, distance between them not much greater than distance of either from eye; third antennal segment slightly tapered, about twice as long as its basal width; arista microscopically pubescent; face almost flat, and a little receding below. Thorax with three pairs of strong dorsocentrals, the anterior pair close to suture, intradorsocentral hairs very short, in four series in front only, and the inner postalar and anterior sternopleural bristles weak. Fore femur with an anteroventral comb; all tibiae with a preapical dorsal bristle; mid pair

with one long apical ventral bristle. Inner cross-vein slightly beyond middle of discal cell and level of apex of first vein; ultimate section of fourth vein not over 1.5 as long as penultimate section.

Length, 4 mm.

Type, Strahan, Tasmania, 6th Feb., 1923 (A. L. Tonnoir).

This species runs to section 23 in my key but is distinguished from any in the subsequent part of key by the fulvous yellow thorax, which is not dusted nor vittate.

SAPROMYZA FLAVODORSALIS, n. sp.

Male and female.—Head testaceous yellow; frons orange-yellow, shining only on the orbital stripes, the latter, vertex, and ocellar region, greyish dusted; ocellar spot and upper occiput fuscous, grey dusted; antennae and aristae black, basal antennal segment rufous; palpi black. Thorax fuscous, dorsum, including the humeral angles, fulvous testaceous, the whole greyish dusted, dorsum shining. Abdomen fuscous, slightly shining, with dense even grey dust. Legs testaceous yellow, blackened on all of fore femora and bases of mid and hind pairs, all except bases of fore tibiae, and the apices of mid and hind pairs, all of fore tarsi and the apices of mid and hind pairs. Wings yellowish hyaline. Halteres yellow.

Frons not longer than wide, with some microscopic black surface hairs, all bristles distinct; anterior orbitals about one-third from anterior margin of frons and farther from eyes than posterior pair; third antennal segment rather wide at base, tapered to apex, and not twice as long as its basal width; arista practically bare; face concave in profile, a little receding below; cheek not as high as width of third antennal segment. Thorax with three pairs of postsutural dorsocentral bristles, the anterior pair quite short and rather close to suture, the hairs anterior to the bristles quite long and strong so that sometimes there may be four, or even more, almost bristle-like; intradorsocentral hairs biseriate, two or three of the pairs behind, and sometimes even up to or in front of suture, quite long, and laterad of these two series there are usually some scattered short hairs so that in some cases the hairs may appear quadriseriate; sternopleurals two. Fore femur without an anteroventral comb; all tibiae with distinct preapical dorsal bristle, mid pair with one long and one very short apical ventral bristle. Wings narrow; inner cross-vein very slightly before the middle of discal cell and distinctly before apex of first vein; ultimate section of fourth vein not over 1.5 as long as penultimate section.

Length, 4 mm.

Type, male, and allotype, Mt. Field, Tasmania, 21st Dec., 1922 (A. L. Tonnoir).

If this species is accepted as having the anterior pair of postsutural dorsocentrals much weaker than the posterior two pairs, which is evidently the case, it will run to section 11 in my key, but it differs from any species in the sections between 11 and 19 inclusive in having the mesonotum fulvous testaceous and the pleura and metanotum fuscous. If it is placed amongst the species with three strong pairs of postsutural dorsocentrals it will run to section 23, but, like *strahani*, it differs from any included in the subsequent sections in the colour of the thorax.

15. Genus *TRYPANEOIDES* Tonnoir and Malloch.

This genus contains, so far as I know at present, species which are as a rule a little smaller than the average of those in *Sapromyza*, some being less than 2 mm.

in length, and the wings of the known species are always conspicuously pictured. The presence of a strong bristle on middle of the mesopleura, which is always more or less downwardly directed, readily distinguishes the genus from any other except one which occurs in Formosa. The species very closely resemble small Trypetidae. There are no species of the genus known to me from Australia, the genotype was described from New Zealand, but there are about a dozen species distributed throughout the Orient.

16. Genus HOMONEURA van der Wulp.

I have in the press a paper in which I erect some new subgenera of this genus and two of the species now before me from Australia are used as the types of new subgenera in this paper.

HOMONEURA (EUHOMONEURA) ORNATIPENNIS (de Meijere).

I have compared the type specimen of this species with that of *atrogrisea* Malloch and can find no characters that would justify me in distinguishing them as different species. Originally the species was described from the Nederland Indies and its occurrence in Australia may be due to commerce, though there is nothing yet known of its larval and pupal stages to indicate how it may be transported.

I erect for this species and three others which occur in the Orient the new subgenus, *Euhomoneura*, with *ornatipennis* as type.

The distinguishing character is found in the dorsocentral bristles of thorax which are arranged 1+2. The most closely related subgenus is *Xenohomoneura* described below and the differentiating characters are noted thereunder.

Subgenus XENOHOMONEURA novum.

This subgenus is erected for a species which has the same arrangement of the dorsocentral bristles of thorax as has *Euhomoneura*, but the wings are hyaline, not conspicuously pictured as in that subgenus, and the distance from lateral edge of central portion of face to eye and the width of central portion and its lower angle are about equal. In *Euhomoneura* the central portion of face is about three times as wide at lower margin as the distance from its edge to eye. The type is *testacea*, n. sp.

HOMONEURA (XENOHOMONEURA) TESTACEA. n. sp.

Male and female.—Dull testaceous yellow; aristae and ocellar spot fuscous; disc of mesonotum, and to a lesser extent that of scutellum, infuscated, and rather copiously grey dusted; metanotum fuscous, and grey dusted; abdomen of female with a dark dorsocentral vitta. Wings hyaline.

Frons about one-third of the head width and a little longer than wide, all the bristles strong, the anterior orbitals close to anterior margin of frons; antennae rather small, third segment about 1.5 as long as wide; arista minutely pubescent; lower occiput slightly bulging; cheek higher than width of third antennal segment; face almost flat. Thorax with all three pairs of dorsocentrals long and strong, the prescutellar acrostichals short and fine, and the intradorsocentral hairs in four irregular series; scutellum flattened above, not elongated; sternopleurals both present. Fore femoral comb not conspicuous; all tibiae with preapical dorsal bristle; mid pair with two apical ventral bristles. Inner cross-vein at about two-

fifths from apex of discal cell; ultimate section of fourth vein less than twice as long as penultimate section.

Length, 3 mm.

Type, male, and allotype, Adventure Bay, Tasmania, 7th Dec., 1922 (A. L. Tonnoir).

HOMONEURA (HOMONEURA) FERGUSONI, n. sp.

Male and female.—Testaceous yellow, slightly shining. Antennae and palpi yellow; aristae fuscous. Thorax slightly dusted, usually with faint traces of two brownish vittae just mesiad of the dorsocentrals. Abdomen of male usually with a faint series of dark dorsocentral spots on apical half, that of female with the spots quite distinct and in addition a larger one on each side of the fifth tergite. Legs yellow. Wings hyaline, normally with seven dark spots, those over inner cross-vein and at least the anterior extremity of outer cross-vein, just before apex of second vein, and at apex of third vein, most distinct, those at apex of fourth vein, at base of antepenultimate section of same vein, and between apices of auxiliary and first veins, least noticeable, sometimes very faint. Halteres yellow.

Frons subquadrate, orbits faintly differentiated, all the bristles long, surface hairs microscopic and sparse; third antennal segment almost twice as long as wide, slightly angulate on upper apical extremity; arista with very short pubescence. Thorax with three pairs of postsutural dorsocentrals and six series of intradorsocentral setulae. Fore femur with an anteroventral comb; all tibiae with distinct preapical dorsal bristle; mid tibia with two subequal moderately long apical ventral bristles. Inner cross-vein about two-fifths from apex of discal cell; ultimate section of fourth vein a little longer than penultimate section.

Length, 4-5 mm.

Type, male, allotype and four paratypes, Geraldton, W.A., 5th Sept., 1926 (E. W. Ferguson).

Named in honour of the collector, to whom I am indebted for most of the material received from this region.

In my recently published key (These PROCEEDINGS, 1927, p. 12) to the species of this genus from Australia this species will run down to section 4, but is distinguished from *apicinebula* Malloch, the only species in the first alternative, by the fact that the dark spot on second vein is not at extreme apex, and the base of antepenultimate section of fourth vein is clouded; from the second alternative it is distinguished by the pubescent arista.

HOMONEURA (HOMONEURA) FLAVOFEMORATA, n. sp.

Male and female.—Fulvous yellow, thorax and abdomen glossy, frons except the orbits, sides of face, and cheeks, not shining. Ocellar region with a dark mark on inner margin of each ocellus; antennae yellow, third segment and aristae, and the apices of palpi, black. Legs yellow, blackened from near bases of tibiae to apices of tarsi. Wings yellowish hyaline, both cross-veins slightly clouded. Halteres yellow.

Frons subquadrate, all bristles long, anterior orbitals a little farther from eye than posterior pair and about one-third from anterior margin of frons; third antennal segment about 1.5 as long as wide; arista microscopically pubescent; face slightly convex in profile; cheek fully as high as width of third antennal segment. Thorax with three pairs of strong postsutural dorsocentrals, the anterior pair close to suture, and eight or more irregular series of intra-

dorsocentral hairs; scutellum slightly flattened. Female with about eight short bristles on genital segment. Fore femur with a slight anteroventral comb; all tibiae with a distinct preapical dorsal bristle, mid pair with two apical ventral bristles. Inner cross-vein a little beyond apex of first vein and middle of discal cell; ultimate section of fourth vein not 1.5 as long as penultimate section.

Length, 4.4-5 mm.

Type, male, and allotype, Eaglehawk Neck, Tasmania, 15th Nov., 1922 (A. L. Tonnoir).

This species runs down to section 12 in my key to the species of this genus, but is distinguished from all the species included thereafter by the colour of the legs, all the others having the tibiae, and usually also the tarsi, yellow.

17. Genus AUSTRALINA, Malloch.

I have seen only the two original specimens of the genotype of this genus, *geniseta* Malloch, described from Darwin, N.T.

There are some species of this family still in my hands which I do not care to describe from single specimens in rather teneral condition.

Family Agromyzidae.

Genus CRYPTOCHAETUM Rondani.

This genus is of considerable economic importance in Australia and the south-western United States, feeding upon certain scale insects, in which the larvae are internal parasites. Two species were brought from Australia to California about 35 years ago, and are now established there as parasites of a scale insect infesting citrus trees. The genus occurs also in Europe and Asia.

Two subgenera have been recognized by Bezzi, based upon the structure of the frons, presence or absence of hairs on the eyes to some extent, and some trivial wing characters. The known Australian species fall into the subgenus *Lestophonus*, all having the eyes hairy, and the frontal triangle wide at anterior margin. Below I give a synopsis of the characters by means of which the Australian species known to me may be recognized. I am accepting the specific names applied to the two old species, but whether these are correct or not I cannot be absolutely certain.

The genus is the only one in the Acalyptratae in which the antennal arista is lacking (Text-fig. 4). The species have a habitus very similar to those of *Leucopis* Meigen, which are so far as known predacious enemies of aphides and scale-insects, and with which I linked them in a paper on Agromyzidae published a number of years ago. The most recent work on the families of Acalyptratae by Hendel has, however, placed a great deal of emphasis upon the structure of the basal half of the costal vein of the wing and the degree of development and individuality of the auxiliary vein, and if we accept these characters as criteria for the segregation of families then *Cryptochaetum* can hardly be considered as Ochthiphiline. All the members of this latter group have the auxiliary vein complete, though sometimes closely approaching first vein near its apex, and the costal vein is not broken at the point where the auxiliary vein connects with it. In *Cryptochaetum* the auxiliary vein is almost obsolete, being visible only under a very high power lens, and the costa is slightly interrupted where the rudimentary auxiliary vein connects with it. There is no cross-vein between the discal cell and the anterior basal one in *Cryptochaetum*, while there is always such a cross-vein in the Ochthiphilinae.

All the species of the genus are bluish black in colour, and the frontal triangle, which is the same colour, is very large, occupying most of the frons, the latter lacks distinct lateral bristles and, like the dorsum of thorax, scutellum, mesopleura, and abdomen, is furnished with short hairs. Differences in venation, and the structure of the fore tarsi in the males, are the principal distinguishing characters.

Key to the Species.

1. Inner cross-vein of wing nearly one-third from apex of discal cell; ultimate section of fifth vein not over two-thirds as long as penultimate section; third antennal segment with a sharp apical upper angle; fore tarsus in male without exceptional structure or hairs; calyptrae fuscous *monophlebi* Skuse.
Inner cross-vein of wing close to, or even proximad of middle of discal cell; ultimate section of fifth vein at least three-fourths as long as penultimate section; third antennal segment rounded at apex, or obtuse 2
2. Fore tarsus of male dilated (Text-fig. 5); calyptrae white; inner cross-vein a little beyond middle of discal cell; ultimate section of fifth vein about three-fourths as long as penultimate section *latimana*, n. sp.
Fore tarsus of male not dilated, with some short fine erect hairs along the anterior side (Text-fig. 6); inner cross-vein sometimes a little proximad of middle of discal cell; ultimate section of fifth vein about as long as penultimate section *iceryae* Williston.



Text-fig. 4. *Cryptochaetum latimana*, head from side.

Text-fig. 5. *Cryptochaetum latimana*, fore tarsus of male.

Text-fig. 6. *Cryptochaetum iceryae*, fore tarsus of male.

CRYPTOCHAETUM LATIMANA, n. sp. (Text-figs. 4 and 5.)

Male.—Glossy blue-black, frons on sides of the triangle, and the antennae, deep opaque black. Legs shining black, tarsi testaceous. Wings hyaline. Calyptrae white. Halteres black.

Frontal triangle gradually narrowed from vertex to anterior margin, at the latter point narrower than distance of its side from eye; third antennal segment not angulate but broadly rounded at apex. Scutellum margined as in other species. Abdomen rather wide, third and fourth visible tergites subequal in length. Fore tarsus as in Text-fig. 5.

Inner cross-vein almost exactly at middle of discal cell; penultimate section of fourth vein a little over one-fourth as long as ultimate, the latter diverging from third, and at its apex a little farther from third, measured on costa, than third is from second; ultimate section of fifth vein about three-fourths as long as penultimate.

Length, 1.5 mm.

Type, Wahroonga, Sydney, N.S.W., 24th Oct., 1926.

CRYPTOCHAETUM MONOPHLEBI Skuse.

I have before me Australian specimens of this species, or at least specimens so labelled, and which agree with the characters cited for its distinction. Some

of the specimens were reared from *Monophlebus*. These specimens all have the third antennal segment with a very pronounced angular production on its upper apical angle which character appears to ally them very closely with *curtipenne* Knab, the type specimen of which I have compared with the specimens referred to. The type of Knab's species is in very poor condition and it is impossible to say whether or not it is the same species, though one of the Australian specimens of *monophlebi* bears this name label. The male has the fore tarsus normal

CRYPTOCHAETUM ICERYAE Williston. (Text-fig. 6.)

Readily distinguished from the other two species by the characters cited in the foregoing key. Fore tarsus of male as in Text-fig. 6. I have before me Australian and American specimens.

There are probably Australian species of this genus yet undiscovered.

Genus CERODONTA Rondani.

I have previously described two species of this genus from Australia and now present a third one. To facilitate the identification of these three species I am giving below a synopsis of their distinguishing characters.

Key to the Species.

1. Scutellum lemon yellow, with a deep black spot on each basal angle; thorax shining yellow, mesonotum with the following glossy black marks; a broad complete central vitta, a slightly narrower vitta each side of it, which does not extend to anterior margin, and a narrower one behind suture laterad of these; humeri with a black spot; intradorsocentral hairs in about six irregular series; third antennal segment as in *robusta*, shorter than usual and acute at apex *vittigera*, n. sp.
Scutellum black on entire disc; thorax entirely or almost entirely black above .. 2
2. Stout species; pleura largely lemon yellow; disc of mesonotum black, with slight grey dusting, the margins lemon yellow, the hind margin narrowly so; intradorsocentral hairs in at least four irregular series on almost the entire length of thorax; apices of abdominal tergites lemon yellow; third antennal segment shorter than usual and with a sharp apex; metanotum small .. *robusta* Malloch.
Thorax black, with dense grey dust, and nowhere distinctly shining, mesonotum with two faint brownish vittae posteriorly on the lines of dorsocentrals; intradorsocentral hairs biseriate, sparse, and present only anteriorly; abdominal tergites black; third antennal segment normal, more elongate than in *robusta*, and with a sharp point at upper apical angle; metanotum prominent, extending to apex of scutellum *australis* Malloch.

CERODONTA VITTIGERA, n. sp.

Male.—Head orange-yellow, frontal orbits paler, ocellar region with a large black mark; aristae black; third antennal segment with a very small part of apex black; inner mouth margin and occiput black. Thorax lemon yellow, dorsum with five glossy black vittae as described in the key; pleura largely black, the sclerites yellow on margins. Abdomen black, apices of tergites yellow. Wings hyaline. Halteres yellow.

Head as in *robusta*. Thorax with 1 + 3 pairs of dorsocentrals, about six series of long intradorsocentral hairs which are continued almost to scutellum, the intra-alar bristle hardly distinguishable from the hairs, and no differentiated prescutellar acrostichals; metanotum not well developed. Legs stout, the femora quite pronouncedly so. Wings normal, inner cross-vein at about one-third from apex of discal cell, outer cross-vein vestigial in both wings, ultimate section of

fourth vein about nine times as long as penultimate; ultimate section of fifth vein longer than penultimate.

Length, 2.75 mm.

Type, Koolanooka, W.A., 9th Sept., 1926 (E. W. Ferguson).

Genus AGROMYZA Fallen.

I have been accumulating material for a review of the Australian species of this genus for some time, but have not yet obtained sufficient to warrant my publishing on the entire genus. Below I deal with some of the available species which belong to the group in which the halteres are entirely black or fuscous, and the entire insect is black, usually with some part of thorax or abdomen, or both, with a distinct blue or green tinge, sometimes quite noticeably metallic. There are at least two segregates of this group, those before me from Australia being referable to *Melanagromyza* Hendel, and *Ophiomyia* Braschnikow. These have been accepted by Hendel as genera, but I think subgeneric rank is all they are entitled to, and I so treat them herein. Below I present a synopsis of the characters that are of value in distinguishing them. Hendel has cited the difference in the course of the auxiliary vein in the two major groups in his recent paper on the European species of *Agromyza* as a character for their separation, but I can not see any fundamental distinction here. In neither group is this vein absolutely fused with the first vein according to my opinion, though in certain species it appears to be so owing to the bending up of the membrane between the first vein and the vestigial auxiliary vein. If the wing is carefully flattened out, or turned round, in examining it it will be seen that there is practically no distinction between the two groups that are so distinguished in his key.

Synopsis of Subgenera.

- A. Face without a broad central vertical carina, sometimes with a linear one which is not much elevated and does not appreciably separate the antennae at bases, the antennae projecting parallel, or almost so; vibrissal angle not prominently projecting and never with a fasciculus of bristles in male *Melanagromyza* Hendel.
- AA. Face with a quite prominent central vertical carina, more or less widened above middle, which very distinctly separates bases of antennae, the antennae almost invariably distinctly diverging to sides; vibrissal angle projecting, and with two or more long bristles forming a curved fasciculus in male *Ophiomyia* Braschnikow.

Subgenus MELANAGROMYZA Hendel.

The larvae of the great majority of the species in this subgenus mine in the roots and stems of low plants and some are quite destructive. One of the worst species is *M. phaseoli* Coquillett, which affects beans in Australia.

In the key given below I include three named and two unnamed species.

Key to the Species.

1. Thorax with three pairs of well developed dorsocentral bristles *trispina*, n. sp.
Thorax with but two pairs of distinct dorsocentral bristles 2
2. Calyptrae white, their margins yellowish, or whitish, and fringes white 3
Calyptrae greyish or fuscous, their margins and fringes fuscous, or dark brown .. 4
3. Inner cross-vein of wing at middle of discal cell; ultimate section of fourth vein about three times as long as penultimate; ultimate section of fifth vein hardly over half as long as penultimate section *albisquama*, n. sp.
Inner cross-vein of wing about one-third from apex of discal cell; ultimate section of fourth vein not less than five times as long as penultimate; ultimate section of fifth vein about two-thirds as long as penultimate section sp. 1

4. Frontal triangle polished greenish black, extending narrowly to, or almost to, the anterior margin of frons *phaseoli* Coquillett.
 Frontal triangle slightly shining, black, wider than in *phaseoli*, and extending to about middle of frons sp. 2

AGROMYZA (MELANAGROMYZA) TRISPINA, n. sp.

Male.—Shining black. Frons shining on orbits and posterior part of triangle. Scutellum slightly dusted and not so shiny as mesonotum. Legs black. Wings hyaline. Calyptrae and their fringes white. Knobs of halteres black.

Eyes bare; frons over one-third of the head width; orbits narrow, each with about six bristles, and many short hairs; triangle distinct only on posterior half, obsolete anteriorly, its apex at about one-third from anterior margin of frons; ocellar bristles erect and divergent, as long as postvertical pair; face slightly carinate; vibrissal angle not produced, with a fine bristle and some long hairs; antennae small, third segment rounded; arista thickened basally, subnude; cheek barely as high as width of third antennal segment. Thorax with three pairs of dorso-central bristles, the anterior pair weakest and distinctly behind the suture, the intradorsocentral hairs in about ten series, prescutellar acrostichal bristles not developed, postalar bristle next to scutellum minute; intra-alar bristle distinct. Legs stout; mid tibia with one or two posterior setulae. Inner cross-vein at less than one-third from apex of discal cell; outer cross-vein at a little less than its own length from inner and over 1.5 its own length from apex of fifth vein; ultimate section of latter over three-fourths as long as penultimate; ultimate section of fourth vein deflected apically, and about five times as long as penultimate section.

Length, 3 mm.

Type, Merredin, W.A., 31st Aug., 1926 (E. W. Ferguson).

It is exceptional for a species in this subgenus to have three pairs of dorso-central bristles, nearly all having but two pairs.

AGROMYZA (MELANAGROMYZA) PHASEOLI Coquillett.

This species differs from the preceding one in having the dorso-centrals consisting of two pairs, the fronto-orbital bristles usually five in number, with the anterior two pairs incurved, the frontal triangle polished and extending narrowly to anterior margin of frons, the face with a low sharp central vertical carina, the vibrissal angle slightly produced and with one bristle, the inner cross-vein at about two-fifths from apex of discal cell, the ultimate section of fourth vein four or five times as long as penultimate, and the length of specimens about 1.5 mm.

A common enemy of beans.

AGROMYZA (MELANAGROMYZA) ALBISQUAMA, n. sp.

Male.—More distinctly metallic green-black than *phaseoli*, and with the calyptrae white, their margins yellowish and fringes white.

Structurally quite similar to *phaseoli*, but the frontal triangle is broader at posterior margin and is more evenly narrowed from there to anterior extremity which latter almost attains the anterior margin of frons. Thorax as in *phaseoli*. Inner cross-vein at middle of discal cell; ultimate section of fourth vein three times as long as penultimate; ultimate section of fifth vein about five-eighths as long as penultimate section.

Length, 2 mm.

Type, Eccleston, Allyn R., N.S.W., 28th Feb., 1921.

In addition to the above I have two other species on hand, but it is not advisable to deal with these on the basis of single specimens.

Subgenus OPHIOMYIA Braschnikow, 1897.

There is but one species of this subgenus before me at this time, unless a single specimen mentioned hereinafter belongs to a distinct species.

AGROMYZA (OPHIOMYIA) LANTANAE Froggatt.

This species is the same length as *phaseoli*, but belongs to a different subgenus, the face being more conspicuously carinate, with the carina broadened above middle and distinctly separating the bases of antennae, and a more prominent vibrissal angle on which there is a fasciculus of two or three long bristles in the male, and at least one prominent bristle in female. In other respects the species closely resemble each other, but the frontal triangle in *lantanae* is less shiny, and shorter and broader, extending only to about middle of frons. The inner cross-vein is at, or close to, one-third from apex of discal cell, the ultimate section of fourth vein is about seven times as long as penultimate section, and the posterior bristles on mid tibiae are extremely short.

Feeds on *Lantana*. Narrandera, North Harbour, Mosman, and Sydney, N.S.W.

I have before me a female specimen in poor condition which belongs to this subgenus, and may be a distinct species. It is a little larger than *lantanae* and has the inner cross-vein very slightly beyond middle of the discal cell. Sydney, N.S.W.

In connection with members of this genus, and especially those of the two subgenera above dealt with, it is highly desirable that rearing records be obtained wherever possible and that specimens of the mines, and larvæ and puparia, be kept when specimens are reared.

Subgenus LIRIOMYZA Mik.

This subgenus contains species that are more slenderly built than in the two preceding subgenera, which have the halteres always yellow, and the auxiliary vein of the wing more evidently separated from the first at apex than appears to be the case in these and in the subgenus *Agromyza* Fallen.

I note also that there is a more constant lack of an intra-alar bristle here than in the other subgenera mentioned, but until I attempt a review of all the subgenera occurring in Australia I do not care to indicate the importance of this character. It appears to me at this time that the character used by Hendel for the separation of *Liriomyza* from *Dizgonomyza* is too trivial for such a purpose as it consists solely of a difference in the colour of the scutellum, yellow or partly yellow in *Liriomyza*, entirely black, or at least without yellow, in *Dizgonomyza*. The genotypes are not available to me so that it is impossible to determine if there are other characters that may be used for their separation. I do not use *Dizgonomyza* in my treatment of the Australian species at present.

I have several species of *Liriomyza*, as accepted by me, in my hands at this time, one of which, *pusilla* Meigen, I have already recorded from Australia. This species has a very wide range and feeds upon a great diversity of food-plants, mining in their leaves. It has also a large number of names applied to it, some of them at least being entitled to retention for subspecies and varieties. It may be that with a fuller knowledge of the immature stages some of these subspecies

or varieties may be established as good species, but careful work will have to be done to determine this point. I describe only the species which appear to me to be perfectly distinct from any known to me from any part of the world. Possibly some of the species recently described by Mr. M. Watt from New Zealand may be found to occur in Australia, but it is imperative that very careful examinations be made of any such species as appear to be identical with his as there appears to be a group of similar appearing species in this part of the world that only a specialist can definitely distinguish from each other.

AGROMYZA (LIRIOMYZA) PALLIDICENTRALIS, n. sp.

Female.—Head dull yellowish testaceous, upper occiput, ocellar spot, upper half of third antennal segment, aristae and clypeus, blackened, face usually with a dark mark in each fovea; frontal orbits and vertex each side of the ocellar spot paler than the interfrontalia; palpi yellow. Thorax fuscous, humeri and a stripe along centre of scutellum testaceous yellow, mesonotum brown dusted and entirely dull, with slight traces of darker vittae along the dorsocentral lines. Abdomen black, almost entirely dull, slightly grey dusted, and without conspicuous yellow apices to the tergites. Legs dusky testaceous, irregularly suffused with fuscous. Wings greyish hyaline. Calyptrae whitish, fringes pale brown. Halteres white.

Frons fully one-half of the head width, orbits narrow, well defined, each with three bristles, two outwardly and backwardly directed on upper half and one inwardly directed on anterior half, besides a short hair which is sometimes present anterior to the latter; ocellars longer than the postverticals; frons slightly projecting in profile; face with a slight central vertical carina; antennae of average size, third segment rounded at apex; arista bare; cheek at anterior margin about as high as width of third antennal segment, much higher at posterior margin, the marginal hairs very fine and sparse, vibrissa short and fine. Thorax with four pairs of dorsocentral bristles (1 + 3), no prescutellar acrostichals nor intra-alar, and almost devoid of surface hairs, at most with a few between anterior dorsocentrals; scutellum with four equal bristles. Legs slender, fore femora without posteroventral bristles; mid tibia without any posterior median setulae. Inner cross-vein slightly before apex of first vein and at middle of discal cell; ultimate section of fourth vein about five times as long as penultimate; ultimate section of fifth vein about 1.25 as long as penultimate.

Length, 2 mm.

Type and two paratypes, Sydney, N.S.W., 10th Oct., 1923, 26th Sept., 1923, and 24th Sept., 1924.

This species has much in common with *flavocentralis* Watt, but the wing venation is quite different, *flavocentralis* having the ultimate section of fifth vein over twice as long as penultimate, and there are other distinctions.

AGROMYZA (LIRIOMYZA) TRICOLOR, n. sp.

Male and female.—Head clay-yellow, interfrontalia more orange-yellow; ocellar spot, and upper occiput except on margins, and centre above, black; third antennal segment brownish above; aristae fuscous; palpi yellow; clypeus narrowly black. Thorax clay-yellow, mesonotum fuscous except between the lateral margins, the dark part densely grey dusted except between the dorsocentrals from near anterior margin, the central part brown dusted; scutellum fuscous, yellow at apex, densely grey dusted on sides, brown dusted in centre; metanotum broadly shining black

centrally; a black mark on each humerus, one behind it on notopleural suture, one on lower margin of mesopleura, another on lower part of pteropleura, and a large black triangle on the sternopleura. Abdomen clay-yellow, more or less brownish on centre of dorsum, the genitalia in both sexes black. Legs clay-yellow. Wings hyaline. Halteres clay-yellow, with a large brownish spot on each knob.

Frons fully one-third of the head width; orbits distinct, each with three bristles; ocellar and postvertical bristles subequal; third antennal segment rather large, rounded at apex; arista with short pubescence; face slightly carinate in centre; cheek at anterior extremity about half as high as width of third antennal segment, much higher posteriorly; vibrissae short. Thorax with four pairs of strong dorsocentral bristles (1 + 3), four series of intradorsocentral hairs anteriorly only, and no prescutellar acrostichal nor intra-alar bristles; scutellum slightly elongated, and narrowed at apex, slightly free from postscutellum at apex. Legs as in preceding species. Wing almost exactly as in Watt's figure of that of *citreifemorata* Watt, inner cross-vein slightly before middle of discal cell; ultimate section of fifth vein about twice as long as penultimate; ultimate section of fourth vein fully four times as long as penultimate.

Length, 1.5 mm.

Type male and allotype, Como, N.S.W., December, 1923, swept from flowers (H. Petersen).

Distinguished from any species in Australasia by the tricoloured thoracic dorsum.

Family Chloropidae.

Subfamily CHLOROPINAE.

Genus PACHYLOPHUS Loew.

I have already described one species of this genus from Australia, and now introduce other two, one of them so closely allied to *lutea* Malloch that it is not necessary to give a detailed description of it. The other species is rather divergent from type and I have included the essential characters for its separation from the other two in the following synoptic key. The genus has much the appearance of *Meromyza* Meigen, which genus contains species which mine in the stems of wheat and other cereal plants, causing what are known as "dead-heads", but nothing is at present known of the larval habits of the species of *Pachylophus*.

Key to the Species.

1. Hind femora with weak pale spinules in two faint series on a portion of apical half of ventral surface, which are evident only under a very high power lens; face without a dark mark in each antennal fovea, but with a complete blackish line along each parafacial suture; arista gradually tapered from near base of third segment to its apex; notopleural bristles 1 + 1 *alienus*, n. sp.
- Hind femora with quite evident minute black spines in two series on at least the apical half of ventral surface; face with a dark mark in each antennal fovea on upper portion, the parafacial suture not blackened; arista lanceolate, about equally wide almost to apex; notopleural bristles 1 + 2 2
2. Upper inner mouth margin with a central dark mark; pleura with a black streak along lower margin of mesopleura and a black spot in centre of hypopleura, sternopleura with most of its surface red, the upper posterior angle of the red mark faintly blackish, the dark mark below prothoracic spiracle very faint, reddish *lutea* Malloch.
- Upper inner mouth margin entirely black; pleura with a black streak along lower margin of mesopleura and another along upper margin of the red sternopleural area, a black mark in centre of hypopleura, one below prothoracic spiracle, and a poorly defined mark on pteropleura *secundus*, n. sp.

PACHYLOPHUS SECUNDUS, n. sp.

In addition to the characters cited in the above key this species is more slender and a little smaller than *lutea*, and though both have the characteristic black streaks on upper part of face and the black spot on each fore coxa at base, these are more conspicuous here than in *lutea*. The three dorsal vittae on the thorax are quite variable in colour, being sometimes nearly all rufous, and varying to nearly all black.

Length, 2.5-3 mm.

Type and four paratypes, Coolgardie, W.A., 12th Sept., 1926.

PACHYLOPHUS ALIENUS, n. sp.

Female.—Shining testaceous yellow like the other two species, but the frontal triangle has a rather broad black streak along each side, the parafacial suture has a complete blackish line on it, there are two fuscous spots on clypeus, the central mesonotal vitta is reddish, and the posterior two-thirds of the submedian, and all of the sublateral vittae, are black. There are five blackish spots on pleura, the one on sternopleura being confined to the upper margin of the red mark, and there is a black spot on each humerus.

Structurally similar to *lutea* except as stated in the key, and in having the hind femora less thickened.

Length, 3.75 mm.

Type, Woy Woy, N.S.W., November, 1921 (A. L. Tonnoir).

It is possible that the presence of but one bristle on hind part of the notopleura is abnormal, if not it is an interesting digression from type.

Genus CHLOROPISCA Loew.

This genus is the only one in this subfamily known to me which has a distinct oval sensory area on dorsal surface of the hind tibia. This sensory area consists of an elongate flattened section covering a variable extent of the posterodorsal surface of the tibia, generally slightly darker in colour than the remainder of the surface, and is furnished with microscopic erect pile. When I first mentioned the existence of this area in the literature of this family I considered it possible that it was of a sensory nature, and suggested that some morphologist examine it to discover its function if any. So far as I know this has not yet been done. The character is present in nearly all genera in Botanobiinae, but I have not noticed it in related families, though there exists on the basal segment of the fore tarsus of males of the South American Sapromyzid genus *Griphoneura* a small flattened area that suggests a similarity to the one under consideration, though here there are no erect hairs present.

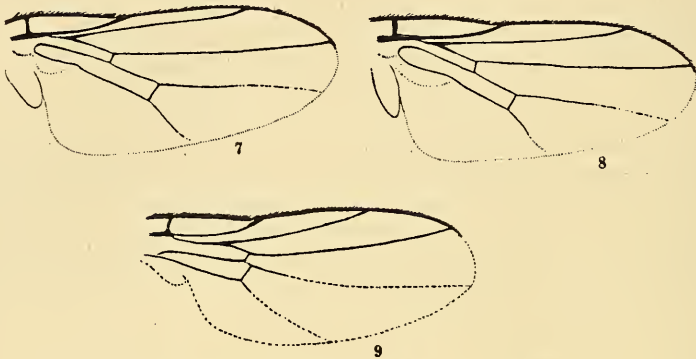
I present below the description of a species from Australia which appears to be undescribed, though it closely resembles *notata* Meigen.

CHLOROPISCA SUBNOTATA, n. sp. (Text-fig. 7.)

Female.—Head yellow, ocellar spot, apical margin of third antennal segment and the entire arista, black; frontal triangle more or less browned, but nowhere black; inner mouth margin sometimes brownish. Thorax with the usual five glossy black vittae, submedian pair not extending to anterior margin, laterals not extending in front of suture; pleura with a black spot on mesopleura and another on hypopleura, sternopleura red below, sometimes with a black spot above; metanotum black in centre; scutellum yellow. Abdomen with most of the tergites

blackened, fourth with two black spots. Legs yellow, fore tarsi slightly dark at apices. Wings hyaline. Halteres yellow.

Frontal triangle almost as wide as vertex, impunctate, with numerous fine lateral hairs, sides almost straight, apex almost at anterior margin of frons; arista subnude; cheek about as high as width of third antennal segment. Dorsum of



Text-fig. 7. *Chloropisca subnotata*, wing.

Text-fig. 8. *Chloropisca monticola*, wing.

Text-fig. 9. *Diplotox tasmaniensis*, wing.

thorax with numerous fine short hairs; scutellum flat, elongate, with two long and two very short hairs. Fore tarsus slightly dilated apically. Wings as in Text-fig. 7, subcostal cell very narrow.

Length, 2.5 mm.

Type and paratype, Mosman, N.S.W., 2nd Apr., 1923.

Resembles *notata* Meigen, but it has the frontal triangle quite coarsely punctate on sides.

CHLOROPISCA MONTICOLA, n. sp. (Text-fig. 8.)

Female.—Head testaceous, upper occiput and entire frontal triangle glossy black; third antennal segment browned above; aristae fuscous; inner mouth margin hardly darkened; palpi yellow. Mesonotum glossy black, more brownish anteriorly on sides, yellow on lateral margins; scutellum yellow; metanotum black; pleura with four large black marks, situated on mesopleura, sternopleura, pteropleura, and hypopleura. Abdomen largely blackish brown above. Legs yellow, fore tarsi hardly darkened apically. Wings hyaline. Halteres yellow.

Frons a little over one-third of the head width, triangle not filling entire vertex, its sides slightly curved, apex extending almost to anterior margin of frons, surface smooth and polished; antennae normal; cheek about half as high as width of third antennal segment. Thoracic dorsum smooth, the hairs rather numerous and long; scutellum flat above, without a pronounced marginal rim, not elongate, the disc with a few black hairs, and apex bristled as in preceding species. Fore tarsus not widened. Wing as in Text-fig. 8.

Length, 1.75 mm.

Type, Blue Mts., N.S.W., 26th Mar., 1923.

This species is readily distinguished from *subnotata* by the entirely black frontal triangle, black disc of mesonotum, and different venation of the wings.

Genus CHLOROMERUS Becker.

This genus is readily distinguished from its allies by the thickened hind femora with the short dense spines on the apical halves of their ventral surfaces, and the normal venation, and shape of third antennal segment.

There are two described species, both from Australia, and to these I now add four new species. It is particularly difficult for the taxonomist to determine from a few dry specimens of certain genera in this family what are the specific limits. Some species vary very much in colour and markings and without large series it is often impossible to make certain of the specific characters. At times the colours and markings are very stable, but in other cases so variable that only careful field observations and critical examinations of series will suffice to identify species.

This condition of apparent variability obtains in this genus and it is impossible for me to be certain of whether the forms of *purus* described herein are really forms or valid species on the basis of the material on hand. It is quite possible that they will turn out to be distinct species, but a larger series of each is a desideratum to aid in determining this point.

Key to the Species.

1. All femora quite conspicuously marked with black 2
Femora entirely yellow, or only the fore and mid pairs with a faint blackish ventral mark at middle 3
2. Femora almost entirely glossy black; thoracic vittae and pleural spots entirely black; clypeus (inner mouth margin) fuscous *nigrifemur*, n. sp.
Femora yellow, with a blackish mark on upper surface at middle of each; thoracic vittae largely red, central one with a pair of small black spots on hind extremity, submedian pair each with a mark on outer side in front of suture, and the apical half, black, sublateral pair entirely black and present behind suture only; sternopleural mark red below, black on upper margin; clypeus yellow
..... *maculifemur*, n. sp.
3. Slender species, with the hind femora not much thickened, not over twice as thick as mid pair; frontal triangle entirely yellow, and without distinct lateral impressed lines; third antennal segment almost wholly black *gracilis*, n. sp.
Robust species, with hind femora much thickened, at least three times as thick as mid pair; frontal triangle either with an impressed line along each lateral margin which is usually quite conspicuously blackened, or the third antennal segment is entirely yellow or slightly blackened on its upper margin 4
4. Frontal triangle yellow, only the ocellar spot black; mesopleura, sternopleura, and hypopleura, each with a black mark 5
Frontal triangle yellow, with the lateral margins and ocellar spot black; pleura usually with five black marks (*purus* Becker.) 6
5. Clypeus yellow; thoracic dorsum with three glossy black vittae, due to a fusion of the sublateral and submedian pairs behind suture *pallidior*, Becker.
Clypeus partly black; thoracic dorsum with five glossy black vittae
..... *trimaculata*, n. sp.
6. Thoracic vittae largely red, only the posterior extremities, and sometimes the sublateral pair on outer edges anterior to suture, black
..... *purus*, form *varians*, novum.
Thoracic vittae entirely or almost entirely glossy black 7
7. Thoracic vittae totally glossy black; fore and mid femora each with a faint, but evident, blackish spot on ventral surface at middle
..... *purus*, form *maculifera*, novum.
Median thoracic vitta usually reddish near anterior extremity; fore and mid femora entirely yellow *purus*, form *purus*, Becker.

CHLOROMERUS NIGRIFEMUR, n. sp.

Male and female.—Head yellow, face more whitish, upper central part of occiput and especially a line on each side at angles of frontal triangle darkened; ocellar spot and a line along each side of triangle black; aristae fuscous; antennae

yellow, third segment darkened at insertion of arista; palpi yellow; clypeus fuscous. Thorax with three broad black dorsal vittae, and an elongate black mark on each side of these behind suture; humeri with a black spot; pleura with the usual five black marks, the one on sternopleura covering all except its upper margin. Abdomen brownish yellow, the apices of tergites paler, sometimes with two dark spots on each side of first tergite. Legs yellow, femora almost entirely glossy black. Wings hyaline. Halteres pale yellow.

Frontal triangle extending to anterior margin of frons, with an impressed line along each side; ocellar bristles divergent, forwardly directed; antennae short, distinctly separated at bases, third segment orbicular; arista microscopically pubescent, thickened basally, second segment about three times as long as thick; face not carinate; proboscis short; palpi normal; cheek about half as high as eye. Dorsum of thorax slightly punctured at bases of hairs. Not much difference between the three principal sections of costa.

Length, 3.3-25 mm.

Type, female allotype, and two female paratypes, Cradle Valley, Tasmania, 16th December, 1923 (A. L. Tonnoir).

CHLOROMERUS MACULIFEMUR, n. sp.

Female.—A much paler species than *nigrifemur*. Head coloured as in that species, but the palpi are brownish apically, and the hairs on middle of cheeks are yellow, not black. Thoracic vittae anteriorly, humeral spot, and lower portion of sternopleural mark reddish. Apices of abdominal tergites broadly pale yellow. All femora and the hind tibiae with a black partial annulus at middle, most distinct on dorsal surface. Wings clear. Halteres yellow.

Structurally the same as in *nigrifemur*, the hind femora about three times as thick as the middle pair, but the cheeks are not so high, and the second costal section is distinctly longer than the third.

Length, 3.5 mm.

Type, National Park, Tasmania, 17th Dec., 1922 (A. L. Tonnoir).

CHLOROMERUS GRACILIS, n. sp.

Male.—Head clay-yellow, the triangle glossy brownish yellow, ocellar spot, central half of upper occiput, arista, and third antennal segment, except its base on inner surface, black; palpi yellow; clypeus brownish yellow. Thorax glossy testaceous yellow, darker on dorsum, mesonotum with the usual five glossy black vittae, and a dark spot on each humerus; pleura with only the spot on lower portion of mesopleura deep black, the one on sternopleura blackened above, those on pteropleura, hypopleura, and below prothoracic spiracle, brownish; metanotum black. Abdomen clay-yellow, more or less infuscated above, and with a black spot on each side of second tergite. Legs honey-yellow. Wings hyaline. Halteres white.

Frons fully one-third of the head width; triangle filling vertex, its sides straight, apex at anterior margin, surface polished, each lateral margin with a series of fine hairs; inner vertical bristles much weaker than the outer pair; third antennal segment suborbicular; arista microscopically pubescent; cheek not over half as high as width of third antennal segment. Thoracic dorsum with quite coarse piliferous punctures; scutellum convex, rounded in outline, the two apical bristles quite long. Legs more slender than in the other species of the genus, the hind femora not over twice as thick as mid pair, and not thicker at setulose part than proximad of it; hind tibiae not noticeably curved. First costal division

(the one beyond humeral vein) not two-thirds as long as second and a little shorter than third; penultimate section of third vein about half as long as penultimate section of fourth, the latter shorter than ultimate section of fifth.

Length, 2.25 mm.

Type, Sydney, N.S.W., 29th Jan., 1925; paratype, Lindfield, N.S.W., 26th Febr., 1922 (A. J. Nicholson).

CHLOROMERUS TRIMACULATA, n. sp.

Brighter yellow than *gracilis*, frons yellow, with the exception of a black triangular mark on ocellar region; antennae orange-yellow; two blackish marks on the clypeus. Thoracic dorsum with the usual five glossy black vittae, each humerus with a black spot; pleura with only three spots, which are entirely glossy black, these situated on the lower part of mesopleura, on sternopleura, and hypopleura, metanotum broadly black in centre. Abdomen with a large black spot on each side of second tergite, and bases of other tergites blackened. Legs yellow, fore tarsi slightly browned. Wings hyaline. Halteres yellow.

Frontal triangle glossy, occupying almost the entire vertex, and extending to anterior margin of frons, its sides with some fine hairs, but not sulcate; cheek over half as high as width of third antennal segment. Thoracic dorsum with numerous piliferous punctures. Fore tarsi not dilated; hind femora about three times as thick as mid pair. First costal division fully two-thirds as long as second, and about equal to third; penultimate section of third vein a little shorter than penultimate section of fourth, the latter shorter than ultimate section of fifth.

Length, 2.75 mm.

Type, Barrington Tops, N.S.W., 25th Jan., 1922 (A. J. Nicholson).

CHLOROMERUS PURUS Becker.

I have distinguished in the foregoing key three forms of this species to which I have given names. It is possible that these may be entitled to specific rank, but my material is too scanty to permit of a full investigation of this point.

CHLOROMERUS PURUS, form PURUS Becker.

In this form the mesonotal vittae are either entirely black or there is a small portion at or near the anterior extremity of the central vitta reddish. In addition to this character the hind tibia has usually a dark dorsal mark near middle, the humeri are unspotted, and the frontal triangle always has a black marginal line on each side. The first costal division is distinctly longer than third.

Locality, Kosciusko, N.S.W., 27th Nov., 1922, and 7th Dec., 1922 (A. J. Nicholson).

CHLOROMERUS PURUS, form MACULIFERA, novum.

This form is distinguished from the typical form in having a blackish mark on underside of each femur at middle, and a black spot on each humerus. The hind tibia is dark marked as in *purus*. Penultimate section of fourth vein longer than ultimate section of fifth.

Type, Lake Margaret, Tasmania, 3rd Feb., 1923 (A. L. Tonnoir).

CHLOROMERUS PURUS, form VARIANS, novum.

This form has the dorsal vittae of the thorax largely, sometimes entirely, reddish, usually the black markings confined to posterior and lateral portions.

Type, and one paratype, Kosciusko, N.S.W., 7th Dec., 1922, two paratypes. Perth, W.A., 15th Nov., 1924 (Nicholson); two paratypes, Cradle Valley, Tasmania, 12th Jan., 1923 (A. L. Tonnoir).

In all probability many more species of this genus will be discovered by careful collecting and being an indigenous genus it will be of interest to find out what are its larval habits.

Genus DIPLOTOXA Loew.

This genus is similar to *Chlorops* Meigen, but has the cross-veins of the wings much closer together. In the only species of the genus amongst the material now before me from this region, the third antennal segment is short, and rounded at apex, but some of the American species have the third antennal segment much longer than wide. This latter segregate is the typical one, containing as it does the genotype, *versicolor* Loew, occurring in North America.

DIPLOTOXA TASMANIENSIS, n. sp. (Text-fig. 9.)

Male and female.—Clay-yellow. Frontal triangle wholly glossy, the colour brownish yellow, ocellar spot black; third antennal segment slightly darkened above; arista, centre of occiput above, and the clypeus, black. Thoracic dorsum with three broad black or brownish vittae which are slightly grey dusted, the median one not extending to posterior margin of mesonotum, and two narrow vittae behind suture laterad of these; metanotum broadly black in centre; scutellum paler in centre than on sides; pleura with five black marks. Abdomen more or less browned at bases of tergites. Legs without noticeable dark markings. Wings hyaline. Halteres yellow.

Frontal triangle extending narrowly to anterior margin of frons; third antennal segment not longer than wide; arista thinner than in *microcera* Loew, and a little longer, the pubescence very short. Thorax normal. Legs slender. Wing as in Text-fig. 9.

Length, 1.75 mm.

Type, male, and allotype, Eaglehawk Neck, Tasmania, 14th Nov., 1922 (A. L. Tonnoir).

This species is very similar to *microcera* Loew, a North American species that occurs commonly in marshy spots in the central states, but in the latter the frontal triangle is not polished and it does not extend to anterior margin of frons. Nothing is known of the larval habits of *microcera*.

I had intended to publish in this part of the series a key to the genera of Chloropidae but lack of time to finish the work on the Australian material causes me to defer this until a subsequent part, though it is possible now to present a key to the genera of the subfamily Botanobiinae, with keys to certain genera, herein.

Subfamily BOTANOBIINAE.

The members of this subfamily are distinguished from those of Chloropinae by the continuation of the costal vein to apex of fourth vein, and the invariable presence of a sensory area on the dorsal surface of the hind tibia.

In presenting the following key to genera I realize that there is a very great probability that it is far from complete as the material in my hands is not sufficient to warrant one forming the opinion that all Australian genera are represented in it, and the area covered by the collections is comparatively small. Later should there be material forthcoming to permit a fuller treatment I will publish a more complete synopsis.

Key to the Genera.

1. Fifth wing vein absolutely straight along discal cell 2
 Fifth wing vein with a more or less conspicuous flexure or bend at about middle of discal cell 4
2. Second wing vein very short, ending in costa close to apex of first vein, the second costal section not half as long as third *Siphunculina* Rondani.
 Second wing vein not exceptionally short, ending in costa far from apex of first vein, the third section of costa not longer than second 3
3. Scutellum about twice as long as its basal width, gradually tapered from base to apex, where it is about one-fourth as wide as at base, with a broad shallow central dorsal sulcus; mesonotum trisulcate; hind tibial spur quite large.
 *Euhippelates* Malloch.
 Scutellum not longer than its basal width, rounded in outline, and not sulcate; thorax not sulcate on dorsum; hind tibial spur microscopic *Platyina*, n. g.
4. Humeri each with two bristles, the inner one curved towards middle of dorsum, the outer one curved backward; dorsocentral bristles on thorax usually quite long, and more than two postsutural pairs present 5
 Humeri with no inwardly directed bristle 6
5. Arista normal in form in both sexes; hind tibia always with a more or less evident apical spur on anterior side, sometimes very small; scutellum with two or more fine discal bristles or hairs in addition to the marginal bristles
 *Parahippelates* Becker.
 Arista normal in form in the female, with the second segment much elongated and almost as long as third in male, geniculated at the division between these segments; hind tibia without an evident apical spur; scutellum without discal hairs, only the marginal bristles present *Ephydroscinis* Malloch.
6. Hind tibia with a more or less noticeable black spur at apex on anterior side
 *Hippelates* Loew.
 Hind tibia without any apical spur on anterior side 7
7. Mesopleura quite densely haired on its upper posterior portion; scutellum rounded in outline *Batrachomyia* Skuse.
 Mesopleura without distinct hairs, usually pollinose or microscopically tomentose on upper posterior portion 8
8. Frons flattened and precipitous from above middle, the posterior third horizontal, triangle not extending beyond the horizontal part, antennae situated well below middle of eye in profile; notopleural bristles 1 + 1 *Benjaminella* Malloch.
 Frons horizontal, or sloping downward, on entire length, antennae usually inserted at or above middle of eye; notopleurals 1 + 2 or 1 + 3 9
9. Scutellum longer than its basal width, flattened above, tapered to apex, and with some setigerous warts on margin apically; mesopleura tomentose on upper posterior portion *Thyridula* Becker.
 Scutellum not longer than its basal width, and without marginal setigerous warts 10
10. Face sharply carinate in centre, the anterior outline of mouth-opening seen from below in the form of a wide V; penultimate section of fourth vein fully six times as long as penultimate section of third *Deltastoma* Malloch.
 Face with or without a central carina, but in all cases with the outline of mouth-opening forming a transverse or arcuate line anteriorly 11
11. Frontal triangle not defined beyond immediate range of ocelli; scutellum flattened above, slightly tapered to apex, where it is narrowly transverse and furnished with two short stiff bristles, the disc with short spinules; face deeply concave *Caviceps* Malloch.
 Frontal triangle usually well defined, and always extending much beyond range of ocelli or the scutellum and face are not as above 12
12. Thoracic dorsum with three punctate linear furrows or sulci *Tricimba* Lioy.
 Thoracic dorsum without well defined sulci or furrows 13
13. Arista quite densely short haired, the longest hairs longer than its basal diameter *Gaurax* Loew.
 Arista bare or pubescent, the longest hairs not longer than its basal diameter *Botanobia* Lioy.

* The line of demarcation between these two genera is not very sharply drawn.

Genus SIPHUNCULINA Rondani.

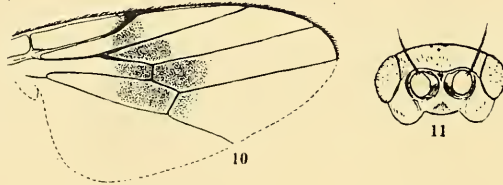
I have described an Australian species of this genus, *breviseta* Malloch, from New South Wales. The genotype, which is possibly cosmopolitan, ought to occur also.

Genus EUHIPPELATES Malloch.

The genotype, *pallidiseta* Malloch, was described from New South Wales.

Genus PLATYINA novum.

A peculiar genus, with no flexure of the fifth vein on its penultimate section. The cross-veins are quite noticeably approximated (Text-fig. 10), the frons and thorax are more flattened than usual, and the face has a central carina which widens below and above, leaving two lateral rounded cavities in which lie the divergent antennae (Text-fig. 11). Genotype, *P. nebulifera*, n. sp.



Text-fig. 10. *Platyina nebulifera*. wing.

Text-fig. 11. *Platyina nebulifera*. head from front.

PLATYINA NEBULIFERA, n. sp. (Text-figs. 10 and 11.)

Female.—Head testaceous, occiput and upper two-thirds of frons black, the whole greyish dusted; third antennal segment brownish above; aristae fuscous; palpi testaceous. Thorax black, upper parts of pleura and entire dorsum with greyish dusting, but quite noticeably shining, the short dorsal hairs yellow. Abdomen above concolorous with mesonotum. Legs testaceous, all coxae and femora almost entirely blackened, and usually at least the mid and hind tibiae browned at middle. Wings whitish hyaline, clouded centrally as in Text-fig. 10. Halteres white.

Frons nearly half of the head width, with short regular hairs, slightly projecting in profile, the vertical and postvertical bristles very short, ocellar bristles microscopic; third antennal segment not as long as wide; arista pubescent; cheek fully as high as width of third antennal segment; eyes haired, longer than high; palpi quite large. Thoracic dorsum smooth, with quite dense decumbent microscopic hairs, the humeral bristle as long as the notopleurals, the latter 1 + 2; scutellum wider than long, narrowly subtransverse at apex, the disc with microscopic hairs, the apex with two small incurved setulae. Legs normal. Wing venation as in Text-fig. 10.

Length, 1.75 mm.

Type and one paratype, Eaglehawk Neck, Tasmania, 14th Nov., 1922 (A. L. Tonnoir).

I am not absolutely certain of the sex of these specimens but think that they are females.

Genus PARAHIPPELATES Becker.

I have in preparation a new synopsis of the species of this genus, the one previously published by me (These PROCEEDINGS, 1923, p. 619) being incomplete owing to the subsequent description of some species.

Genus EPHYDROSCINIS Malloch.

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

Genus HIPPELATES Loew.

There are several undescribed species of this genus in my hands now and below I present a key for the recognition of the species known to me up to this time.

It would be of interest to know whether the Australian species of this genus have the same habits as some of those occurring in America, where the adults are very persistent in flying about persons in the open, apparently attracted by perspiration, and they have been considered as transmitters of certain diseases of the eye.

Key to the Australian species.

1. Third antennal segment entirely deep black; hind tibial spur brownish yellow, not as long as the apex of the rather thick tibia, quite stout and curved, situated close to apex; mesonotum with three glossy black vittae on a yellow ground, the central one complete, the laterals abbreviated at both extremities, and slightly interrupted at suture *atricornis*, n. sp.
 Antennae either entirely yellow or with a very slight darkening of the upper edge of third segment; hind tibial spur deep black 2
2. Hind tibial spur much curved and distinctly longer than tibial diameter, situated well in front of apex of tibia; thoracic dorsum with a large quadrate mark in centre of hind margin, and a spot near each humeral angle, deep black, the ground colour yellow *bancrofti* Malloch.
 Hind tibial spur not as long as tibial diameter, slightly curved, and situated at, or very close to, apex of tibia; thorax not marked as above 3
3. Mesonotum and disc of scutellum with rather coarse setigerous punctures, the scutellum slightly rugose, disc of mesonotum black, the usual three black vittae fused on their entire length leaving only the lateral margins yellowish, the postsutural lateral vittae separated from the central black complex; scutellum broadly blackened across base; sternopleura entirely glossy black *nigridorsata*, n. sp.
 Mesonotum and disc of scutellum with a few weak setigerous punctures, sparsest on scutellum; disc of mesonotum with distinct black vittae; scutellum not blackened across base; sternopleura partly, or entirely, yellow 4
4. Pleura absolutely without black markings, entirely yellow; thoracic dorsum marked as Text-fig. 12, *d*; frontal triangle glossy black *atrisseta* (Malloch).
 Pleura with at least one black mark; thoracic dorsum not marked as above 5
5. Sternopleura largely black in centre, two black spots on mesopleura, and one on pteropleura; discal thoracic markings as Text-fig. 12, *a* *abbreviata*, n. sp.
 Sternopleura yellow, only one black mark on pleura 6
6. Discal thoracic markings as in Text-fig. 12, *b*; tibial spur moderate *unimaculata*, n. sp.
 Discal thoracic markings as in Text-fig. 12, *c*; tibial spur minute .. *fergusoni*, n. sp.

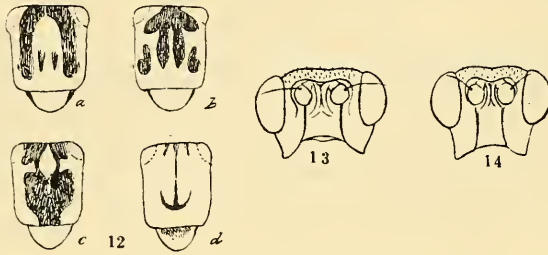
The first two species dealt with are distinguished by having the hind tibial spur extremely small and inconspicuous, so much so in fact that I originally described one of them as a species of *Gaurax*. I believe, however, that they are properly referable to *Hippelates*.

HIPPELATES ATRISETA (Malloch). (Text-fig. 12, *d*.)

Gaurax atriseta Malloch, PROC. LINN. SOC. N.S.W., 1924, xlix, p. 355.

Originally described as a species of *Gaurax*. Readily distinguished from any of those now included in the genus by the entirely yellow pleura and the inconspicuously marked thoracic dorsum (Text-fig. 12, *d*).

Locality, Sydney, N.S.W.



Text-fig. 12. Dorsal thoracic markings of species of *Hippelates*. *a*, *abbreviata*; *b*, *unimaculata*; *c*, *fergusoni*; *d*, *atriseta*.

Text-fig. 13. *Tricimba carinifacies*, head from front.

Text-fig. 14. *Tricimba pollinosa*, head from front.

HIPPELATES FERGUSONI, n. sp. (Text-fig. 12, *c*.)

This species is fulvous yellow in colour, with the frons and scutellum more lemon-yellow, the frontal triangle with a central dark vitta, third antennal segment with a dark mark at insertion of arista, thoracic dorsum marked as in Text-fig. 12, *c*, the pleura with but one black mark, on lower margin of mesopleura, the abdomen black on dorsal surface except on first tergite, centre of second, and the sides of fifth.

Structurally the species is very similar to *atriseta*, but the lateral hairs on frons are stronger.

An additional character is that the palpi are brown instead of yellow, but the colour may be due to some unnatural cause, and abnormal.

Length, 2.5 mm.

Type, Sydney, N.S.W., 26th Aug., 1923.

I take pleasure in dedicating this species to the late Dr. E. W. Ferguson, to whom I was indebted for most of the material used in the compilation of this series of papers.

HIPPELATES ATRICORNIS, n. sp.

Female.—Head yellow, with yellow hairs and brownish bristles; ocellar spot, third antennal segment, and arista, black. Thorax yellow, dorsum with three glossy black vittae, of which only the central one extends the entire length, and traces of two narrow reddish vittae laterad of these behind the suture; pleura with a black mark on each of the following parts: mesopleura, pteropleura, sternopleura, and hypopleura; scutellum yellow; metanotum broadly glossy black in centre; hairs pale, the bristles black or brown. Abdomen yellow, with a black suffused spot on each side of second tergite, third and fourth tergites almost entirely black on disc, fifth with a central black spot. Legs yellow. Wings hyaline. Halteres yellow.

Frons longer than wide, quite copiously fine-haired, the lateral margins with a series of short setulae, vertical and postvertical bristles quite well developed, ocellars short; eyes hairy, higher than long; cheek not half as high as width of third antennal segment, the latter orbicular; arista with very short pubescence; proboscis stout, geniculated. Thorax with quite long fine decumbent dorsal hairs, the surface hardly punctate, and the bristles well developed; scutellum slightly flattened above, with two long and two short apical black bristles. Legs stout, the hairs quite long, apical spur on hind tibia stout, curved, and about as long as diameter of tibia. Penultimate section of fourth vein about twice as long as penultimate section of third, and about equal in length to ultimate section of fifth.

Length, 3 mm.

Type, Cairns, N. Queensland (J. F. Illingworth).

Type in United States National Museum.

HIPPELATES NIGRIDORSATA, n. sp.

Female.—Head orange coloured, occiput in centre, and the ocellar region, black, a brown streak running forward from ocellar spot to front of triangle; clypeus black; antennae yellow; aristae black. Thorax orange-yellow, disc marked as stated in key, humeral angles unspotted; pleura black except in front and above. Abdomen brownish orange. Legs dirty orange-yellow, a dark spot near base of each fore coxa, and some dark suffusions on hind femora which may be abnormal. Wings hyaline. Halteres yellow.

Frons a little less than half the head width, triangle shining, not conspicuously differentiated on sides, microscopically striate laterally; ocellar bristles minute, postvertical pair much larger; orbitals distinct posteriorly; face concave, with a V-shaped elevation above between bases of antennae; eyes hairy; cheek about one-eighth of the eye height, not much produced anteriorly, with black hairs below; palpi elongate, not very slender; proboscis stout; antennae normal; arista pubescent. Mesonotal hairs short; subapical pair of bristles on scutellum much shorter than the apical pair. Legs normal, apical spur on hind tibia not half as long as the diameter of tibia, situated close to apex. Second section of costa a little longer than first and about 1.75 as long as third; apical sections of veins 3 and 4 parallel.

Length, 4 mm.

Type, King River, Tasmania, 4th Febr., 1923 (A. L. Tonnoir).*

HIPPELATES UNIMACULATA, n. sp. (Text-fig. 12. b.)

Male.—The general colour of this species is paler than that of *nigradorsata*, the lateral margins of mesonotum, and especially the disc of the scutellum, being conspicuously so, lemon yellow. The abdomen is, however, extensively blackened on dorsum, the first visible tergite having a black spot on each side, the second and third largely black, only yellow on anterior and posterior margins laterally, and the fourth black except on its anterior lateral margins. Legs yellow, a small black spot behind on base of each mid coxa, and there is a black mark on middle of frontal triangle before ocelli. Wings clear. Halteres yellow.

Frons narrower than in *nigradorsata*, narrowest anteriorly, triangle glossy, well defined, extending to anterior margin of frons, orbital setulae rather strong; other characters as in *nigradorsata*. Scutellum more flattened than in that species, apex very slightly pointed between the apical bristles, the latter longer than in

nigradorsata, the subapical pair more remote from apical pair and not so short. Apical spur on hind tibia fully half as long as tibial diameter, rather stout, close to apex. Venation similar to that of *nigradorsata*.

Length, 3.5 mm.

Type, Burnie, Tasmania, 5th Oct., 1922 (A. L. Tonnoir).

HIPPELATES ABBREVIATA, n. sp. (Text-fig. 12, a.)

Male.—Similar to *unimaculata* in colour, the scutellum lemon-yellow, and the abdomen with lateral dark spot on first visible tergite and a dark apical fascia on each of the other tergites. Distinctions as in key.

The frontal triangle extends only two-thirds of the way to front margin of frons; the cheeks are narrower than in *unimaculata*; the apical spur on hind tibia is shorter, and the species is not so large.

Length, 2 mm.

Type, Burnie, Tasmania, 5th Oct., 1922 (A. L. Tonnoir).

Genus BATRACHOMYIA Skuse.

I have already described two species of this genus from Australia and having two new species from Tasmania present herewith a key for the identification of the four. The genotype is unknown to me, but appears to be distinct from these.

Key to the Species.

1. Thoracic dorsum rufous yellow, with four deep black vittae 2
 Thoracic dorsum brownish or yellowish, without distinguishable vittae 3
2. Notopleural area and scutellum not much paler than remainder of thoracic dorsum, the scutellum not blackened on basal lateral angles; humeri without a black spot; tibiae largely fuscous *major*, n. sp.
 Notopleural area and scutellum ivory-white, the latter blackened on basal lateral angles; humeri with a black spot; tibiae yellow *strigipes*, n. sp.
3. Third antennal segment deep black; femora largely black-haired .. *atricornis* Malloch.
 Third antennal segment yellow; femora entirely yellow-haired *flavicornis* Malloch.

BATRACHOMYIA MAJOR, n. sp.

Male and female.—Head yellow, opaque, variegated with brown, the frons sometimes brown except on anterior margin; clypeus blackish; antennae and palpi yellow, third segment of former more or less darkened at insertion of arista; aristae black; cephalic hairs black except on lower part of occiput. Thorax reddish yellow, shining; mesonotum with three broad black vittae which are fused on anterior half, and a narrow postsutural black streak which is separated from the submedian vitta; postnotum black; four large black spots on pleura, on lower part of mesopleura, on pteropleura, on hypopleura, and on all except the upper margin of sternopleura. Abdomen rufous yellow, with the apices of tergites darkened. Legs rufous yellow, the fore femora and all tibiae almost entirely black. Wings slightly greyish. Halteres yellow. Fine hairs on thorax mostly pale, the bristles, and many of the hairs on abdomen, black.

Frons about two-fifths of the head width, the surface with many black hairs; post-vertical bristles long; ocellar pair shorter, both pairs incurved; antennae narrowly separated at bases, third segment higher than long; arista rather thick basally, microscopically pubescent; cheek about one-fifth of the eye height, rather densely haired except on upper margins, the hairs ascending well above the mouth margin to vibrissal angle; palpi normal; eyes densely haired. Dorsum of thorax including that of scutellum quite densely haired, the hind margin of scutellum with a number of setulae. Abdomen more hairy than usual, but not so densely

so as mesonotum. Legs rather robust, tarsi slightly broadened apically. First section of costa subequal to second in the male, a little longer than it in female, third section about half as long as second in male, distinctly less than that in female.

Length, 4.5-5.25 mm.

Type male, allotype, and four paratypes, Cradle Valley, Tasmania, 10th to 26th Jan., 1923 (A. L. Tonnoir).

BATRACHOMYIA STRIGIPES, n. sp.

Male.—A paler species than *major*, the head, except ocellar spot, a part of occiput, and arista, pale yellow; mesonotal vittae not fused anteriorly, connected at hind extremities. Wings hyaline. Halteres cream coloured.

Hairs not so dense as in *major*; third section of costa about two-thirds as long as second, the latter subequal to first.

Length, 3.5 mm.

Type, Wilmot, Tasmania, 8th Jan., 1923 (A. L. Tonnoir).

Genus BENJAMINELLA Malloch.

There is but one species of this genus known, *albifacies* Malloch, which occurs in Tasmania and New South Wales.

Genus THYRIDULA Becker.

There are three species already described from Australia, and I now add a fourth one, which is as yet undescribed. Below I present a key for the identification of the species, and a description of the new one.

Key to the Species.

1. Scutellum paler at apex than at base, quite coarsely rugoso-reticulate on entire surface, its sides parallel on basal two-thirds of their extent, the apex broadly rounded, and with four subequal bristles situated on small warts; claws of hind tarsi not much longer and stronger than those of mid and fore tarsi *rugosa* Malloch.
- Scutellum darker at apex than at base, or with a black central vitta, and not coarsely rugoso-reticulate, the sides converging from base to apex, at the latter narrowly truncate and with a pair of quite long bristles situated on two small warts; claws of hind tarsi much stronger than, and at least twice as large as, those of mid and fore tarsi 2
2. Scutellum with a complete, deep black, central vitta; face broadly blackened centrally *centralis* Malloch.
- Scutellum black on apical half or less 3
3. Face and hind tarsi entirely yellow; frons yellow, ocellar spot black *atroapicata* Malloch.
- Face blackened in centre; fourth and fifth segments of hind tarsi black, the other segments yellow; frons dark brown, yellow only on anterior and posterior margins, the ocellar spot black *brunneifrons*, n. sp.

THYRIDULA (EUTHYRIDULA) RUGOSA Malloch.

I erect for this species the new subgenus *Euthyridula*, based upon the characters cited in the key.

THYRIDULA CENTRALIS Malloch.

This species is known only from the type specimen from Sydney, N. S. Wales.

THYRIDULA ATROAPICATA Malloch.

This species is known only from the type specimen from Bowral, N. S. Wales.

THYRIDULA BRUNNEIFRONS, n. sp.

Male.—Head brownish testaceous, centre of face blackish, frons dark brown, yellowish only on anterior and vertical margins, the ocellar spot glossy black; antennae testaceous yellow, third segment brownish except at base; aristae fuscous; palpi testaceous yellow. Thorax brownish testaceous, dorsum with three black vittae, a complete one in centre, and one on each side of it which is not carried to anterior nor posterior margin and is not interrupted at suture, and laterad of these behind suture a black streak; humeri unspotted; sternopleura mostly black, a black spot on lower part of mesopleura, one on pteropleura, one behind prothoracic spiracle, and one on hypopleura; scutellum black at about the apical half; metanotum glossy black. Abdomen testaceous yellow, with a dark mark on each side of at least the second tergite. Legs testaceous yellow, mid and hind femora and tibiae more or less darkened on middle; fourth and fifth segments of hind tarsi black. Wings hyaline. Halteres pale yellow.

Frons a little longer than its anterior width, quite densely haired, the orbital setulae hardly differentiated, triangle not extending to middle of frons; third antennal segment quite large, orbicular; arista distinctly pubescent; face slightly carinate above, distinctly produced below; eyes densely haired; palpi long; proboscis long, geniculated, and slender, the apical section as long as head; cheek almost linear. Thorax as in *centralis*. Legs stout, hind tarsal claws fully twice as long as those of mid and fore pairs.

Length, 2 mm.

Type, Strahan, Tasmania, 6th Febr., 1923 (A. L. Tonnoir).

Genus DELTASTOMA Malloch.

Only one species of this genus is known, *unipunctata* Malloch; Sydney, N.S.W.

Genus CAVICEPS Malloch.

Only one species of this genus is known, *flavipes* Malloch; Sydney, N.S.W.

Genus TRICIMBA Lioy.

Before me are four species of this genus which appear to be undescribed. All of them are very different from the genotype in structure, two having a very conspicuous flat carina on upper half of the face separating the antennae quite widely, and the frons quite noticeably protruded in front, projecting well over antennae, much as in the genus *Eurina* Meigen. One of the other species is much less robust than the genotype, without a facial carina, and with larger wings.

One might be justified in erecting a new subgenus for the reception of the two first mentioned species but for the fact that an Australian species, *carinata* Malloch, to a considerable extent bridges the gap between these and the genotype. In the Australian species the facial carina is present, but not so wide, and the frons is less protruded in front. The species now known to me are included in the key below.

Key to the Species.

1. Face with a quite broad conspicuous central vertical carina on upper half 2
Face not at all evidently carinate 4
2. Small species, not over 2 mm. in length; frons not projecting beyond anterior margin of third antennal segment in profile; facial carina rather narrow, not widened out at lower extremity, and extending well below middle of face
. *carinata* Malloch.

- Larger species, not less than 3 mm. in length; frons projecting well beyond anterior margin of third antennal segment in profile; facial carina broad, distinctly widened out at lower extremity, and not extending below middle of face 3
3. Sternopleura grey dusted on upper and lower margins, the upper margin testaceous, the remainder black *carinifacies*, n. sp.
- Sternopleura entirely grey dusted, and all black *pollinosa*, n. sp.
4. Scutellum quadrate, flat on entire dorsal surface, and with a prominent setigerous wart near each posterior lateral angle; small species, not over 1.5 mm. in length, and rather robust 5
- Scutellum longer than wide, tapered to apex, the sides sloping basally, and the margin without setigerous warts; species averaging fully two mm. in length, and of slender build *convexa*, n. sp.
5. Mesonotum with but one evident series of microscopic pale hairs between the central and lateral sulci; frontal triangle with evident grey dusting, but distinctly shining, ending a little in front of middle of frons, and with no wedge-shaped mark in front of it, the anterior margin of frons orange-yellow; legs testaceous yellow; penultimate sections of third and fourth veins subequal in length *scutellata* Malloch.
- Mesonotum with about four series of microscopic dark hairs between the central and each lateral sulcus; frontal triangle densely grey dusted, and not shining, ending at middle of frons, but with a wedge-shaped pale-dusted mark in front of it which gives it the appearance of being continued to anterior margin of frons, the latter hardly paler than remainder of surface; mid and hind femora, and hind tibiae, with a brownish median mark; penultimate section of third vein about half as long as penultimate section of fourth *similata*, n. sp.

TRICIMBA CARINIFACIES, n. sp. (Text-fig. 13.)

Female.—Head yellowish testaceous, becoming fuscous on upper part of frons and occiput, third antennal segment dark above; clypeus fuscous. Thorax brownish testaceous, dorsum fuscous, with grey dusting, but distinctly shining on most of the surface, lower part of sternopleura and postnotum black, the latter shining. Legs testaceous yellow, femora mostly, and tibiae in middle, brown or fuscous. Wings hyaline. Halteres yellow. All hairs and bristles luteous.

Frons projecting beyond eye fully as far as height of cheek, the latter over one-third as high as eye; arista subnude; front view of head as in Text-fig. 13. Mesonotal hairs stubby, lateral sulci broadened posteriorly; scutellum flattened above, with rather dense stubby bristles or hairs on disc, and with two approximated bristles at apex. Legs normal. First costal section about four-fifths as long as second, third two-thirds as long as it.

Length, 3.5 mm.

Type and one paratype, Burnie, Tasmania, 25th Oct., 1922 (A. L. Tonnoir).

TRICIMBA POLLINOSA, n. sp. (Text-fig. 14.)

This species is very similar to *carinifacies*, but is smaller, and darker in colour, the frons is darker, being sometimes entirely fuscous, and the sternopleura is entirely grey dusted. In addition to the characters listed in the key the face is narrower, being at lower extremity of the parafacials not wider than the height of cheek, while in *carinifacies* it is distinctly wider, and the carina in this species does not extend to middle of face (Text-fig. 14), while in *carinifacies* it does extend to, or even very slightly below, the middle.

Length, 3 mm.

Type male, Woy Woy, N.S.W., 2nd Sept., 1923; one paratype, Lindfield, N.S.W., 19th Nov., 1922 (A. J. Nicholson); one paratype, Bridgetown, W.A., 29th Aug., 1926 (E. W. Ferguson).

The Western Australian specimen is slightly different from the others, but not so distinctly so as to justify me in accepting the distinctions as of specific value.

TRICIMBA CONVEXA, n. sp.

Female.—Differs from *carinifacies* in having the frons darker, the thorax and abdomen uniformly fuscous, shining, with greyish dust except on lower half of pleura, and the legs uniformly yellowish testaceous.

The frons is not half of the head width, the cheeks are almost linear, the mesonotum is more convex, with finer hairs, and the lateral sulci are not widened posteriorly, the legs are more slender, and the wings broader and longer.

Length, 2.2-5 mm.

Type and one paratype, King River, Tasmania, 4th Febr., 1923; one paratype, National Park, Tasmania, 6th Dec., 1922; two paratypes, Adventure Bay, Tasmania, Dec., 1922 (A. L. Tonnoir).

The most slender species of the genus known to me.

TRICIMBA SIMILATA, n. sp.

This species is so very similar to *scutellata* Malloch, which I recently described, that it appears unnecessary to describe it further than has already been done in the foregoing key. I have included all the essential differentiating characters therein, and a comparison of the specimens one may have, with this key and the description of *scutellata* ought to be sufficient to permit an accurate identification.

Length, 1.5 mm.

Type, Sydney, N.S.W., 9th Nov., 1924.

TRICIMBA CARINATA Malloch.

PROC. LINN. SOC. N.S.W., 1924, p. 356.

I have seen only the type female from Como, N.S.W., December, 1923.

TRICIMBA SCUTELLATA Malloch.

PROC. LINN. SOC. N.S.W., 1925, p. 337.

I have seen only the type male from Sydney, N.S.W., 9th Aug., 1924.

Genus *GAURAX* Loew.

As already stated by me this genus is very poorly differentiated from *Botanobia* Lioy, only the more distinctly haired arista serving to separate it from that genus. When I come to publishing the key to the species of *Botanobia* I may decide to include in it all the species of both so that no errors may occur in identifications. I have before me a very pretty undescribed species which appears to be referable here.

GAURAX APICIPUNCTATA, n. sp.

Male and female.—Head orange-yellow, occiput, frontal triangle except extreme apex, and upper extremities of frontal orbits, glossy black; third antennal segment lemon yellow; arista and their hairs black; palpi yellow. Thorax glossy black, humeri and lateral margins of mesonotum and upper margin of pleura, fulvous yellow; scutellum black. Abdomen rather variable in colour, ranging from brownish to black. Legs yellow, all femora and tibiae blackened medially. Wings hyaline, with a fuscous spot at apex from a little before tip of third to just beyond tip of fourth vein which has usually a pale central spot. Halteres yellow.

Frons over half of the head width, with quite long black hairs; postvertical and ocellar bristles erect and convergent; triangle wide, extending fully two-thirds of the length of frons; third antennal segment higher than wide; arista thickened at base, very densely short haired and appearing thickened on entire length, the longest hairs about as long as the thick second segment; eyes hairy, a little higher than long; cheek almost linear. Thoracic dorsum not punctate, the hairs quite dense, long, and fine; scutellum convex, rounded in outline, with two long and two short fine bristles. Legs stout. Second costal section fully 1.5 as long as first, the latter a little longer than third; penultimate section of third vein over half as long as penultimate section of fourth.

Length, 2.2-5 mm.

Type female, allotype, and one female paratype, Sydney, N.S.W.

This is the only species known to me from Australia in which the wings are marked with a fuscous apical spot.

Genus *BOTANOBIA* Lioy.

I have been compiling a key to the species of this genus but am not yet ready to publish it as with every consignment of specimens of small Diptera received there are new species of this genus. Isolated descriptions are not of very much value in many genera and this is one in which only synoptic treatment will provide characters by means of which the species may be identified.

There appear to be about 30 species of the genus now before me from Australia and Tasmania.

Family *Asteiidae*.

This family contains but three genera and may ultimately be merged with the *Drosophilidae*, as it has been heretofore by many workers. Meanwhile I accept it in the status given to it by recent workers. I have already described a species of the genus *Leiomyza* from Australia and now add a species of a second genus. Below I present a key to the three described genera. The third genus may occur also in Australia.

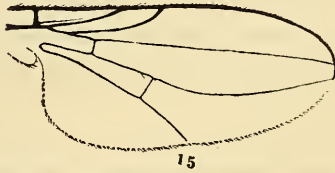
Key to the Genera.

1. Outer cross-vein of the wing lacking; second wing vein ending in apex of first vein, or in costa very close to apex of that vein; arista with quite long widely separated hairs above and below *Asteia* Meigen.
Outer cross-vein of wing present; arista bare or pubescent 2
2. Thorax with two pairs of well developed postsutural dorsocentral bristles; second wing vein ending in costa very close to apex of first vein; arista bare or pubescent *Sigaloessa* Loew.
Thorax with but one pair of well developed postsutural dorsocentral bristles; second wing vein ending in costa about midway between apices of first and third veins; arista bare or almost so *Leiomyza* Macquart.

SIGALOESSA MELBOURNENSIS, n. sp. (Text-fig. 15.)

Female.—Head testaceous, a broad dark mark on each side of upper occiput, frons reddish, face whitish, its lower rim and clypeus brown; antennae testaceous. Thorax brownish black, shining, lightly greyish dusted on dorsum, the lateral mesonotal margins yellowish; pleura yellowish, with two darker vittae; scutellum yellow. Abdomen fuscous on dorsum, yellow on membranous part. Legs testaceous yellow. Wings hyaline. Knobs of halteres dark brown above, pale below.

Frons about one-third of the head width, parallel-sided, almost flat, and nearly 1.5 as long as wide, with microscopic stiff black hairs; postvertical bristles microscopic, divergent as in the other genera in which they are present; both pairs of vertical bristles rather short, but longer than the single pair of orbitals; antennae normal; arista with very short pubescence. Thorax with a series of



Text-fig. 15. *Sigaloessa melbournensis*, wing.

short hairs on almost the entire length of the two dorsocentral lines and between these in front of suture an irregular series of similar acrostichal hairs; posterior pair of intra-alar setulae present; scutellum with two long apical and two short basal bristles. Legs slender. Wing as in Text-fig. 15.

Length, 2.25 mm.

Type, Melbourne, Victoria, found in jar with *Monophlebus*.

Except for the dark colour in general, and especially that of mesonotum, this species is very similar in all respects to *flaveola* Coquillett, a North American species, but I consider it as distinct pending the receipt of more material from Australia.