

NOTES ON AUSTRALIAN DIPTERA. No. xvii.

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(Twelve Text-figures.)

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In this paper I offer some data upon a subfamily of Mycetophilidae, notes on the genus *Pachyneres* Greene belonging to Bombyliidae, a few notes on Asilidae, and notes on some already described species of Cyclorrhapha, most of the latter being in extension of matter already published in a previous part of this series of papers.

There are systematists who believe that a genus is a concept and that what binds it is not the genotype but the author's conception. What limits a genus is its genotype and, no matter how poorly the characters of the genotype may have been depicted by the original author of the genus, it stands to reason that all subsequently included species must conform to it in the essential generic characters, or else they are not congeneric.

The data presented in this and other papers of this series have been acquired during the past quarter of a century in working over material from all over the world, and almost invariably are not available in published form in any magazine either in Australia or elsewhere.

Frequently one finds that in a genus including many species from various faunal regions there are segregates which may readily be distinguished by structural characters and, when this is the case, it appears appropriate that these segregates should be given subgeneric or generic rank, so that the more closely related forms may the more readily be associated and in this manner form a ready basis for a generalization upon geographic distribution, a fad becoming more common than heretofore.

It was with this end in view that I have already dealt with some Brachycera in this series of papers and, in extension of this line of thought, I present below some notes upon a subfamily of Mycetophilidae. How many species there may be in some of the genera related to *Platyura* Meigen one can not even hazard a guess, but it is not improbable that there are some hundreds which only wide and intensive collecting will disclose. Unfortunately the insects are mostly fungivorous and of little or no economic importance so far as we at present know and, consequently, are of purely academic interest so that most collectors pay no attention to them. They do play, however, a part in our scheme of classification and as such must be considered on a parity with others which, because of their pernicious or beneficial functions, are more favoured in systematic literature for these reasons alone.

Suborder ORTHORRHAPHA.

Division NEMATOCERA.

Family Mycetophilidae.

Subfamily CEROPLATINAE.

In working over some North American material in the family Mycetophilidae to make comparisons with a few specimens received from several sources in Australia, I discovered some characters of group significance that appear to be worth recording for the benefit of Australian students of Diptera who may be interested in arriving at an accurate determination of the associations of Australian species with those from other faunal regions. To make matters as clear as possible I present herein a key to the genera of the subfamily Ceroplatinae which includes all the known genera and is similar in part to that by Johannsen published in 1909 (*Genera Insectorum*, Fasc. 20).

Not having access to several of the Australian genera, I am unable to make use of some of the new classificatory characters, such as the metathoracic hairs, included in the key and applied to the North American genera. If the publication of these data induces some student to investigate the Australian members of this subfamily further, I shall be more than satisfied with the result attained.

The subfamily Ceroplatinae belongs to the section of Mycetophilidae in which the medio-cubital crossvein of the wing is present, or in other words to that section in which there is a crossvein connecting the cubitus with media, usually beyond the furcation of the former. From the major portion of the subfamilies in this division it is readily distinguished by the obliteration of the radio-medial crossvein due to the fusion of a section of the basal portion of radius with media at the point where the crossvein should be. These features may be readily appreciated by a comparison of Text-figures 1 and 2 herein. The only subfamily in which the venation of the wings is similar to that of the Ceroplatinae in its essential features is Macrocerinae, but in the latter the antennae are very long and slender, usually not shorter, and often much longer, than the entire insect, while in the Ceroplatinae the antennae are never very slender, frequently conspicuously flattened, or even pectinate, and always much shorter than the entire insect.

Without access to a much larger amount of material than I have at present, I do not care to express a definite opinion as to the generic distinctness of the few Australian species I have before me, but am inclined to believe that when the species are carefully compared with those from the New World, some of them will be found to belong to different genera, for which new names will be required.

Key to the Genera.

1. Face and proboscis prolonged downward beak-like, the proboscis about as long as height of head, or longer than it 2
 Face and proboscis not prolonged downward, sometimes a short elevation on lower portion of face projecting forward or slightly curved downward 5
2. Vein R_{2+3} much longer than the distance from its base to the crossvein; apex of wing abruptly truncated *Arctoneura* Hutton
 Vein R_{2+3} shorter than the distance from its base to the crossvein; apex of wing not abruptly truncated 3
3. Antennae with 2 + 15 segments, the apical one very small, papilla-like; subcostal crossvein present, the subcosta usually connecting with costa; prosternum, metanotum, and metapleura, bare *Asindulum* Latreille
 Antennae with 12 or 14 flagellar segments; subcostal crossvein lacking 4
4. Subcosta short, connecting with costa; antennae with 2 + 12 segments *Antriadophila* Skuse
 Subcosta free at apex; antennae 2 + 14 segmented *Helladepichoria* Becker
5. Antennae pectinate, 2 + 12 segmented *Platyroptilon* Westwood
 Antennae not pectinate 6

6. Antennae much flattened, strap-like; palpi porrect, short, dilated, not incurved . . . 7
Antennae not conspicuously flattened; palpi slender apically, incurved, and moderately elongated 10
7. Tibiae and tarsi of mid and hind legs much thickened *Heteropterna* Skuse
Tibiae and tarsi of mid and hind legs not thickened 8
8. Metapleura bare; mesopleura haired above; R_{2+3} connecting with R_1
 *Cerotelion* Rondani
Metapleura haired; R_{2+3} connecting with the costa 9
9. Upper portion of mesopleura haired *Ceroplatus* Bosc., pt.
Upper portion of mesopleura bare *Ceroplatus* Bosc., pt.
10. Media originating at base of wing, the basal section more or less evident 11
Media originating at the crossveins, its basal section lacking 12
11. Ocelli lacking, the vertex prominently elevated; R_{2+3} connecting with costa
 *Hesperodes* Coquillett
Ocelli present, vertex not abnormally elevated; R_{2+3} connecting with R_1
 *Apemon* Johannsen
12. R_{2+3} short, less than half as long as R_{4+5} 13
 R_{2+3} more than half as long as R_{4+5} 17
13. Antennae with 2 + 13 segments, almost cylindrical *Pseudoplatyura* Skuse
Antennae with 2 + 14 segments, usually somewhat compressed 14
14. Metapleura and upper portion of mesopleura with black hairs; all tibiae with one long apical ventral bristle; subcostal crossvein lacking
 *Calliplatyura*, n. gen.
Metapleura bare; mid and hind tibiae each with one long and one slightly shorter apical ventral spur 15
15. Metanotum setulose; tibiae with 6 or more series of closely placed black spinules which form black lines from base to apex of each tibia; anal vein of wing distinct only at base, becoming evanescent outwardly, and never distinguishable to margin of wing *Platyura* Meigen
Metanotum bare; anal vein of wing distinct to, or almost to, margin of wing . . . 16
16. Some erect black hairs behind prothoracic spiracle *Neoplatyura*, n. gen.
No erect black hairs behind prothoracic spiracle *Xenoplatyura*, n. gen.
17. Petiole of media distinct *Nervijuncta* Marshall
Petiole of media obliterated *Casa* Hutton

Notes on the Genera.

Arctoneura Hutton. One New Zealand species known, *hudsoni* Marshall.

Asindulum Latreille. No Australian species known to me.

Antriadophila Skuse. Four known species, all Australian.

Helladepichoria Becker. One species; Canary Islands.

Platyroptilon Westwood. Type species from Brazil. The Ceylonese species *Platyura talaroceroides* Senior-White evidently belongs here also.

Heteropterna Skuse. Two Australian species.

Ceroplatus Bosc. There are two segregates of this genus known to me which are distinguished as indicated in the foregoing key. The group in which the mesopleura is haired on upper portion is represented in Australia, from whence I have seen one species (*mastersi* Skuse). The same group occurs in North America.

Cerotelion Rondani. One Australian species has been placed in this genus.

Hesperodes Coquillett. The genotype and only species is North American.

Apemon Johannsen. All the species of this genus so far recorded are from North America.

Platyura Meigen. There are about nine Australian species recorded for this genus, but whether any of them belong to it or not I am unable to say. I have divided the genus into four segregates in the foregoing key on the basis of characters that are apparently of generic value and possibly all of the Australian species will fall in one or other of these groups, though it is not improbable that

there may be present, in one or more of the species, structural characters which may indicate that they are entitled to separation from any of the included groups.

I have but one Australian species which would be referred to *Platyura* in the old sense, but it does not belong to the genus as herein restricted.

This limitation of the genus is based upon characters of the genotype as confirmed by Mr. J. E. Collin.

CALLOPLATYURA, n. gen.

I have erected this genus for the reception of three species from the New World, the genotype being *Platyura elegans* Coquillett from North and Central America. The characters listed in the key form the basis of the genus.

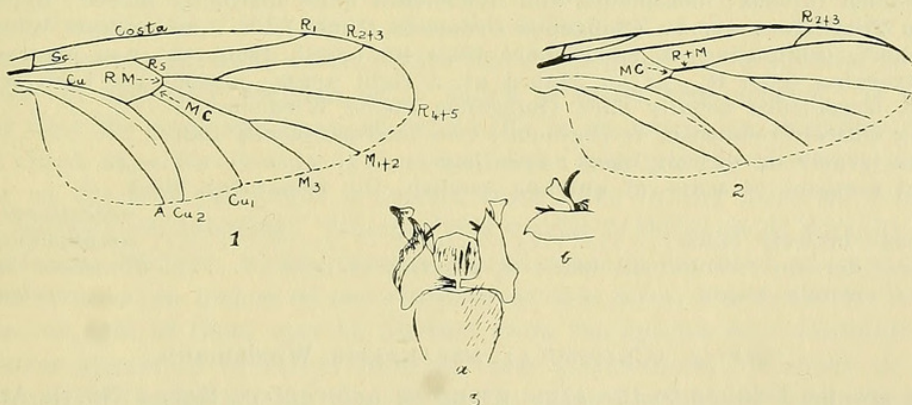
NEOPLATYURA, n. gen.

This genus is erected for the reception of those species in which the metanotum is bare. The distinction in the hairing of the mid and hind tibiae may be utilized as a subgeneric character. The genotype of *Neoplatyura* is *Platyura setiger* Johannsen, a North American species.

Genus XENOPLATYURA nov.

I erect this genus for the reception of some Australian species which have the mesopleura bare behind the anterior spiracle, and the posterior branch of media and anterior branch of cubitus obsolete at apex. I have not enough material to go exhaustively into detail, but the group may contain a number of species of which I select *conformis* Skuse as genotype.

Before me there are two specimens of a species which I consider as probably *conformis*. If I am correct in this identification there are some stiff hairs on the anterior margin of frons between and above the antennal insertions which I have not seen in any other species hitherto placed in *Platyura*. I find, however, one South American species which is evidently undescribed, that has these hairs. In the latter the tibial hairs are serially arranged on the entire extent, while in the Australian species before me they are indiscriminately arranged, except at apices of tibiae.



Text-fig. 1.—*Ditomyia* sp., wing.

Text-fig. 2.—*Xenoplatyura* sp., wing.

Text-fig. 3.—*Xenoplatyura* sp. Ventral plate of male hypopygium. *a*, left side, from above, right side, from below; *b*, side view of apex.

The hypopygia present many characters for the differentiation of the species. Possibly the most valuable portion of these organs is the ventral plate and its

appendages, as shown in Text-figure 3. In addition to this plate there are two other portions of the male hypopygia, one internal, the other dorsal. I commend the study of these various parts of Platyurinae to Australian dipterists as a means towards the authentic identification of the species.

The two males which I assign to *conformis* are from Roma, Qld. (F. H. Taylor), and Cairns, Qld. (J. F. Illingworth).

Family Bibionidae.

This family has been separated from Scatopsidae by recent writers on the basis of structures of all stages. The adults are distinguished from those of Scatopsidae by the presence of the second basal cell of the wing.

The genera *Plecia* Wiedemann, *Bibio* Geoffroy, and *Dilophus* Meigen, are known to me from Australia. Skuse in 1888 dealt with the Australian species known to him (PROC. LINN. SOC. N.S.W., (2), 3, p. 1362) and later published a supplement (Id., (2) 5, p. 633), in which he recorded another species. I give below a key for the separation of the three genera mentioned above, with some notes on the genus *Plecia*.

Key to the Genera.

1. Third wing vein furcate, i.e., R_{2+3} present *Plecia* Wiedemann
 Third wing vein not furcate 2
2. Fore tibia with a circle of spines at apex *Dilophus* Meigen
 Fore tibia with a very strong spine-like process at apex *Bibio* Geoffroy

Genus PLECIA Wiedemann.

The species of this genus recorded by Skuse are *amplipennis* Skuse, which he afterwards synonymized with *fulvicollis* Fabricius, *erebea* Skuse, *dimidiata* Macquart, *ornaticornis* Skuse, and *melanaspis* Wiedemann. I have not seen *erebea*, but its entirely black thorax should be a good distinguishing character. Below I present a key to the species, with notes on those available.

Key to the Species.

1. R_{2+3} originating close to, or even at, the r-m crossvein, quite long, and extending almost parallel with R_{4+5} ; thorax black, posterior half to two-thirds of mesonotum reddish fulvous; mesopleura and hypopleura quite distinctly haired; hypopygium as Text-figure 4 (Subgenus *Crapitula* Gimm.) *melanaspis* Wiedemann.
 R_{2+3} short, originating at much more than its length from the r-m crossvein and diverging from R_{4+5} at, or almost at, a right angle; mesopleura bare or almost so, hypopleura usually bare (Subgenus *Plecia* Wiedemann) 2
2. Thorax entirely reddish or ferruginous; eyes microscopically haired 3
 Thorax largely or entirely black; eyes bare 4
3. Second segment of scape of antenna reddish, the remainder black
 *ornaticornis* Skuse
 Antennae entirely black *amplipennis* Skuse
4. Thoracic dorsum ferruginous, black at anterior margin *dimidiata* Macquart
 Thorax entirely black *erebea* Skuse

PLECIA (CRAPITULA) MELANASPIS Wiedemann.

This species belongs to the same group as *heteroptera* Say, a North American species, having the pleural hairing the same, and the male hypopygium with geniculated outer forceps. It has the vein R_{2+3} much longer, however, and, though this species has been given generic status distinct from the typical forms in which the face is quite distinctly protruded, the hypopleura bare, and the outer forceps of the male hypopygium not geniculated, I do not believe there is much to be gained by the procedure. The genus *Crapitula* Gimm., was erected for the

reception of *melanaspis*, as was also *Plecomyia* Brunetti. A character distinguishing it from *heteroptera* Say is the sessile media, the North American species having this vein pedunculate as in the remaining species occurring in Australia. Possibly subgeneric segregation would be the best course, as adopted herein, the basis of the segregation being the hairing of the hypopleura, and the form of the hypopygium. The genus *Rhinoplectia* Bellardi was erected for the reception of *rostrata* Bellardi (= *rostellata* Lw.), which has the face quite noticeably protruded, but this character is variable in the genus and can not be considered as of even subgeneric value. In any event the genotype of *Plectia* has the character rather evident so that it is synonymous with *Plectia*. The hind tibiae in the two species of this subgenus known to me are more conspicuously widened at apices, especially in the males, than they are in the typical forms. It is noteworthy that in *Crapitula* species the position of the medio-cubital crossvein is farther from the base of the anterior branch of cubitus than in the other group, the latter having the two forming a more or less angulate line, while in the former the basal section of the branch of cubitus is much longer than the crossvein and lies almost longitudinally, instead of almost erect or transversely.

I have seen this species from India and China, but have no Australian examples for comparison with them.

I have before me a female of *indica* Brunetti from Kashmir, India, which leads me to consider that it belongs to the subgenus *Crapitula* though, as in the North American species, the media is petiolate. From *melanaspis* this species is readily separated by the entirely red mesonotum.

PLECIA (PLECIA) AMPLIPENNIS Skuse.

This species was sunk as a synonym of *fulvicollis* Fabricius by Skuse in his second paper on *Plectia*, but I have grave doubts as to the accuracy of the determination of *fulvicollis*. Before me there are three specimens which may be referred to *amplipennis* as they have the antennae entirely black, and four specimens apparently referable to *ornaticornis*, having the second segment of the scape of antenna very noticeably reddish. Unfortunately neither of the two males I refer to *amplipennis* has the hypopygium present, so that I am unable to compare this organ with that of the species I accept as *ornaticornis* (Text-fig. 5).

I have five species of this group from the Orient, all of them, with the possible exception of *parva*, agreeing closely with the description of *fulvicollis*, so that it is a matter of arbitrary decision as to which is really that species. It is to be regretted that the type specimen of *fulvicollis* is no longer in existence, and an accurate check upon its identity is thus no longer possible. It may be permissible to accept as the true *fulvicollis* a species from Java in the material before me, and this course I am adopting. Whether this species is the same as *dorsalis* Walker and *subvarians* Walker, which species are at present accepted as synonyms of *fulvicollis*, I have no means of ascertaining at this time, but probably it is not, and either or both of these may be distinct from the species now available to me, as the latter appear to be rather local in their distribution. A check up on the Walker types will establish the identity of his species as he had both sexes in his type series. The type of *dorsalis* is from Singapore, that of *subvarians* from Sarawak; none of my material is from these localities. What *Penthetria thoracica* Guérin may have been can not be decided, but it is at present ranked as a synonym of *fulvicollis* and may be left as such.

Apart from the entirely black antennae there is no distinction between *amplipennis* and *ornaticornis* that I can make out. As these notes are intended

merely as guides to Australian students I leave the elucidation of the species on the basis of hypopygial characters, if these exist, to someone who has material for such a study.

Localities.—Vanikoro Is., Qld. (Dr. C. M. Deland), and Innisfail, Qld. (F. H. Taylor).

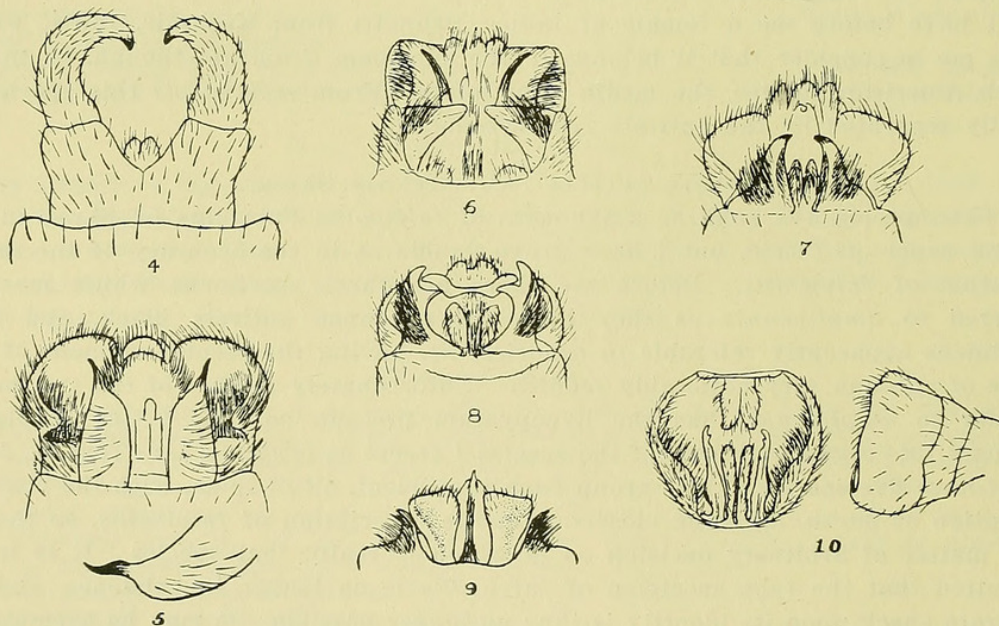
PLECIA (PLECIA) ORNATICORNIS Skuse.

This species I have before me in both sexes, one pair taken *in copula*. I figure the male hypopygium (Text-fig. 5), which is quite distinct from that of any of the Oriental species. Should there be but one species represented by this and the preceding species names, *ornaticornis* will fall as a synonym.

Localities.—Cairns, N. Qld. (J. F. Illingworth), Townsville, Qld. (F. H. Taylor).

PLECIA (PLECIA) FULVICOLLIS Fabricius.

I accept as this species one which occurs in Java, the larvae living at the roots of plants. One male was found amongst orchids from Java on a ship at San



Text-fig. 4.—*Plecia (Crapitula) melanaspis*, male hypopygium from above.

Text-fig. 5.—*Plecia (Plecia) ornaticornis*, male hypopygium and side view of inner forceps.

Text-fig. 6.—*Plecia (Plecia) fulvicollis*, male hypopygium.

Text-fig. 7.—*Plecia (Plecia) bakeri*, male hypopygium.

Text-fig. 8.—*Plecia (Plecia) philippinensis*, male hypopygium.

Text-fig. 9.—*Plecia (Plecia) confusa*, male hypopygium.

Text-fig. 10.—*Plecia (Plecia) parva*, male hypopygium, rear and side views.

Francisco, California, by O. E. Brenner, an inspector of the U.S. Federal Horticulture Board, but the species has not found its way into the United States as far as we know.

The head of the male is larger than in *ornaticornis*, and the ocelli are much less elevated, while the antennae are more slender, with the divisions between the

segments much more prominent, and the eighth flagellar segment is almost indistinguishable. The hypopygium as seen from below is as Text-figure 6.

Length, 7.8 mm.

Locality.—Buitenzorg, Java, at roots of *Cacao theobroma* (H. F. Deitz). The exact locality of the specimen found in San Francisco is unknown, but it came from Java. A female, apparently of this species and identified as such by Dr. de Meijere, is also from Java (Jacobson).

The following four species are described now to permit comparison with examples of related species occurring in Australia and Oceania, of which there are possibly several unknown to me and confused with *fulvicollis*.

PLECIA (PLECIA) BAKERI, n. sp.

Male and female.—Similar in coloration to *fulvicollis*, but the coxae are fulvous, not darkened, the mid and hind femora are yellowish at bases, and there is usually a dark central line on apex of the scutellum.

The eyes of the male are smaller than those of the male of *fulvicollis*, the ocelli are even more prominent than in the Australian species, and the antennae are 7-segmented in this sex, the apical papilla being indistinguishable with ordinary magnification. In the female the eighth flagellar segment is longer than the seventh, and while in all three species of this group discussed above, the distance from upper margin of eye to highest point of ocellar region seen from the side is less than half as great as the height of the eye, in *bakeri* it is fully as great as the eye. The male hypopygium as seen from below is as Text-figure 7.

Length, 6.7.5 mm.

Type, male, allotype, and two male paratypes, Baguio, Benquet, P.I.; one male and one female paratype, Limay, Batuan, P.I. The first series taken by Dr. C. F. Baker, in whose honour the species is named, the others taken by R. C. McGregor. In the United States National Museum Collection.

PLECIA (PLECIA) PHILIPPINENSIS, n. sp.

Male.—Similar in colour to *bakeri*, but shades a little deeper, with a dark central apical line on the scutellum.

The head structures are the same as in *bakeri*, but the hypopygium is as Text-figure 8.

Length, 7.7.5 mm.

Type, male, and one paratype, Tangcolan, Bukidnon, P.I.; one paratype, Lamboanga, P.I. (C. F. Baker). United States National Museum.

PLECIA (PLECIA) CONFUSA, n. sp.

Male and female.—More similar in general colour and structure to *fulvicollis*, the thorax bright orange or fulvous. The eyes of the male are very large, and minutely haired, the ocelli are small and very slightly elevated, and the antennal flagellum is 7-segmented. The head of the female seen from the side is similar to that of *ornaticornis*, and the flagellum is 8-segmented, exclusive of the minute apical papilla. The hypopygium of the male seen from below is as Text-figure 9, the forceps being omitted in the drawing.

Length, 8.8.5 mm.

Type, male, and allotype, Peradeniya, Ceylon, 25.8.13 (A. Rutherford). British Museum.

PLECIA (PLECIA) PARVA, n. sp.

Male and female.—A more uniformly coloured species than any of the others of the group, the thorax being ochreous, and not much paler than the brownish fuscous abdomen. The legs are hardly darker than the thorax and about the same colour as the dull ochreous pleura. Wings pale brown. Halteres with the knobs dark brown.

Eyes large, and microscopically haired, in male, ocelli large and very prominently elevated, antennal flagellum with but six segments, exclusive of the almost indistinguishable apical papilla; frons of female broader than long, bare, height of frons above eye in profile more than half as great as that of eye, antennal flagellum stout and uniformly thick, the segments closely adherent, apparently eight in number. Legs stouter than usual. Hypopygium large and stout, with an apical opening as shown in Text-fig. 10. Venation similar to that of *ruficollis*.

Length, 4.5 mm.

Type, male, and allotype, Los Banos, P.I.; one male paratype, Kolumbugan, Mindanao, P.I. (C. F. Baker). United States National Museum.

None of the Australian species belonging to the other section is available to me at this time.

I find that the wing venation in any species is quite variable, and no mention of any venational features is made in the descriptions of the species for this reason. The internal portions of the male hypopygium appear to be characteristic in the different species, but I had insufficient material to permit of an intensive study of these organs, merely figuring them as seen in the dry specimens, though I did take the pains to denude them so that the contours could be the better distinguished. This denuding may be easily done by using a fine camel-hair brush, bringing it lightly to bear on the hypopygium and drawing it in the opposite direction from which the hairs are directed.

Division BRACHYCERA.

Family Bombyliidae.

Genus PACHYNERES Greene.

When I placed my species *australis* in this genus, I did not make an exhaustive examination of the literature of the family Bombyliidae, but after Mr. G. H. Hardy suggested referring the genus to the family Bibionidae without having seen the specimens I took the trouble to discover whether any other data upon its affinities were available. I now am able to report that the genus *Pachyneres* is a synonym of *Glabellula* Bezzi, and that for quite a number of years it has been firmly established as a Bombyliid, with the accord of Bezzi, Verrall, Wahlgren, and other European authors. The synonymy of the genus is as follows, the Zetterstedt allocations being to the family Cyrtidae.

GLABELLULA Bezzi.

Zeitschr. f. Hymen. u. Dipt., vol. 2, 1902, p. 191, n.n. for *Glabella* Loew.

Platygaster Zetterstedt, *Ins. Lapp.*, Diptera, 1838, p. 574, preocc. by *Platygaster*

Latreille in Hymenoptera, 1809, and *Platygaster* Schill., in Hemiptera, 1829.

Sphaerogaster Zetterstedt, *Dipt. Scand.*, vol. 1, 1842, pp. 22 and 232, n.n. for *Platygaster* Zetterstedt. Preoccupied by *Sphaerogaster* Dejean, in Coleoptera, 1821.

Glabella Loew, *Beschr. Europ. Diptera*, vol. 3, 1873, p. 210, preoccupied by *Glabella* Swains., in Mollusca, 1840.

Pachyneres Greene, *Proc. Ent. Soc. Washington*, vol. 26, 1924, p. 62.

In neither of the two specimens of *australis* which I had was there any indication of a short process at apex of the third antennal segment, such as is conspicuous in the two species referred to *Glabellula* in Europe. I have examined specimens which appear to be referable to these two species in the collection of Dr. A. L. Melander, and the apical process is very readily distinguished. I do not believe that this process had been broken off in the Australian examples and, even so, without a process, I consider it unnecessary to erect a new genus for the reception of the species without other differentiating characters of more significance.

I have no doubt that with careful collecting this species will be found to be more common than is generally supposed. It very closely resembles *femorata* Loew in colour and general appearance.

It interests me to note that in a paper just received Mr. G. H. Hardy accepts the species discussed above as a Bombyliid, having seen the type and another specimen. No mention is made by him of the above synonymy so this note may stand as written.

Family Asilidae.

Subfamily DASYPOGONINAE.

Genus STENOPOGON Loew.

The genotype of *Stenopogon* is *sabaudus* Fabricius, a European species. To determine the relations of the Australian species before me which have been referred to *Stenopogon*, I made a critical study of the American forms and the genotype. The notes presented below are the results of this study.

Loew erected the genus *Scleropogon* in 1866 for the reception of *picticornis* Loew, a Californian species, distinguishing the genus from *Stenopogon* by the narrower face and frons, the shorter third antennal segment, with its longer style, the closed first, and the widened third, posterior cell of wing. Back, in 1909, discarded the genus, as did Coquillett before him, finding that the distinguishing characters were not stable; he stated, however, that he was confident subgeneric divisions could be made out when carefully collected material was brought together.

My study of the genus indicates that there are at least four segregates which may be accepted as subgenera, and possibly as genera, when all the evidence is in. I append a key to these groups below, all segregates will run down to *Stenopogon* in Ricardo's key to the genera of Asilidae.

Key to the Subgenera.

1. Metapleura bare; all posterior cells of wings open; mesopleura bare 2
Metapleura haired or bristled in front of halteres and above spiracle 3
2. Both sections of first abdominal sternite haired on entire extent
..... *Stenopogon*, pt. (N.Amer.)
Anterior section of first abdominal sternite haired on entire extent, posterior section
haired in centre of anterior margin *Stenopogon*, pt. (Europe)
3. Posterior section of first abdominal sternite haired in middle of anterior margin;
first posterior cell of wing normally closed and petiolate *Scleropogon*, pt.
Posterior section of first abdominal sternite bare 4
4. Mesopleura bare *Scleropogon*, pt.
Mesopleura haired above and behind *Neoscleropogon*, n. subgen.

Subgenus NEOSCLEROPOGON nov.

This subgenus has the head a little wider than high, the facial swelling not extending much above middle of face, the upper half of face densely haired, and

the pleural hairs long. There is a variously formed dorsal process which projects backward over the hypopygium in the males, whereas in the other groups there is no such central process.

Subgenotype, *Dasyopogon elongatus* Macquart.

There are at least two other Australian species. In all species known to me the tarsi are shorter and wider than is usual in *Stenopogon*. Possibly the group is entitled to full generic status, thus removing *Stenopogon* from the list of Australian genera.

Genus THEREUTRIA Loew.

This genus does not belong to Laphriinae, having the prosternum disconnected from the propleura, a character pointed out in one of my preceding papers as important in distinguishing members of Dasypogoninae from those of Laphriinae. I note that in a paper by Hardy received after my manuscript of that paper was sent to press this genus was removed along with *Metalaphria* Ricardo to Dasypogoninae and placed in the tribe Saropogonini. This tribe contains, in Hardy's sense, species in which the females possess genital spines, but the division is not a very sharp one, as is indicated by his key to the tribes, and it has the disadvantage of being based upon a character of one sex alone.

Thereutria undoubtedly belongs to Dasypogoninae, as does also *Metalaphria*, and the two genera are very closely related, possibly not entitled to separate generic rank. I have attempted to find characters other than those originally cited for their distinction, and have discovered at least one additional feature. This is the presence of sternopleural hairs in *Thereutria* and their absence in *Metalaphria*. Whether this character will hold throughout for the species involved in accord with the original definitions I am unable to say, but they hold in the material now before me.

It appears worthy of note that there is evidently considerable difference in the coloration of the legs in the sexes of the same species in *Thereutria*. I make this statement because in a pair mounted *in copula* now in my possession, the male has the legs entirely black with the exception of the basal half of the hind metatarsus, which is whitish, while the female has the femora and tibiae testaceous yellow with the tips of former, and apices of tibiae more broadly, black; the base of hind metatarsus is whitish-yellow as in male. Two other male examples have the mid and hind tibiae whitish above (dorsally) except at apices, and the hind metatarsus coloured as in the other specimen. I accept these two last as normally coloured males of *pulchra* Schiner, and the first mentioned example as a dark legged variety. Miss Ricardo's description of *amaracus* Walker, with its synonyms, appears to suggest that the female above mentioned is included amongst the forms, and that careful field work is required to establish the related sexes, if there are several species and not only one.

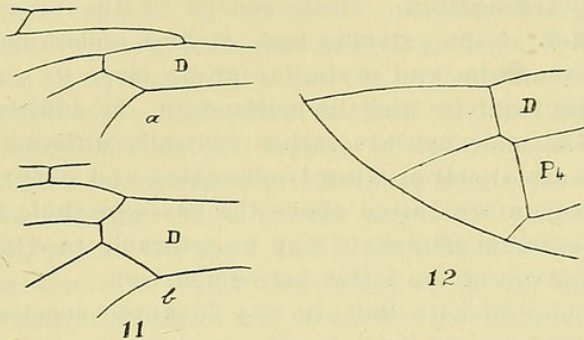
Genus METALAPHRIA Ricardo.

In addition to the character mentioned above for the distinction of this genus from *Thereutria*, possibly the hairing of the frons will be of value. In *Metalaphria*, or at least in the species before me, there are a few hairs on each side on the frons a short distance proximad of the anterior ocellus, situated on slightly raised areas, and no hairs on extreme lateral margins of frons close to eyes, while in *Thereutria* there are no hairs where they are present in *Metalaphria* and there is a series of hairs along each lateral margin of frons on its entire length close to the eyes.

Subfamily LAPHRIINAE.

Genus LAPHRIA Meigen.

This genus as at present accepted is, as I pointed out in my previous paper on the family, composite. One of the most striking digressions from type is found in *notabilis* Macquart, a species from the Aru Islands. In this species the metanotum has a group of bristles and hairs on each side, the hind coxae are produced in the form of thin plates at apices above, the hind trochanters are longer than their coxae, gradually thickened from bases to apices, and furnished with a group of bristles on ventral side at tips, and the mesopleura has an angular projection on hind margin above the series of bristles. I have seen only the female, so can not state whether these characters hold good in both sexes. In venation this species agrees with typical species of *Laphria*, having the apex of second basal cell as in Text-figure 11. The distinction between typical Laphriinae and typical Dasypogoninae, insofar as this character is concerned is shown in the



Text-fig. 11.—*Thereutria pulchra* (a), and *Laphria* species (b), apex of discal cell of wings.

Text-fig. 12.—*Laphria scapularis*, apices of discal and fourth posterior cells of wing.

figure mentioned. In another species, identified by Coquillett as *Atomosia scapularis* Wiedemann, from the same island, the veins closing discal and fourth posterior cells are in an almost continuous line (Text-fig. 12), but the species is an undoubted *Laphria* belonging to the group in which the metanotum is bare on the lateral regions.

Subfamily ASILINAE.

Genus OMMATIUS Wiedemann.

Recently Mr. G. H. Hardy has proposed to give tribal rank to this genus and one or two others which agree with it in having the arista with long hairs on one side.

I have several Australian species of the genus *Ommatius* before me and desire to draw the attention of students to some of the more important characters of the groups represented. Miss Ricardo's paper serves to distinguish *Ommatius* and two closely related genera from others, on the basis of the pectinate arista. I have before me only species that would fall within the genus *Ommatius* in the sense of that paper, but *chinensis* Fabricius, because of the elongate third antennal segment, appears to give ground for the belief that the careful student might be tempted to consider the species belongs to the genus *Allocotosia*, though the segment is only equal to the combined lengths of first and second. Curran, in a recent paper on the African species (*Bull. Amer. Mus. Nat. Hist.*, vol. 57, 1928,

art. 6, p. 334), notes that *Emphysomera* Schiner is scarcely tenable, as there is every gradation in the shape of the femora from greatly swollen to rather slender. Miss Ricardo cites as the distinguishing feature of *Emphysomera* the flat face, and makes no mention of the structure of the femora. Curran makes no mention of *Allocotosia*, but disregards some other generic segregations.

In making a comparative study of the few Australian and American species that I have access to, I was struck by the fact that *Ommatius* has several features that serve to isolate it, in addition to the pectinate arista. One of the most striking of these structural characters consists of the chitinized plate above the hind coxae which extends entirely across the hind margin of the thorax and is furnished with fine hairs similar to those present on the abdominal sternites. Besides this there is, as usual in Asilinae, a divided basal abdominal sternite, the apical portion of which is bare and the basal portion haired.

I can see no reason to distinguish even subgenerically the Australian and North American forms, but in the case of *chinensis* there are characters that appear to justify its segregation. These consist of the presence of a group of fine hairs on each side of the extreme base of first abdominal tergite and lying close against the metanotum, and a similar group close to scutellum on the line separating the postalar declivity and the metanotum. In addition to these features, the hypopygium of the male appears rather radically different from those of the other group, and the discal cell of wing is elongated and narrow at apex. In both segregates the hind coxae are haired above the bases of their femora on posterior sides. I rather suspect that *chinensis* may be referable to *Allocotosia*, but I have not access to the genotype of the latter for comparison.

It appears pertinent to note that, in one Javanese species and another from Africa which I have before me, there is a long bristle on the middle of the pteropleura in addition to the normal soft hairs, which bristle is lacking in all other species now known to me.

Genus PROMACHUS Loew.

This genus is readily separated from the great bulk of genera in the subfamily by the venation of the wings. Every sclerite of the pleura, except the small subtriangular one at upper posterior angle of mesopleura, is partly haired, the metanotum is bare on the lateral swollen areas, the mesosternum and metasternum are haired, and there are some hairs on the membranous or semimembranous base of abdomen immediately above the bases of hind coxae; similar but more evident hairs are present in *Ommatius*, but the portion of abdomen on which they are situated in the latter is chitinized and not membranous.

Two striking characters of the genus are the presence of hairs and bristles on the small sclerite directly below the anterior extremity of the base of wing, and the fact that the margin of scutellum has the strongest bristles above the usual depressed line and well removed from the lower edge, while there is a weaker series below these and almost on the edge.

I have before me only *doddi* Ricardo, from Cairns, N. Queensland, and in it the characters agree with those of the North American species with which I have compared it.

Genus ASILUS Linné.

This genus has been subjected to much arbitrary subdivision, and unfortunately most of the segregates, the more outstanding of which are usually given subgeneric rank, are based upon characters of one sex, most frequently the female.

I have taken the opportunity already in this series of papers to decry the use of characters of one sex for the segregation of groups of species no matter whether such segregates be considered genera, subgenera, or merely un-named groups.

I have tried to assign the North American species of *Asilus* to subgenera, with rather unsatisfactory results. I do find, however, that there are several characters apparently of value for the grouping of species, some of which have not heretofore been made use of for segregations in this genus. In the North American material I find that there are three groups divisible as follows:

1. Metanotum bare; tarsi normal Group I
 Metanotum with bristles or hairs on each side 2
2. Tarsi normal Group II
 All tarsi with an elongate oval depression in base of fifth segment on its ventral surface, apex of fourth with a rounded excavation connecting with same
- Group III

In Group I there are two North American species, one with, the other without, spines on the genitalia in the female. In Group II all of the species have the genitalia without spines; and in Group III one species has the genitalia of the female spinose, and eighteen have no genital spines. It is not appropriate to dilate herein upon the relationships of the American species, but it may be worth while to examine the Australian material in the light of these data.

Amongst the comparatively few species of *Asilus* from Australia that I have, I find several that have the metanotum bare, and others that have a group of hairs on each side of metanotum. Both groups have the tarsi normal and thus they would appear to fall within Groups I and II as defined above. There are, however, so many other characters in which they differ from the North American species, such as the shape and bristling of the face, that it would be unwise to place them in the same groups either named or un-named. I have seen no Australian species with the peculiar fifth tarsal segment described in the above key, but such may exist.

Suborder CYCLORRHAPHA.

Family Sepsidae.

In a previous paper in this series I drew attention to the fact that Dr. O. Duda's first part of his monograph on the family Sepsidae bears the statement that it appeared in December, 1925, but suggested that verification was necessary as many continental European magazines do not appear on the dates which they bear. I am now able to state on information given me by Dr. H. Zerny, custodian of Diptera in the Austrian National Museum, that the first part of that paper appeared on January 16, 1926, and the second part on December 10, 1926. The second part bears the notation that it appeared in November, 1926. My genus *Australosepsis* therefore has priority over *Saltelliseps* Duda.

Genus PODANEMA Malloch.

I have recently received from Dr. Duda the second part of his monograph and find that his description of *Toxopoda* Macquart agrees with that of *Podanema*. My genus thus falls as a synonym, but the Australian species is distinct from the only one he places therein, *nitida* Macquart (*viduata* Thomson).

Family Ortalidae.

Genus POGONORTALIS Hendel.

This genus is distinguished from any in the subfamily Platystominae by the very large mouth, which occupies almost two-thirds of the head width when seen

from below, leaving only a narrow cheek between it and lower margin of eye which is not half as wide as third antennal segment. Other distinguishing features are the presence of a number of long bristly hairs on the hind part of lower margin of cheek in the male and of one rather strong bristle about its middle in female; the mesopleura has a strong upper hind marginal bristle; scutellum bare except for the four bristles; first and third veins setulose above to apices, bases of second and third setulose below; anal cell shortest on its lower side, not pointed at lower apical angle; distance between apices of first and second veins about half as great as that between second and third.

POGONORTALIS BARBIFERA Hendel.

This is the only species known from Australia. It is distinguished from the other two species placed in the genus by the dark brown wing markings which consist of a central vitta extending from base to inner crossvein and filling the entire cell, a costal mark filling the cell between apices of auxiliary and first veins, a narrow fascia extending from apex of vein over disc of wing as far as third vein, a spot at apex beginning on costa above apex of third vein and extending below that vein, but less distinctly, to apex of fourth; and a cloud on vein closing posterior basal cell. Body fuscous to black. Legs brownish-yellow, sometimes with the femora and tibiae partly darker.

Arista bare; each orbit with two bristles; ocellars very weak; all verticals strong; postverticals minute. Only the prescutellar dorsocentrals and acrostichals distinct.

Length, 4 mm.

Localities.—Burpengary, S. Qld. (Dr. T. L. Bancroft); Sydney, N.S.W. (H. J. Carter). Hendel recorded the species from these same localities.

Genus EUPROSOPIA Macquart.

EUPROSOPIA TENUICORNIS Macquart.

I have seen a pair of this species in the United States National Museum from the Baker collection, taken on Stradbroke Island, 5.12.13 (H. Hacker). These were identified as *australis* Walker, but they do not agree with the description of that species. The male has two long slender flattened bristles at apex of basal segment of fore tarsus on its anterior side, which are curved downward and outward. The apices of first and second visible tergites in both sexes, and the whole of third and fourth tergites in male have pale yellow scale-like hairs.

EUPROSOPIA MACULIPENNIS Macquart.

Two specimens from Brisbane (H. Hacker), from the same collection, have a faint greyish-brown fascia over the region of the outer crossvein of wing which is not shown in Hendel's figure of the wing of this species. Abdomen as in *tenuicornis*, but with a few pale scales on third visible tergite in female.

Family Calliphoridae.

Subfamily RHINIINAE.

Genus RHINIA Robineau-Desvoidy.

RHINIA XANTHOGASTER Wiedemann.

In the material of this family submitted to me at my request by Dr. H. Zerny, of the Austrian National Museum, there are three specimens of this species from the old collection of that museum, two of which bear the label "New Holland",

and the other with the same label, but with the addition of a question mark (?) after the locality. I have yet to see a specimen which is unquestionably from Australia, though I do not doubt that it occurs there. The specimens referred to above are identical in all respects with Javanese specimens from the Vienna Museum and in my own collection.

It appears to be pertinent to note that the specimen sent me from Vienna, which bears the type label and the locality Java, is not *xanthogaster*, but a species of the genus *Idiella*, possibly *mandarina* Wiedemann. It is evidently mislabelled as it does not agree with Wiedemann's description, the tibiae and bases of tarsi being yellow, and the apex of the abdomen blackened.

Subfamily CALLIPHORINAE.

Genus CALLIPHORA Robineau-Desvoidy.

CALLIPHORA OCHRACEA Schiner.

Seven females from the type series in the Vienna Museum conform to my interpretation of this species already published in this series of papers in having the thorax obscured by ochreous dusting.

These specimens bear the Novara label and the locality Sydney.

CALLIPHORA STYGIA Fabricius.

A series of 31 examples of this species, mostly from the Novara collection, and named by Schiner and Brauer and Bergenstamm, was sent for examination by Dr. Zerny. There is not a single specimen of *hilli* Patton in the series.

Most of the specimens are from Sydney, but some are from Swan River.

CALLIPHORA TIBIALIS Macquart.

Two males of this species were misidentified as *villosa* by Schiner. They are from the old collection of the Vienna Museum and are labelled simply New Holland.

CALLIPHORA AUGUR Linné.

A dozen specimens of this species are in the Vienna Museum. Most of them were named *oceania* by Brauer and Bergenstamm; a few from the old Winthem collection are from Swan River, most of the others are from the Novara collection and labelled Sydney.

CALLIPHORA CENTRALIS Malloch.

One male of this species was confused with the preceding one and labelled *oceania* by Brauer and Bergenstamm also. It is evidently one of the specimens from Schiner's material as it was collected at Rockhampton by Thorey in 1868.

CALLIPHORA QUADRIMACULATA Swederus.

A dozen specimens of this species named *dasyophthalma* Macquart, mostly from the Novara collection, all from New Zealand, are in the Vienna Museum material. I have seen no Australian specimens of this species.

CALLIPHORA (XENOCALLIPHORA) HORTONA Walker.

A dozen specimens of this species from the Novara collection, all from Auckland, N.Z., bear the identification *aureopunctata* Macquart by Brauer and Bergenstamm.

Family **Tachinidae.**

I am presenting below some additional data on Ameniini and Rutiliini with notes on the genus *Microtropeza* Macquart. This information was derived from an examination of material submitted by Dr. H. Zerny, some of which consisted of types of Brauer and Bergenstamm species, and of species identified by them, as well as types of some of Schiner's species.

I have now seen the genotypes of all the genera included in Engel's paper, except that of *Paramphibolia* Brauer and Bergenstamm, which genus is unknown to me.

Tribe **Ameniini.**Genus **AMENIA** Robineau-Desvoidy.**AMENIA PARVA** Schiner.

I have before me a male and female of this species, apparently the types, and they confirm my previous identification of the species. They are labelled Sydney, and bear the printed label Novara R. The smaller of the two specimens is almost 7 mm. in length. Both specimens are in perfect condition.

Genus **PARAMENIA** Brauer and Bergenstamm.

I now have before me the type specimen of *semiauriceps* and can confirm my previous statement that it is the same as *macularis* Walker. The locality of the type is Port Denison (Thorey, 1868).

I have also examined two males in the Baker collection, now in the United States National Museum, which differ from the females in having the frons linear and the frontal orbits and upper portion of parafacials yellow, and not white, dusted, hardly paler than the lower portions of parafacials.

These last specimens are from Brisbane.

Tribe **Microtropezini.**Genus **MICROTROPEZA** Macquart.

This genus does not belong to the foregoing tribe, though the triangularly exposed abdominal sternites with their strongly spinose apices are the same as in that tribe. It differs from all three genera placed by me in Ameniini in having no hairs just below the lower calypter, many erect hairs on the supra-spiracular convexity, the postscutellum evenly rounded and convex and not with a broad shallow central apical concavity or emargination. The prosternal plate, postalar declivity, and suprasquamal ridge are bare, and the centre of propleura and apices of hind coxae above the bases of femora are haired. The pleural knob is not elevated as much as the portion above it, the arista is bare, and the parafacials are entirely haired.

MICROTROPEZA SINUATA Donovan.

Head yellow, and yellow dusted, interfrontalia and antennae orange, third segment of latter sometimes fuscous. Thorax fulvous testaceous, sternopleura and dorsum of thorax largely infuscated, the latter greyish dusted, with a slight metallic tinge and four narrow black vittae. Abdomen varying from castaneous to black, shining, with anterior margins of tergites 2 to 4 grey dusted, more broadly on 4, and on 3 and 4 with a central extension of the grey dust giving the tergite the appearance of having two large black apical spots; the black portions sometimes tinged with metallic blue. Legs yellow, tarsi fuscous. Wings greyish hyaline, yellow at bases. Calyptres yellow.

Frons at vertex about one-fourth of the head width in male, about one-third of the head width in female; each orbit with some strong forwardly directed bristles in female, none in male; third antennal segment about 1.5 times as long as second; palpi slightly spatulate at apices. Thorax with 3+4 pairs of dorso-centrals, the presutural acrostichals well developed, and the sternopleurals 2 or 3+1. Bristles on apical margin of third abdominal tergite almost continuous, those on apex of fourth in two lateral groups. Fore tibia with an almost complete series of anterodorsal bristles in female, these less distinct apically in male.

Length, 14-15 mm.

I have before me a male labelled "New Holland", and a female labelled Rockhampton, the latter from the Schiner collection, both from the Vienna Museum.

The supraspiracular hairs on metanotum distinguish the genus from its allies.

Tribe **Rutiliini**.

In neither of my two previous papers on this tribe did I present a key for the identification of the genera. This was due to the fact that I lacked several of the genera usually referred here, but now having had an opportunity to examine all of those included by Engel in his paper, except one genus, I present a key for their identification which I hope may be of service to Australian students of the family.

It is not a simple matter to define the tribe and at present I can only offer as distinguishing characters the presence of a pronounced vertical central carina on the face, hairs on centre of propleura, and of only a few short bristles on base of anterodorsal surface of fore tibia. Locally the species may generally be recognized by their large size and robust build, coupled with their bright colours and strongly bristled abdomen, but there are some large robust genera such as *Euchaetogyne* Townsend which may readily be confused with them. A thorough revision of the group based upon large series of specimens of each species is essential to a thorough understanding of the relationships and this can be best accomplished in Australia.

Key to the Genera.

1. Suprasquamal ridge haired 2
Suprasquamal ridge bare 5
2. Second and third visible abdominal tergites each with a pair of short stout bristles in centre near anterior margin; parafacials bare below apex of second antennal segment *Amphibolia* Macquart
Second and third visible abdominal tergites without bristles, except sometimes at apices 3
3. Facial carina narrowly rounded above, lower end almost sharp below; parafacials with rather long black setulose hairs to below lowest level of eye
..... *Chrysopasta* Brauer and Bergenstamm
Facial carina broadly rounded, sometimes with a central sulcus above, flat below; parafacials with or without hairs, if these are present they are usually fine and rather short (*Rutilia* Robineau-Desvoidy, *sens. lat.*) .. 4
4. Arista pubescent or bare *Rutilia* Robineau-Desvoidy, *s.s.*
Arista short haired, the longest hairs about half as long as width of third antennal segment *Senostoma* Macquart
5. Postalar declivity bare; palpi minute *Prodiaphania* Townsend
Postalar declivity haired in centre (*Formosia* Guérin, *s.l.*), 6
6. Arista long haired *Formosia* Guérin, *s.s.*
Arista pubescent or bare *Euamphibolia* Townsend

Genus CHRYSOPASTA Brauer and Bergenstamm.

This genus is very similar to *Rutilia*, but the facial carina is much narrower, being only narrowly rounded above and not so high and almost sharp on lower portion. Although the hairing of the parafacials in *Rutilia* is very variable, not one of the species has the hairs as long and strong as does this monobasic genus. Although Engel, in his paper on Rutiliinae, stated that this genus has the abdominal sternites the same as in Ameniini, this is erroneous. The specimens before me, and presumably he had the same pair for examination, show some differences, as the male has the abdomen unduly extended, exhibiting the sternites on its entire length, while the female has the sternites, except the apical one, concealed by the overlapping tergites. Even a cursory examination of the male discloses the fact that the sternites are quite different from those of the other group, the latter being more broadly exposed at apices than at bases, sometimes almost triangular in exposed area, while in *Chrysopasta* they are narrowed at apices; the apical bristles are also much weaker than in Ameniini.

CHRYSOPASTA VERSICOLOR Brauer and Bergenstamm.

This species, the only one of the genus so far recorded, is metallic green or blue-green, with distinct whitish dusting on dorsum of thorax and abdomen, and on the mesonotum four quite conspicuous black vittae which are broken at suture and cease about midway between suture and hind margin. Head testaceous yellow, frontal orbits, parafacials, and cheeks, with variable checkerings of pale dust; third antennal segment fuscous except at base; arista pubescent, fuscous; palpi yellow; parafacial hairs strong, long, and black; occipital hairs yellow; upper occiput green. Dorsocentrals 3+4; all thoracic hairs black; scutellum yellowish in ground colour, suffused with metallic green. Basal tergite black, the others with black apices and a black central line, the green portions whitish dusted. Legs black; hind tibia with a few long bristles on anteroventral, anterodorsal, and posterodorsal surfaces, the male with a fringe of anterodorsal bristles, one or two of which are longer than the others, the anteroventral and posterodorsal surfaces as in female. Wings hyaline, veins yellowish basally.

Length, 14-15 mm.

Redescribed from type male and allotype, from Swan River, W. Australia, in the Winthem collection of the Vienna Museum.

Genus RUTILIA Robineau-Desvoidy.

Subgenus SENOSTOMA Macquart.

I have before me one specimen in rather poor condition which is referable to this subgenus. I do not consider *Senostoma* as entitled to full generic rank as, apart from the smaller size and less strongly bristled abdomen of the species, only the presence of distinct hairs on the arista serves to separate it from typical species of the genus *Rutilia*.

SENOSTOMA RUFICORNIS Macquart.

Head yellow, with paler dusting on all parts except the interfrontalia; antennae and palpi yellow; parafacials bare; facial carina broad and almost flat; longest hairs on arista about half as long as width of third antennal segment. Thorax fulvous yellow, mesonotum metallic green, with whitish dust, and rather distinctly quadrivittate; humeri, pleura, and scutellum, fulvous yellow, with variable green shading. Abdomen metallic green, becoming fulvous below, dorsum with a



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Proceedings of the Linnean Society of New South Wales 53, 598–617.

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