

DIPTERA II

CYCLORRHAPHA :
Muscidae, Calliphoridae and Tachinidae

BY

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ORDER DIPTERA
SUBORDER CYCLORRHAPHA

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FAMILY MUSCIDAE.

Genus *ATHERIGONA* MEIGEN.

***Atherigona* sp.**

One female which I can not satisfactorily determine as to species. It has the mesonotum with three broad black vittae, the laterals extending over the sides of the scutellum, the abdomen fulvous yellow, with apical half of dorsal exposure of first tergite, all of same exposure of second and third tergites except a narrow apical margin, and two spots on fourth tergite black; legs fulvous yellow, with the fore femora except their extreme apices, fore tibiae except their basal third or less, and all the tarsi black; wings hyaline; halteres yellow.

Length, 4.5 mm.

Den Pasar, Bali, January 26, 1929.

This species appears to be distinct from any known to me but without a male to furnish more definite specific distinctions I do not care to describe it as new.

Genus *LIMNOPHORA* ROBINEAU-DESVOIDY.

This genus is recognized by me as containing only those species in which the third wing vein is setulose at base above and below, and the prosternal plate is haired on the sides. Usually, but not always the fourth vein is curved forward at apex, and the legs are black.

Limnophora parviseta n. sp.

A black species, with dense whitish grey dust on thorax and abdomen, the former with a large deep black presutural mark which does not extend to the suture, a postsutural fascia of the same color, and an entirely black scutellum. The arista is short haired, and the postsutural dorsocentrals are in three pairs.

MALE. — Head black, frontal orbits, face, parafacials, and genae densely grey dusted, the first listed becoming dark brown on upper third or less in front of the ocelli; antennae and palpi black. Frons at narrowest point not as wide as third antennal segment, gradually widened on anterior third, the interfrontalia black and linear on its entire extent, the orbits widened at anterior extremities, with one or two microscopic hairs close to ocelli, and one rather strong bristle near base of antennae, otherwise bare; ocellar bristles well developed, about twice as long as, and much stronger than, the verticals and postverticals. Third antennal segment nearly three times as long as second; arista with longest hairs fully as long as its basal diameter. Parafacials linear in profile; vibrissal angle not at all produced, one long strong vibrissa and a number of short adjacent setulae present; gena about as high as width of third antennal segment; eyes bare.

Thorax black, with dense greyish white dust forming a complete annulus from the lower extremity of the sternopleura upward over the pronotum on its posterior margin behind the posterior pair of dorsocentrals, widest on lateral margins of pronotum where it extends forward on to posterior edge of the humeri, and a similar fascia on the posterior margin of the postsutural area from just before the posterior pair of the dorsocentrals to extreme hind margin, the surface slightly shining on the black parts; scutellum entirely black, with faint traces of brownish dust apically. Dorsocentrals 2+3, acrostichals in front of suture in four series, at least one pair well developed setulae, postsuturally four to six series; one pair of posterior intra-alars; sternopleurals 1+2.

Abdomen elongate conical, shining black, with a large triangular silvery white dusted mark on each side on anterior margin of second and third visible tergites that extends below to extreme lateral margins, the fourth with sides entirely and broadly silvery white dusted, the black part on second and third tergites divided centrally by a brown dusted vitta that is widened in front on each, the black central mark on fourth with a trace of a central brown mark only in front. Second, third, and fourth tergites each with an apical series of well developed bristles, the latter with a similar submedian series which is less distinct on second and third. Fifth sternite with a shallow rounded emargination occupying almost its entire apical width.

Legs black; fore tibia without a median bristle; mid tibia with two posterior bristles; hind femur with one preapical anteroventral bristle; hind tibia with one

anteroventral and one anterodorsal bristle near middle; pulvilli and tarsal claws moderately large.

Wings brownish hyaline, veins fuscous, fourth vein very slightly or not at all curved forward at apex, outer cross vein practically straight, separated from inner by its own length.

Length, 4 mm.

Type, Samarinda, Borneo, February 8, 1929.

This species closely resembles *caduca* Stein, which I know only from the description, but the latter appears to differ in having the arista shorter haired, the claws and pulvilli smaller, differently marked abdomen, and in being smaller, 3 mm.

***Limnophora suturalis* STEIN.**

Limnophora suturalis STEIN, Ann. Mus. Nat. Hung., vol. 16, p. 155 (1918).

Differs from the preceding species in having the arista long haired, the frons distinctly wider than the third antennal segment, the orbits with bristly hairs on their entire extent, dorsocentrals 2+4, the anterior two pairs of postsuturals much weaker than the posterior two pairs, and the abdomen differently marked.

Length, 6 mm.

Poelo Karang, Aru Island, March 22, 1929.

The identification is made on the basis of the original description as I have not seen specimens previously; the species was described from Formosa.

The dorsum of the thorax in this species is marked much as in *caduca*, but the pleural markings are different as there is a greater proportion grey dusted, and the scutellum is distinctly grey dusted at the apex. This black and grey type of thoracic marking is met with in a number of species of the genus and in other genera also such as *Anthomyia*, *Helina*, *Phaonia*, *Stomoxys*, etc.

Genus **DICHAETOMYIA** MALLOCH.

Dichaetomyia MALLOCH, Ann. Mag. Nat. Hist., ser. 9, vol. 7, p. 163 (1921).

***Dichaetomyia rufa* (STEIN).**

Spilogaster rufa STEIN, Term. Fuz., vol. 23, p. 132 (1900).

One male specimen in a fragmentary condition belongs apparently to this species which is quite widely distributed in the region adjacent to New Guinea, from which island it was originally described.

Moemi, New Guinea, March 5, 1929.

Genus ORTHELLIA ROBINEAU-DESVOIDY.

Orthellia ROBINEAU-DESVOIDY, Hist. Nat. Dipt., vol. 2, p. 837 (1863).

This is the genus generally accepted as *Pseudopyrellia* Girschner, and I have already given a revision of the species in a paper published in 1923 ⁽¹⁾. The genus is readily distinguished from any other in the subfamily *Muscinae* by the characters I originally cited in that paper, but in addition I may note now that the face is furnished with some short hairs on the lower half much as in some genera of *Calliphoridae*, e. g., *Lucilia* Robineau-Desvoidy, *Phumosia* Robineau-Desvoidy, and *Euphumosia* Malloch, the last of which is dealt with on a subsequent page in the present paper. The species of *Orthellia* are carrion feeders or scavengers in the larval stages in much the same surroundings as those of *Lucilia*, but the latter and the two genera linked with in above belong to the *Calliphoridae* which family is distinguished from *Muscidae* by the presence of a series of strong bristles situated vertically below the metathoracic spiracle. The distinction between the families is not a very radical one as many *Muscidae* have hairs on the sclerite on which the bristles occur in the other family, and it is conjectural whether one is justified in using the character mentioned as a family index. However families in the Order are in many cases almost illusory, and essentially established more as conveniences than as verified natural groups.

***Orthellia siamensis* MALLOCH.**

Orthellia siamensis MALLOCH, Ann. Mag. Nat. Hist., ser. 9, vol. 12, p. 509 (1923).

One female agreeing with the original description.

Tjipanas, Java, December 28, 1928.

***Orthellia caeruleifrons* MACQUART.**

Lucilia caeruleifrons MACQUART, Dipt. Exot., suppl. 4, 248 (1850).

Musca diffidens WALKER, Proc. Linn. Soc. Lond., 1, 26 (1857).

I am obliged to Miss D. Aubertin of the British Museum for information as to the above synonymy which is based upon an examination of the type specimens of the species involved.

The male of this species has the facets of the upper half or more of the eyes much enlarged. Both sexes have the halteres with pale knobs, and the frontal

⁽¹⁾ *Ann. Mag. Nat. Hist.*, ser. 9, vol. 12, p. 505.

orbits black, the last character indicating a very poor choice of a specific name for the species by Macquart.

Medan, Sumatra, May 3, 1929; S. Manoembai, Aru Islands, March 26, 1929; Sakoemi, New Guinea, March 12, 1929.

***Orthellia chalybea* WIEDEMANN.**

Musca chalybea WIEDEMANN, Ausser. Zweifel. Ins., vol. 2, p. 402 (1830).

One female in rather poor condition.
Fort de Kock, Sumatra, April 22, 1929.

***Orthellia* sp.**

One female in too poor condition to identify specifically.
Harau Kloof, Sumatra, April 23, 1929.

Genus *MUSCA* LINNÉ.

A few years ago I wrote several papers on the family *Muscidae* in which I accepted several named segregates of this genus as valid genera on the basis of characters that have been utilized for that purpose generally throughout the family. Recently Major W. S. Patton has published the first part of a paper revising the species of the genus ⁽¹⁾ in which he suggests the abandonment of these named segregates and a return to one generic name for all the species. His contention appears to be based largely upon the striking similarity of the hypopygial organs of the males and the quite similar larval habits of most of the species. There are however, at least in my opinion, rather good reasons for the retention of the segregates and without going into this question at length now I use the following two in the generic sense in this paper.

Genus *VIVIPAROMUSCA* TOWNSEND.

This genus is separated from *Musca*, as accepted by me, on the characters of the bare central portion of the propleura, and the presence of setulose hairs on the suprasquamal ridge.

The species described below is an aberrant one possessing a number of short stiff black hairs on the surface of the alar squama that is exposed when the wings are drawn in and covering the abdomen, i. e. on what would normally be termed the underside; the thoracal squama is bare above.

⁽¹⁾ *Ann. Trop. Med. & Paras.*, vol. 26, No. 3, 1932.

Viviparomusca squamata n. sp.

FEMALE. — General color black, distinctly shining, with much the same markings and appearance as the females of most of the larger species of the genus, the mesonotum with four black vittae which are largely fused, and the abdomen with a rufous mark on each side of the second tergite.

Head black, densely pale grey dusted except on the interfrontalia; antennae and palpi black. Frons at vertex not over one-fourth of the head width, the orbits at middle not wider than one-third of the interfrontalia at same point; all four verticals, the ocellars, and the inner marginal orbitals strong, the orbits with one or two rather strong proclinate outer bristles on upper part and numerous setulose hairs carried to bases of antennae.

Thorax black, shining, grey dusted, the mesonotum with four broad black vittae that are fused except in front, and with 2+4 pairs of strong dorsocentral bristles. Hypopleura with some fine hairs.

Legs black. Fore tibia without median bristles; mid femur with a series of quite strong bristles on the basal half or more of the anterior surface; mid tibia with two series of bristles of unequal lengths on the posterior surface and no ventral bristle beyond middle; hind femur with a complete series of anteroventral bristles, one or two near apex longer than the others; hind tibia with one posterodorsal, and three or four anteroventral bristles, the anterodorsal surface with a series of bristles, one beyond the middle longer than the others.

Wings hyaline, more greyish basally, the stem vein with four or five bristly hairs on posterior side near base, third vein with setulose hairs from base to beyond middle below, and at extreme base above.

Squamae white, the upper one with numerous fine black hairs on exposed side.

Abdomen black, with grey dusting and the usual checkering, the sides of second tergite brownish red.

Length, 8 mm.

Type, Celebes, Menado (Van Braekel).

Genus BYOMYIA ROBINEAU-DESVOIDY.

Byomyia sp.

One female of a rather large species in too poor condition to identify.
Celebes, February 4, 1929.

SUBFAMILY **STOMOXYDINAE.**Genus **STOMOXYS** GEOFFROY.**Stomoxys indica** PICARD?*Stomoxys indica* PICARD, Bull. Ent. Soc. Soc. France, vol. 20, p. 21 (1908).

One female in rather poor condition appears to belong to this species, though I would prefer to have males from the same locality to check up the identification.

Mataram, Lombok, 28-I-1929.

FAMILY **CALLIPHORIDAE.**SUBFAMILY **CALLIPHORINAE.**Genus **EUPHUMOSIA** MALLOCH.

Ann. & Mag. Nat. Hist., ser. 9, vol. 77, p. 501 (1926).

In my original description of this genus I used as one of the characters the presence of but two bristles on the presutural lateral area of the mesonotum. I am now in possession of four species of the genus and find that this character is not uniform in the group, there being frequently three bristles present, the posterior intra-alar being the one that is variable in its occurrence. There would therefore appear to be a need for a restatement of the generic characters, which are as follows : Eyes in male bare, closely contiguous for a long stretch above, the facets much larger above and in front than behind; parafacials without developed hairs; arista plumose to apex; face without a central carina, always with some microscopic erect hairs on lower part between the vibrissal angles, very indistinct when pale; mesonotum with the dorsocentrals 2+3, and one pair of long presutural acrostichals; pteropleura with long hairs and no strong bristles (males); prosternum and the area on each side of it anteriorly with fine hairs, centre of prosternum and of the post-alar declivity also haired; supra-spiracular convexity of the metanotum without erect hairs, the flap of the meta-thoracic spiracle with numerous stiff hairs over its surface; hairs on third vein confined to its extreme base and rather long and curled; lower calypter large, lying close against the side of the scutellum, bare above.

The cited genotype is *Calliphora papua* Guérin.

The species now before me may be separated as below.

KEY TO THE SPECIES

1. Femora fulvous yellow, pleura of the same color, with only a small black spot on upper edge of pteropleura; calyptra yellowish or pale brown; halteres brownish yellow 2
- Femora, pleura, lower calypter except at base, and halteres dark, mainly black. 3
2. Tibiae except basally, and the tarsi entirely, black; first abdominal tergite fulvous yellow, with a large transverse bluish black mark above on each side, second fulvous yellow on basal third, bluish black beyond, the pale part with white dust, third and fourth tergites deep bluish black, each with a white dusted band near the base that extends below the lateral curve to or almost to the extreme lateral edge *papua* (GUÉRIN).
- Legs entirely fulvous or tawny yellow; abdomen semipellucid fulvous yellow, with a trace of a short dark dorsocentral line on second tergite, the third and fourth tergites metallic greenish blue, the former less distinctly so basally, and without definite white dusted bands *leopoldi* n. sp.
3. Face entirely black between the facial ridges, or with a very faint yellow central line; mesopleura fulvous yellow, the lateral margin of the mesonotum of the same color from and including the humeri to suture, beyond that point the fulvous streak does not extend entirely to the lateral edge, and terminates at the base of the posterior intra-alar bristles; submedian white dusted vittae on mesonotum extending far beyond the suture *nigrifacies* n. sp.
- Face yellow, with a black stripe up each facial ridge; mesopleura metallic green below the yellowish dust, the lateral margin of the mesonotum with a fulvous stripe from upper half of each humerus to or slightly beyond the suture, beyond that point with whitish dust; submedian white dusted vittae on mesonotum not continued beyond the suture *variegata* (BIGOT).

***Euphumosia papua* (GUÉRIN-MENÉVILLE).**

Calliphora papua GUÉRIN-MENÉVILLE, Voy. Coquille, Zool., Insects, 1830, pl. 21, fig. 3.

Musca cristaloides WALKER, Proc. Linn. Soc. Lond., vol. 3, p. 106 (1858).

Musca calliphoroides WALKER, l. c. vol. 5, p. 245 (1861).

Musca trifascia WALKER, l. c. (?).

This species is not in the present collection but was described from New Guinea and I have seen it from Aru Island and Australia.

I am not absolutely certain that *trifascia* is a synonym but the description agrees very closely with this species that I consider the probability very strong that it is.

***Euphumosia leopoldi* n. sp.**

A tawny yellow species, distinctly shining, the type rather greasy, but the mesonotum showing the same two broad submedian whitish grey dusted vittae as in the other species, the abdomen however without trace of alternate black and white or yellow fasciae, and the legs entirely tawny yellow.

MALE. — Head tawny yellow, upper occiput except the postocular orbits dark brown, frontal orbits, parafacials, and genae yellow dusted; antennae not noticeably darkened, though the third segment in type is brownish except at base; palpi yellow. Beard yellow, the other hairs and bristles fuscous. Eyes as in the genotype, the facets much enlarged on the upper and anterior portions, the frons a mere line on about the upper half. Third antennal segment about six times as long as second, rounded at apex; gena about one-fourth of the eye height, the lower margin with a series of moderately long black bristles, the vibrissal angle slightly produced and with one long vibrissa, the shorter black hairs extending upward to about middle of facial ridges; epistome protruded distinctly beyond vibrissal angle in profile; palpi about as long as the antenna; apical section of the proboscis subequal in length to that of lower margin of head; inner vertical and ocellar bristles both short and fine.

Thorax colored as head, the mesonotum with the usual two broad parallel white dusted vittae between the dorsocentral and acrostichal bristles anteriorly extending distinctly to beyond the suture, the dark vitta on each side of these not very evident, merely brown, but presenting the appearance when seen from behind of being connected in front of the scutellum; scutellum brownish yellow; pleura paler than scutellum, the mesopleura slightly darkened on central portion of upper half. All the bristles on the mesonotum, scutellum, and pleura black, the mesonotal hairs almost all black, those on the pleura yellow except on a part of the mesopleura. Sternopleura with the bristles as usual, 2+1; scutellum with six strong marginal and two weaker discal bristles; posterior presutural intra-alar bristle present (usually lacking in the preceding species); scutellum with fine hairs below.

Abdomen semipellucid tawny yellow basally, becoming gradually darker on dorsum from near base of third tergite to apex of fourth, the dark part metallic blue as in most species of the genus *Phumosia* Robineau-Desvoidy. Hairs and bristles dark except on first and second sternites and sides of same tergites, where they are yellow. Dark apical part of surface with brownish dust. All tergites with some bristles on sides of apices, third and fourth with

rather widely separated series on apices; sides of first tergite more densely haired than the others.

Legs entirely tawny yellow. Fore coxae with yellow bristles on basal and black bristles on apical half; fore tibiae with a series of short bristles on anterodorsal surface from base to apex, longer and more widely separated on basal than on apical half, and one long submedian posterior bristle; mid tibiae lacking in type; hind femora with long bristles on anteroventral and posteroventral surfaces, the series on latter confined to basal half, and bristles on anterior surface basally more numerous than usual; hind tibiae with a series of short setulae on anterodorsal surface amongst which there are two noticeably longer bristles, one near base and the other, longer, just beyond middle, the anteroventral and posterodorsal surfaces each with a short bristle nearer apex than the submedian one on anterodorsal surface.

Wings yellowish hyaline, more noticeably tinged with yellow costally and at base, the venation as in genotype, the costal thorn lacking.

Calpytra brownish yellow, the fringe and margin not darker.

Halteres yellow.

Length, 10.5 mm.

Type, Siwi, Forest, New Guinea, 6-III-1929.

Resembles some species of *Phumosia* rather than the more strikingly marked species of the present genus.

***Euphumosia variegata* (BIGOT).**

Phumosia variegata BIGOT, Bull. Soc. Zool., vol. 12, p. 610 (1887), ♂.

Phumosia papouana BIGOT, *l. c.*, ♀ (?).

I am not certain of the absolute correctness of the above synonymy which was suggested by Bigot when he described the second species in 1887, and the head of the type specimen being absent prevents an accurate determination though the probability that the two names refer to the same species is very great.

The male now before me agrees in all details with the description given by Bigot except that the specimen is rather discolored and the two white dusted spots on the fourth tergite are not distinct. The traces still visible of the white dust on the fourth tergite incline me to the belief that in perfect examples there might be a basal fascia of that color that would be more or less interrupted in center. In this and the next species the bases of the wings are very distinctly infuscated, which is not the case in either of the two preceding species, and the knobs of the halteres are black or fuscous. The hairs on the lower part of the face are black while in the two preceding species they are yellow. It is possible that the color of the halteres differs in the sexes as Bigot says in *variegata* these

are black and in *papouana* they are said to be yellow. All the four specimens before me are males and I am therefore unable to determine this point.

For other comparative details of this species see the description of next one.

Length, 10 mm.

Sakoemi, New Guinea, March 11, 1929. Originally described from New Guinea.

***Euphumosia nigrifacies* n. sp.**

A very dark species, with the face except the parafacials black, the thorax and abdomen largely deep metallic blue or violet colored, and the legs black. Abdomen with a conspicuous yellow basal band on second tergite which is white dusted, the third and fourth tergites not yellow at bases but with whitish dusted basal fascia.

MALE. — Head black, frons brown in centre, the orbits, parafacials, and genae anteriorly, yellowish and densely yellow dusted, centre of genae with a dark brown mark on entire height, postocular orbits and hind margin of genae densely yellowish grey dusted. Antennae entirely black, third segment about seven times as long as second measured on inner side, and a little wider than parafacial. Palpi brownish yellow, with many short setulae, and three long bristles on lower edge and one at apex. Proboscis stouter than in *leopoldi*.

Thorax black, with very distinct metallic blue-green to violet sheen, the scutellum more definitely metallic blue than the mesonotum, the latter with a well defined pair of whitish grey dusted submedian vittae that extend well behind the suture, the lateral margins conspicuously tawny or fulvous yellow from and including the humeri to suture, beyond the latter the pale stripe does not lie close against the lateral margin and ceases at the base of the posterior intra-alar bristle; the surface greasy but evidently in well preserved material there should be a grey dusted postmarginal fascia; pleura metallic blue-black, with a large fulvous yellow mark on the posterior half or more of the mesopleura, the dust visible in type owing to condition of the specimen; all thoracic hairs and bristles black; prothoracic spiracle with the flap fulvous yellow, meta-thoracic one with the flap dark brown.

Abdomen quite brilliant metallic blue-green with violet reflections, base of second tergite with a complete yellow fascia that is less than half the width of the length of tergite at center and is white dusted, first tergite with a yellow wedge shaped mark on each side below the lateral curve; third tergite like the fourth more greenish at base and violet at apex, the base with a white dusted fascia of about the same width as the one on second tergite, but the dust much more dense near sides than in center, the fourth tergite discolored in type but of the same general color as third; all hairs and bristles black, the hairs on sides

of first tergite longer and denser than usual, the apical bristles on third and fourth tergites long.

Legs black, femora metallic dark blue. Fore tibia with the anterodorsal series of setulae quite uniform in length and arrangement, the posterior bristle long, and a shorter bristle slightly basad of the latter and nearer to the dorsal surface which is more evident than in *leopoldi* but similar to that in *variegata*. Mid tibia with a long strong submedian ventral bristle; hind tibia with two anterodorsal submedian bristles; otherwise as in *leopoldi*. All hairs and bristles on legs black.

Wings greyish hyaline, the bases infuscated to about level of apices of basal cells, the costal half with rather evident brown suffusion and the veins also more or less suffused with yellow, the inner cross vein narrowly dark brown.

Calypteres brownish black, their bases subhyaline whitish, the upper one more broadly so than the lower, the margin and fringes black.

Knobs of halteres black.

Length, 10 mm.

Type, lake Angi-Gita, New Guinea, March 10, 1929.

Genus PHUMOSIA ROBINEAU-DESVOIDY.

Phumosia ROBINEAU-DESVOIDY, Ess. sur. Myiod., p. 427 (1830).

I have attempted in a paper published in 1926⁽¹⁾ to distinguish this genus from those to which it is most closely allied, but I am not convinced that the segregation can be maintained on the basis of the characters I then used for that purpose. The fact is that the more one broadens his knowledge of this and closely related families the more he is compelled to admit the impracticability of a successful scheme of classification that will meet with universal approval in the eyes of students of the insects involved, and the less versed the student may be the more the probability is that he will adopt either one of two courses, i. e., either lump the whole mass of certain closely related genera when there are evidences of intermediates, or add to the total of genera by erecting named groups for such as will not readily conform to preconceived generic concepts. It is unfortunately that case that frequently one may be swayed to either the one or the other of these expedients according to whether he may or may not be inclined to see eye to eye with some previous worker who has done the reverse from what he proposes. Advanced students in taxonomy will readily admit that the often heard statement « there are no genera in Nature » is true, and that these concepts are erected and maintained by systematists as a matter of convenience in arriving at identifications and determining relative

⁽¹⁾ *Ann. Mag. Nat. Hist.*, ser. 9, vol. 17, p. 491.

associations, or what may be called the degree of relationship between particular organisms. Thus the retention or rejection of any particular genus by a systematist in the final analysis may be stated as merely a matter of opinion and immaterial to classification except insofar as the excessive lumping of segregates may give to particular groups a wider range than may be granted when a more limited view of generic criteria is exercised. The genus *Musca* in the sense of Linne was a very wide concept, while that genus as now accepted is very limited in its comprehension, in fact it contains but one good species in the opinion of the present writer while others accept it as embracing over 40 species. The difference in the scope of the genus is due to the acceptance of certain characters as of generic value by me and their rejection by others. The final determination of the generic scope will of course fall to be made by subsequent generations of men who are qualified to determine the matter.

In *Phumosia* we have just such another concept as *Musca*. In attempting to limit the genus on the basis of the characters of the genotype and at the same time to admit any possibility of generic or subgeneric status for subsequently proposed named groups I adopted certain characters as criteria and with the material then in hand my method worked out all right. But as is so frequently the case further acquisitions of specimens resulted in the weakening of the fabric of my classification somewhat and with the material in the present collection adding additional data to the available facts I present herein some remarks upon the question of the status of this genus.

I separated *Phumosia* and several other genera from the others in *Calliphorinae* by the character of the erect hairing of the metapleural convexity, or as I called that part « the suprspiracular convexity ». This conspicuous hairing occurs in the present genus, and in two others that are closely allied to it besides in the genera *Hypopygiopsis* Townsend and *Hemipyrellia* Townsend which are not so closely related. Of the accepted genera in my previous paper there are two in the present collection, *Phumosia* and *Caiusa* Surcouf, the latter being considered by me as merely a subgenus of *Paratricyclea* Villeneuve. The two concepts may be separated as below :

The very narrow ridge above the base of the lower calypter with very fine hairs on its entire extent; humeral cross vein with some hairs on underside at its junction with radius; parafacials usually haired to well below insertion of the antennae *Phumosia* ROBINEAU-DESVOIDY.

The ridge above base of the lower calypter bare; no hairs at junction of the humeral cross vein and radius; parafacials bare below insertion of the antennae *Caiusa* SURCOUF.

There is but one specimen belonging to *Phumosia* in the collection; this is a female in rather poor condition.

Phumosia abdominalis ROBINEAU-DESVOIDY.

Phumosia abdominalis ROBINEAU-DESVOIDY, Ess. sur. Myiod., p. 427 (1830).

The specimen before me differs from others which I have examined, that were collected in the East Indies, in having the lower propleural bristle pale and inconspicuous, the dark mark on the apical half of the dorsum of the abdomen divided in center, and the wings without any brown clouding.

It is possible that this represents a distinct species but it is inadvisable to attempt to distinguish it on the basis of the specimen in hand.

Halmaheira Island, Forest Todowangi, February 16, 1929.

Genus **CAIUSA** SURCOUF.

Caiusa SURCOUF, Nouv. Arch. Mus. d'Hist. Nat., 5th ser., 1912, p. 52.

In my paper already referred to above I accepted this as a subgenus of *Paratricyclea* Villeneuve. The matter is a debatable one and I leave the decision of the generic or subgeneric status to future workers. In the species available there are four pairs of postsutural dorsocentrals of which the anterior one or two pairs are much shorter and weaker than the posterior pair. In the species dealt with next above there are three equal, long, strong pairs of these bristles, but this is not a reliable generic distinction.

Caiusa indica SURCOUF.

Caiusa indica SURCOUF, *l. c.*, p. 53.

One male somewhat damaged, agreeing with the general description of this species, but larger than the usual run of specimens, though similar to one from Java in the collection available to me.

Celebes, Makassar, February 1, 1929.

It is entirely possible that this species was amongst those described by Walker from one of the East Indian islands but only an examination of the types will determine this and the name here used may be continued until this is done.

Genus **BENGALIA** ROBINEAU-DESVOIDY.

Bengalia ROBINEAU-DESVOIDY, Ess. sur. Myiod., p. 425 (1830).

In a paper published in 1927 I have dealt with this genus in an exhaustive manner, pointing out distinctions between the genus *Bengalia* and *Ochro-*

myia Macquart, the latter being considered a subgenus of the former ⁽¹⁾. For information on the species of the genus students are referred to that paper.

***Bengalia (Ochromyia) recurva* MALLOCH.**

Bengalia (Ochromyia) recurva MALLOCH, *l. c.*, p. 404.

One female in good condition.

Celebes, Menado, no date (Van Braekel).

***Bengalia (Ochromyia) latro* (DE MEIJERE)**

Bengalia latro DE MEIJERE, Tijds. v. Ent., vol. 53, p. 336 (1910).

Two pale colored females.

Soembawa, 30-I-1929, and Poedjon, Java, 16-I-1929.

Genus *CALLIPHORA* ROBINEAU-DESVOIDY.

Calliphora ROBINEAU-DESVOIDY, Ess. sur. Myiod., p. 433 (1830).

Of this widely distributed genus there are two very dissimilar species in the collection.

***Calliphora prosternalis* n. sp.**

Very similar to *sarcophagoides* Malloch, differing in having the frontal orbits with more numerous and much weaker inner marginal bristles, the mid tibia with a submedian anteroventral bristle, and in several other characters.

MALE. — Black, the thorax and abdomen with dense grey dust.

Head fuscous, gradually merging into testaceous in front, the face largely and the anterior portions of genae of that colour, the whole with yellowish grey dust. Frons at vertex not over one-sixth of the head width, narrowed in front of ocelli and widened from there to anterior margin, the inner vertical and ocellar bristles moderately well developed but shorter and weaker than in *sarcophagoides*, the frontal orbits each with about 12 incurved bristles which are not very strong except anteriorly, as against about seven in the older species in which they are much stronger. Parafacials much as in that species but the hairs confined to the upper half or less, and the face shorter, the epistome less produced, and the vibrissae separated by a distance hardly over half that of the

⁽¹⁾ *Ann. Mag. Nat. Hist.*, ser. 9, vol. 20, p. 392.

length of either from eye as against an almost subequal length in both proportions in *sarcophagoides*. Third antennal segment missing in type but from the other proportions of head it is assumed that it is hardly more than three times as long as second, while in the other species it is fully five times as long.

Thorax with four or six distinct black vittae on the grey dusted mesonotum, the bristling as in *sarcophagoides*, except that the posthumeral bristle is lacking on both sides so that if it is ever present the position whether in line with or outside of the posterior one is uncertain.

Abdomen stout, subcylindrical, second tergite with a pair of rather poorly developed central apical bristles, third and fourth with an apical series; remaining tergites not nearly as glossy black as in *sarcophagoides*.

Legs black, bristled as in the other species, but here the mid tibia has a distinct submedian anteroventral bristle which is lacking in *sarcophagoides*.

Wings greyish hyaline, about three setulae at base of third vein, bend of fourth vein rounded, the vein almost straight beyond the bend.

Calypteres white. Halteres yellow.

Length, 7 mm.

Type, Weim Island, N. Misool, February 28, 1929.

A very striking character of the type, and possibly characteristic of the species, is the bare prosternal plate. In *sarcophagoides* there are numerous bristly hairs on the sides of this plate, and this is almost uniform throughout the genus, and it is rather surprising to find that there are no such hairs present in this species.

Calliphora augur (FABRICIUS).

Musca augur FABRICIUS, Ent. Syst., IV, p. 321, 1794.

One female that appears to belong to this species. It differs in having the apical segment of the abdomen without distinct yellow dust but the specimen is badly crushed and it would be unwise to depend much upon this character for distinguishing it from the Australian species so I prefer to consider it as *augur*.

Sakoemi, New Guinea, March 11, 1929.

There is in the collection one female specimen in very poor condition that it is impossible to definitely place as to the genus, but it apparently belongs to this subfamily. The locality is, Siwi, New Guinea, March 7, 1929.

SUBFAMILY **CHRYSOMIINAE.**Genus **CHRYSOMYIA** ROBINEAU-DESVOIDY.*Chrysomyia* ROBINEAU-DESVOIDY, Ess. sur. Myiod., p. 620 (1830).**Chrysomyia megacephala** (FABRICIUS).*Musca megacephala* FABRICIUS, l. c., p. 317 (1794).

Several specimens of this very widely distributed Oriental and Australian species.

Makassar, Celebes, February 1, 1929; Misool, Lilinta, February 26, 1929; Kaimana, New Guinea, March 19, 1929. Five specimens.

Chrysomyia albiceps (WIEDEMANN).*Musca albiceps* WIEDEMANN, Auss. zweifl. Ins., vol. 2, p. 404 (1830).

One male, Makassar, Celebes, February 1, 1929

SUBFAMILY **SARCOPHAGINAE.**Genus **SARCOPHAGA** MEIGEN.*Sarcophaga* MEIGEN, Syst. Besch. Eur. zweifl. Ins., vol. 5, p. 14 (1826).

There are two species in the collection one of which I am able to identify.

Sarcophaga albiceps MEIGEN.*Sarcophaga albiceps* MEIGEN, l. c., p. 22.

This species belongs to a group that contains several very closely allied forms, some of which have been rather doubtfully accepted as species. Most of them occur in the Old World and they extend from the Palearctic Region southward through the Malayan Region to Australia. The present species is the most widely distributed and is possibly the stem from which the others developed. Of those known to me I may list in the acceptance of other workers: *misera* Walker, *dux* Thomson, *harpax* Pandellé, *knabi* Parker, *aurifrons* Macquart, *doleschalli* Johnston and Teigs, and the present species. I have carefully figured the hypopygium of the male of the species in the collection before me to show the particular form accepted by me as *albiceps*, and in giving this name

to the species I am fortified in my action by the result of a comparison of the specimen with a male identified by Boettcher as *albiceps* from Europe.

In the New Guinea specimens the frontal orbits, face, and genae, are much more markedly yellow, almost golden, dusted than is the case in other specimens before me. The lack of a complete series of anteroventral bristles on the hind femur is a character of the former, there being only one or two distinct bristles near the apex, but I find that this character is rather variable and while in the specimen named by Boettcher there are four or five such bristles present there are more in some specimens. The hairs on the lower half of the back of head and of the genae are golden in the New Zealand specimen while in the European

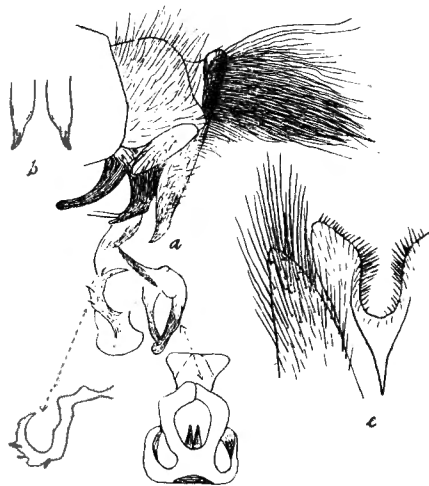


FIG. 1. — *Sarcophaga albiceps*, male hypopygium : *a*, in profile; *b*, apices of superior forceps from behind; *c*, one side of fifth sternite and apex of one side of fifth tergite from below.

they are white. The dusting of the mesonotum is pale grey in the latter, while in the other it is golden yellow. Despite these distinctions I believe that the specimen belongs to *albiceps*.

Male, Sakoemi, New Guinea, March 11, 1929; female, Siwi, New Guinea, March 7, 1929.

I may here note that in general characters the species listed as belonging to this group are as readily grouped as they are by means of the hypopygia of the males, so that both sexes would run out in keys based upon the former to identical segregates. The subgenus *Parasarcophaga* Johnston and Teigs was erected for the reception of a crushed specimen of *omega* n. sp. (= *knabi* Parker) which had the frons malformed by the protrusion of the hardened ptilinum. Nevertheless should the segregate be accepted as a subgenus the name would have to be accepted.

Sarcophaga sp.

A female with no outstanding specific characters that serve to distinguish it without attendant males. The propleura is bare in center and the wings are not yellow at bases.

Length, 12 mm.

Tengarong, Borneo, February 9, 1929.

SUBFAMILY **RHINIINAE.**

There are but two specimens in the collection that belong to this subfamily, and each belongs to a distinct genus.

Genus **STRONGYLONEURA** BIGOT.

Strongyloneura BIGOT, Ann. Soc. ent. France, Bull. bimens., June 1886, p. xiv.

Strongyloneura viridaurea (WIEDEMANN).

Musca viridaurea WIEDEMANN, Aussereur. zweifl. Ins., vol., 2, p. 397 (1830).

One female that appears to belong to this species.

Celebes, forêt vierge entre Paloe et Koelawi, February 4, 1929.

Genus **IDIELLA** BRAUER.

Idiella BRAUER and BERGENSTAMM, Zweifl. Ins. Kais. Mus. Wien, vol. 4, p. 154 (1889).

Idiella mandarina (WIEDEMANN).

Idia mandarina WIEDEMANN, *l. c.*, p. 350.

One female apparently of this widely distributed species.

Sumatra, Bireun-Takengon, May 8, 1929.

FAMILY **TACHINIDAE.**Genus **HERMYIA** ROBINEAU-DESVOIDY.

Hermia ROBINEAU-DESVOIDY, Ess. sur. Myiod., p. 226 (1830).

Hermyia beelzebul (WIEDEMANN).

Tachina beelzebul WIEDEMANN, *Aussereur. zweifl. Ins.*, vol. 2, p. 301 (1830).

A conspicuous large black species with black wings, the mesonotum with grey dust and four broad black vittae, the calypteres white with black margins.

Atjeh, Sumatra, no date.

Widely distributed throughout the Orient, extending north to China.

Genus PHOROCERA ROBINEAU-DESVOIDY.

Phorocera ROBINEAU-DESVOIDY, *l. c.*, p. 131.

Phorocera sp.

An unidentifiable female of large size, 14 mm.

Medan, Sumatra, May 3, 1929.

Genus STURMIA ROBINEAU-DESVOIDY.

Sturmia ROBINEAU-DESVOIDY, *l. c.*, p. 171.

Sturmia sp.

A female in rather poor condition.

Tandjong-Siamat, Sumatra, May 5, 1929.

Genus PROSENA ST. FARGEAU & SERVILLE.

Prosenia ST. FARGEAU & SERVILLE, *Encycl. Method.*, vol. 10, pt. 2, p. 500 (1828).

Prosenia sp.

One female specimen which I do not care to attempt to identify specifically without males for dissection.

S. Manoembai, Aru Island, March 26, 1929.

This species is not the widely distributed *P. sibirita* Fabricius, nor is it one of the species that I have seen from Australia.
