VI. REVISION OF THE ORIENTAL *STRATIOMYIDÆ*, WITH *XYLOMYIA* AND ITS ALLIES.

By E. BRUNETTI.

For some time I have been studying the *Stratiomyidæ* of the Oriental Region and the neighbouring parts of the Australian, partly for the purpose of revising the Indian Museum Collection in this group, and partly to enable me to identify my own captures during the last two years in India and other parts of the East, and the notes accumulated seem to be worth recording.

I intended including as *Stratiomyidæ* those genera which, under the older system of classification, would be placed in *Xylophagidæ*; but this would differ from the latest authorities, as in the elaborate new Catalogue of Palæarctic Diptera by Kertesz, Becker, Bezzi and Stein this latter group is still retained as a separate family. Some authors have disbanded it, relegating species of the *Xylomyia* (*Subula*) group to the *Stratiomyidæ*, and the remainder (*Xylophagus* group) to the *Leptidæ*, with which they undoubtedly have strong affinities. *Xylomyia* approximates to *Beris* in many respects. Baron Osten Sacken noted this in 1882 in his critical remarks on Dr. Brauer's paper on the characteristics of the genera of the *Notacantha*, and he objected (to use his own words) to "the juxtaposition of *Subula* and *Xylophagus* in the same ultimate subdivision."

By structural characters, and by their metamorphoses, *Xylomyia* (*Subula* is preoccupied by Schummell in Mollusca, 1817) is much more related to the *Stratiomyidæ* than to *Xylophagus*, which latter genus is distinctly related to the *Leptidæ* and, in a less degree, to the *Tabanidæ* also.

In Aldrich's recent Catalogue of North American Diptera *Xylophagidæ*, as a family, is sunk bodily in *Leptidæ*, and *Cænomyia* with its allies added also. My own hesitation has been partly due to the costal vein in these genera being continued all round the edge of the wing, as in most other Brachycera, instead of terminating suddenly at the tip of the wing or just beyond it, which latter characteristic is peculiar to the *Stratiomyidæ*: also partly, to the variation from the typical venation, a character in which the *Stratiomyidæ* are strikingly consistent. Without expressing any definite opinion, having only casually studied the question of

affinities, it seems to me that *Xylomyia* and its allies would be best placed with *Cœnomyidæ*, the family name of the latter retained, and the group placed next to the *Stratiomyidæ*, followed by the *Acanthomeridæ* as a family, followed again by the *Tabanidæ* and *Leptidæ* (including *Xylophagus* and its allies).

However, so far as this paper is concerned, I retain *Xylomyia* and the allied genera as a separate group.

The material in the Indian Museum in this family is not abundant in either species or specimens, and my own labours have only resulted in a limited number of both. For this reason it is to be regretted the more that a personal reference to Walker's types in the British Museum has been impossible, since about half the species in the family are his. Baron Osten Sacken's view to the effect that writings on the fauna of a region imperfectly known should be considered as preparatory and not final results seems correct, and his opinion that a writer is not "called upon to describe as new every specimen that he cannot identify" is echoed by my own. Therefore I am not sure whether analytical tables of genera and species should have been presented, for owing to my inability to obtain specimens of the majority of the species, the tables have had to be drawn up mainly from descriptions, and will be open to improvement on a better personal acquaintance with a larger proportion of the species.

GROUP XYLOMYINÆ.

Table of genera.

3rd and 4th externo-medial veins not united	*Xylomyia* Rond.
3rd and 4th externo-medial veins united just before the border of the wing.	
Thorax elongo-quadrate, discal cell 3 times as long as broad	*Rhachicerus* Wlk.
Thorax much longer than broad, discal cell 4 times as long as broad	*Rhyphomorpha* Wlk.

Xylomyia Rond., 1861.

Subula Mg., 1820; Sys. Besch., ii, 15.
(Preoccupied by Schummell in Mollusca, 1817.)
Solva Wlk., 1860, Proc. Linn. So., Lond., iv, 98.

Osten Sacken, in 1880, in his "Enumeration of the Diptera of the Malay Archipelago," says, "There is no necessity for a new genus *Solva* Wlk.; it is simply a *Subula* closely resembling in structure and colouring the European and North American species"; and as he has examined Walker's type in the British Museum, the identity may be held proved.

Table of species.

Posterior femora normal, not thickened.
Legs without black markings.
Abdomen luteous, with dorsal darker spots Long. 4 mm.[1] *flavipes* Dol.
Abdomen cinereous black, testaceous at sides and on posterior borders each segment Long. 5½—6 mm. *inamœna* Wlk.
Legs with black markings.
Abdomen uniformly blackish-brown Long. 3½ mm. *vittata* Dol.
Abdomen black with yellow testaceous marks. Long. 10 mm. *calopodata* Big.
Posterior femora incrassated Long. 6—8 mm. *hybotoides* Wlk.

X. flavipes Dol., 1858.

(*Subula*) Nat. Tijd. Ned. Ind., xvii, 85.

Amboina. Closely allied to *inamœna* Wlk., for which Osten Sacken would have taken it, except for the brown antennæ of the latter. Having seen neither species, it appears to me that the difference in size and abdominal markings (though these latter are not so real as would appear on a first reading) would be a better means of separation.

Van der Wulp reports ♂ ♀ ♀ from New Guinea.

X. inamœna Wlk., 1860.

(*Solva*) Pr. Linn. So., iv, 98.

♀ Java, Celebes. Osten Sacken records two ♀ ♀ from Kandari (Celebes), taken in April 1874.

X. vittata Dol., 1858.

Nat. Tijd. Ned. Ind., xvii, 86.

♂ Amboina. 1 ♂ April.

X. calopodata Big., 1879.

Ann. So. Ent. Fr. (1879), 195.

♀ Ternate. Type in the Bigot Collection—now in the possession of Mr. Verrall, the English dipterologist.

X. hybotoides Wlk., 1862.

(*Solva*) Pr. Linn. So., vi, 5.

♂ ♀ Gilolo. The type of this species is said to be in the British Museum, but Osten Sacken did not find it there.

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[1] All lengths given in this paper are in millimetres.

Rhachicerus Hal. in Wlk., 1848.

List Dipt. Brit. Mus., i, 124 (*nomen nudum*) and v, 103 (1854) description.

No description is given in the first reference, but a full description of the ♁ only is given in the second. I think, therefore, the date of the genus ought to be altered to 1854, but I have followed precedent in keeping it 1848. Only three oriental species are known; all closely allied.

Larger sp. Thorax and abdomen more reddish—wings more brownish, and cloud in wings much larger — *fulvciornis* Sn. v. Voll.

Long. 12·13 mm. Thorax brownish yellow —wings with less brown — *zonatus* O.S.

R. fulvicornis Sn. v. Voll., 1863.

(*Antidoxion* Versl. en Meded. Kon. Acad. v. Weten xv, 1, figs. 1—3. ♀ Java. Type in Leyden Museum.

Antidoxion of Voll. (1863) was recognised by Gerstaecker in the same year (Entom. Bericht, 1863, p. 410) as a synonym of *Rhachicerus* and Osten Sacken sees no justification in their separation. I have not seen a description of this species.

R. zonatus O. S., 1880.

Ann. Mus. Gen., xvi, 408.

♀ Mt. Singalang (Sumatra), July 1878. Long. (without ovipositor) 12·13 mm.

R. nigrinus Wandolleck, 1897.

Ent. Nach., xxiii, 290.

This species is described from Sumatra.

Rhyphomorpha, Wlk., 1861.

Pr. Linn. So., v, 275.

R. bilinea Wlk., 1861.

Pr. Linn. So., v, 275.

♀ Batjan. Long. 6 mm. The type should be in the British Museum, but Osten Sacken has not found it there.

FAMILY STRATIOMYIDÆ.

Table of sub-families.

A Abdomen of 7 segments — *Berinæ.*

AA Abdomen of 5 or 6 segments.

B Discal cell, or this and the anterior basal cell together, emitting 3 veins. Abdomen short, often shorter than thorax and nearly always much wider — *Pachygastrinæ.*

BB Discal cell, or this and the anterior basal cell together, emitting 4 veins. Abdomen nearly always much longer than thorax and generally only slightly wider. When much broader, abdomen quadrate (*Stratiomyinæ* only).
C Abdomen linear, oval or elliptical, not quadrate, antennæ of various forms.
D Antennæ always setiform, scutellum unspined, species nearly always of bright metallic colour — *Sarginæ.*
DD Antennæ mostly stylate rarely setiform (*e.g.*, in *Oxycera*, etc.) Scutellum spined or not. Species rarely metallic.
E Abdomen oval, sometimes very short, often broader than thorax — *Clitellarinæ.*
EE Abdomen elongate and always longer than thorax—barely wider — *Hermetilnæ.*
CC Abdomen always approximately or nearly quadrate. Antennæ of three distinct joints, cylindrical — *Stratiomyinæ.*

Sub-family I.—Berinæ.

There is only one oriental species of this sub-family, namely *Beris javana*, V d. Wulp, 1892, Dipt. Mid. Sumatra, 13. The author mentioned a ♀ as that of the *Beris javana* described by Macquart in Dipt. Exot., i, pt. 2, 188; but Osten Sacken having seen the type in the Paris Museum wrote to Van der Wulp, saying that the species was "*either an Evaza or a Tinda, at any rate not a Beris*; *Beris javana* V d. Wulp *must be a different species.*" The name therefore stands good for Van der Wulp's ♀ from Sumatra (taken at Rawas), it being impossible for the latter entomologist to mistake a *Beris* for a species of any other sub-family.

Sub-family II.—Pachygastrinæ.

Table of genera.

A Antennæ sprayed — *Ptilocera* Wied.
AA Antennæ of various forms, but not sprayed.
B Body elongate, nearly linear; abdomen not much broader than thorax.
C Scutellum 4-spined.
D Antennal style narrow, not distinctly plumose. Scutellar spines small, of equal length. Small transverse vein absent — *Tinda* Wlk.
DD Antennal style long, feathered, distinctly plumose on both sides. Inner

	pair of scutellar spines much longer than outer. Small transverse vein present	*Rosapha* Wlk.
CC	Scutellum unspined.	
E	Posterior femora elongated, thickened, with spines below at tip	*Enoplomyia* Big.
EE	Posterior femora not thickened, nor elongated.	
F	Antennæ long and linear, thin.	
G	Abdomen distinctly longer than thorax	*Salduba* Wlk.
GG	Abdomen short and round	*Acraspidea* Brauer.
FF	Antennæ very short, 3rd joint round	*Adraga* Wlk.
BB	Body short, transverse. Abdomen generally much broader than thorax.	
H	Scutellum 4-spined.	
I	Abdomen only slightly longer or slightly shorter than thorax; scutellum normal.	
J	Last antennal joint leaf-shaped	*Phyllophora* Mcq.
JJ	Last antennal joint not leaf-shaped.	
K	Abdomen rather flat, elliptical, nearly bare, little longer but hardly broader than thorax	*Evaza* Wlk.
KK	Abdomen thick, nearly round.	
L	3rd antennal joint round	*Culcua* Wlk.
LL	3rd antennal joint cylindrical	*Acanthina* Wied.
II	Abdomen only about half the length of thorax. Scutellum large, with marginal suture	*Obrapa* Wlk.
HH	Scutellum with 2 short spines	*Wallacea* Dol.
HHH	Scutellum unspined	*Pachygaster* Meig.

Ptilocera Wied., 1830.

Ausser. Zwiefl., ii, 58.

Table of species.

Thorax with well-defined bright green stripes.
4 stripes; wings brownish with abbreviated testaceous fascia Long. 7 mm. *fastuosa* Gerst.
2 stripes; wings nearly clear. Long. 10 mm. *smaragdifera* Wlk.
Thorax without well-defined stripes.
Thorax with gold pubescence in front and at sides Long. 8 mm. *quadridentata* F.
Thorax without such gold pubescence
Antennæ (presumably) all black Long. 8 mm. *smaragdina* Wlk.
Antennæ with the tip white .Long. 7 mm. *continua* Wlk.

N.B.—From the description of *amethystina* Sn. v. Voll. I can find no characters to separate it from *fastuosa* Gerst., so cannot include it in above table.

Pt. quadridentata Fab., 1805.

Sys. Antl., 86.

Fabricius describes the ♀ only.

In his Ausser. Zweifl., ii, 59, Wiedemann gives a better and longer description of both sexes. This species is generally distributed in the East: Malacca, Singapore, Amboina, Sumatra, Philippine and Aru Islands, Djokjokarta (Java), Makessar (Celebes), Papua.

Pt. fastuosa Gerst., 1857.

Linn. Entom., xi, 332.

(*smaragdina* Sn. v. Voll.)

Gerstaecker described it from a ♀ from Ceylon. Schiner records 3 ♂♂ from Tellschong (Nicobar Islands) which agree well with the species, and Meijere received 2 ♀♀ from Mañokwari (Papua) taken at the end of May.

Pt. smaragdifera Wlk., 1859.

Pr. Linn. So., iv, 94.

Makessar (Celebes), Philippine Islands.

Pt. continua Wlk., 1851.

Ins. Saunds. Dipt., II, 84, pl. iii, 2.

♀ Java. Two ♀♀ named by Bigot, from the Andaman Islands are included in the Indian Museum Collection.

Pt. smaragdina Wlk., 1849.

List Dip. Br. Mus., iii, 525.

Ceylon, Celebes, Philippine Islands. Osten Sacken examined a series of 30 from Celebes, 3 from Ternate, 3 from Papua and 1 from Amboina, thinking *Pt. amethystina* Sn. v. Voll. the same species; he added, "In 2 ♀♀ from Amboina and Papua, the greater part of the anal cell, and a portion of the 4th posterior are almost hyaline, while the interval between the anal cell and the costal margin is much darker brown than the distal half of the wing."

Pt. amethystina Sn. v. Voll., 1858.

Tijd. v. Ent., i, 92.

Java, Celebes, Philippine Islands. Three of each sex from the Philippine Islands are referred by Osten Sacken to this species; which he thought hardly to be separated from *smaragdina* Sn. v.

Voll. This latter species is considered a synonym of *fastuosa* Gerst. by Van der Wulp in his recent Cat. Dip. S. Asia, and as he probably had material on which to form a definite opinion, I follow him both in the synonymy and also in admitting *amethystina* Sn. v. Voll. as a distinct species, but with an impression that the latter form is but *fastuosa* Gerst.

Tinda Wlk., 1860.

Pr. Linn. So., iv, 101.

Table of species.

Antennal style 3 times as long as rest of 3rd joint — Long. 6 mm. *indica* Wlk.

Antennal style twice as long as rest of 3rd joint.

Scutellum with yellow posterior border — Long. 6 mm. *acanthinoides* Jaen.

Scutellum black, legs reddish, posterior femora black marked — Long. 6 mm. *recedens* Wlk.

T indica Wlk., 1851.

(*Biastes indicus* Saunds. Dip., II, 81, pl. iii, 1 and 1*a*.)

(♀ *Tinda modifera*, Wlk., Pr. Linn. So., iv, 101.)

(*Phyllophora bispinosa*, Thoms., Eugen Reise, 454.)

♂ Locality not given by Walker. Celebes, Manila. This, the first species described of those now included in *Tinda*, was described under *Biastes*, created by Walker for it, but *Biastes* being preoccupied in Hymenoptera, *Tinda* must stand. Osten Sacken in his "Enumeration, etc." speaks of 4 ♂ ♂ from Kandari (Celebes) taken in April 1874 and remarks that the scutellum ("even in the type specimen") has 4 and not 6 spines as Walker says; but Walker queried his assertion as to the number of spines in his genus *Tinda*. Regarding *Biastes* Walker plainly says, "armed with 4 short tawny teeth," and his excellent figure shews but 4. Osten Sacken, whilst not sinking the genus *Phyllophora* Mcq., suspects that Walker's *P. angusta* from Singapore may be a *Tinda*. I find 2 ♂ ♂ in the Indian Museum Collection from Calcutta and Margherita (Assam).

T acanthinoides Jaen., 1868.

(*Elasma*) Neue Exot. Dipt., 15, pl. i, 3.

♀ Java. The author placed this genus (*Elasma*) between *Acanthina* and *Phyllophora*. Type in the Heyden Collection which, I believe, is now in the Frankfort Museum.

T recedens Wlk., 1861.

Pr. Linn. So., v 233.

♂ Dorey (Papua).

Rosapha Wlk., 1860.

Pr. Linn. So., iv, 100.

Osten Sacken corrects the author's error in saying 2 instead of 4 spines to the scutellum, and Meijere's splendid coloured plate of *bimaculata* shews 4, the inner pair much the longer.

R. habilis Wlk., 1860.

Pr. Linn. So., iv, 100.

♂ ♀ Long. 7 mm., Makessar (Celebes). Osten Sacken reports a ♀ from Kandari (Celebes) dated April 1874, and observes that the extent of black in the abdomen varies, and that the black mark on the thorax is sometimes wanting.

R. bicolor Big., 1879.

(*Calochætis*) Ann. So. Ent. Fr. (1879), 189.

(*Calochætis*, misprinted *Calcochætis*) Big., Bull. So. Ent. Fr. (1879), p. lxxiv.

♀ Manila. Type in Bigot's Collection.

R. bimaculata Meij., 1904.

Bijd. Dierk., xviii, 96; pl. viii, 13, 14.

♂ Java. Long. 6 mm. Gunong Tji Salimar. W Preanger (Java).

I should not be surprised to find that the three just mentioned represent but a single species. Walker describes both sexes, mentioning that the abdomen is clear tawny in the ♂ and with the centre blackish in ♀ Bigot says "centre of abdomen blackish" (a ♀) and Meijere differentiates his species from Bigot's by the clear, reddish yellow abdomen. His type is a ♂ and perhaps he had not seen Walker's description of sexual differences.

The three descriptions read surprisingly alike, and the only character I can find that may separate the species is that *bicolor* and *bimaculata* have the brownish cloud towards the tip of wings separated by a clear hyaline space from the dark stigma, which clear space is not mentioned in Walker's species.

Osten Sacken has specimens from the Philippines shewing the hyaline space referred to by Bigot. Walker speaks of an elongated black spot on the front of the thorax in *habilis*, which seems only another way of describing Bigot's species *bicolor*—"longitudinal band from anterior to middle of disc"; this black mark, Osten Sacken announces to be variable.

Should my surmise be correct, the wing marks would be the best means of separating the species, as follows :—

Wings with darker cloud around stigma extending towards tip. Stigma ferruginous brown. ♂ Abdomen unicolorous tawny : in ♀ centre of abdomen blackish	*habilis* Wlk.

Wings with subapical brown cloud separated from the blackish stigma by a clear hyaline space. ♂ abdomen clear reddish yellow. ♀ dark in centre (*Calochætis*) *bicolor* Big.
(Syn. *Rosapha bimaculata* Meij. ♂.)

Osten Sacken (in his "Enumeration") regards *bicolor* Big. as a doubtful synonym of *habilis*, and Meijere notices the resemblance of his species to Bigot's. I fear Meijere's distinctions of colour in the proboscis and the halteres is insufficient to build a species on in a variable group. This being so, it is a question of the two species above being distinct, unless all are the same species, in which case *habilis* stands.

Enoplomyia Big., 1878.

Ann. Ent. So. Fr. (5) VIII Bull., p. xxii.

E. cothurnata Big., 1878.

Bull. Ent. So. Fr. (1878), p. 44.

♀ Batjan. Long. 10 mm. Bigot Collection.

Adraga Wlk., 1859.

Pr. Linn. So., iii, 82.

A. univitta Wlk., 1859; *l.c.*, 82.

♂ Mysol, Aru. Islands. Long. 6 mm.

Salduba Wlk., 1859.

Pr. Linn. So., iii, 79.

Table of species.

A Moderate sized species, 6 to 11 mm. long.
B Scutellum unarmed, antennæ not placed on a protuberance. Thorax striped, abdomen linear.
C Abdomen nearly twice as long as thorax. Femora red, posterior femora incrassated Long. 6—9 mm. *singularis* Wlk.
CC Abdomen a little longer than thorax. Femora yellow, black or brown (reddish in *gradiens* only). Femora not incrassated.
1. Legs red or yellowish.

Abdomen normal, length of body 6—9 mm.
Thorax with 2 indistinct cinereous stripes. Legs mainly reddish Long. 6—8 mm. *gradiens* Wlk.
Thorax with 4 gilded tomentum stripes. Legs mainly luteous Long. 6—9 mm. *hilaris* Wlk.
Abdomen clavate. Length of body 11 mm. Thorax with 4 cinereous stripes, centre pair joined on scutellum. Legs mainly yellow Long. 11 mm. *areolaris* Wlk.

2. Legs mainly whitish. Thorax with 4 gilded tomentum stripes Long. 9 mm. *diphysoides* Wlk.
3. Legs all black, except white base of tarsi. Thorax with a cinereous stripe each side Long. 7 mm. *lugubris* Wlk.

BB Scutellum with 4 minute teeth. Antennæ placed on a protuberance. Thorax (presumably) all black. Abdomen fusiform Long. 6 mm. *scapularis* Wlk.

AA Small species 3 to 4 mm.

3rd antennal joint elliptical, anterior femora with black traces. Long. 3¾ mm. *signatipennis* V Wulp.

3rd antennal joint round, legs all pale yellow. Long. 3 mm. *exigua* V Wulp.

This genus was placed by Walker in the subfamily *Sarginæ* and puzzled me for a long time, the nearly uniform black colour of all the species being such a contrast to the usual brilliant metallic colours in this group. Not being able to obtain a specimen, I was about to leave it where it was, when I obtained Van der Wulp's paper on New Guinea Diptera, in which he not only describes two new species (which may both be removed later owing to formation of the antennæ) but gives a diagram of the wing of *Salduba* shewing only three veins issuing from the discal and basal cells combined, thus placing it at once in the *Pachygastrinæ*.[1] Walker made no mention of this venation, nor had I any information on the point. The species *S. melanaria* Wlk., formed by Van der Wulp into a new genus *Cœnocephalus*, has 4 veins instead of 3 and therefore cannot be placed in *Pachygastrinæ*. This new genus seems by its linear abdomen and form of antennæ to approach nearest to the *Hermetiinæ*, where I bring it for the present.

Three other species of the restricted *Salduba* shew aberrant forms of abdomen—*scapularis* with fusiform abdomen and 4 minute teeth on the scutellum; while *singularis* with incrassated posterior femora minutely spined below, and the abdomen double the usual length may easily form the type of a new genus. *S. areolaris*, with its clavate abdomen, may also be regarded later as generically distinct.

S. singularis Wlk., 1861.

Pr. Linn. So., v, 271.

♂ ♂ Batjan. A ♂ is recorded from Ramoi (Papua). Osten Sacken thinks it differs from *gradiens* Wlk. only by less white at the base of the posterior tarsi and much more distinct spines on the hind femora. The incrassated posterior femora and abdomen of nearly double the usual length might entitle this species to generic separation.

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[1] Van der Wulp also expressed his opinion of its affinity with *Tinda*.

S. gradiens Wlk., 1864.

Pr. Linn. So., vii, 203.

♀ Mysol. Type in British Museum Collection. Osten Sacken doubtfully refers to this species a single ♂ from Ramoi (Papua) taken February, 1875.

S. hilaris Wlk., 1861.

Pr. Linn. So., v, 271.

♂ ♀ Batjan. Has been queried as a var: of *diphysoides.*

S. areolaris Wlk., 1864.

Pr. Linn. So., vii, 204.

♂ Mysol. Allied to *hilaris* and *diphysoides.*

S. diphysoides Wlk., 1859.

Pr. Linn. So., iii, 79.

♂ Aru Islands.

S. lugubris Wlk., 1861.

Pr. Linn. So., v, 271.

Batjan.

S. scapularis Wlk., 1861; *l.c.*, 271.

♂ Batjan. It has been suggested that this may belong to Van der Wulp's new genus *Cænocephalus*, but this depends on its venation. Its fusiform abdomen and minutely spined scutellum might, however, entitle it to generic or subgeneric rank.

S. signatipennis V. d. Wulp, 1898.

Termés. Fuzet., xxi, 412, pl. xx, fig. 2 (head), fig. *2a* (wing).

♂ ♀ Friedrich Wilhelmshafen (Papua).

S. exigua V d. Wulp, 1898.

Loc. cit., 413; pl. xx, fig. 3 (head).

♂ One from Erima, Astrolabe Bay (Papua). The author rather doubts its right to a place in this genus, owing to the roundness of the 3rd antennal joint. This joint in *signatipennis* being elliptical instead of cylindrical forms a link between *exigua* and the other species and perhaps justifies them both remaining.

Acraspidea Brauer, 1882.

Denk. Kais. Acad. Wissens. Wien, xliv, 75.

A. felderi Brauer, 1882, *l.c.*, 75.

♂ Rambodde (Ceylon). Long. 5—6 mm.

Phyllophora Mcq., 1838.

Dip. Ex., i, pt. i, 178.

This generic name pre-occupied by Thunberg in Orthoptera.

P. angusta Wlk., 1857.

Pr. Linn. So., i, 7.

♂ Singapore. Long. 5 mm. This may be a *Tinda*, according to Osten Sacken.

Evaza Wlk., 1857.

Pr. Linn. So., i, 109.

(*Nerua*—sometimes misprinted *Nerna*—Wlk., 1858.)

Pr. Linn. So., ii, 81.

Most authors have been spelling this genus *Evasa*, but Kertesz in his recent monograph of the genus in Ann. Mus. Hong., vol. iv, 276, reverts to the original form. He alludes also to a closely allied genus of Walker's, *Artemita*, from S. America, differentiated from *Evaza* by having pubescent eyes.

Table of species.

Legs principally blackish brown (anterior femora blackish brown, with more or less pale tips).
Scutellum with yellowish border Long. 8—8½ mm. *argyroceps* Big.
Scutellum all black, spines only yellowish Long. 5½—7 mm. *impendens* Wlk.
Legs principally yellow (anterior femora yellow or yellowish brown).
Legs all yellow.
Scutellum black, with yellow spines, dorsum of thorax and scutellum distinctly arched, with yellow hair Long. 7 mm. *flavipes* Big.
Scutellum with posterior border partly black, dorsum of thorax and scutellum flat, with yellowish white hair Long. 7 mm. *bipars* Wlk.
Legs not all yellow.
Wing tips clear, all tibiæ all black or blackish brown Long. 9 mm. *tibialis* Wlk.
Wing tips not clear, tibiæ not throughout unicolorous.
Abdomen reddish brown, partly blackish brown.
Wings hyaline, fore-border brown from

subcostal cell to apex Long. 5—6 mm. *mollis* O. Sack.
Wings very pale brown; only subcostal cell brown Long. $5\frac{1}{2}$—$7\frac{1}{2}$ mm. *fulviventris* Big.
Abdomen principally black or blackish brown.
Tibiæ of middle and posterior legs brown or blackish brown at apical half Long. 9 mm. *fortis* Wlk.
Tibiæ of middle and posterior legs all yellow
Anterior radial cell clear Long. $6\frac{1}{2}$ mm. *indica* Kert.
Anterior radial cell brownish Long. 6 mm. *scenopinoides* Wlk.

E. argyroceps Big., 1879.

Ann. So. Ent. Fr. (1879), 219.

♀ Moluccas. Bigot Collection. The author describes the ♂ only, but Kertesz's description applies to both sexes, from 3 ♂♂ and a ♀ in the Bigot Collection.

E. impendens Wlk., 1860.

Pr. Linn. So., iv, 197.

♂ ♀ Makessar (Celebes), Aru Islands. Osten Sacken mentions 9 ♂♂ 1 ♀ from Kandari (Celebes), April, 1874.

E. flavipes Big., 1879.

Ann. So. Ent. Fr. (1879), 219.

♀ India. Bigot Collection (badly preserved). Van der Wulp gives a ♂ from Friedrich Wilhelmshafen (Papua).

E. bipars Wlk., 1857.

Pr. Linn. So., i, 110; pl. vi, 2.

(*E. flavipes* V. d. Wulp, Térmes. Fuzet., xxi, 416, nec *flavipes* Big. (Ann.), 1879.)

♂ Sarawak (Borneo); Papua. Kertesz also records it and describes the ♀ from a New South Wales (badly preserved) specimen in the Hermann Collection.

E. tibialis Wlk., 1861.

(*Clitellaria*) Pr. Linn. So., i, 57.

♂ Manado (Celebes). In his Cat. Dipt. S. Asia, Van der Wulp mentioned that, having 4 spines to the scutellum, this species

" might require a generic separation," and Kertesz refers it now to *Evaza* with the support of Mr. E. E. Austen of the British Museum, who has examined the type.

E. mollis Os. Sacken, 1880.

(*Nerua*) Ann. Mus. Gen., xiv, 415.

♂ ♀ Sumatra; Papua. The author differentiates his species from *fulviventris* Big. and *bipars* Wlk., to which it is allied.

E. fulviventris Big., 1879.

Ann. So. Ent. Fr. (1879), 220.

♂ Moluccas. Bigot Collection. Kertesz describes both sexes, recording it in the Hungarian National Museum from Papua, dated 14th July and 24th December.

E. fortis Wlk., 1865.

(*Sargus*) Pr. Linn. So., viii, 107.

E. pictipes Big., 1879, Ann. So. Ent. Fr. (1879), 221.

♂ Papua.

Kertesz, after Mr. E. E. Austen's corroboration from an examination of the type, places this species here, and sinks *pictipes* as a synonym.

The Hungarian Museum possesses specimens from Papuan localities (Bali, Mafor, Stephansort, Simbang, Erima, Sakelberg). Van der Wulp also records a ♀ from Erima, Astrolabe Bay, Papua, and Meijere mentions a ♂ from " Oberes Jamur Gebiet," dated August 6th.

E. indica Kert., 1906.

Ann. Mus. Hung., iv, 289.

♂ ♀ Bombay, taken by Mr. Biro, 3rd July 1902.

E. scenopinoides Wlk., 1859.

(*Nerua*) Pr. Linn. So., iii, 81.

(*E. pallipes* Big., 1879; Annales, 220.)

♀ Aru Islands, N. Ceram, Waigion, Gilolo, Dorey, Batjan, Papua.

The Hungarian Museum has it from Papua taken in April and September. Van der Wulp gives a ♂ from Friedrich Wilhelmshafen (Papua) and Osten Sacken mentions 1 ♂ 2 ♀ ♀ from Dorei Hum (Papua), February 1875, also from Andai (Papua).

Culcua Wlk., 1857.

Pr. Linn. So., i, 109.

C. simulans Wlk., 1857 ; *l.c.*, 109.

♂ Malacca, Sarawak.

A specimen in the Indian Museum Collection seems to form an undescribed species of this genus from Tennasserim.

Acanthina Wied., 1830.*

Ausser. Zweifl., ii, 50.

The two oriental species may be distinguished as follows :—

Thorax marked with a cross. Abdomen with a basal, and 2 posterior silvery hair spots *azurea* Gerst.
Thorax unmarked, but with bright gold hair in front Abdomen unmarked *auricollis* Big.

A. azurea Gerst., 1875.

Linn. Entom., xi, 335.

(*Clitellaria obesa* Wlk.)

Long. 7 mm. ♂ Ceylon, Ceram, Dorey (Papua), Batjan, Philippine Islands, Ramai and Andai in Papua (4 ♂ ♂ taken February 1875) also June and August 1872. Osten Sacken records the species as *C. obesa* Wlk., adding " very like *azurea* Gerst.," but mentions differences. He again (Dipt. Phil. Is., 1882) expresses doubt as to the identity of this species with 3 specimens examined by him from those Islands collected by Dr. Carl Semper.

A. auricollis Big.

♂ Kohima (Assam), Sadiya (Assam). Long. 8 mm. Type in Indian Museum.

I can find no reference to the description of this species, which appears distinct from *azurea* Gerst.

Obrapa Wlk., 1859.

Pr. Linn. So., iii, 82.

Table of species.

Body black.
Shining black ; body of normal width ; wings clear Long. 5 mm. *perilampoides* Wlk.
Dull black ; body narrower ; wings with cloudy spot Long. 44 mm. *celyphoides* Wlk.
Body with shining silvery hair Long. 33 mm. *argentata* V Wulp.

* See end of paper for *A. argentea*, sp. nov.

O. perilampoides Wlk., 1859 ; *l.c.*, 82.

♀ Aru Islands, Batjan, Kaisaa, Mysol, Dorei.

O. celyphoides Wlk., 1859 ; *l.c.*, 83.

♀ Aru Islands, Batjan, Dorei. Walker adds further characters in the same journal, vol. v, 273, and separates it from *perilampoides* by the characters given above.

O. argentata V d. Wulp, 1898.

Termés. Fuzet., xxi, 417 ; pl. xx, 5.

1 ♂ from Tamara Berlinhafen (Papua).

Wallacea Dol., 1858.

Nat. Tijd. Ned. Ind., xvii, 82.

W argentea Dol., 1858 ; *l.c.*, 82.

Gabasa argentea Wlk., Pr. Linn. So., iii, 80.

Amboina, not rare in April.

In the Indian Museum are ♀ ♀ from Calcutta, taken 8.1.06 and 14.3.07—also a ♀ from Mergui (Lower Burma). On 21.3.07 I took in Calcutta what is no doubt the ♂ of this species and which I think has not previously been noted. It resembles the ♀ in every way except that the tibiæ are a little browner. The eyes are sub-contiguous immediately above the antennæ, diverging thence upwards to the vertex, which is wholly occupied by the ocelli. The antennal style instead of being thick is quite filamentous.

Pachygaster Meig., 1803.

Illig. Mag., ii, 266.

Table of species.

Legs mostly black, tips of tibiæ and the tarsi pale — Long. 3 mm. *rufitarsis* Mcq.

Legs mostly yellowish or whitish.

1. Legs yellow, femora with apical ½ brown — Long. 2½ mm. *limbipennis* V d. Wulp.
2. Legs brownish yellow. Femora and anterior tibiæ blackish brown — Long. 3 mm. *lativentris* V d. Wulp.
3. Legs quite white, tarsi tips faintly blackish — Long. 2—2½ mm. *albipes* mihi sp. nov.

P. rufitarsis Mcq., 1846.

Dip. Ex. Supp., i, 57 ; pl. vi, 3.

♂ Pondicherry. Macquart Collection (now in the Paris Museum).

P. limbipennis V. d. Wulp, 1898.

Termés. Fuzet., xxi, 417.

2 ♂ ♂ Friedrich Wilhelmshafen (Papua).

P. lativentris V d. Wulp, 1898; *l.c.*, 416.

1 ♀ Seleo, Berlinhafen (Papua).

P. albipes mihi sp. nov.

♀ Calcutta. Head and front shining black, a brilliant white streak each side of lower part of head. Antennæ and proboscis pale yellow. Thorax and abdomen shining black with short, sparse, silvery-grey hair, which is a little thicker and mixed with gold hairs on dorsum of thorax. Belly uniformly black. Legs uniformly dirty white, the tarsi tips faintly blackish. Wings quite clear, veins on foreborder pale yellowish. Halteres white. Described from 4 ♀ ♀ in the Indian Museum taken in Calcutta. Long. 2—2½ mm.

SUB-FAMILY III.—SARGINÆ.

Eyes in male not contiguous, approximate only, leaving a very narrow frontal space from vertex to antennæ.

Table of genera.

Antennal arista apical	*Chrysochlora* Latr.
Antennal arista dorsal.	
2nd antennal joint projecting over base of 3rd on inner side. Species non-metallic, generally more or less yellowish	*Ptecticus* Loew.
2nd antennal joint not projecting over 3rd. Species nearly always bright metallic blue or green	*Sargus* Fab.
Eyes in male absolutely contiguous.	
Eyes pubescent in both sexes	*Chloromyia* Dunc.
Eyes quite or practically bare in both sexes.	
3rd antennal joint 6-ringed	*Brachycara* Thoms.
3rd antennal joint 4-ringed	*Microchrysa* Loew.

Salduba, hitherto placed amongst the *Sarginæ*, I relegated to the *Pachygastrinæ* immediately I saw a figure of the wings; supported by Van der Wulp's authority for its affinity with *Tinda*.

Microchrysa Loew, 1855.

Verh. Zool. Botan., v, 146.

Table of species.

Abdomen honey yellow.

Long. 5 mm. Post. fem. ringed *flaviventris* Wied. ♂

,, 3 ,, Post. fem. pale. *bipars* Wlk.

Abdomen metallic ; never yellow.
Abdomen unicolorous.
Middle femora and tibiæ all pale
Abdomen bluish violet *flaviventris* Wied. ♀
Abdomen blackish, with purple reflections Long. 4 mm. *affinis* Wied.
Middle femora and tibiæ indistinctly brown-ringed Long. 3 mm. *gemma* Big.
Abdomen violet ; edges distinctly pale yellow Long. 2⅔ mm. *calopus* Big.

M. flaviventris Wied.

(*Sargus*) Analec. Entom., 31, ♀

(*annulipes* Thoms., Eugenie Reise, 461.)

♂ East India. Type in Royal Museum, Copenhagen.

Osten Sacken records a ♂ from Java, and I took one ♂ at Bareilly, 1st September 1905, and if I have determined the ♀ rightly I have taken 3 specimens, respectively at Mussoorie, June 26 ; Meerut, July (13 to 19) ; and Lucknow, August 8 ; all during 1905. From Papua Van der Wulp records 2 ♂ ♂ 1 ♀

M. bipars Wlk., 1861.

(*Chrysomyia*) Pr. Linn. So., v, 273.

♂ Batjan. Walker says allied to *Sargus redhibens*, but I fail to see where.

M. affinis Weid.

(*Sargus*) Analec. Entom., 31.

♀ East India. Types in Copenhagen Museum and Wiedemann's Collection. Wiedemann (Auss. Zweif., ii, 41) suspects that this is the ♀ of *flaviventris*, and I am inclined to think so to.

M. gemma Big., 1879.

Ann. So. Ent. Fr. (1879), 231.

♀ Ceylon. Bigot Collection. Bigot emphasizes the very broad front in this species, and speaks of the middle femora and tibiæ being indistinctly brown-ringed, yet I would not be surprised to find it only the ♀ of *flaviventris* Wied.

M. calopus Big.

1 ♀ Margherita (Assam). I cannot trace the reference. (Incidentally I may add that Bigot described a *Chrysonotus calopus* ♀ in 1879 from Natal, but this is a different species.) Type in Indian Museum Collection. It is certainly a very distinct species.

In addition to the species mentioned I possess 3 specimens taken by myself at Mussoorie from June 18 to 26, 1905, in which the last antennal joint is entirely and quite black, the species other-

wise agreeing with *flaviventris*. All the other species have entirely yellow antennæ, so I believe them to be new, but refrain from describing them as such until I obtain a more extended experience of the Eastern species.

Brachycara Thoms., 1868.

Eugenie Freg. Reise, 460.

B. ventralis Thoms., 1868; *l.c.*, 641, pl. ix, 4.

"Isl. Rossi." Van der Wulp infers he means an isle of this name in the Andamans. Ross Island is the one on which Port Blair, the seat of government in the islands, is situated. Both sexes are recorded by Van der Wulp from Seleo, Berlinhafen (Papua).

Chloromyia Dunc., 1837.

Mag. Zool. Bot.

The only two oriental species are easily separated.

Legs blue, with shining hoary hair — Long. 8 mm. *sapphirina* Wlk.
Legs pale yellow, apical half of anterior legs black — Long. 8 mm. *stigmatica* V d. Wulp.

C. stigmatica V d. Wulp, 1898.

Termés. Fuzet., xxi, 411.

2 ♀ ♀ from Friedrich Wilhelmshafen (Papua).

C. sapphirina Wlk., 1849.

(*Chrysomyia*) List Dip. Brit. Museum, iii, 519.

♀ East Indies. British Museum Collection.

Sargus Fab., 1798.

Ent. Sys. Supp., 566.

Table of species.

A Large species 14 to 18 mm. long.
B Abdomen rusty red, with dorsal blackish stripe; wings nearly clear — Long. 14 mm. *rufus* Dol.
BB Abdomen metallic—no stripe, wings rather deeply blackish
1. Front piceous, legs tawny, streaked with pitch. Thorax blue-green, abdomen brilliant violet — Long. 18 mm. *gemmifer* Wlk.
2. Front chalybeate, supra-antennal triangle pale green. Thorax blue-green, abdomen metallic violet, stigma testaceous . — Long. 15 mm. *pubescens* V.W.

3. Front brilliant, metallic blue-green, triangle yellow, stigma unicolorous, thorax blue-green, abdomen copper, violet reflections Long. 14 mm. *magnificus* Big.

AA Moderate sized species 7 to 10 mm. (*lætus* 12 mm.).

C Wings very long, each 14 mm. long Long. 12 mm. *longipennis* Wied.

CC Wings normal.

D Abdomen metallic blue-green, or thereabouts. Base not whitish; legs normally long.

E Legs all yellow (reddish yellow or yellowish white), no black in them: at most, tarsi tips darker or blackish.

F Stigma dark brown.

G Wing cinereous; whitish species. Disc of thorax and scutellum tip purple Long. 10 mm. *inactus* Wlk.

GG Wing clear, posterior half a little grey. Thorax and scutellum brilliant gold-green. Abdomen brilliant metallic violet Long. 8 mm. *pallipes* Big.

FF Stigma pale yellow ♂ eyes contiguous.

H ♂ eyes contiguous Long. 8—10 mm. *metallinus* F.

HH ♂ eyes not contiguous . Long. 7—9 mm. *mandarinus* Sch.

EE Legs with distinct black rings, streaks, or more or less black.

1. Femora with black streak above, near tip Long. 7—8 mm. *redhibens* Wlk.
2. Base of posterior femora black and slender Long. 12 mm. *lætus* V. W.
3. Femora and tibiæ partly piceous Long. 9 mm. *concisus* Wlk.
4. Posterior half of posterior femora black Long. 9 mm. *albopilosus* Meij.
5. Anterior femora black at tip and posterior tarsi at base. Posterior femora and tibiæ black Long. 7 mm. *tibialis* Wlk.
6. Posterior tibiæ with blackish basal half Long. 9 mm. *mactans* Wlk.
7. Legs mostly brown marked, not black Long. (without head) 9 mm. *papuanus* Big.

DD Abdomen purple, white at base, legs extra long Long. 11 mm. *longipes* Wlk.

AAA Small species.

Long. 5 mm. black shining Long. 5 mm. *debilis* Wlk.

Long. 3 mm. pale tawny shining Long. 3 mm. *inficitus* Wlk.

S. rufus Dol., 1858.

Nat. Tijd. Ned. Ind., xvii, 83.

Amboina. Rare, during dry season.

S. gemmifer Wlk., 1849.

List Dip. Brit. Mus., iii, 516.

Sylhet. Type in British Museum.

S. pubescens V. der Wulp, 1885.

Notes Leyden Mus., vii, 67.

♀ Gorontolo.

S. magnificus Big., 1879.

Ann. So. Ent. Fr. (1879), 222.

Assam. Bigot Collection. Head and middle legs (except femora) missing from the type when described. In spite of this, I feel sure that 4 ♂ ♂ in the Indian Museum from Tenasserim are of this species.

The three species above must be closely allied, but from the descriptions appear to be truly distinct.

S. longipennis Wied., 1824.

Analec. Entom., 31.

♂ Java. Type in Westermann's Collection. Also recorded from Malacca; and a ♂ named thus by Bigot exists in the Indian Museum, labelled Sadiya (Assam).

S. inactus Wlk., 1860.

Pr. Linn. So., iv, 97.

♀ Makessar (Celebes).

S. pallipes Big., 1879.

Ann. So. Ent. Fr. (1879), 222.

♀ Ceylon. Type in Bigot's Collection.

S. metallinus F., 1805.

Sys. Antl., 258.

(*S. formicæformis* Dol., Nat. Tijd. Ned. Ind., xiv, 403; pl. iii, 5.)

The commonest of all *Stratiomyidæ* throughout the Orient and a widely distributed species. Walker reports it from Borneo, India, Java and the Aru Islands; the Indian Museum possesses specimens from Katmandu (Nepal), Calcutta, Siliguri, Dehra Dun and Naini Tal, the dates varying from June to August. It has, outside of India, a much wider range of appearance, as it has fallen to my net at Rangoon (January), Singapore (17th February 1906), Shanghai and Calcutta (both in May), Mussoorie (June), Meerut (July), and Lucknow (August and September).

S. mandarinus Sch., 1868.

Reise der Novara, 62.

♂ One example. Hong Kong, allied to the European *flavipes*. Schiner says the eyes quite touch, which may require it a generic separation, as in *Sargus* the eyes are approximate, not contiguous.

S. redhibens Wlk., 1860.

Pr. Linn. So., iv, 97.

♀ Makessar (Celebes). He mentions a variety with green thorax and purple vertex, and thinks it may be a local variety of *metallinus* F., but as he mentions dark markings on its hind legs, it could hardly be *metallinus*. I took one ♂ at Rangoon between 23rd December 1904 and 3rd January 1905, also a ♀ at Singapore, 17th February 1906, both certainly this species ; but the posterior tibiæ have a black streak at the *base* and not at the tip.

S. lætus V der Wulp, 1885.

Notes Leyden Mus., vii, 66.

♂ Sumatra. The author notes it near *mactans* Wlk., and would have considered it the male of that species but for the pattern and coloration of the abdomen.

S. concisus Wlk., 1861.

Pr. Linn. So., v, 273.

♂ Batjan, near *redhibens* Wlk.

S. albopilosus Meij.

Nova Guinea Res. L'Exp. Sci. Neerl. N. Guinea, Dipt., 73.
♂ Mañokwari (Papua).

S. tibialis Wlk., 1861.

Pr. Linn. So., v, 273.

♂ Batjan, Gilolo. Near *redhibens* Wlk.

S. mactans Wlk., 1860.

Pr. Linn. So., iv, 97.

♂ Makessar (Celebes), Amboina, Borneo, Ceylon. Osten Sacken saw three from Kandari (Celebes) taken April 1874, and one from Ternate, and pertinently adds : " There may be several conflicting species here, or else they vary in the extent of black on the legs, and in the colour of the stigma."

I think it probable that several of the species in this group may prove varieties, but described as most of them are, from single specimens, and these types not being available for examination in India, I cannot further our knowledge of the group.

Three ♂ ♂ in the Indian Museum Collection from Nepal (4,500 feet) taken in October, agree pretty closely with Walker's description, as does a ♂ in the same collection captured by Dr. Annandale at Bhim Tal, 19th to 22nd September 1906, also at an altitude of 4,500 feet. From this height to the plains and so low a latitude as Singapore and the East India Islands would be by no means an excessive range for a Dipteron.

Van der Wulp mentions 2 ♂ ♂ from Papua.

S. papuanus Big., 1879.

Ann. Soc. Ent Fr. (1879), 223.

♀ Bigot Collection.

S. longipes Wlk., 1861.

Pr. Linn. So., v, 232.

♂ Dorey (Papua). A male from Erima (Astrolabe Bay) Papua, is recorded by Van der Wulp.

S. debilis Wlk., 1861 ; *l.c.*, v, 274.

♂ Batjan. Near *redhibens* Wlk.

S. inficitus Wlk., 1861 ; *l.c.*, v, 274.

♂ Batjan.

Ptecticus Loew., 1855.

Verh. Zool. Bot., v, 142.

Table of species.

A Black species ; wings blackish (slightly tawny in front in *tenebrifer*).

Long. 18 mm. — *remeans* Wlk.
,, 14 mm. — *illucens* Sch.
,, 10 to 12 mm. — *tenebrifer* Wlk.

AA Yellow species (sometimes much marked with black).

B Wing with basal half yellow tawny, remainder blackish or grey.

Posterior femora black — Long. about 15-16 mm. *rufescens* V d. Wulp.

Posterior femora reddish yellow.

1. Disc of thorax ferruginous, 3 indistinct darker lines. Abdomen with shining black dorsal bands. Posterior tibiæ in ♂ with brown band — Long. 14-15 mm. *aurifer* Wlk.
2. Male genitalia black. 4th abdominal segment with a very large brown spot. 5th all blackish. Thorax all tawny, unmarked. Long. 15 mm. *apicalis* Lw.

3. ♂ genitalia black. 2nd to 6th abdominal segments, with broad black cross bands reaching the side border. Posterior tibiæ blackish brown Long. 16 mm. *cingulatus* Lw.
4. ♂ genitalia black; disc of thorax ferruginous. Body reddish yellow. Last abdominal segment black. Apical half of posterior tibiæ brown Long. 12-14 mm. *leoninus* Rond.
5. ♂ genitalia fulvous, very large and complex. Long. 15-16 mm. *Wulpii V d. W* nom. nov.

BB Wings with distinct black or blackish parts :—not yellow.

Long. 18 mm.

Abdomen all testaceous 18 *repensans* Wlk.
Abdominal last 2 segments black 18 *tricolor* Meij.

Long. 8 to 12 mm.

All tibiæ and tarsi blackish, abdomen subclavate, lengthened 8 *quadrifasciatus* Wlk.

Only posterior tibiæ black marked. Abdomen normal.

1 Posterior tibiæ and tarsi all black. Abdomen with a brown spot on segments 2 to 5. 10 *rogans* Wlk.
2. Posterior tibiæ black, tawny marked apically. Abdomen with 4 broad, abbreviated piceous bands 12 *complens* Wlk.
3. Posterior tibiæ black, posterior tarsi whitish. Thorax indistinctly striped. Abdomen with abbreviated dilated black band on each segment 12 *tarsalis* Wlk.

BBB Wings nearly or quite clear, or pale grey. (Anterior margin yellowish in *ferrugineus* Dol.)

Anterior margin of wing yellow. Long. 10 mm. *ferrugineus* Dol.
Anterior margin of wing not yellow.

Thorax with 3 stripes, species partly black Long. 11-12 mm. *brevipennis* R.
Thorax unstriped, species mostly yellow.

Abdomen black above with narrow lighter bands. Long. 8 mm. *australis* Sch.
Abdomen tawny with broad black bands.

Posterior femora striped with black Long. 10 mm. *latifascia* Wlk.
Posterior femora testaceous tawny Long. 10 mm. *doleschalli* Big.

Pt. remeans Wlk., 1860.

(*Sargus*) Pr. Linn. So., iv, 96.

♀ Makessar (Celebes) ♀ " allied to *S. tenebrifer* " Walker says. Head wanting in the type. Osten Sacken notes 14 ♂ ♂ and 1 ♀ from

Kandari (Celebes) taken April 1874, but is hardly positive as to identity. Walker describes a perfect specimen of what he takes to be the male, but selects the headless female as the type!

Pt. illucens Sch., 1868.

Reise Novara, 65.

One example; sex? Hong Kong. A large handsome species, I took a ♂ ♀ *in cop.* and a separate ♀ at Yokohama, 21st to 26th May 1906, thus fixing the sexes and species. Schiner queried the sex of his type specimen. I think it was a ♂, because he mentions "front broad behind" and this is *apparently* the case (but not really so, proportionately) in this sex, owing to the eyes almost touching in front just above the frontal raised triangle. The front in the ♀ is slightly but distinctly wider. In the ♀ taken *in cop.*, the white 2nd translucent abdominal segment is much obscured. Van der Wulp mentions the occurrence of the species in Japan, from which land it also figures in the recent Catalogue of Palæarctic Diptera.

Pt. tenebrifer Wlk., 1849.

(*Sargus*) List Dip. Brit. Mus., iii, 517.

♀ China. Brit. Mus. Coll.

Pt. rufescens V d. Wulp, 1868.

(*Sargus*) Tijd. Ent., xi, 104; pl. iii, 7 to 9.

By Van der Wulp's remark referring to his *apicalis* "close to *rufescens* V. W." I have presumed this species to be of the same size, and therefore enter it in my table as 15 to 16 mm.

Pt. aurifer Wlk., 1854.

(*Sargus*) List Dip. Brit. Mus., v, 96.

♂ ♀ India. N. China. Walker compares it to *S. cuprarius* L., differing from that species in venation.

Pt. apicalis Lw., 1855.

Verh. Zool. Bot., v, 142; pl. x, 3—4.

(*Sargus luridus* Wlk.; Pr. Linn. So., i, 8.)

♂ Pulo Penang. Type in Westermann's Coll.

There are six more or less closely allied species in this group, and I have had some difficulty in understanding them All seem distinguished from all other species in the genus by the basal half of the wing being brightly yellow, and the remaining half blackish—commencing at or just beyond the discal cell to the tip of the wing. Two species (*aurifer* Wlk., and *leoninus* R.) are said to have the disc of the thorax ferruginous, that is, darker than the general reddish yellow colour of the whole body—the former bearing, in addition,

traces of three longitudinal lines. In *apicalis* Lw., the spot on the 4th abdominal segment is large, distinct and separate from the all black 5th segment. In a few specimens I captured in August 1895 at Mussoorie, which seem, almost undoubtedly, this species, I find faint traces of a blackish dorsal band on the 2nd and 3rd segments, and the posterior tibiæ are black at the tip and not at the base. A smaller specimen similarly marked, I refer to this species, although it answers fairly to *leoninus* Rond., except that the disc of the thorax is not darker, nor are the tarsi tips blackish. However, in size (12 mm.) and the apical black posterior tibiæ, it agrees with *leoninus* better than with *apicalis*.

Apicalis V der Wulp (for which, *apicalis* being preoccupied by Loew, I take the liberty and pleasure in proposing the name of its illustrious author *Wulpii*) stands out from *apicalis* Lw., *cingulatus* Lw., and *leoninus* Rond., by its very prominent and complicated *fulvous* genitals, which are black in the other three species. In *cingulatus* the abdominal bands are broad, and transverse, extending to the border; in *aurifer* the band is *dorsal*; in *apicalis* Lw., the 4th segment is occupied by a large, black, oval, distinct spot, whilst in *leoninus* the whole last segment only of the abdomen is black—wherein it differs from *Wulpii*, which has the last two or three segments purplish brown. These various markings, if consistent would sufficiently separate the species—and in the only two species I recognise with certainty, from actual specimens, the consistency seems sufficiently present. These are the 4 or 5 *apicalis* Lw. in my own collection and 5 or 6 damaged *Wulpii* (one specimen named by Bigot) in the Indian Museum.

Pt. cingulatus Lw., 1855.

Verh. Zool. Bot., v, 143.

♂ Penang. Westermann's Coll.

Pt. leoninus Rond., 1875.

(*Sargus*) Ann. Mus. Gen., vii, 454.

♂ Locality not given.

Pt. wulpii nom. nov.

(*Pt. apicalis* V d. Wulp nom bis lectum.)

Notes Leyden Mus., vii, 62, 1885.

♂ Sumatra, Borneo. Near *leoninus* Rond., but genitalia *fulvous*, conspicuous and complex instead of black.

The Indian Museum specimens (*vide* note on *Pt. apicalis* Lw.) are from Margherita (Upper Assam).

Pt. repensans Wlk., 1860.

(*Sargus*) Pr. Linn. So., iv, 96.

♂ Makessar (Celebes). Walker says, allied to *S. aurifer* Wlk.

Osten Sacken in reporting 9 ♂ ♂ and a ♀ from Kandari (Celebes), April 1874, adds, "Walker should not have called the wing cinereous — otherwise, the description is recognisable."

Pt. tricolor Meij., 1904.

Bijd. Dierk., xviii, 95; pl. viii, 11.

1 ♂ Sukabumi (Java). The author adds "V der Wulp descr." The coloured illustrations in this paper by Meijere are most excellent.

Pt. quadrifasciatus Wlk., 1861.

(*Sargus*) Pr. Linn. So., v, 146.

♂ Amboina, Batjan. The author adds further characters and a description of the ♀ in his article on Batjan Diptera. Osten Sacken records 1 ♂ from Dorei Hum (Papua), February 1875, and, suspecting variability in the black on the abdomen, places here also a ♀ from Ternate.

Pt. rogans Wlk., 1859.

(*Sargus*) Pr. Linn. So., iii, 81.

♀ Aru Isles. Type in British Museum much damaged. Osten Sacken saw a ♂ from Dorei Hum (Papua) marked February 1875 and adds that *ferrugineus* Dol. is near it, but has no brown spots on the abdomen, nor brown cloud at wing tip. *Pt. doleschalli* Big. from Mysol is probably this species. Osten Sacken has seen a specimen from the Philippines named by Walker as this species, I took a few ♀ ♀ at Lucknow, 7th September 1905, which agree, except that the posterior tarsi are yellow, not black, but in one ♂ they are blackish at the base.

Pt. complens Wlk., 1859.

(*Sargus*) Pr. Linn. So., iii, 81.

♀ Aru Isles.

Pt. tarsalis Wlk., 1861.

(*Sargus*) Pr. Linn. So., v, 274.

♀ Batjan, Gilolo.

Pt. ferrugineus Dol., 1858.

(*Sargus*) Nat. Tijd. Ned. Ind., xvii, 83.

Amboina. Rare during dry season. Van der Wulp records 5 ♀ ♀ from Papua allied to *rogans* Wlk., *rufus* Dol., and *latifascia* Wlk.

Pt. brevipennis Rond, 1875.

(*Sargus*) Ann. Mus. Gen., vii, 454.

Pt. australis Sch., 1868.

Reise Novara, 65.

One ♀ Fani Is. (Nicobars). In the Indian Museum 2 ♂♂ and 2 ♀♀ from Assam (Sadiya and Margherita) and also from Dehra Dun, the species determined by Bigot.

Pt. latifascia Wlk., 1857.

(*Sargus*) Pr. Linn. So., i, 110.

♂ Java, Sumatra.

Pt. doleschalli Big., 1879.

Ann. So. Ent. Fr. (1879), 231.

♂ Mysol. Bigot Coll. May be the same species as *rogans* Wlk., according to Osten Sacken in Ann. Mus. Genova, xvi, 416. Van der Wulp mentions 4 ♂♂ from Tamara and Berlinhafen (Papua).

Chrysochlora Latr., 1825.

Fam. Nat. du regne anim., 494.

The two species recorded from the East vary enormously in size, that of Doleschall being only 3 mm. in length, whilst *C. baccoides* is 17.

Ch. vitripennis Dol., 1856.

Nat. Tijd. Ned. Ind., x, 408; pl. xi, 2.

Djokjokarta (Java).

Ch. baccoides Rond., 1875.

Ann. Mus. Gen., vii, 454.

♀ Borneo.

Sub-family IV.—Clitellarinæ.

Table of genera.

A Thorax with a strong side spine.
  Antennal style thickly pilose — *Negritomyia* B g.
  Antennal style bare — *Ephippiomyia* Latr.
AA Thorax with no side spine.
  Scutellum very gibbous, abdomen always shorter than thorax.
    Scutellum unspined.
      Abdomen little broader than long, much shorter than

thorax; antennæ very short — *Saruga* Wlk.
Abdomen much broader but not longer than thorax; antennæ nearly as long as thorax — *Aulana* Wlk.
Scutellum 2-spined — *Musama* Wlk.
Scutellum normal, abdomen shorter or longer than thorax.
1. Scutellum bare.
Face produced into a snout — *Nemotelus* Geoff.
Face not so produced.
Abdomen elliptical, elongated a little .. — *Lasiopa* Brullé.
Abdomen globose, very much broader, and a little longer than thorax — *Ruba* Wlk.
2. Scutellum with 2 spines.
Spines very distinct, abdomen short, round, very arched — *Oxycera* Meig.
Spines often small or indistinct, abdomen elongated, less arched — *Clitellaria* Meig.
3. Scutellum 4-spined — *Trichochæta* Big.

Negritomyia Big., 1879.

Ann. So. Ent. Fr. (1879), 190.

The species are closely allied in markings, coloration and size; and a rough table for their identification is all that can be drawn up in the absence of specimens of any of the species.

1. Femora black, base pale: large brown spot above discal cell. Long. 10 mm. *maculipennis* Macq.
2. Legs luteous; wings cinereous—costa luteous — Long. 12 mm. *festinans* Wlk.
3. Legs pale tawny testaceous; wing brownish, base clearer — Long. 11 mm. *albitarsis* Big.
4. Legs brown, base of femora pale, wing nearly clear, brown stigma, diffused band near tip, reddish spot on lower edge of wing — Long. 9 mm. *consobrina* Big.

N. maculipennis Macq., 1851.

Dipt. Exot. Supp. 4, 54.

♂ ♀ Manila, Ternate, Papua, near *Clitellaria heminopla* Wied. Type in Paris Museum. In his "Enumeration" Osten Sacken records 1 ♂ and 4 ♀ ♀ from Ramoi and Dorei Hum (Papua) taken February 1875, and from Ternate; also 12 ♂ ♂ ♀ ♀ from Manila,

the abdomen in these latter being more bluish than in the East Indian Islands specimens. Meijere announces a ♀ from Mañokwari (Papua), taken May 2nd. In 1880 Osten Sacken queried "*Odontomyia cinerea*" Dol. (=*Ephippiomyia* id) from Amboina as a synonym of this species, but Van der Wulp keeps them generically divided in his Catalogue.

N. festinans Wlk., 1860.

Pr. Linn. So., iv, 95.

(*Engonia aurata* Sch.)

♂ Makessar, Amboina. The author also adds what he considers the ♀ Osten Sacken records 3 ♂♂ 1 ♀ from Kandari, April 1874.

N. albitarsis Big., 1879.

Ann. So. Ent. Fr. (1879), 207.

♀ Papua. Bigot Coll. Also known from Australia.

N. consobrina Big., 1879; *l.c.*, 208.

♂ Papua. Bigot Coll.

Ephippiomyia Latr., 1809.

Gen. Crust. Ins., iv, 276.

Emended from *Ephippium* Latr. by Bezzi, 1902, Zeits. Hym. Dip., ii, 191.

Ephippium being preoccupied by Bolten in Mollusca 1798, the change of name is merely an emendation. I believe no change of generic characters attaches to Ephippiomyia, but I have not seen the work. I mention this because the new Palæarctic Catalogue attributes the genus to Bezzi, as though newly created.

Table of species.

Rather large sized species 10 to 14 mm.

Femora black	Long. 12-14 mm. *bilineatum* F.
Femora livid, except towards tips	Long. 10 mm. *responsale* Wlk.

Moderate sized species, 7 mm.

Thorax with two stripes of gilded tomentum	Long. 7 mm. *gavasum* Wlk.
Thorax with two indistinct whitish stripes	Long. 7 mm. *cinereum* Dol.
Quite small species	Long. 4 mm. *nigerrimum* Dol.

E. bilineatum F., 1805.

(*Stratiomys*) Sys. Antl., 79.

Clitellaria bivittata Wied., Auss., ii, 46.
Ephippium augustum Macq., Dipt., i, 252.

Raphiocera spinithorax Macq., Dip. Ex. Sup., 3, 17; pl. i, 7.
Clitellaria tenebrica Wlk.; List Dip. Brit. Mus., vii, 522.
Ephippium spinigerum Dol., Nat. Tijd. Ned. Ind., x, 407.
Negritomyia bilineata V d. Wulp, Notes Leyd. Mus., vii, 59.

Reported to be common in Java and to occur in Amboina. I did not come across it although collecting in Java in five localities. Also occurs in Japan.

Two specimens from Tenasserim are in the Indian Museum, of which one, with contiguous eyes, is certainly a ♂ The other has the eyes very slightly but distinctly apart. It is not a ♀, because in this genus the eyes in the ♀ should be widely apart, yet the specimen is undoubtedly of the same species as the first one.

Another specimen also from Tenasserim in the Indian Museum Collection varies in nothing but size, and is a fine *Ephippiomyia* with absolutely contiguous eyes, whilst an interesting fourth specimen (unfortunately minus its antennæ), likewise from Tenasserim, appears to belong to the same genus, but has no side spines. The abdomen is much wider than the thorax as in the typical European species *thoracica* Latr., whereas in *bilineata* it is ovately elongated, and this latter species does not strike one at first as an *Ephippiomyia* at all. Without thoracic spines (of which there is no trace whatever) the Tenasserim specimen becomes an *Oxycera*, but its size (7 mm.), general facies, and black colour approximates it more to the present genus. Regarding the species with linear abdomens not wider than the thorax, I think a separate genus should be established for them. This would include *bilineata* F., and *Ephippiomyia* would be reserved for species in which the abdomen is much broader than the thorax, also comparatively much shorter, thicker and more convex.

E. responsale Wlk., 1865.

(*Clitellaria*) Pr. Linn. So., viii, 106.

♂ Papua. Allied to *bivittata*, but with broader antennæ.

E. gavasum Wlk., 1860.

(*Clitellaria*) Pr. Linn. So. iv., 95.

♂ Makessar (Celebes). The author also describes what he thinks is the ♀

E. cinereum Dol., 1857.

(*Clitellaria*) Nat. Tijd. Ned., xiv, 403.

Amboina. In Van der Wulp's Catalogue, he doubts if an *Ephippiomyia*, and questions the form of its antennæ.

E. nigerrimum Dol., 1858.

Nat. Tijd. Ned. Ind., xvii, 81.

Amboina. A mountain species taken in April, no sex mentioned.

Saruga Wlk., 1860.

Pr. Linn. So., iv, 101.

S. conifera Wlk., 1860 ; *l.c.*, 103.

♂ Makessar (Celebes).

Aulana Wlk., 1864.

Pr. Linn. So., vii, 204.

A. confirmata Wlk. ; *l.c.*, 204.

♀ Mysol.

Musama Wlk., 1864.

Pr. Linn. So., vii, 205.

M. paupera Wlk., 1864 ; *l.c.*, 205.

♀ Mysol. In Carl Semper's collection of Diptera from the Philippines, reported on by Osten Sacken in 1882, was a specimen identified as *paupera* by Walker himself, but Osten Sacken finds it disagrees with the description in several points.

Nemotelus Geoff., 1764.

Hist. d. Insects, ii, 542.

N. albiventris Thoms., 1868.

♂ Manila.

Lasiopa Brullé, 1832.

Exped. à Morée, iii, 307.

Table of species.

Moderate sized species	Long. 10 mm. *villosa* F., var. nov. *himalayensis* mihi.
Small species 4 to 6 mm.	
Antennæ tawny.	
Long. 6 mm.	*radians* Wlk.
,, 4 mm.	*detracta* Wlk.
Antennæ black	Long. 4 mm. *infera* Wlk.

L. villosa F., var. nov. *himalayensis* mihi.

At Mussoorie in May 1905 (12th and 31st) I took 3 ♀ ♀ which hardly differ from the typical form of this European species. The

abdominal spots are slightly narrower and not quite curved upwards so much at the inner ends.

L. radians Wlk., 1857.

(*Cyclogaster*) Pr. Linn. So., i, 7.

♀ Singapore.

L. detracta Wlk., 1857.

(*Cyclogaster* id) *l.c.*, 108.

♀ Sarawak.

L. infera Wlk., 1857 ; *l.c.* 107.

♀ Sarawak.

Ruba Wlk., 1860.

Pr. Linn. So., iv, 100.

Walker gives his description of the ♀, but the only species mentioned is a ♂!

Body wholly testaceous	Long. 8 mm. *inflata* Wlk.
Abdomen black, with whitish pubescence	Long. 6 mm. *opponens* Wlk.

R. inflata Wlk., 1860.

Pr. Linn. So., iv, 101.

Dr. Brauer in Denks. Kais. Ac. Wiss. Wien., xliv, 77, thinks that Schiner's *Thylacosoma amboinense* from that island may be a synonym.

A specimen in the Indian Museum Collection from Kohima (Assam) agrees rather well with this species, but is rather larger (10 mm.) and shews abnormal expanse of wing (12 mm. from centre of thorax to tip of wing—the other wing is missing, also the antennæ). In other respects there are differences ; it may be a new species.

R. opponens Wlk., 1865.

Pr. Linn. So., viii, 107.

♂ Papua. Van der Wulp also records it from Friedrich Wilhelmshafen in Papua.

Oxycera Meig., 1803.

Illig. Mag., ii, 265.

O. manens Wlk., 1860.

Pr. Linn. So., iv, 96.

♂ ♀ Makessar (Celebes).

Oxycera indica mihi, sp. nov.

♀ N.W India. Long. 4½ mm. Head entirely lemon yellow, except a rather wide black band on the vertex reaching from eye to eye. Four small black spots arranged in the form of a square, all placed at an equal distance from the base of the antennæ, which latter are tawny brown, darker at the tip. Lower part of head yellow behind, a moderately wide yellow band encircling the head —passing behind the vertex. The whole head, including the eyes, sparsely pubescent with short pale yellow hairs. Proboscis prominent, black. Thorax aënus black above, with short, rather close yellowish white hair; underside black. Sides lemon yellow from anterior corners of dorsum to beyond root of wings. Scutellum lemon yellow, base narrowly black; two very small spines. Abdomen pale yellow, with very short yellowish white hairs and black marked as follows: a large diamond-shaped spot spread over the centre of the 1st and 2nd segments, a minute spot on each side of the base of the 2nd segment; rather more than the basal half of 3rd, 4th and 5th segments black,—these bands being joined to one another in their centres and the upper one to the large diamond spot on 2nd segment. Belly yellow. Legs lemon yellow, pubescence yellow, minute; a black ring on all the femora and the posterior tibiæ. Wings colourless, veins pale yellow on anterior portion. Halteres pale yellow.

Described from 2 ♀ ♀ in perfect condition in the Indian Museum Collection. Type from Bareilly, United Provinces (15th to 22nd March 1907); the second specimen from Rampur Chaka (23rd to 31st January 1907). In the type the upper pair of spots on the front are larger than the lower ones; in the other example, all four are of uniform size. A larger specimen taken at Calcutta (June 22nd) has four complete black abdominal bands, the first being basal.

This species differs from *O. manens* Wlk. by the latter having the abdomen entirely black.

Clitellaria Meig., 1803.

Illig. Mag., ii, 265.

Table of species.

Antennæ black.

Thorax with three green stripes . Long. 5—7 mm. *flaviceps* Wlk.

Thorax "with a band and stripe of grey tomentum" Long. 10 mm. *notabilis* Wlk.

Antennæ tawny red.

Thorax with yellowish hairs on dorsum Long. 7 mm. *heminopla* Wied.

Thorax with 3 interrupted downy bands Long. 8 mm. *varia* Wlk.

C. flaviceps Wlk., 1857.

Pr. Linn. So., i, 7.

♀ Singapore, Sarawak.

C. notabilis Wlk., 1857.

Pr. Linn. So., i, 108.

♀ Borneo.

C. heminopla Wied.

Zool. Mag., iii, 30.

♂ ♀ Tranquebar.

Not uncommon in India. I took several of each sex at Meerut, 25th April 1905; and odd specimens at Calcutta, 18th to 24th November 1905; Jhansi, 31st March 1905; Jullundur, 5th May 1905; and Lucknow, 7th September 1905. The Indian Museum possesses it from Karachi and Calcutta.

Two ♂ ♂ I took at Meerut, 13th to 19th July 1905, have the femora pale at the base.

C. varia Wlk., 1854.

List Dipt. Br. Mus., v, 63.

♂ Java, Sarawak, Malacca.

Trichochæta Big., 1879.

Bull. So. Ent. Fr., 26; Annales (1879), p. 190 (published first in pt. 3, p. 6, 1878).

T nemoteloides Big., 1879; *l.c.*, 191.

♀ Ternate. Bigot Coll.

SUB-FAMILY V.—HERMETIINÆ.

Table of genera.

Scutellum unspined.

Abdomen elongated, not linear.

Head produced horizontally, antennæ long, almost filiform, horizontal — *Cœnocephalus* V. d. Wulp.

Head normally vertical.

Antennæ apparently of 3 distinct joints, not of uniform width; last joint of 8 divisions — *Hermetia* Latr.

Antennæ apparently filiform, not of uniform width; last joint of at most 6 divisions. — *Eudmeta* Wied.

Abdomen linear, contracted at base — *Massicyta* Wlk.

Scutellum 2-spined, antennæ filiform.
Discal cell elongated, and attenuated posteriorly — *Ampsalis* Wlk.
Discal cell (presumably) normal.
Abdomen elongated, as wide as thorax — *Campeprosopa* Macq.
Abdomen elongate-elliptical; attenuated at base, a little broader and longer than thorax — *Tracana* Wlk.

Cænocephalus V. der Wulp, 1898.

Termés. Fuzet., xxi, 413.

Van der Wulp in separating *Salduba melanaria* Wlk., from the rest of the genus and creating the above genus for it, recognised at once that the venation placed this species in a different sub-family supplemented by a most unusual form of head. Moreover, he recognised *Salduba's* true position (*Pachygastrinæ* sub-family) by his remarks as to its affinities with *Tinda*.

C. melanarius Wlk., 1861.

(*Salduba*) Pr. Linn. So., v, 271.

♂ Batjan.

Hermetia Latr., 1805.

Hist. Nat. Crust. Ins., xiv, 238.

Table of species.

Scutellum unspined.
Legs all or mainly black or blackish brown.
Wings clear, tip a little darker, stigma black brown — Long. 14 mm. *fenestrata* Meij.
Wings blackish.
Long. 10 to 12 mm.
Posterior borders of abdominal segment bright yellow. Long. 10-12 mm. *cerioides* Wlk.
Posterior borders of abdominal segments whitish. Long. 10½ mm. *albitarsis* V. d. Wulp.
Long. 14 to 16 mm.
Thorax with 3 indistinct cinereous stripes — Long. 14-16 mm. *remittens* Wlk.
Thorax with pale yellow marks — Long. 14 mm. *laglaizei* Big.
Legs yellow or reddish
Wings blackish. Thorax with 3 indistinct gold stripes. Long. 12 mm. *rufiventris* Wlk.

Wings clear. Thorax with 1 indistinct white line — Long. 13 mm. *læta* Meij.
Scutellum 2-spined — Long. 17-19 mm. *armata* V. d. Wulp.

H. fenestrata, Meij., 1904.

Bijd. Dierk., xviii, 93 ; pl. viii, 9.

1 ♂ Palembang.

H. cerioides Wlk., 1859.

(*Massicyta*) Pr. Linn. So., iii, 78.

H. *batjanensis* V d. Wulp, 1885 ; Notes Leyd. Mus., vii, 67.

♀ Moluccas, Aru Isles, Gilolo, Batjan, South Halmaheira.

Walker described this under his genus *Massicyta*, distinguished from *Hermetia* by a subpetiolate abdomen and more elongated and linear body, but I agree with Van der Wulp in keeping it in *Hermetia*, a genus in which all degrees of slight contractions of the first abdominal segments occur. *Massicyta* must be reserved for distinctly subpetiolated species such as *bicolor* Wlk.

A series of ♀ ♀ exists in the Indian Museum Collection, but they bear no data. Van der Wulp had 2 ♀ ♀ from Seles, Astrolabe Bay (Papua).

H. albitarsis V. der Wulp, 1898.

Termés. Fuzet., xxi, 419.

♀ Friedrich Wilhelmshafen (Papua).

H. remittens Wlk., 1860.

Pr. Linn. So., iv, 94.

♀ Makessar (Celebes).

H. laglaizei Big., 1887.

Ann. So. Ent. Fr. (1887), 21.

♀ Amberbek (Papua). Type much damaged.

H. rufiventris Wlk., 1861.

Pr. Linn. So., v, 145.

♀ Amboina.

H. læta Meij., 1904.

Bijd. Dierk., xviii, 93 ; pl. viii, 8.

♀ Bengal, near *cerioides*. This is true, for, from the excellent plate I immediately recognised one ♀ which I had eliminated from the series of ♀ *cerioides* in the Indian Museum as distinct.

H. armata V. d. Wulp, 1885.

Notes Leyd. Mus., vii, 68.

♀ Morotai. In possessing two spines on the scutellum this species differs from all others in the genus, and, I think, entitles it to generic rank.

Massicyta Wlk., 1857.

Pr. Linn. So., i, 8.

There are only two oriental species, the former 12—14 mm. in length, the latter 22.

M. bicolor Wlk., 1857.

Pr. Linn. So., i, 8 ; pl. i, 1.

♀ Singapore. The plate given is excellent.

M. inflata Wlk., 1859.

Pr. Linn. So., iii, 78.

♀ Aru Isles.

Eudmeta Wied., 1830.

Ausser. Zweifl., ii, 43.

Table of species.

Large species — Long. 14 mm. *brunnea* Meij.
Smaller species.
Black species with green markings. Long. 9 mm. *marginata* F.
Ferruginous luteous species — Long. 7 mm. *flavida* Big.

E. brunnea Meij., 1904.

Bijd. Dierk., xviii, 94 ; pl. viii, 10.

♂ ♀ Darjeeling. One ♀ from Kohima, Assam, answers well to Meijere's description.

E. marginata F., 1805.

Sys. Antl., 63. (*Hermetia.*)

(*Hermetia cingulata*) Guer. Voy. Coquille.

(*Toxocera limbiventris*) Macq. Dip. Ex. Supp. 4, 45 ; pl. v, 3.

♂ India, Singapore, Sumatra, Java, Amboina. Macquart in Dipt. Exot. Supp. iii, 176, describes the ♀ , pl. i, 9 (figures of head and wing).

In the Indian Museum a ♀ example, without data, is probably this species.

Campeprosopa Macq., 1851.

Dipt. Exot. Supp. 4, 46.

Of the two oriental species, *flavipes* has a black thorax, with lighter coloured pile, whilst *munda* possesses a metallic blue-green thorax.

C. flavipes Macq., 1851.

Dipt. Exot. Supp. 4, 46 ; pl. v, 4.

♀ Java. Long. 12 mm. Bigot Coll.

C. munda Os. Sack., 1880.

Ann. Mus. Gen., xvi, 409.

♂ Sumatra. Long. 8—9 mm.

Ampsalis Wlk., 1860.

Pr. Linn. So., iv, 98.

A. geniata Wlk., 1860 ; *l.c.*, 99.

♀ Makessar (Celebes).

Tracana Wlk., 1860.

Pr. Linn. So., iv, 99.

T iterabilis Wlk., 1860 ; *l.c.*, 99.

♂ ♀ Makessar.

The descriptions of *Campeprosopa*, *Ampsalis* and *Tracana* all read so much alike to me that, I believe, they represent but a single genus. Walker calls the discal cell in *Ampsalis* " elongated and attenuated exteriorly," which is not mentioned in the other genera ; and he differs his *Tracana* from *Ampsalis* by the abdomen being " elongate, elliptical, attenuated at base, a little broader and longer than thorax " compared with " abdomen elliptical, a little broader but not longer than thorax."

Following Van der Wulp I have retained the genera separately, and hope that a visit to England a little later on will enable me to settle the question by an examination of all three types.

SUB-FAMILY VI.—STRATIOMYIINÆ.

Table of genera.

First antennal joint 3 to 4 times as long as 2nd	*Stratiomyia* Geoff.
First antennal joint at most twice as long as 2nd.	*Odontomyia* Meig.
First antennal joint shorter than 2nd	*Euceromyia* Big.

Stratiomyia Geoff., 1764.

(*Stratiomys*) Hist. d. Ins., ii, 475.

Table of species.

Antennæ unusually long—1st joint six times length of 2nd — Long. 10-14 mm. *apicalis* Wlk.

Antennæ of moderate length.

Legs principally black.

Abdomen tawny, with broad black dilated dorsal band. 1st two antennal joints red — Long. 12 mm. *parallela* Wlk.

Abdomen black—no dorsal band; pale marks on posterior borders of segments—near sides. Antennæ black — Long. 10-12 mm. *barca* Wlk.

Legs principally yellow.

Abdomen tawny. Thorax 2-striped, antennæ pale — Long. 8 mm. *inanimis* Wlk.

Abdomen black.

Thorax 4 gold striped, base of antennæ pale — Long. 8 mm. *confertissima* Wlk.

Thorax unstriped, densely pubescent. Antennæ black. — Long. 15 mm. *flavoscutellata* V d. Wulp.

S. apicalis Wlk., 1854.

List. Dip. Brit. Mus., v, 53.

♀ Shanghai.

S. parallela Wlk., 1865.

Pr. Linn. So., viii, 107.

♂ Papua.

S. barca Wlk., 1849.

List. Dip. Brit. Mus., iii, 530.

♂ China. I took a ♂ each at Hankow, 22nd April 1906, and Shanghai, 9th May 1906.

S. inanimis Wlk., 1856.

Tr. Entom. So. (new ser.), iv, 121.

China.

S. confertissima Wlk., 1859.

Pr. Linn. So., iii, 79.

♀ Aru Isles.

S. flavoscutellata V. d. Wulp, 1885.

Notes Leyd. Mus., vii, 60.

♁ Java.

The genus is poorly represented in the East apparently. Three out of the six known species come from semi-Palæarctic regions. I have never taken a specimen myself in the East proper, nor is there one in the Indian Museum, nor do other authors mention any species except the three original descriptions mentioned here. I mention this because *Odontomyia*, the kindred genus, is far from uncommon.

Odontomyia Meig., 1804.

Klass. i., 128.

Table of species.

A Scutellum spined (generic character).
B Abdomen black, with lighter dorsal bands, or edges of abdominal disc pale.
C Legs mostly black.
Abdomen, with pale dorsal band. Long. 5 mm. *minuta* Fab.
Abdomen, with only the edges pale Long. 8 mm. *atraria* Wlk.
CC Legs mostly yellow, with or without darker bands. Abdomen black with pale edges.
Legs all yellow; smaller species. Long. 6 mm. *bifascia* Wlk.
Legs with or without black bands, little larger species.
Femora and tibiæ with black bands .. Long. 8 mm. *æqualis* Wlk.
Femora and tibiæ all yellow.
Antennæ all reddish yellow. Thorax gold striped; abdomen with greenish yellow side spots Long. 8 mm. *viridana* Wied.
Antennæ with base only yellow. Thorax with gold pubescence; abdomen with narrow pale border. Long. 8 mm. *cinctilinea* Wlk.
BB Abdomen pale; yellow, green, or tawny, with or without black dorsal stripe or bands.
D Legs mostly black.
Thorax unstriped Long. 5 mm. *pusilla* Fab.
Thorax with 2 silvery stripes. Long. 9 mm. *siderogaster* Wied.
DD Legs mostly pale, or slightly marked with black.
E Abdomen uniformly pale, without dorsal or transverse black bands.
1. Thorax black with light hair; 3 black stripes Long. 8 mm. *finalis* Wlk.

2. Thorax black with bright red brassy pile — Long. 5 mm. *rubrithorax* Macq.
3. Thorax black with light hair, unstriped.
   Legs entirely yellow — Long. 8 mm. *diffusa* Wlk.
   Legs not entirely yellow.
      Posterior femora and tips of tibiæ brown — Long. 7 mm. *claripennis* Thoms.[1]
      Femora and tibiæ tawny, coxæ more or less black — Long. 10 mm. *lutatius* Wlk.

EE Abdomen pale, with black dorsal stripe or transverse bands.

F Legs partly black, or with distinct black rings.
1. "Posterior legs black, testaceous at base" — Long. 9 mm. *consobrina* Macq.
2. Legs pale. 4 posterior femora and tibiæ with broad black rings — Long. 5 mm. *ochracea* Bru. sp. nov.

FF Legs all pale (femora narrowly ringed in *immaculata*).
1. Thorax brassy — Long. 6 mm. *solennis* Wlk.
2. Thorax pale green with yellow hair, legs reddish. — Long. 12 mm. *ochropa* Thom.
3. Thorax black, with lighter hair.
(*a*) Small species, indistinct brown bands on femora — Long. 5 mm. *immaculata* Bru. sp. nov.
(*aa*) Larger species—
1. Thorax with bright tawny hair. Long. 9-11 mm. *garatas* Wlk.
2. Thorax with whitish down. Long. 12 mm. *immiscens* Wlk.
3. Thorax with short, golden yellow hair. Long. 8 mm. *restricta* Wlk.
4. Thorax with silver tomentum. Long. 10 mm. *staurophora* Sch.

AA Scutellum with two exceedingly minute spines — Long. 5 mm. *submutica* Bru. sp. nov.

AAA Scutellum unspined — Long. 11 mm. *mutica* V d. Wulp.

O. minuta Fab., 1792.

(*Stratiomys*) Ent. Sys., iv, 268.

♀ Tranquebar, East India. Type in Fab. Coll.

In the Indian Museum Collection I find 1 ♀ taken at the end of June, and have taken 2 ♀ ♀ myself in Calcutta.

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[1] I am not quite sure that this species belongs to my sub-division E—the author's description reading "abdomen pallide flavum, limbo prasino," yet this hardly reads like a distinct dorsal stripe, or wide transverse bands.

O. atraria Wlk., 1865.

Pr. Linn. So., viii, 106.

♂ ♀ Papua.

O. bifascia Wlk., 1861.

Pr. Linn. So., v, 232.

♂ Dorey (Papua).

O. æqualis Wlk., 1861.

Pr. Linn. So., v, 271.

♀ Batjan.

O. viridana Wied., 1824.

Analec. Entom., 29.

Bengal, Ternate, Tibet.

O. cinctilinea Wlk., 1862.

Pr. Linn. So., vi, 4.

♀ Gilolo.

O. pusilla Fab., 1792.

(*Nemotelus*) Ent. Sys., iv, 268.

Tranquebar. Allied to *minuta* F. and to my new species *submutica* and *incompleta.*

O. siderogaster Wied., 1830.

Ausser. Zweifl., ii, 65.

♀ Java. Type in Westermann's Coll. Also in Leyden Museum.

O. finalis Wlk., 1860.

Pr. Linn. So., iv, 94.

♀ Makessar and Manado (both Celebes). I took one ♀ at Rangoon, 18th August 1906. The abdomen (if the species is correctly identified) is "dirty tawny black" to use a Walkerian expression, and the specimen is only 7 mm. long.

O. rubrithorax Macq., 1838.

Dip. Exot., vol. i, 185.

♂ Bengal. Macquart says it resembles *Stratiomyia cuprina* Wied, from Brazil, but that species is much larger.

O. diffusa Wlk., 1854.

List. Dip. Brit. Mus., v, 53.

♀ Java, Sumatra. I am in much doubt as to the limits of this species.

O. claripennis Thoms., 1868.

Eugenie Reise, 456.

♂ Manila. Said to be near Macquart's *albipennis*.

O. lutatius Wlk., 1849.

List. Dip. Brit. Mus., iii, 532.

♀ Malacca.

A ♀ from Siliguri, N. Bengal, in the Indian Museum dated 30th June 1906 is undoubtedly this species. The legs are all yellow, whereas Walker says " hips " black.

O. consobrina Macq., 1847.

Dip. Exot. Supp. 3, 16 ; pl. i, 8.

♂ Java, Sumatra. Macquart's diagram of the antenna shews it rather thicker than is usual in this genus.

O. ochracea mihi, sp. nov.

♂ Calcutta. Vertex and front, shining black ; lower part of head, yellowish white ; mouth black ; eyes practically, but not absolutely contiguous just above frontal triangle, diverging thence to vertex. Antennæ brown, 3rd joint black, the 1st joint a little longer than the 2nd. Thorax shining, dark aënus black, with sparse very short gold hair. Scutellum pale, base black, spines small, pale yellow. Abdomen in life—peach colour, after death—pale ochreous tawny, with a dorsal row of 4 black spots, of which the basal one is largest and triangular, the 2nd very small and round, the 3rd large and transversely oral, the 4th much smaller and of the same shape. Belly unicolorous, the last two dorsal spots being visible from below. Legs pale yellow tawny, all the femora with a broad brown ring in the middle ; posterior tibiæ and upper side of posterior tarsi dark brown. Wings quite limpid, veins invisible, except along the fore border. Long. 4 mm.

Described from 2 ♂ ♂ in the Indian Museum Collection (including the type specimen) and 2 ♂ ♂ in my own Collection—all taken in Calcutta.

O. solennis Wlk., 1851.

♂ East India. Ins. Saunds. Dip., 79.

O. ochropa Thoms., 1868.

Eugenie Reise, 456.

Manila. Very near *O. viridana* Wied. There are several specimens (♂ ♂ ♀ ♀) of a species near this one in the Indian Museum Collection, from Bangalore and Calcutta.

O. immaculata mihi, sp. nov.

♂ N. India. Long. 5 mm., length of wing 5 mm. Type in Indian Museum Collection. Head black, with very short pale hair below, a shining black tubercle immediately below antennæ, which are black, 1st and 2nd joints tawny. Eyes contiguous for a short distance thus forming a small triangle above antennæ, and another on the black vertex. Eyes large, upper facets much larger. Thorax dull black with short, meagre goldish pubescence, black below with a little short white hair at the sides. Scutellum all black, spines very short. Abdomen pale greenish or tawny, with more or less distinct traces of a pale brownish coloration on apical half; this spot may not be a natural coloration, but due to the contents of the body. Wings quite clear, veins invisible except those on foreborder, which are tawny. Discal cell so minute as to be almost invisible: alulæ bright yellow. Legs tawny yellow, anterior femora with a narrow, brown ring in middle; intermediate femora with a brown ring near tip. Tarsi tips slightly darker. One ♂ from Bhim Tal,[1] 4,500 feet, captured by Dr. Annandale, 22nd to 27th September 1906. What I believe to be the ♀ of this species, is represented in the Indian Museum Collection by a single specimen taken in Calcutta, 5th April 1907.

O. garatus Wlk., 1849.

List Dip. Brit. Mus., iii, 532.

♀ China.

O. immiscens Wlk., 1860.

Pr. Linn. So., iv, 94.

♂ Makessar. Osten Sacken describes a ♀ from Kandari (Celebes) taken April 1874, adding that he has seen Walker's type in the British Museum and believes it to be the same species, although not agreeing entirely with the description.

O. restricta Wlk., 1864.

Pr. Linn. So., vii, 203.

♂ Mysol.

O. staurophora Sch., 1868.

Novara Reise, 59.

2 ♀ ♀ Hong Kong.

O. submutica mihi, sp. nov.

♀ Bengal. In *minuta* F. group. Head above, below, front, and

[1] Also in Indian Museum collection from Bareilly and from Calcutta (June 6th). I took one ♂ at Calcutta (31st March 1907).

a wide band behind eyes, bright yellow. Eyes rather small, black facets of uniform size. A blackish brown band stretches across the vertex from eye to eye, with a central larger spot. Two large round spots on front, below vertex, two much smaller ones just below antennæ, a small spot immediately below base of antennæ, and the proboscis, black. Thorax black, with very short silvery cinereous pubescence, sides black, pleuræ pale yellow. Scutellum yellow, base black, bearing two almost microscopic spines. Abdomen pale yellow, tinged with grey, 1st segment yellow, posterior border black in centre; 2nd, yellow, occupied by a black band not reaching the sides, placed along the foreborder, and extended posteriorly in the centre, and at the sides; 3rd, 4th and 5th with black bands from anterior border, nearly to posterior border, and not reaching sides of segments; last segment very small, all yellow. Wings quite clear, veins, costal cell and stigma pale yellow. Legs yellow, femora with broad brown band about the middle, tips of posterior tibiæ, and tips of tarsi, blackish. Halteres pale green. Of the three specimens (♀) I have seen, one is in the Indian Museum, from Siliguri, and the other two I took myself in Calcutta, 5th March 1905, and 1st February 1907, in grass near ponds at Tollygunge.

O. mutica V der Wulp, 1885.

Notes Leyd. Mus., vii, 62.

♂ Ternate. The author compares this to the North American species *nigirostris* Lw., a species which, in general facies, seems to have some resemblance to a *Lasiopa*.

This species having an unspined scutellum may perhaps be placed in a new genus, in which my *submutica* might also enter.

Euceromyia Big., 1877.

Bull. So. Ent. Fr. (1877), p. lxxiv.

E. nexura Wlk., 1859. (*Stratiomys*) Pr. Linn. So., iii, 80.

♂ ♀ Aru Isles; also from Mysol. Long. 7 mm.

In concluding these notes I wish to thank Dr. Annandale, Officiating Superintendent of the Indian Museum, Calcutta, for his kindness in affording me access to the Museum Collection and Library. They were originally intended only as a revised list of Oriental species of Stratiomyidæ for my own use, but gradually extended to their present form, and I must again attribute to the paucity of material at my command any errors or deficiencies that may be found.

I hope to visit England shortly, and shall then be able to correct any errors, at least as far as Walker's species are concerned, by an examination of his types at the British Museum. Such corrections will be incorporated in a supplementary paper and published in this journal.

ADDENDUM.

Acanthina argentea, mihi, sp. nov.

♂ Calcutta. Long. 3 mm. Eyes extending the whole height of the head shortly but not thickly pubescent, subcontiguous at nearest point of approach as the frons at this point is receding but attains the surface of the eyes towards the vertex, which is considerably raised and occupied by the ocelli; facets rather large, of uniform size. Frons, both above and below the nearest approach of the eyes, shining white. Back of head and underside of head black, inner orbit of eyes below antennæ white. Antennæ, structurally, exactly as in Wiedemann's generic description, with first two joints black, third reddish-brown with blackish marks: style thick. Proboscis short, yellowish, with a few hairs. Thorax, dorsum and sides, and scutellum black, both uniformly covered with short silvery-grey pubescence. Scutellum with four rather large whitish spines. Abdomen black, covered like the thorax with short silvery-grey pubescence. No signs of any marks or pattern on either thorax or abdomen. Belly black, with short grey hairs. Legs yellowish-white; femora black, extreme base and tips pale; tibiæ with a broad black band, leaving only the basal fourth and the tip pale. Wings and stigma absolutely colourless, but veins distinct, though pale: alulæ very small, brownish-white; halteres brownish-yellow, knob white.

Described from a perfect ♂ in the Indian Museum Collection, taken at Calcutta on 22nd May, 1907. The small size of this species will easily distinguish it from the other two species mentioned.