

XVI.—ADDITIONAL RECORDS AND DESCRIPTIONS  
OF SYRPHIDÆ FROM THE MALAY PENINSULA

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In my previous report on the *Syrphidæ* of the Malay Peninsula\* I presented descriptions of all the species of which I had representatives. In that report the specimens collected during the years 1921–25 were dealt with. The present contribution is based upon the collections made since that time, up to early January of the present year (1930). Many species new to the region are at hand and the range of forms previously recorded from a single area is increased as a result of the study of the further excellent collection made by Mr. H. M. Pendlebury, Systematic Entomologist, Federated Malay States Museums.

I have found a few typographical errors in the original paper and these, where important, are noted in the text. Some inaccuracies have also come to light, some new synonymy is suggested. Where additional species belonging to a genus are represented in the collection new keys are presented in order to simplify the identification of material. In what is really a second part of this report, dealing with two collections from British North Borneo, are descriptions of many new species: these are included in the keys. In addition to these a few specimens from Siam, contained in the collection of the American Museum of Natural History, are also recorded. In pursuance of the policy of the Federated Malay States Museums, the types of new species will be deposited in the British Museum of Natural History, while, wherever material permits, paratypes are retained in the collection of the American Museum of Natural History.

The arrangement follows that of my previous paper. The acquisition of several genera of which I have not previously had representatives enables me to present what appears to be a much more satisfactory generic synopsis.

I must once more express my thanks to Mr. H. M. Pendlebury for the pleasure it has given me to examine and report upon the collection. Also to Mr. C. Boden Kloss, Director of the Straits Settlements and Federated Malay States Museums, with whom Mr. Pendlebury made the first collection from Borneo and whose direction of the Museums is resulting in the acquisition and maintenance in Malaya of extensive faunal collections.

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\* Journ. F.M.S. Mus., XIV, 1928, pp. 141—324.

## Synopsis of Genera.

- 1 (2). Anterior crossvein terminating considerably before the middle of the discal cell - - - 2.  
 Anterior crossvein joining the fourth vein at or beyond the middle of the discal cell, usually oblique - - - 43.
- 2 (1). Arista apical - - - 3.  
 Arista dorsal - - - 4.
- 3 (2). Eyes pilose; abdomen oval - - - *Callicera* Meigen.  
 Eyes bare, abdomen slender - - - *Pelecocera* Meigen.
- 4 (2). Humeri pilose, at least on the posterior part - 5.  
 Humeri entirely bare - 26.
- 5 (4). Face never tuberculate, concave between the antennal base and tip of oral margin which is usually more or less produced - - - 6.  
 Face either tuberculate, strongly produced downward, practically perpendicular or convex - - - 9.
- 6 (5). Epistoma produced forward into a long snout, abdomen broadly oval - *Rhingia* Scopoli.  
 Epistoma not unusually produced; abdomen slender - - - 7.
- 7 (6). Third antennal segment orbicular, rather large, rarely oval; arista longer than antenna - *Sphegina* Meigen.  
 Third antennal segment elongate-oval - - - 8.
- 8 (7). Face everywhere more prominent than the antennal base - - - *Rhinobaccha* de Meijere.

Face concave and, at some point, less prominent than the antennal base - - - *Neoascia* Williston.

9 (5). Marginal cell closed - 10.

Marginal cell open - - 11.

10 (9). Arista plumose - - *Volucella* Geoffroy.

Arista bare (*Eristalinæ*) - *Dissoptera* Edwards.

11 (9). Arista plumose - - 12.

Arista bare or short pubescent - - - 16.

12 (11). Face wholly black (or with small yellow spot on the sides below) and with strongly differentiated lateral margins (subgenus *Endoiasimyia* Bigot) - *Cheilosia* Meigen.

Face yellowish, often with median black vitta, the side margins obsolete above and at most poorly differentiated - 13.

13 (12). Posterior coxæ bare behind; apical cross-vein oblique - - - 14.

Posterior coxæ pilose behind; apical cross-vein at right angle to fourth vein - - - *Graptomyza* Wiedeman.

14 (13). Abdominal pile short, not abundant, not concealing the ground color from any view - - 15.

Abdominal pile abundant and moderately long concealing the ground color from anterior or lateral view - - *Arctophila* Schiner.

15 (14). Head very short - - *Pseudovolucella* Shiraki.

Head somewhat shortened but not strikingly so - - - *Sericomyia* Meigen.

16 (11). Face convex in profile, never tuberculate - 17.

- Face not convex, usually tuberculate or the oral margin more or less projecting - - - 18.
- 17 (16). Posterior coxæ bare behind - - - *Mixogaster* Macquart.  
Posterior coxæ pilose behind - - - *Microdon* Meigen.
- 18 (16). Face or front with transverse wrinkles - - 19.  
Face and front without transverse wrinkles - 20.
- 19 (18). Third antennal segment elongate - - - *Orthoneura* Macquart.  
Third antennal segment little longer than broad - - - *Chrysogaster* Meigen.
- 20 (18). Abdomen spatulate; humeri hairy only on the posterior border (subgenus *Allobaccha* Curran) - - - *Baccha* Fabricius.  
Abdomen rarely spatulate, the humeri more than half haired - - 21.
- 21 (20). Abdomen oval or elongate oval, not unusually long; face almost always wholly black in ground color - - 22.  
Abdomen twice as long as thorax, somewhat narrowed sub-basally; arista near middle of third antennal segment - - - *Spheginobaccha* de Meijere.
- 22 (21). Face tuberculate - - 23.  
Face without tubercle - 24.
- 23 (22). Eyes bare - - - *Cartosyrphus* Bigot.  
Eyes pilose - - - *Cheilosia* Meigen.
- 24 (22). Oral margin conspicuously produced - - - *Psilota* Meigen.  
Oral margin scarcely produced - - - 25.

- 25 (24). Face widening below - *Pipiza* Meigen.  
 Face slightly narrowed  
 below - - - *Pipizella* Rondani.
- 26 (4). Abdomen more or less  
 spatulate, the second  
 segment cylindrical on  
 most of its length - - *Baccha* Fabricius.  
 Abdomen not spatulate,  
 never conspicuously  
 narrowed toward the  
 base - - - 27.
- 27 (26). Face and scutellum whol-  
 ly black - - - 28. .  
 Face or scutellum or both  
 partly pale in ground  
 color - - - 30.
- 28 (27). Abdomen broad, ellipti-  
 cal, flat - - - *Xanthandrus* Verrall.  
 Abdomen narrower than  
 the thorax, with almost  
 parallel sides in male - 29.
- 29 (28). Anterior tarsi or tibiae  
 or both, in ♂, more or  
 less strongly broaden-  
 ed - - - *Platycheirus* St.  
 Fargeau et Serville.  
 Legs simple - - - *Melanostoma* Schiner.
- 30 (27). Antennæ very long, por-  
 rect; wasp-like species - *Chrysotoxum* Meigen.  
 Antennæ shorter, not  
 porrect, usually not  
 wasp-like in appear-  
 ance - - - 31.
- 31 (30). Sides of the mesonotum  
 bright yellow in ground  
 color - - - 32.  
 Sides of the mesonotum  
 at most obscurely yel-  
 lowish - - - 35.
- 32 (30). Face strongly produced  
 forward and with a  
 well marked, long, nasi-  
 form tubercle - - *Sphærophoria* St.  
 Fargeau et Serville.  
 Face at most moderately  
 produced, usually with  
 a very low or broad  
 tubercle - - - 33.

- 33 (32). Abdomen mostly opaque ;  
facial tubercle not  
strong, broad and low - *Syrphus* Fabricius pt.  
Abdomen with broad  
shining black and yellow  
bands or spots - 34.
- 34 (33). Third antennal segment  
swollen, elongate and  
cylindrical - - - *Ischiodon* Sack.  
Third antennal segment  
laterally compressed,  
obtusely rounded apically,  
not elongate - *Sphærophoria* St.  
Fargeau et Serville.
- 35 (31). Eyes pilose - - - 36.  
Eyes bare - - - 40.
- 36 (35). Abdomen and thorax  
with abundant, long  
pile, the face produced  
strongly downward - *Eriozona* Schiner.  
Without both these characters  
- - - 37.
- 37 (36). Quite small species,  
the abdomen normally  
drooping; antennæ rather  
elongate - - *Paragus* Latreille.  
Species more than 7 mm.  
in length, the abdomen  
never drooping - - 38.
- 38 (37). Abdomen not margined,  
the sides curled under - *Ischyrosyrphus* Bigot.  
Abdomen with raised  
margins at the sides - 39.
- 39 (38). Abdomen with pale fasciæ  
or paired spots - *Syrphus* Fabricius.  
Abdomen black on basal  
half, reddish on apical  
half - - - *Malayomyia* Curran.
- 40 (35). Wings pure hyaline, entirely  
without microscopic hairs - - *Scaeva* Fabricius.  
Wings villous on most of  
surface - - - 41.
- 41 (40). Oral opening narrow; abdomen  
shining, broader than the thorax  
and usually flat - - *Asarkina* Macquart.

- Oral opening oval; abdomen largely opaque - 42.
- 42 (41). Abdomen very broad and flat, the very broad pale fasciæ usually with green tinge - - *Didea* Macquart.
- Abdomen but little broader than the thorax, often narrow, always more pointed apically - *Syrphus* Fabricius.
- 43 (1). Antennæ with a terminal style - - - *Ceriodes* Rondani.
- Antennæ with dorsal arista - - - 44.
- 44 (43). Each femur at base of under surface with a dense patch of setulæ which are usually black; third vein usually strongly looped into apical cell - - - 53.
- Only the posterior femora with such setulæ; third vein only gently looped into apical cell - 45.
- 45 (44). Marginal cell open - - 46.
- Marginal cell closed and petiolate - - - *Milesia* Latreille.
- 46 (45). Apical crossvein strongly recurrent - - - *Eumerus* Meigen.
- Apical crossvein at most weakly recurrent just at its apex - - - 47.
- 47 (46). Face produced downward and forward into a long, sharp snout - *Lycastris* Walker.
- Face not sharply produced - - - 48.
- 48 (47). Arista bare - - - 49.
- Arista plumose (see couplet 14). - -
- 49 (48). Pile very long and abundant; (resembling bumble bees) - - *Criorhina* Meigen.
- Pile short or of moderate length; (resembling wasps or other bees) - 50.

- 50 (49). Mesonotum with bright yellow pollinose spots in addition to those on the humeri - - *Temnostoma* St. Fargeau et Serville.
- Mesonotum at most weakly pollinose other than on the humeri - 51.
- 51 (50). Pile abundant and moderately long - - *Brachypalpus* Macquart.
- Pile short and usually inconspicuous - - 52.
- 52 (51). Face rather carinate; oral margin not strongly produced; posterior femora very greatly swollen - - - *Syritta* St. Fargeau et Serville.
- Face concave; posterior femora rarely greatly swollen - - - *Xylota* Meigen.
- 53 (43). Marginal cell open - - 54.
- Marginal cell closed - 57.
- 54 (53). Posterior femora with a triangular projection below before the apex - *Merodon* Meigen.
- Posterior femora normal, sometimes with a low ridge on apical third of lower edges - - 55.
- 55 (54). Apical crossvein strongly recurrent - - *Azpeytia* Walker.
- Apical crossvein at most slightly recurrent - 56.
- 56 (55). Face at most obscurely tuberculate - - *Mesembrius* Rondani.
- Face with strong tubercle - - - 57.
- 57 (56). Scutellum yellowish - 58.
- Scutellum shining black - *Klossia* gen. n.
- 58 (57). Posterior femora with a distinct ridge on more than the apical third - *Tigridimyia* Bigot.
- Posterior femora with only slight preapical swelling - - - *Mallota* Meigen.



- 59 (53). Eyes pilose, at least on  
upper half - - - 58.  
Eyes bare - - - 62.
- 60 (59). Eyes unicolorous or prac-  
tically so - - - *Eristalis* Latreille.  
Eyes spotted or striped - 61.
- 61 (60). Eyes with vertical brown  
stripes - - - *Eristaloides* Rondani.  
Eyes with numerous  
round spots, often  
many of them con-  
fluent - - - *Lathyrophthalmus*  
Mik.
- 62 (59). Mesonotum vittate with  
black and gray or yel-  
low - - - 63.  
Mesonotum not vittate - 64.
- 63 (62). Face not tuberculate, the  
oral margin the most  
prominent - - - *Keda* gen. n.  
Face tuberculate, the  
tubercle the most pro-  
minent - - - *Merodonoides* gen. n.
- 64 (62). Posterior femora with a  
strong triangular sub-  
apical tooth below near  
the apex - - - *Dolichomerus*  
Macquart.  
Posterior femora without  
such tooth - - - 65.
- 65 (64). Mesonotum distinctly  
broader than long;  
head very large - - - *Megaspis* Macquart.  
Mesonotum not as broad  
as long; head normal  
in size - - - 66.
- 66 (65). Mesonotum almost bare,  
the hair extremely  
short - - - *Axona* Walker.  
Mesonotum with more or  
less conspicuous pile - 67.
- 67 (66). Loop of third vein more  
or less recurrent ante-  
riorly; abdomen elong-  
ate - - - *Korinchia* Edwards.  
Loop of third vein oblique  
apically, never quite  
transverse; abdomen  
broader, more oval and  
more tapering - - - *Eristalis* Latreille.

## CERIOIDINÆ

Genus *Cerioides* Rondani.

The collections contain three species, one from Borneo. The genus was not represented in previous collections although it was known to occur in the Malay Region.

## Table of Species.

- |  |                              |
|--|------------------------------|
| 1. Mesonotum without a yellow vitta or spot above the wings - - - -                          | 2.                           |
| Mesonotum with a yellow vitta above the wings - -  | <i>trinotata</i> de Meijere. |
| 2. Scutellum yellow with the median third black, the spots of practically equal size - - - - | 3.                           |
| Scutellum black with the free border wholly yellow -   | <i>siamensis</i> sp. n.      |
| 3. Squamæ brown with whitish border - - - -  | <i>javana</i> Wiedemann.     |
| Squamæ white - - - -   | <i>anchorata</i> Bigot.      |

*Cerioides trinotata* de Meijere.

Two ♂, Kedah Peak, 3,950 ft., March 23, 1928 (H. M. Pendlebury).

One of these specimens shows only a part of the yellow triangle on the posterior border of the mesonotum while the other shows no trace of it. Nevertheless I believe that they are referable to this species.

*Cerioides siamensis* sp. n.

Evidently related to *triangulifera* Brunetti but the cheeks are wholly black in ground color. Length, about 13 mm.

*Female.* No antennal pedicel, but the frontal prominence is produced forward so as to overlap the base of the antennæ. Head black in ground color, the sides of the face very broadly yellow, the yellow produced inwards above as a large, orbicular spot which greatly narrows the black and leaves it in the form of a triangle; front below with a large transverse yellow triangle on either side which is narrowly separated from the yellow of the face along the orbits. Frontal depressions sub-triangular, coarsely punctured, leaving a broad median ridge; sides of front yellow pubescent below the ocelli. Posterior orbits and vertex brassy yellow pollinose, behind the upper angles of the eyes a small, brown spot. Pile short, whitish, very short and fine on the face and lower half of the front.

Antennæ blackish, the basal half of the basal segment brownish-red; third segment short and tapering, half as long as the second, the second five-sixths as long as the first; style yellowish.

Mesonotum black, finely scrobiculate; humeri and notopleura yellow; pile very short, brownish-yellow. Pleura black; the posterior half of the mesopleura and a large, subcontiguous spot on the sternopleura, yellow; pile whitish. Scutellum black, the free border broadly yellow, the pile as on the mesonotum.

Anterior femora yellow on basal third, ferruginous apically, the under surface black on apical two-thirds; tibiae and tarsi rusty brownish-red. Middle femora yellow on basal half, rusty reddish apically, the under surface black on the whole length. Middle tibiæ and tarsi, brownish-red, the apical segment blackish. Basal fourth of posterior femora yellow except ventrally, the apical third brownish-red, the rest black; posterior tibiæ and tarsi somewhat paler than the middle pair, the apical two or three segments black or brown.

Wings cinereous hyaline, brown in front of the third vein. Squamæ white. Halteres yellow.

Abdomen black, with very short appressed pile. First segment with a yellow spot on either side. Apices of second to fourth segments rather broadly reddish-yellow. Second segment slender, longer than the third, widened at base and apically, its sides broadly ferruginous except on the apical fourth. Fourth segment with a very large triangle of brownish-yellow pollen which is coarsely punctulate and conspicuous only in some views.

Described from one specimen from Nan, Siam, Dec. 30, (T. D. A. Cockerell) in American Museum of Natural History.

#### MICRODONTINAE

#### Genus *Microdon* Meigen.

The following key includes the species which I have been able to place from Malaya and Borneo.

#### Table of Species.

- |   |   |   |     |
|---|---|---|-----|
| 1. Scutellum with spines  | - | - | 2.  |
| Scutellum without spines  | - | - | 10. |
| 2. Scutellar spines closer together than the length of the scutellum which is about as long as wide | - | - | 3.  |

- Scutellum almost or quite twice as wide as long its apex gently concave between the spines which are situated on the corners - - - - 5.
3. Wings hyaline or nearly so, or the crossveins clouded - - - - 4.
- Wings blackish and brownish in front and apically - *robinsoni* Curran.
4. Antennæ longer than head - 19.
- Antennæ shorter than head - *minuticornis* sp. n.
5. Face wholly yellow pilose - 7.
- Face largely or wholly black pilose - - - - 6.
6. Face wholly black pilose - *lativentris* de Meijere.
- Face yellow pilose laterally; wings pale yellow in front - - - - *grandis* Curran.
7. Mesonotum and abdomen wholly golden yellow pilose - - - - *æneoviridis* sp. n.
- Mesonotum and abdomen largely black pilose - 8.
8. Abdomen with white or yellow pilose areas - - 9.
- Abdomen wholly black pilose - *stilboides* Walker.
9. Anterior four tibiæ and the scutellum white haired - *alboscutatus* sp. n.
- Tibiæ and scutellum black haired - - - - *laticutellaris* sp. n.
10. Color blackish or partly reddish - - - - 11.
- Color metallic bluish - - *sumatranus* Wulp.
11. Abdomen not or but little reddish on the sides - 13.
- Abdomen partly reddish or yellow on the second and third segments - - 12.
12. Antennæ very short, not longer than the head; scutellum emarginate apically and with erect pile - *minuticornis* sp. n.
- Antennæ very long; scutellum evenly rounded apically and with appressed pile - - - - 18.

13. Apical fourth of the wings  
brown - - - - *wulpi* Mik.  
Wings not contrastingly  
brown apically - - - *auroscutatus* Curran.
14. Wings black basally, pale  
orange on more than the  
apical half - - - - *pretiosa* sp. n.  
Wings differently colored - 15.
15. Wings rather whitish, with  
yellow veins and brown  
apex - - - - *pendleburyi* sp. n.  
Wings differently colored, (if  
spotted apically the veins  
are brown) - - - - 16.
16. First antennal segment hairy - 17.  
First antennal segment bare - 20.
17. Legs wholly brownish-yellow;  
wings uniformly brown-  
ish tinged - - - - *fulvipes* de Meijere.  
Legs black; wings deep  
brown in front, paler  
brown behind - - - *stenogaster* sp. n.
18. Apical fourth of the wings  
brown and sharply con-  
trasting with the basal  
part - - - - *wulpi* Mik.  
Wings much more evenly  
colored - - - - *auriscutatus*  
*variventris* Curran.
19. Abdomen narrowest at second  
segment - - - - *luxor* sp. n.  
Abdomen widest at second  
segment - - - - 20.
20. Mesonotum with transverse  
brassy yellow fasciæ - *klossi* sp. n.  
Mesonotum with unicolorous  
pile - - - - *trimacula* Curran.

***Microdon æneoviridis* sp. n.**

A very robust species with very narrow front and short, rectangular scutellum, differing from *stilboides* Walker and *grandis* Curran by the color of the pile. Length, 14 mm.

*Male.* Head green, sides of front and narrow posterior orbits with cyaneous reflections. Pile black, on the face and the occiput below the neck brassy-yellow. Front strongly narrowed at lowest third, the ocellar triangle longer than wide, situated far before the posterior angles of the eyes. Face gently convex, more strongly so below.

Eyes with sparse, short white pile. Antennæ much longer than the head, black, the first and third segments of equal length, the second two-sevenths as long. Face narrow, somewhat narrowed below.

Mesonotum and scutellum green, the former with five brassy vittæ, the latter mostly brassy, the pile moderately short and brassy-red. Pleura black pilose.

Legs deep blue, black pilose, the posterior tarsi slightly swollen.

Wings with brownish tinge, somewhat darker along the veins, the venation much as in *grandis*. Squamæ white with rusty brownish fringe, the upper lobe brownish.

Abdomen bronze-green, with abundant rather short brassy reddish pile. Basal three sternites green, mostly black haired, the fourth sternite and genitalia reddish.

Holotype, ♂, Kedah Peak, 1,000 to 2,000 feet, March 7, 1928 (H. M. Pendlebury).

#### ***Microdon alboscutatus* sp. n.**

Cyaneous, the abdomen with three pairs of large, white pilose spots. Resembles *sumatranus* but with a short, broad scutellum and short, sparse, cinereous pile on the eyes. Length, 12 mm.

*Male.* Head bluish, the face green; pile white, on the front yellow. Front narrow, narrowed to the anterior third where the transverse groove is deep; ocellar triangle equilateral, situated well before the posterior angles of the eyes. Face almost perpendicular, convex below. Antennæ black, very long, the third segment six-sevenths as long as the first, the second one-fifth as long as the third; arista brown, shorter than the third segment.

Pile of the thorax fairly long, in front of the suture rather golden and there are a few golden hairs above the roots of the wings, behind the suture and on the pleura the pile is black but below the humeri it is whitish. The scutellum bears white pile and the pilose spines are situated at the posterior corners, the apex transverse but distinctly concave dorsally, the width of the scutellum equal to about twice its length.

Legs black, with bluish reflections, the pile black; anterior four tibiæ and basal half of the posterior pair on upper half, with abundant, silvery-white pile. The pile on the tarsi is short and appressed, the first segment of the posterior pair strongly swollen.

Wings blackish, paler posteriorly, subbasally with a broad, incomplete hyaline fascia; apical crossvein very slightly recurrent, with a short appendage projecting into the apical cell from the middle. Squamæ white. Halteres yellow with black knob.

Abdomen with appressed, rather short pile, the first and second segments each with a white pilose spot towards either side, the second with another lateral spot outside the first-mentioned one; third segment on either side with an oblique, subtriangular white pilose spot which tapers posteriorly and connects with the inner spots on the preceding segment; fourth segment laterally with a large, oblique-transverse spot anteriorly which connects with a smaller spot on the third segment towards the middle, and on either side posteriorly with an elongate oval, longitudinally situated white pilose spot. In some lights these spots appear silvery. Venter darker, with violaceous reflections, the pile black. Genitalia blackish.

*Female.* Front wider, widening slightly on the anterior third, wholly whitish pilose. Mesonotal pile very pale yellow, almost whitish. Fifth abdominal segment with white pilose triangle on the basal corner.

Holotype, ♂, Malay Peninsula, West Coast, Langkawi Island, April 19, 1928 (H. M. Pendlebury). Allotype, ♀, Siam.

#### *Microdon pretiosa* sp. n.

Wings black on almost the basal half, pale orange on apical half, head and apical abdominal segment deep golden pilose. Length, 12 to 13 mm.

*Male.* Head black, golden pilose, some black hairs behind the vertex, the cheeks and lower part of the occiput pale yellow pilose. Face gently receding, moderately convex below. Upper three-fifths of the front with almost parallel sides and very little wider than long. The ocellar triangle is of moderate size, slightly wider than long and situated distinctly in front of the posterior corners of the eyes. Antennæ elongate, the first segment reddish, exactly as long as the two following combined, which are reddish-brown, the second segment two-fifths as long as the third; arista reddish, shorter than third segment.

Thorax black, in front of the suture, the mesopleura, upper part of the sternopleura and the sides of the mesonotum behind the suture, short golden pilose, the dorsum otherwise black haired, the pleura bare.

Legs reddish, the basal third of the anterior, half of the middle and whole of the posterior femora and the posterior tibiæ, black; hair very short, black, on the tarsi golden; the ventral surface of the anterior four tibiæ and the posterior pair on the apical fourth of under surface, reddish golden pilose. Posterior tarsi strongly widened, tapering to their apices.

The extent of the black color of the wings varies according to the angle from which viewed sometimes

appearing to occupy little more than the basal third of the wing. The crossveins closing the apical and discal cells are slightly recurrent, very broadly rounded posteriorly and without appendages. Squamæ black.

Abdomen black, with very short appressed black pile, the apical segment deep golden pilose, as long as the basal three combined, in the middle with a narrow wedge of black pile extending from the base almost to the apex; sides of third segment with a weak, oblique patch of golden pile. Venter black and black pilose, the tip of the fourth sternite and the genitalia reddish and reddish or golden pilose.

Holotype, ♂, Malay Peninsula, West Coast, Langkawi Islands, April 16, 1928, (H. M. Pendlebury). Paratype, ♂, same data, April 15, in American Museum of Natural History.

[This species bears a superficial resemblance to the wasp: *Odynerus (Rygius) hæmorrhoidale* Fabr., which is common on Langkawi Islands, H. M. P.]

**Microdon auroscutatus** Curran.

Journ. F.M.S. Mus., XIV, 152, 1928.

♂, Selangor, Kuala Lumpur, 15th mile Kanching, Jan. 14, 1930, (H. M. Pendlebury).

**Microdon auroscutatus variventris** Curran.

Journ. F.M.S. Mus., XIV, 154, 1928.

♂, Kedah, Catchment Area, near Jitra, April 11, 1928, (H. M. Pendlebury).

**Microdon pendleburyi** sp. n.

Black, sides of second abdominal segment and legs in part, reddish; wings whitish with brown apical spot, the veins yellow. Length, 15 mm.

*Female*. Head black, the facial depressions very broad, triangular, reddish; pile very short, whitish with brassy sheen, the front with black pile, below the middle with a shallow depression resting on either orbit below which the pile is pale; no distinct transverse groove. Ocellar triangle swollen, prominent, longer than wide, situated in front of the posterior angle of the eyes. Face perpendicular above, convexly receding below. Antennæ blackish, the first segment reddish basally, equal in length to the third segment, the second segment two-sevenths as long as the third; arista slender, two-thirds as long as third segment, reddish basally.

Mesonotum black, with extremely short black pile, the sides broadly and a posterior band rusty reddish; pleura and scutellum ferruginous or brownish-red, the mesopleura and base of the scutellum blackish, the pleura with white, the scutellum with rusty reddish pile.



Coxæ and trochanters black; femora reddish, the anterior four black posteriorly; tibiæ reddish, largely black anteriorly; tarsi brownish-red. Pile extremely short, appressed, white and silvery in some views, becoming yellow on the apices of the tarsi.

Wings with the veins on the apical fifth broadly clouded with brown, the apical and discal crossveins somewhat recurrent. Squamæ whitish with broad brownish margins. Halteres whitish.

Abdomen black, the sides of the second segment broadly and the narrow lateral margins of the following segments reddish; pile extremely short, black, on the first segment white, on the sides of the third and following segments brassy or golden, the pale pile extending inwardly along the sutures, while there are scattered brassy hairs laterally on the fourth segment as well as on its apical fourth. On the second segment the pile appears whitish in some views or brownish or yellowish on the disc. Ventral incisures more or less reddish, the pile yellowish, white on the basal two sternites.

Holotype, ♀, Kedah Peak, 3,000 to 3,500 ft., March 15, 1928, (H. M. Pendlebury).

### **Microdon luxor** sp. n.

An elongate, slender species, the abdomen narrowest at the second segment, widest at the apex of the third. Black, the second abdominal segment mostly yellow; tibiæ and tarsi yellow. Length, about 7.5 mm.

*Male.* The head has been wet and it is not possible to determine the color of any pollen which might have been present. Front wide, gently widened at the vertex, with short, pale brassy yellow hair except around the ocellar triangle; ocellar triangle small, wider than long, situated slightly in front of the posterior angles of the eyes. Face slightly narrowing below, pale brassy yellow pilose; but little retreating and gently convex. Pile of the occiput whitish. Antennæ black, longer than the head, the first segment bare, as long as the apical two combined; third segment three times as long as the second; arista brownish red, slender.

Mesonotum with very short black hair; with a broad posterior fascia and triangles at the outer end of the suture brassy yellow pilose, the pleura with a broad band of similar pile across the middle. Scutellum black, with short, subappressed brown pile and small, rather approximated spines.

Femora shining blackish, the apices of the anterior (four?) broadly reddish-yellow, the hair very short and black. Tibiæ reddish-yellow, bright yellow pilose, the pos-

terior pair brown and brown pilose on the apical three-fifths. Tarsi wholly pale and pale pilose. The anterior legs are missing but are probably similar in color to the middle pair.

Wings cinereous hyaline, tinged with brown along the apical border. Apical crossvein transverse, with a short appendage behind. Discal crossvein recurrent, convex on posterior two-thirds. Squamæ and their fringes brownish. Halteres reddish-yellow.

First abdominal segment shining black, with a large, low, median swelling. Second segment narrow, mostly yellow, the lateral margins narrowly and the posterior border broadly black, the posterior black fascia emitting a slender brownish triangle which runs half through the yellow spot. Third and fourth segments fused, the fourth broadly reddish apically. Pile very short, appressed, black; a broad, oblique band extending from the sides of the fourth segment well onto the third medianly and a very large triangle on either side of the fourth segment apically, brassy yellow. The black triangles on the fourth segment are moderately separated from each other. The pile on the first segment is erect and yellowish laterally. There appears to be a small basal triangle of brassy-yellow pile on the anterior angles of the third segment and this may extend slightly onto the second. Genitalia reddish; second sternite yellow.

♂, Selangor, Bukit Kutu, 3,500 ft., April 20, 1926 (H. M. Pendlebury).

#### VOLUCELLINAE

#### Genus *Graptomyza* Wiedemann.

The present collection contains one species, *longirostris* Wiedemann, not previously seen by me from Malaya.

#### Table of Species.

- |    |   |         |                                |
|----|---|---------|--------------------------------|
| 1. | Legs practically all black  | -       | <i>seimundi</i> Curran.        |
|    | Legs extensively reddish or yellow  | - - - - | 2.                             |
| 2. | Posterior femora black or brown only on apical third or less              | - - -   | <i>brevirostris</i> Wiedemann. |
|    | Posterior femora wholly reddish or at least with the apical third reddish | -       | 3.                             |
| 3. | Abdomen with longitudinal pale markings                                   | - -     | <i>longirostris</i> Wiedemann. |
|    | Abdomen with transverse pale markings                                     | - - -   | <i>ventralis</i> Wiedemann.    |

**Graptomyza seimundi** Curran.

Journ. F.M.S., xiv, 170, 1928.

♀, Kedah Peak, 3,900 ft., March 28, 1928 (H. M. Pendlebury).

**Graptomyza ventralis** Wiedemann.

Ausser. Zweifl., ii, 207, 1830.

♀, Selangor, Bukit Kutu, 3,500 ft., April 20, 1926 (H. M. Pendlebury).

**Graptomyza brevirostris** Wiedemann.

Ausser. Zweifl., ii, 209, 1830.

♀, Kedah Peak, 3,300 ft., March 23, 1928, (H. M. Pendlebury).

**Graptomyza longirostris** Wiedemann.

Nova Dipt. Gen., 16, 1820; Ausser. Zweifl., ii, 208, 1830.

♂ ♀, Kedah Peak, 3,000 and 3,300 ft., March 18, 19, 1928; ♂, Kuala Lumpur, Dusun Tua, Jan. 12, 1930; 2 ♀, Kuala Lumpur, one on window, May 5 and Oct. 26, 1926, (H. M. Pendlebury).

## MILESINAE

Genus *Milesia* Latreille.

## Table of Species.

- |  |       |                            |
|--|-------|----------------------------|
| 1. Face black in ground color  | -     | <i>balteata</i> Kertesz.   |
| Face yellow or orange in ground color  | - - - | 2.                         |
| 2. A yellow pollinose fascia immediately in front of the scutellum                             | - - - | 3.                         |
| No prescutellar fascia   | - - - | 6.                         |
| 3. Abdominal segments each with a single, interrupted yellowish fascia                         | - - - | 4.                         |
| Segments each with two pale fasciæ   | - - - | 5.                         |
| 4. A pair of median yellow vittæ on the anterior three-fourths of the mesonotum                | -     | <i>conspicua</i> Curran.   |
| No such vittæ, the interrupted pollinose fasciæ not connected                                  | - - - | <i>insistens</i> sp. n.    |
| 5. Anterior yellow fascia on abdominal segments, normally interrupted, the black fasciæ linear | - -   | <i>sinensis</i> Curran.    |
| Both fasciæ on abdominal segments entire, the black fasciæ broad                               | - - - | <i>pendleburyi</i> Curran. |

6. Thorax brownish-red - - *gigas* Macquart.  
 Thorax blackish - - - 7.
7. Notopleura bright yellow in  
 ground color - - - *tenuiformis* Curran.  
 Notopleura not yellow in  
 ground color - - - 8.
8. Abdomen with at least one  
 yellowish fascia - - 9.  
 Abdomen without yellow  
 fasciæ - - - *metallica* sp. n.
9. Wings almost evenly colored;  
 abdomen with two yellow  
 fasciæ - - - *excelda* Curran.  
 Wings tricolored; abdomen  
 with four yellow bands - *callida* Curran.

**Milesia balteata** Kertesz.

Three ♂ ♀, Kedah Peak, 3,000—3,500 ft., March 9, 15, 19 and 23, 1928, (H. M. Pendlebury).

The female has only short pile on the legs and the front is wholly shining black.

**Milesia gigas** Macquart.

Hist. Nat. Dipt. i, 533, 1834.

♀, Malay Peninsula, West Coast, Langkawi Islands, April 23, 1928, (H. M. Pendlebury).

The female has the legs rather slender and without long hair.

**Milesia pendleburyi** Curran.

Journ. F.M.S. Mus., XIV, 179, 1928.

♂, Kedah, Catchment Area, near Jitra, April 11, 1928, (H. M. Pendlebury).

**Milesia callida** Curran.

Journ. F.M.S. Mus., XIV, 181, 1928.

7 ♂, 5 ♀, Kedah Peak, 3,300 to 3,950 ft., March 11 to 28, 1928; ♂ ♀, Kedah, Catchment Area, near Jitra, April 10, 1928, (H. M. Pendlebury); ♂, Long Akar, Baram River, Sarawak, Oct. 29, 1920, (J. C. Moulton).

**Milesia tenuiformis** Curran.

Journ. F.M.S. Mus., XIV, 176, 1928.

♂, S. China Sea, Anamba Island, Pulau Siantan, (F. N. Chasen); ♂, Pulau Aor, May 1927, (N. Smedley); ♀, Kedah, Catchment Area, near Jitra, April 6, 1928, (H. M. Pendlebury).

## EUMERINAE

Genus *Eumerus* Meigen.

Syst Besch. Eur. Dipt., iii, 202, 1822.

*Citibæna* Walker, Proc. Linn. Soc. London, i, 124, 1857.

The species which I described as *E. trepidus* is identical with *Azpeytia scutellaris* Walker, a genus belonging to the *Eristalinæ* and being most nearly related to *Merodon*.

## Table of Species.

- |    |  |                                     |
|----|--|-------------------------------------|
| 1. | Scutellum unicolorous blackish<br>or metallic - - -  | 2.                                  |
|    | Scutellum wholly or partly red<br>or yellow - - -  | 6.                                  |
| 2. | Second abdominal segment<br>with a pair of clear yellowish<br>or orange spots; hind tarsi partly<br>white or pale yellow - - - | 3.                                  |
|    | Second abdominal segment<br>with grayish pollinose spots;<br>hind tarsi wholly brownish - - -                                  | <i>insistens</i> Curran.            |
| 3. | Posterior tibiæ of both sexes<br>wholly pale pilose - - -  | 5.                                  |
|    | Posterior tibiæ partly black<br>pilose, at least on the apical<br>half of posterior surface - - -                              | 4.                                  |
| 4. | All the posterior tarsal segments<br>of the male white -   | <i>argentipes</i> Walker.           |
|    | Basal segment of the posterior<br>tarsi blackish - - -   | <i>aurifrons</i> Wiedemann.         |
| 5. | Apical four tarsal segments of<br>posterior four legs whitish in<br>male; abdominal pollen bright<br>yellow - - -              | <i>splendens</i> Wiedemann.         |
|    | Tarsi yellow; abdominal pollen<br>pale yellowish-grey - - -  | <i>deceptor</i> Curran.             |
| 6. | Pile of scutellum tawny - - -  | <i>rufoscutellatus</i><br>Brunetti. |
|    | Pile of scutellum pale brassy<br>yellow or cinerrom - - -  | <i>marginatus</i> Grimshaw.         |

*Eumerus argentipes* Walker.

Proc. Linn. Soc. London, V, 284, 1861.

A single male, Pulau Dayang, May, 1927, (N. Smedley.)

**Eumerus aurifrons** Wiedemann.*Pipiza aurifrons* Wiedemann, Anal. Ent. 32, 1824.

One female, Pulau Dayang, May, 1927, (N. Smedley.)

**Eumerus rufoscutellatus** Brunetti.

Rec. Indian Mus., ix, 269, (1913).

A single ♂, Siam, Chiangmai, Chun Kiau, Oct. 27, 1920, (Hele et Hele jr.).

The original description was based on a poorly preserved specimen. The face is whitish pollinose and pilose, the grey spots on the mesonotal suture do not reach nearly to the vittæ; the scutellum appears bronzed and has a yellow border. The pile on the dorsum of the abdomen is yellowish and not microscopic, though short. The genitalia are very large and there is a complicated arrangement on the venter.

**Eumerus marginatus** Grimshaw.

Fauna Hawaiiensis, iii, 82, 1902.

One female, Selangor, Kuala Lumpur, January 29, 1930, (H. M. Pendlebury).

## SYRPHINAE

Genus **Syrphus** Fabricius.

The addition of several species of *Syrphus* from Borneo and Malaya enables me to present a much more comprehensive key than that contained in my previous paper.

**Table of Species.**

- |  |                                   |
|--|-----------------------------------|
| 1. Eyes pilose - - - -                                 | 2.                                |
| Eyes bare - - - -                                      | 11.                               |
| 2. Face with median black or brown vitta - - -         | 3.                                |
| Face wholly pale - - -                                 | 7.                                |
| 3. Abdominal bands all interrupted - - - -             | 4.                                |
| At least one band entire -                             | 5.                                |
| 4. Anterior femora almost wholly black - - -           | <i>koningsbergeri</i> de Meijere. |
| Apical half of anterior femora reddish - - -           | <i>latistrigatus</i> de Meijere.  |
| 5. Pleura whitish pilose - -                           | 6.                                |
| Pleura yellow or tawny pilose - - - -                  | 10.                               |
| 6. Facial vitta almost reaching the antennæ - -        | <i>serarioides</i> de Meijere.    |
| Facial vitta extending but little above the tubercle - | <i>serarius</i> Wiedemann.        |

7. Pale abdominal fasciæ very narrow, the first one not widened laterally - - 10.  
 Pale fasciæ wide, the first one widest laterally - 8.
8. Lower squamal lobe bare above - - - 9.  
 Lower squamal lobe with long hairs above - - *torvus* Osten Sacken.
9. Mesonotum rather dull black - *chrysotoxoides* Curran.  
 Mesonotum æneous - - *torvoides* de Meijere.
10. Frontal prominence red anteriorly; abdominal fasciæ grayish - - - *griseocinctus* Brunetti.  
 Frontal prominence wholly black in front; abdominal fasciæ reddish - - *hirsuteron* sp. n.
11. Sides of mesonotum sharply defined bright yellow on whole length - - 12.  
 Sides of mesonotum not bright yellow in ground color, at least above the wings, sometimes more or less reddish or dusted with yellow - - - 23.
12. Face with a median black vitta - - - 13.  
 Face without median black vitta - - - 18.
13. Posterior femora wholly black - - - 15.  
 Posterior femora yellowish on almost the basal half - 14.
14. Posterior tibiæ wholly black - *robinsoni* Curran.  
 Posterior tibiæ with a broad, median yellowish band - *Sphærophoria* sp.
15. Scutellum with a large black triangle resting on the base - - - 16.  
 Scutellum without dull black markings - - - *kinabalensis* sp. n.
16. Yellow fascia on second abdominal segment entire - *circumdatus* de Meijere.  
 Yellow fascia composed of two subtriangular spots - 17.

17. Genital claspers bordered with a fringe of long, stiff, yellowish hairs - *hervebazini* Curran.  
 Genital claspers with normal, short, sparse hairs - *pendleburyi* Curran.
18. Posterior femora yellow on the basal third, at least on upper half - 21.  
 Posterior femora wholly black - 19.
19. Mesonotum opaque, rather bluish-gray on the median third - 20.  
 Mesonotum shining black - *difficilis* Curran.
20. Frontal triangle somewhat swollen; anterior femora black basally - *variscutatus* Curran.  
 Frontal triangle not at all bloated; anterior four femora wholly reddish-yellow - *fascipleura* sp. n.
21. Mesopleura wholly yellowish - 22.  
 Mesopleura broadly black in front - *citrinum* Brunetti.
22. Pale spots on second abdominal segment small and lunulate - *luteifrons* de Meijere.  
 Spots on second segment sub-triangular - *clarus* Hervé-Bazin.
23. Lower lobe of squamæ bare above - 24.  
 Lower lobe of squamæ with long hairs above - *fulvifacies* Brunetti.
24. Second, third and fourth abdominal segments with two yellowish and two black bands, the anterior yellow band often interrupted - 25.  
 Third and fourth segment with only one pale fascia, exclusive of the posterior margin - 30.
25. All the pale fasciæ, except that on the base of the third segment, interrupted - *arcifer* Sack.  
 At least the second and third abdominal segments with with entire pale fasciæ - 26.



26. The anterior black fascia on the second and third segments is formed by a pair of very narrow, strongly oblique stripes - - - *divertens* Walker.  
The black fascia is scarcely oblique - - - 27.
27. Frontal triangle practically wholly yellow pilose; front of female mostly yellowish to cinereous pilose - - - 28.  
Frontal triangle and front of ♀, black pilose - - - 29.
28. Scutellum almost wholly pale pilose - - - *viridaureus* Wiedemann.  
Scutellum of ♂ black pilose, of ♀ pale pilose on basal half - - - *obligatus* sp. n.
29. Sternites with black posterior fasciæ; third antennal segment one and three-quarters as long as wide - *nectarinus* Wiedemann.  
Sternites without black fasciæ; third antennal segment only one-fourth longer than wide - - - *balteatus* De Geer.
30. Abdomen elongate, slender with almost parallel sides - - - 31.  
Abdomen elongate oval - - - 35.
31. Face with a median black vitta - - - 32.  
Face wholly yellowish - - - 33.
32. The yellow spots on the sides of the second segment join the yellow of the preceding segment in their full width - - - *deceptor* Curran.  
The yellow spots on the second segment join the yellow of the first segment only narrowly at the sides or the yellow fascia entire - 37.
33. All the very broad pale abdominal fasciæ are interrupted - - - *malayensis* Curran.

Pale fasciæ on segments two  
and three entire - - 34.

34. The pale fasciæ on second and  
third segments very  
strongly arched and  
angular in front and be-  
hind, the anterior edges  
strongly oblique - - *morna* sp. n.

The pale fasciæ are only  
gently arched and only  
slightly oblique to the  
base of the segment - *stigifrons* de Meijere.

35. Second abdominal segment  
with the base pale on its  
whole width - - - *exul* Curran.

Second segment black basally  
except at the sides - 36.

36. Sides of mesonotum sharply  
defined yellow except be-  
hind the base of the  
wings - - - - *kinabalensis* sp. n.

Sides of mesonotum not pure  
yellow in ground color - *confrator* Wiedemann.

37. Second segment with the yel-  
low fascia interrupted - *tenuiformis* Curran.

Second segment with an  
entire yellow fascia - *peteus* sp. n.

### ***Syrphus divertens* Walker.**

Proc. Linn. Soc. London, i, 124, 1857.

*Syrphus claviger* Sack, Stett. Ent. Ztg., lxxxviii, 308,  
1927. (f.)

♀, Selangor, Bukit Kutu, 3,500 ft., Sept. 14, 1929,  
(H. M. Pendlebury).

Originally described from Borneo. It has been redescr-  
ibed by Sack from Formosa. The mesonotum bears a  
pair of very strong yellowish vittæ which do not, however,  
reach to the scutellum.

### ***Syrphus arcifer* Sack.**

Stett. Ent. Ztg., lxxxviii, 306, 1927. (f.)

♀, Kedah Peak, 3,000 ft., March 13, 1928, (H. M.  
Pendlebury).

In this species the front is polished behind the ocelli,  
whereas in *divertens* it is yellowish pollinose. The original  
description was based on specimens from Formosa.

**Syrphus viridaureus** Wiedemann.

Anal. Ent., 35, 1824; Ausser. Zweifl., ii, 137, 1830.

*Syrphus alternans* Macquart, Dipt. Exot., ii, (2), 89, 1842.

♂, Pulau Dayang, May, 1927 (N. Smedley); ♂, Perak, Gunong Kledang, 2,650 ft., Nov. 24—26, 1927 (E. Seimund).

**Syrphus obligatus** sp. n.

Related to *viridaureus* Wiedemann, but much darker in color, in this respect approaching *nectarinus* Wiedemann. Frontal triangle pale yellow pilose; scutellum black pilose. Female front yellow pilose; scutellum black pilose on apical half. Length, 8 to 10.5 mm.

*Male.* Face, cheeks and sides of the front reddish-yellow in ground color, reddish-yellow pollinose, the tubercle bare; face gently receding, with a moderately large, convex tubercle a little below the middle; jowls usually partly brown in ground color. Occiput blackish, the ground color concealed by whitish-yellow pollen. Frontal triangle black or brown, shining on the anterior two-fifths, reddish-yellow pollinose above. Vertical triangle thinly brown pollinose, blackish pilose. Occipital pile whitish-yellow, becoming reddish above. Pile of face and front yellowish. Antennæ reddish; third segment oval, only a little longer than wide; arista luteous.

Thorax brownish-black, yellow pilose. Mesonotum with a pair of broadly separated, reddish-yellow pollinose vittæ on the anterior two-thirds and with a more or less distinct, much more slender median vitta between them. Humeri luteous; notopleura, a large spot on the mesopleura and the posterior calli, reddish-yellow. Pleura thinly reddish-yellow pollinose, a broad stripe extending over the mesopleura and sternopleura, the humeri and protopleura, thickly reddish-yellow pollinose. Scutellum reddish-yellow; black pilose.

Legs reddish-yellow; coxæ brown except their apices. Subapical half of the posterior femora, their tibiæ wholly and the apical four segments of the posterior tarsi, brown, and clothed with black hair, the hair elsewhere on the legs rather bright yellow.

Wings very strongly tinged with brown. Squamæ whitish, with yellow fringe. Halteres yellow.

First abdominal segment shining greenish-black, the sides and linear anterior border reddish-yellow. Second segment with two reddish-yellow and two dull black fasciæ, the basal fascia yellow and broadly interrupted in the middle by a shining black spot; following fascia black, not as wide as the pale fascia, very broadly separated from the lateral margins, and slightly widened medially. The second pale fascia is moderately to only narrowly interrupted in

the middle and is about as wide as the posterior black fascia. The yellow of the third segment occupies the basal two-thirds of the segment and is incompletely crossed by a narrow black fascia, which is close to the base of the segment in the middle and rather broadly separated from it at the sides. Fourth segment similar, but with the apex more or less reddish. Fifth segment with a very large reddish triangle on either side basally and with the apex reddish. Pile black, the basal one and one-half segments and the basal half of the third, yellowish pilose. Venter reddish-yellow, the second to fourth sternites with the posterior border very broadly black, and black pilose.

*Female.* Anterior border of front reddish-yellow, with a roundish black spot above each antenna; a median triangle, narrowly produced above to reach ocelli, and a band across the ocellar region, shining bluish-black, the front otherwise brownish yellow pollinose and yellowish pilose. Median pollinose vitta on mesonotum very distinct. Posterior femora with the broad apices tinged with brown. Anterior dark bands on the abdominal segments narrower, those on the third and fourth segments much more widely separated from the base of the segment and but little arched. Fifth segment with three black triangles, one in the middle and one on either posterior angle. Wings cinereous hyaline.

Described from 46 ♂, 3 ♀, Kedah Peak, 3,000 to 3,950 ft., March 9 to 23, 1928, the holotype, male and allotype, ♀, March 11; and ♂ ♀, Selangor, Bukit Kutu, 3,500 ft., Sept. 13, 1929, (H. M. Pendlebury).

In this species the mesonotum appears bluish-black to the naked eye, and not greenish, as is the case in *viridaureus*.

### **Syrphus morna** sp. n.

Related to *cinctellus* Zetterstedt, but there is a black lateral triangle basally on the third and fourth abdominal segments and the black posterior fascia is much more strongly produced forward in the middle. Length, 9.5 to 11 mm.

*Female.* Face and cheeks reddish-yellow or yellowish, the face with yellow pollen except on the rather large tubercle, concave above, the oral margin almost as prominent as the antennal base. Front thickly ochreous pollinose almost to the level of the ocelli, in the middle broadly bare and shining blue-black, the frontal prominence and vertex similarly colored, the former without pale anterior border. Occiput yellowish pollinose. Pile of the head yellowish, on the upper fourth of the front and vertex, black. Antennæ reddish-yellow; third segment three-fourths longer than wide.

Mesonotum olivaceous black, in front of the suture yellow pollinose with a pair of median vittæ and an oval spot on either side bare or nearly so; lateral margins broadly yellow anteriorly. Pleura yellow and yellow pollinose on the anterior half, the metapleura brownish-yellow; mesopleura only obscurely yellowish above. Pile yellowish; on the posterior half of the mesonotum brown or black. Scutellum translucent reddish-yellow, black pilose.

Legs reddish-yellow; a broad band on the apical third of the posterior femora and the posterior tibiæ and tarsi, brownish. Hair yellow, black on the posterior legs except the basal half of the femora.

Wings cinereous hyaline or tinged with brown, narrowly darker in front and apically. Squamæ and halteres yellow.

First abdominal segment yellowish, with a small rectangular median spot of black. Second yellow with a large, black apical triangle which does not quite reach the lateral margins and is broadly produced to the base of the segment in the middle. Third segment with a large black triangle posteriorly which reaches the sides broadly and extends forward in the middle to the basal third of the segment and with the basal angles bearing triangles; the resultant yellow band is very strongly and angularly arched posteriorly and its width is equal to about one-third the length of the segment. Fourth segment similar but the pale fascia reaches the base of the segment more broadly and is narrowed laterally. Fifth segment with a reddish-yellow posterior border and a large, subtriangular spot on either side, the spots broadly separated from the lateral margin. Pile black, short; yellow on the base of the abdomen and sides of the second and third segments. Venter yellow, black haired on the apical half.

Type, ♀, Pahang, F.M.S., Fraser's Hill, 4,200 ft., Jan. 2, 1930.

Paratype, ♀, N. Borneo, Mt. Kinabalu, Marei Parei, 5,000 ft., April 30, 1929, (H. M. Pendlebury).

### **Syrphus strigifrons** de Meijere.

♀, Lubok Tamang, Lipis District, Pahang, 3,500 ft., June, 1923, (F. N. Chasen) ♀, Selangor, Bukit Kutu, 3,500 ft., Sept. 9, 1929; ♂, West Coast, Langkawi Island, April 25, 1928, (H. M. Pendlebury).

### **Syrphus variscutatus** Curran.

Journ. F.M.S. Mus., xiv, 210, 1928.

♂, Lubok Tamang, Lipis District, Pahang, 3,500 ft., June 1923, (F. N. Chasen).

**Syrphus robinsoni** Curran.

Journ. F.M.S. Mus., xiv, 208, 1928.

♀, Perak, Gunong Kledang, 2,658 ft., Nov. 17, 1927,  
(E. Seimund).**Syrphus citrinum** Brunetti.*Xanthogramma citrinum* Brunetti, Fauna Brit. India, Dipt.,  
iii, 95, 1923.

Seven ♂, Siam, Chiengmai, Oct. 20, 26, 1920, (Hele).

In these specimens the yellow spots are much more  
triangular than shown in Brunetti's figure, so it is possible  
that the identification is not correct.Genus **Asarkina** Macquart.The present collection contains four species, all of  
which were represented in the collection previously reported  
upon.

## Table of Species.

- |    |   |                           |
|----|---|---------------------------|
| 1. | Wings largely black or brown,<br>with the balance hyaline -   | 2.                        |
|    | Wings more or less evenly in-<br>fuscated or hyaline -  | 3.                        |
| 2. | Wings with a pale (usually<br>hyaline) subbasal fascia;<br>pile on mesopleura and<br>squamal fringe distinctly<br>yellowish - - -   | <i>ægrota</i> Fabricius.  |
|    | Wings without a pale subba-<br>sal fascia; pile on meso-<br>pleura pure silvery-white;<br>squamæ with white<br>fringe - - -   | <i>pura</i> Curran.       |
| 3. | Face without a median black<br>stripe - - -   | 4.                        |
|    | Face with a median black<br>stripe, or the tubercle<br>black - - -  | 6.                        |
| 4. | Frontal triangle and lower part<br>of front of ♀ yellow<br>pilose - - -   | 5.                        |
|    | Frontal triangle and front<br>black pilose - - -  | 9.                        |
| 5. | Third antennal joint oval,<br>laterally compressed; black<br>abdominal fasciæ more<br>than one-third as wide as<br>length of third segment;<br>apical half of posterior<br>femora, and their tibiæ<br>wholly, brown - - | <i>laticornis</i> Curran. |

Third antennal joint not compressed, tapering; black abdominal fasciæ not one-fourth as wide as length of third abdominal segment; posterior femora wholly reddish, their tibiæ scarcely darker (*selangensis* Curran) - - - *salviæ* Fabricius.

6. Cheeks wholly orange coloured before the jowls, the median facial vitta not reaching the oral margin - - *incompleta* Curran.

Cheeks wholly or more than half black before the jowls, the median facial vitta reaching the oral margin - 7.

7. All the femora broadly blackish apically; pile on disc of mesonotum black - - *nigripes* Curran.

All femora orange basally; pile of mesonotum wholly tawny - - - 8.

8. Face wholly black in ground color - - - *marokaensis* de Meijere.

Face broadly pale in ground color laterally - - *biroi* Bezzi.

9. First abdominal segment wholly orange except the incisure - - - *consequens* Walker.

First abdominal segment black beneath the scutellum, the sides orange - - - *consequens* var. *exilis* Curran.

#### *Asarkina ægrota* Fabricius.

*Eristalis ægrota* Fabricius. Syst. Antl., 243, 1805.

Two males, Kedah Peak, 3,950 ft., March 21, 1928; ♀, Kedah, Catchment area near Jitra, April 5, 1928; 2 ♀, West Coast, Langkawi Island, April 21, 28, 1928, (H. M. Pendlebury), and ♀, S. China Sea, Anamba Island, Pulau Siantan, (F. N. Chasen).

#### *Asarkina salviæ* Fabricius.

*Syrphus salviæ* Fabricius, Mant. Ins., ii, 340, 1787.

Two males, Kedah, Catchment area near Jitra, April 9, 1928, (H. M. Pendlebury).

**Asarkina consequens** Walker.

*Syrphus consequens* Walker, Proc. Linn. Soc. London, i, 18, 1856.

*Syrphus striata* Wulp, Sumatra Exp., Dipt., 32, 1881.

*Asarcina kelantanensis* Bezzi, Ann. Mus. Nat. Hung., vi, 498, 1908.

Nine males: Kedah Peak, 1,000 to 3,000 ft., March 14—30, 1928; 2, ♂, 2 ♀, Kedah, near Jitra, April 10, 1928; ♂, West Coast, Langkawi Island, April 21, 1928; 3 ♂, Selangor, Bukit Kutu, 3,500 ft., Sept. 6, 7, 1928, (H. M. Pendlebury).

**Asarkina laticornis** Curran.

Journ. F.M.S. Mus., xiv, 235, 1928.

33 ♂, Kedah Peak, 3,300 to 3,950 ft., March 9 to 22, 1928; 2 ♂, Selangor, Bukit Kutu, 3,500 ft., Sept. 13, 1929, (H. M. Pendlebury).

**Asarkina incompleta** Curran.

Journ. F.M.S. Mus., xiv, 239, 1928.

An unfortunate error occurs in the original description of this species which must result in confusion. The caption has been placed in the middle of the description on page 240 instead of immediately preceding the third last paragraph on page 239.

Genus **Sphærophoria** St. Fargeau et Servillé.

**Sphærophoria javana** Wiedemann.

*Syrphus javanus* Wiedemann, Anal. Ent. 34, 1824.

♂, Kedah, Catchment area near Jitra, April 7, 1928; ♀, Kedah Peak, 3,500—3,950 ft., March 14, 1928, (H. M. Pendlebury).

Genus **Ischiodon** Sack.

**Ischiodon scutellaris** Fabricius.

*Scæva scutellaris* Fabricius, Syst. Antl., 252, 1805.

♀, Kedah Peak, 3,000 ft., March 18, 1928, (H. M. Pendlebury).

Genus **Baccha** Fabricius.

A goodly number of specimens belonging to this difficult genus are in the collections, three of which are described as new to science. One of these is from Borneo and is treated in the paper dealing with the *Syrphidæ* from that region.

**Table of Species.**

- |                               |     |
|-------------------------------|-----|
| 1. Scutellum wholly or partly |     |
| yellow - - - -                | 2.  |
| Scutellum wholly blackish -   | 12. |



2. Face with a median black stripe - - - - 3.  
 Face wholly yellowish or reddish - - - - 7.
3. Wings with a broad, brownish median band - - *dispar* Walker.  
 Wings brown only along the costal border - - 4.
4. Abdomen reddish with three broad, transverse black fasciæ - - - - *amphithoe* Walker.  
 Abdomen much more extensively black - - - - 5.
5. Alula almost linear, very narrow; ventral scutellar fringe absent; squamal fringe inconspicuous - 6.  
 Alula of moderate width; ventral scutellar fringe yellow; squamal fringe yellow, well developed - *pedicellata* Doleschall.
6. Costal border of wings almost evenly brown from base to apex (Selangor) - *nigrapex* sp. n.  
 Costal border pale basally, the brown forming an apical spot - - - - *triangulifera* Austen.
7. Wings dark only in front - 8.  
 Wings wholly brown, darker in front - - - - *virtuosa* Curran.
8. Fourth abdominal segment not wholly black - - 9.  
 Fourth abdominal segment wholly black - - - - *macgregori* Curran.
9. Legs entirely reddish - - *rubella* Wulp.  
 Legs partly black - - 10.
10. Costal border brown on the whole length; scutellum wholly pale - - - - *gigas* sp. n.  
 Costal border not brown on the whole length; scutellum with black spot - 11.
11. Third abdominal segment with very broad, entire yellowish fascia - - *tinctiventris* de Meijere.

- Third abdominal segment  
with a pair of elongate,  
longitudinally placed yellowish spots - - - *luteolimбата* de Meijere.
12. Sides of the face broadly yellowish in ground color on more than the upper half - - - 13.
- Sides of face black in ground color on more than the upper half - - - 15.
13. Wing with the alula of full size - - - *pulchrifrons* Austen.
- Alula distinctly narrowed - 14.
14. The yellow of the sides of the thorax is wholly limited to the notopleura - - *porphyra* Curran.
- The yellow color extends onto the surrounding parts in front of the suture - - *fallax* Austen?
15. Wings with narrow, conspicuous clouds on the crossveins - - - *maculata* Walker.
- Crossveins at middle of wing not conspicuously clouded - - - 16.
16. Humeri haired posteriorly - 17.
- Humeri not haired posteriorly - - - *varipes* Curran.
17. Wings with small apical brown spot - - - *nigricoxa* Curran.
- Wings hyaline, the stigma brown - - - *chalybescens* sp. n.

### Sub-genus *Baccha*

Humeri wholly without hair.

*Baccha dispar* Walker.

Proc. Linn. Soc. Lond, iv, 121, 1860.

♀, Selangor, Bukit Kutu, 3,500 ft., Sept. 13, 1929 (H. M. Pendlebury).

*Baccha pedicellata* Doleschall.

Nat. Tijds. v. Ned. Ind., x, 411, 1856.

♀, S. China Sea, Anamba Island, (F. N. Chasen).

**Baccha maculata** Walker.

Ins. Saunders. Dipt., 223, 1852.

*Baccha austeni* de Meijere Tijd. v. Ent., li, 325, 1908.

*Baccha eronis* Curran, Journ. F.M.S. Mus., xiv, 248, 1928.

5 ♂, Kedah Peak, 3,500 ft., March 18 to 29, 1928, (H. M. Pendlebury).

I have little doubt about the above synonymy being correct. However, it seems likely that the species reported from Formosa is distinct. I have two females from that locality and they have the apical abdominal segments broadly reddish on their whole length in the middle. In his description of *austeni* de Meijere did not mention such a difference between the two sexes. Since *maculata* was described from "East Indies" it is safe to presume that the name applies to East Indian specimens rather than to those occurring as far away as Formosa.

**Baccha nigrapex** sp. n.

Base and sides of scutellum yellow, the apex black, costal border of wings narrowly brown to slightly beyond the tip of the third vein; humeri bare. Length, 13 mm.

*Male.* Face, frontal triangle and anterior two-thirds of the cheeks pale orange, the pile very fine and yellowish; a broad median facial stripe which is narrowed below the tubercle and a frontal stripe which narrows above but reaches the upper angle of the frontal triangle, shining black, the upper half of the frontal triangle yellowish pollinose. Occiput and cheeks greenish-black, cinereous white pollinose and whitish pilose. Upper fifth of the occiput thinly brownish pollinose and with short yellow or reddish hair. Vertical triangle long and narrow, the small ocellar triangle situated near the anterior fourth; pollen thin, cinereous; hair in two rows, brownish-yellow, short and fine. Antennæ pale orange, the arista brown except basally. Oral margin as prominent as the antennal base, the tubercle of moderate size and prominent.

Thorax brownish-black; humeri and a very broad stripe reaching to the suture, the mesopleura mostly and a very large spot below, a large spot on the metapleura and a smaller, subtriangular spot below, reddish-yellow, all the spots sharply defined and not pollinose. Mesonotum with extremely short, appressed reddish-yellow hair, the pleura with slightly longer, yellowish pile. Posterior calli reddish-brown. Scutellum with the broad base and still broader sides, reddish-yellow, the apical part shining blackish; hair erect, extremely short, yellowish; no ventral fringe.

Legs orange; coxæ brown; posterior femora brown except the base and apex; posterior tibiæ black on almost

the apical two thirds; basal segment of posterior tarsi black, with orange tip. Hair very short, pale yellowish, black on the dark portions of the posterior legs; long only on the posterior surface of the middle femora.

Wings cinereous hyaline, the costal border narrowly brown on its whole length, the anterior crossvein faintly clouded with brown. Alula very narrow. Squamæ yellow, with inconspicuous fringe. Halteres reddish-yellow.

Abdomen very elongate, slender, broadened apically. First segment reddish-yellow; second brown the base narrowly yellowish at the sides. Third segment brown, with a broad preapical fascia which is convex in front, transverse posteriorly and reaches the sides moderately widely; behind this blackish brown. Fourth segment brownish-black, fifth brown; genitalia brownish-red. Pile black, short; longer and pale yellowish on the first segment, sides of the second and on the genitalia; the hair on the sides of the second segment not as long as usual. Venter brownish-red, the fifth sternite shining black and black haired.

Described from a single  $\delta$ , Selangor, Bukit Kutu, 3,500 ft., Sept. 13, 1929, (H. M. Pendlebury).

### **Baccha varipes** Curran.

Journ. F.M.S. Mus., xiv, 252, 1928.

2  $\delta$ , Pahang, Gunong Tahan, Seat Point, 5,460 ft., Dec. 20, 1922;  $\delta$ , Pahang, Wray's Camp, 3,300 ft., Dec. 11, 1921, (H. M. Pendlebury).

The type was taken in the same place on Dec. 21, 1922.

### Sub-genus **Allobaccha**

Humeri with hair posteriorly.

### **Baccha pulchrifrons** Austen.

Proc. Zool. Soc. Lond., p. 139, 1893.

$\delta$   $\varphi$ , Selangor, Kuala Lumpur, Oct. 27, 1924 and June 21, 1928, (H. M. Pendlebury).

I am still uncertain about the exact identity of *pulchrifrons* and therefore about the identity of these two specimens. However, the size of the alula seems to be correct since, in both these specimens it is much wider apically than in the two allied species, and narrows strongly toward the base.

In his original description Major Austen called attention to the similarity of his species and *apicalis* Loew. In view of the fact that *pulchrifrons* occurs commonly in Japan, whence Loew's damaged specimen came, it seems probable that Loew's name should be applied to this species.

**Baccha fallax** Austen.

Proc. Zool. Soc. Lond., p. 142, 1893.

7 ♂, Selangor, Bukit Kutu, 3,500 ft., April 16, 1926, and Sept. 6, 13, 14, 1929; ♂, Kedah Peak, 3,900 ft., March 28, 1928, (H. M. Pendlebury).

The same uncertainty applies here, as in the case of *pulchrifrons*. The apical wing spot is much narrower than in that species and the same is true of the alula. However, none of the males have the abdominal markings as described by Austen, although in a single specimen from Borneo, (recorded elsewhere) the markings agree quite well. It seems possible that Major Austen described two unusually pale specimens and that the differences between the males of the two species are actually very slight. Some of my specimens even show traces of the violaceous spots on the sides of the antennal prominence.

**Baccha porphyra** Curran.

Journ. F.M.S. Mus., xiv, 254, 1928.

♂, Kedah, Catchment area, near Jitra, April 9, 1928, (H. M. Pendlebury).

**Baccha chalybescens** sp. n.

Bluish-black; wings hyaline; legs mostly reddish. Length, 8.5 mm.

*Female*. Head black; occiput, sides of face very broadly and a pair of moderately separated rectangular spots near the middle of the front, greyish-white pollinose. Pile of occiput face and across the middle of the front white, elsewhere blackish. Occiput thinly brown pollinose and black haired on upper sixth. Front of moderate width, widening anteriorly; ocelli placed well forward, the triangle somewhat longer than wide. Face narrowest below, with prominent tubercle situated mostly below the middle, retreating from the tip of the tubercle to the oral margin. Antennæ reddish-brown, the third segment reddish below; arista brown, with reddish base.

Thorax shining bluish-black, clothed with short, whitish pile. Humeri black. A broad stripe extending from the humeri to the suture and most of the pleura, whitish pollinose, a band below the wings practically bare. Scutellum blue-black, white pilose and with yellowish ventral fringe.

Legs reddish; coxæ and trochanters black; posterior femora black, with the base and apex broadly reddish; posterior tibiæ brown on apical half, the apical four segments of their tarsi reddish-brown.

Wings hyaline; stigma blackish-brown; alula narrow. Squamæ white, with white fringe. Halteres reddish-yellow.

Abdomen metallic blue and black. First segment metallic blue, second metallic blue with broad black bands; third black with a broad, strongly arched, medianly interrupted metallic blue fascia which is separated from the base of the segment by more than its own width and extends almost the whole length of the segment laterally. Fourth segment black, the lateral margins and a large subbasal triangle metallic blue. Fifth and sixth segments metallic blue, the disc of the former darker. Pile cinereous-white; black on the black parts of the third and fourth segments and the whole of the following two. Venter metallic blue, with black markings on the middle of the third and fourth sternites. Hair black except basally. Abdomen very strongly pedicellate, the second segment subcylindrical, slightly widened basally and apically, the third very strongly widening from base to apex.

Described from one ♀, Selangor, Bukit Kutu, 3,500 ft., Sept. 8, 1929, (H. M. Pendlebury).

**Paragus serratus** Fabricius.

*Mulio serratus* Fabricius, Syst. Antl., 186, 1805.

♂ ♀ West Coast, Langkawi Island, April 19, 21, 1928, (H. M. Pendlebury); ♀, East Coast Pulau Dayang, May, 1927, (N. Smedley).

Genus **Melanostoma** Schiner.

**Melanostoma univitattum** Wiedemann.

*Syrphus univitattus* Wiedemann, Anal. Ent., 36, 1824.

♂, Selangor, Ulu Gombak, Jan. 5, 1930; 3 ♂, Kedah Peak, 3,000 to 3,950 ft., March 8, 11, 14, 1928; ♀, Kedah, Catchment Area, near Jitra, April 7, 1928, (H. M. Pendlebury); ♂, Selangor-Pahang, Semangko Pass, 2,700 ft., March 1912.

**Melanostoma talamaui** de Meijere.

Tijd. v. Ent., lvii, Suppl. 15, 1924.

*M. gedehensis* Curran (not de Meijere), Journ. F.M.S. Mus., xiv, 259, 1928.

The description of this species had not come to hand when the manuscript of my previous paper was sent to the editor. A careful comparison of de Meijere's descriptions of *Melanostoma* convinces me that his *gedehensis* is a very different species from *talamaui*, which is closely related to *orientalis* Wiedemann. The name *gedehensis* will have to be used in place of *quadrifasciata* de Meijere since Bigot (1884) described a species from Mexico under that name. The typical form is therefore left without a name, but unless it proves to be distinct from the form described as variety *gedehensis* a name is quite unnecessary.

## CHEILOSINAE

**Spheginobaccha macropoda** Bigot.

*Sphegina macropoda* Bigot, Ann. Soc. Ent. Fr., (6) iii, 331, 1883.

♂, 3 ♀, Kedah, Catchment Area, near Jitra, April 7, 9, 11, 1928; ♀, West Coast, Langkawi Island, April 25, 1928, (H. M. Pendlebury); 2 ♂ 2 ♀, S. China Sea, Anamba Island, Pulau Siantan, (F. N. Chasen).

## XYLOTINAE.

Genus **Syritta** St. Fargeau et Serville.

**Syritta orientalis** Macquart.

Dipt. Exot., ii, (2), 76, 1842.

♀, West Coast, Pulau Angsa, light house, at light, Oct., 27, 1926, (E. Seimund).

## ERISTALINAE.

Genus **Mallota** Meigen.

**Mallota sufficiens** Curran.

Journ. F.M.S. Mus., xiv, 291, 1928.

♀, Kedah Peak, 3,000–3,500 ft., March 15, 1928; ♀, Selangor, Bukit Kutu, 3,500 ft., Sept. 11, 1929 (H. M. Pendlebury).

**Mallota malayana** nom. n.

*Mallota eristaloides* Curran, Journ. F.M.S. Mus., xiv, 293, 1928, (nec. Loew).

This name is proposed on account of preoccupation by Loew, (N. Beitr. iv, 17b, 43, 1856).

Genus **Azpeytia** Walker.

Four species have been placed in this genus and a fifth is before me from Selangor. I have not seen *bifascia* Brunetti but from the description and figures believe it should be place in a different genus. The following key separates the known species.

1. Oral margin distinctly produced, the face almost straight, retreating - - - 2.
- Oral margin not produced; face convex - - - *bifascia* Brunetti.
2. Wings brownish with the posterior border broadly pale - - - - *scutellaris* Walker.
- Wings yellowish or hyaline with brown markings or strongly clouded along the veins on the apical half - - - - 3.

3. Sides of the abdomen yellowish  
pilose - - - - 4.  
Sides of the abdomen black  
pilose on apical half or  
more - - - - *flavoscutellata*  
Kertesz.
4. Genitalia of ♀ black haired;  
mesonotum wholly tawny  
or yellow pilose - - *albomaculata* sp. n.  
Genitalia of ♂ yellow haired;  
mesonotum brown pilose  
on the disc - - - *maculata* Shiraki.

***Azpeytia albomaculata* sp. n.**

Related to *maculata* Shiraki but with differently colored pile, scutellum, etc. It resembles *maculata* in having only two pollinose abdominal lunules. Length, 13 mm.

*Male.* Head black; a bare brownish-yellow triangle on either side of the face above. Face almost evenly receding, the oral margin conspicuously produced; moderately brown pollinose. Frontal triangle large, shining black, with a rather strong tubercle in the middle anteriorly; vertical triangle elongate, brownish pollinose. Occiput yellowish-gray pollinose and clothed with yellowish to tawny pile, the face and front and vertical region with coarse, moderately long black pile, the eyes with fine yellowish pile. Antennæ black, the third segment elongate, rather pointed below at apex; arista black, broadly reddish-yellow basally.

Thorax submetallic black, clothed with reddish-yellow to tawny pile, the pleura with pale brown pollen; pile on notopleura and posterior calli more abundant and erect. Scutellum brown or black basally, becoming brownish-red apically, the pile wholly short and pale.

Femora black, with reddish apices; tibiæ brown with the basal half yellow; tarsi brownish-red, the apical two segments brown, the basal segments of the posterior pair reddish-brown dorsally. Pile yellowish, black and longer on the under surface of the posterior femora except basally. Posterior femora slightly enlarged, with seven short spines on the antero-ventral surface apically and five on the postero-ventral surface. Posterior tibiæ slightly curved.

Wings yellowish or luteous on basal anterior half; pale greyish posteriorly, although the veins may be bordered with brownish-yellow; apical third with a brown cloud which becomes paler apically and posteriorly and may sometimes be brownish-yellow and poorly defined. Squamæ brownish-yellow, with yellow fringe. Halteres yellow.

Abdomen shining black, bearing two depressed, thinly gray pollinose lunules, situated on the posterior half of the second and third segments, the pair on the second



segment oblique, their inner ends at the middle of the segment. Pile on first segment and on the lateral margins, yellow or tawny. Outside a line extending from inside the lateral third of the second segment to inside the posterior corners of the fourth segment the pile is subappressed and usually whitish, in specimens with tawny pile on the base and sides, more yellowish. Dorsum of abdomen and the genitalia black pilose. Sternites reduced in size, the third and fourth bearing long black hair, the second with pale hair.

Type, ♂ and two paratypes, Selangor, Bukit Kutu, 3,500 ft., Sept. 14, 1929 (H. M. Pendlebury).

**Azpeytia scutellaris** Walker.

Proc. Linn. Soc. London, viii, 113, 1865.

*Eumerus trepidus* Curran, Journ. F.M.S. Mus., xiv, 1928, p. 195.

This species should be included in the fauna of the Malay States on the basis of the specimen described as *E. trepidus*. All the femora bear a small patch of coarse pubescence basally, indicating its position in the *Eristalinæ*. This character was overlooked in the original description.

Genus **Mesembrius** Rondani.

Owing to the fact that I do not have females of all the species included in the following key, they have been omitted, with the exception of the two species contained in couplet 4.

**Table of Species.**

- |   |                                  |
|---|----------------------------------|
| 1. Middle femora of ♂ with strong bare tubercle below near the base, strongly narrowed apically - - | 2.                               |
| Middle femora of ♂ without basal tubercle and not constricted apically - -                          | 3.                               |
| 2. Middle femora of ♂ with mammiform process at point of constriction -                             | <i>bengalensis</i><br>Wiedemann. |
| Middle femora of ♂ without such process - - -   | <i>tuberosum</i> Curran.         |
| 3. Large species, over 14 mm.; posterior tibiæ ending in a long spur - - -                          | 4.                               |
| Smaller species, rarely over 12 mm. - - -   | 5.                               |
| 4. Reddish fascia on second abdominal segment entire -  | <i>gigas</i> Curran.             |

Reddish fascia on second abdominal segment interrupted - - - - *insignis* Walker.

5. Posterior femora with numerous long, stiff, black hairs extending along most of the lower surface - - *quadrivittatus* Wiedemann.

Posterior femora with only a few black, bristly hairs apically; middle femora of ♂ with low, bare tubercle on posterior surface near the apex - - - *albiceps* Wulp.

**Mesembrius gigas** Curran.

Journ. F.M.S. Mus., 296, 1928.

♀, Kedah Peak, 3,300 ft., March 19, 1928 (H. M. Pendlebury).

**Mesembrius insignis** Walker.

♂, Saribas, Sarawak, Sept. 18, 1924, (no collector given); ♀, Kedah Peak, 3,950 ft., March 22, 1928 (H. M. Pendlebury).

**Mesembrius bengalensis** Wiedemann.

*Eristalis bengalensis* Wiedemann, Zool. Mag., 1, 3, 1819.

2 ♂, Kedah, Catchment Area near Jitra, April 8, 9, 1928; ♀ Kedah Peak, 3,950 ft., March 22, 1928 (H. M. Pendlebury).

Genus **Keda** gen. n.

Marginal cell closed and petiolate; face without a tubercle, the oral margin produced; third wing vein only moderately curved into the apical cell; mesonotum with yellow pollinose vittæ. This genus resembles *Mesembrius Rondani* but the marginal cell is petiolate and the loop of the third vein is little more than half as deep. The presence of the patch of black setulæ at the base of the anterior four femora indicates its position in the *Eristalinæ*.

Face perpendicular, the oral margin produced and as prominent as the frontal protuberance; sides of face sparsely pilose, front convex, narrow in the female. Antennæ short, the third segment a little longer than wide, obtusely rounded apically; arista subbasal, long and slender. Thorax longer than wide, black, with four yellow pollinose vittæ. Legs simple; femora slender. Third vein gently looped into apical cell; small crossvein oblique, at middle of discal cell. Abdomen as in *Eristalis* Latreille. Genotype, *Eristalis simpliciceps* de Meijere.

**Keda simpliciceps** (de Meijere).

*Eristalis simpliciceps* de Meijere, Tijd. v. Ent., lvii, 146, 1914.

Length, 14.5 mm. (The type was only 11 mm. long).

*Female.* Face, lower seventh of front and the cheeks reddish-yellow in ground color, the face with whitish-yellow pollen and yellow pile, in the middle with a slender black stripe which is broadened below. Front dull black, the sides broadly brownish yellow pollinose; above the antennæ with a shining reddish and black triangle, the black part with a low tubercle in the middle; pile short, black, yellow on the sides of the lower three-fourths. Ocellar triangle slightly longer than wide, situated a little in front of the posterior angles of the eyes. Antennæ brownish, the second segment, lower part of the third and the basal half of the base arista, reddish.

Mesonotum dull black, with four yellowish pollinose vittæ, the outer ones occupying the lateral margins, the inner pair united just in front of the translucent brownish yellow scutellum; median black vitta divided by a slender, inconspicuous pale line, the outer ones sub-shining on the outer half. Pleura cinereous pollinose. Pile short, erect, yellow; apical half of the scutellum with coarser, black hair.

Legs brownish-red; anterior four femora and their tarsi brownish above; posterior legs brown, the base and apex of the femora and almost the whole under surface, basal half of their tibiæ and the whole ventral surface, brownish-red. Hair black; yellowish on the lower basal half of the anterior four femora and the basal third of the posterior pair.

Wings cinereous hyaline; stigma reddish-brown, elongate. Squamæ white, with yellow border and fringe. Halteres yellow.

Abdomen yellow, with black fasciæ. Anterior border of first segment broadly brownish except at the sides. Sub-apical fifth or slightly less of the second segment, produced in the middle as a narrow triangle which extends as a fine line to the narrow, basal brown fascia, black, the basal dark fascia not nearly reaching the lateral margins of the segment. The black fascia on the third segment is equal to two-fifths the length of the segment and the broader median triangle is cut off rather truncately before reaching the base of the segment; the apical fifth of the segment is yellow. Markings of the fourth segment are similar to those of the third. The black fasciæ are opaque, those on the third and fourth segments shining in front. Fifth segment much narrower than the fourth, blackish, the base broadly yellow; a narrow median vitta reddish. Pile short, black on apical half or more of the second and following segments; yellow elsewhere, including the lateral margins

of the fourth segment, that on the apical half of the fifth segment intermixed black and yellow. Entire lateral margin of abdomen shining yellow. Venter wholly yellow and yellow haired.

Described from a single female, Kedah, Alor Star, March 6, 1928, (H. M. Pendlebury).

### Genus *Merodonoides* gen. n.

Superficially resembling species of *Eristaloides* Rond, but the eyes are bare and the posterior femora are greatly enlarged. Similar to *Tigridimyia* Bigot but at once distinguished by the petiolate marginal cell.

Eyes narrowly contiguous, the vertical triangle very long; face with a low tubercle as in *Eristaloides*, the antennæ as in that genus. Mesonotum short, almost circular from dorsal view; scutellum rather large and transverse. Anterior four femora a little swollen, the posterior pair very strongly swollen, very gently concave below, convex above, bearing a very weak, elongate, convex "plate" on the subapical fifth. Posterior tibiæ laterally compressed, gently arcuate. Wings as in *Eristaloides*. Abdomen much longer than the thorax tapering to beyond the middle, the second segment with a broad, inverted wide V—shaped depression, the third with almost transverse depression in the middle. Genotype, *M. circularis* sp. n.

*Merodon tuberculatus* Brunetti may also belong to this genus. „*T. in Helophorus*“ *Hewi-Norm.*

### *Merodonoides circularis* sp. n.

Thorax cinereous pollinose, with four incomplete shining black vittæ. Length, about 10 mm.

*Male.* Head evidently wholly black in ground color, densely cinereous white pollinose, the occipital pollen with yellow tinge above; vertical triangle opaque blackish-brown above, cinereous yellow on anterior half; facial tubercle narrowly shining black; a triangle on the front of the cheeks less thickly pollinose; a small triangle above the antennæ shining black. Pile whitish, a few hairs on the frontal triangle and the vertical triangle entirely, black. Antennæ brown; third segment narrowly reddish below and basally; arista reddish on more than the basal half, bare. Eyes reddish, the posterior border and two irregular vittæ on the upper half, brown.

Thorax thickly ashy pollinose, the four shining black vittæ all rather narrowly separated from each other, more broadly so from the anterior and posterior margins of the mesonotum. Posterior calli bare. Scutellum reddish. Pile of thorax short, abundant, and erect, whitish.

Anterior four femora black with reddish apices, their tibiæ brown with less than the basal half reddish-yellow. Tarsi black, the basal one or two segments of the middle

pair dull yellowish. Posterior femora reddish on basal half, black on apical half, their tibiæ blackish, the basal third obscurely reddish. Pile of legs short and whitish; black on the "plate" on the hind femora and on the apical one or two tarsal segments.

Wings slightly tinged with luteous, the veins blackish apically, luteous basally; stigma longer than wide, dark brown. Squamæ whitish, with brownish border and yellow fringe. Halteres yellow.

Abdomen rusty reddish, with ferruginous markings. First segment gray pollinose except laterally. Second segment with a narrow, dull black incomplete basal fascia and behind the depression with a dull ferruginous triangle which is produced to form an obscure, incomplete preapical fascia. The third segment bears a similarly colored, incomplete fascia beyond the middle. The basal two-thirds of the fourth segment and the genitalia are ferruginous. Pile short, pale yellowish, on the sides and apex longer and whitish. Venter rusty reddish.

Described from one male, Kedah Peak, 3,300 ft., March 19, 1928 (H. M. Pendlebury).

#### Genus *Lathrophthalmus* Mik.

##### Table of Species.

- |  |                                  |
|--|----------------------------------|
| 1. Scutellum shining black - - -   | 2.                               |
| Scutellum reddish or yellowish - - -   | 3.                               |
| 2. Mesonotum with four cinereous vittæ, the outer ones sub-lateral - - -                                 | <i>nigroscutatus</i> de Meijere. |
| Mesonotum wholly without pale vittæ - - -  | <i>selectans</i> sp. n.          |
| 3. Femora mostly reddish, sometimes blackish on apical half; pale abdominal spots widest laterally - - - | <i>arvorum</i> Fabricius.        |
| Femora blackish except their apices, pale abdominal spots widest toward the middle of the abdomen -      | <i>obliquus</i> Wiedemann.       |

#### *Lathrophthalmus arvorum* Fabricius.

*Syrphus arvorum* Fabricius, Mant. Ins., 335, 1787.

3 ♀, Kedah Peak, 3,000-3,300 ft., March 8, 12, 26, 1928 (H. M. Pendlebury).

#### *Lathrophthalmus selectans* sp. n.

Shining black, the abdomen mostly opaque and bearing four small, cinereous pollinose spots; sides of mesonotum cinereous white pollinose in front of the suture. Length, 9 mm.

*Male.* Sides of face rather narrowly, the lower third except in the middle, linear frontal orbits and the posterior orbits on the lowest three-fourths, cinereous white pollinose. Face gently concave above, the large, shining black tubercle situated below the middle. Pile moderately long and white; short and white on the posterior orbits. Frontal triangle shining, with a moderately large tubercle in the middle, the pile black. Vertical triangle short, opaque in front of the equilateral ocellar triangle, black pilose, the occipital cilia black. Antennæ brownish, the third segment paler below on basal portion; arista distinctly pubescent. Eyes with yellowish pile on upper half.

Thorax shining black, the pleura broadly in front and below, the humeri and a broad sub-lateral vitta in front of the suture, sericeous pollinose. Pile rather short and black, the pale pollinose parts of the pleura and the anterior border of the humeri with yellowish pile. Pile very dense on the notopleura laterally and above the base of the wings. A few of the marginal hairs on the shining black scutellum are also yellowish.

Legs black, the extreme tips of the femora, bases of the tibiæ and the first tarsal segment on the anterior four legs more or less reddish. Pile black, yellow on the posterior surface of the middle and ventral surface of the posterior femora. Femora and posterior tibiæ only a little enlarged.

Wings tinged with luteous. Stigma luteous with brown spot at base, the subcostal cell mostly brown before the stigma. Squamæ brown, with brownish-yellow fringe. Halteres yellow.

Abdomen opaque black with shining areas and four cinereous pollinose spots. Second segment with a small, shining black triangle on either side. Third segment with a subtriangular shining black spot in the middle on either side, the inner ends rounded, the outer end produced narrowly to the apex of the segment; in the middle with a pair of very broadly separated, small, longitudinally placed cinereous pollinose spots. Fourth segment with a still larger, lateral triangle which reaches the apex of the segment at the sides and is narrowly separated from the base except at its outer end; on the disc with a pair of widely separated cinereous pollinose vittæ extending from near the base of the segment to the apical fourth, the apex of the segment broadly shining black. Genitalia shining black, thinly brown pollinose. Pile short, yellowish; black on the second and third segments except large basal triangles on the second and around the cinereous spots on the third; longer on the lateral margins, apical segments, genitalia and the shining black venter.

Described from a single male, Selangor, Bukit Kutu, 3,500 ft., April 17, 1926 (H. M. Pendlebury).

Genus *Eristalis* Latreille.

## Table of Species.

- |    |  |   |   |   |   |                                 |
|----|--|---|---|---|---|---------------------------------|
| 1. | Eyes pilose  | - | - | - | - | 2.                              |
|    | Eyes bare  | - | - | - | - | 5.                              |
| 2. | Face with a broad shining black vitta  | - | - | - | - | 4.                              |
|    | Face wholly pollinose, the tubercle sometimes partly bare                          | - | - | - | - | 3.                              |
| 3. | Middle of face black pilose above; eyes black pilose on upper fourth or more       | - | - | - | - | <i>cerealoides</i> sp. n.       |
|    | Face and eyes wholly yellowish pilose  | - | - | - | - | <i>cerealis</i> Fabricius.      |
| 4. | The yellow spots on the second abdominal segment do not reach the posterior border | - | - | - | - | <i>simplicipes</i> Curran.      |
|    | The yellow spots on the second segment are very connected with those on the third  | - | - | - | - | <i>hortorum</i> Fabricius.      |
| 5. | Scutellum blackish   | - | - | - | - | 6.                              |
|    | Scutellum reddish  | - | - | - | - | 9.                              |
| 6. | Pile of mesonotum black except on the sides in front                               | - | - | - | - | <i>perakensis</i> Curran.       |
|    | Pile much more extensively whitish or yellow                                       | - | - | - | - | 7.                              |
| 7. | The opaque black on the base of the second segment reaches the lateral margins     | - | - | - | - | 8.                              |
|    | The opaque black is rather broadly separated from the lateral margins              | - | - | - | - | <i>purus</i> Curran.            |
| 8. | Anterior femora wholly pale pilose   | - | - | - | - | <i>penangensis</i> sp. n.       |
|    | Anterior femora black pilose on upper surface                                      | - | - | - | - | <i>niger</i> Wiedemann.         |
| 9. | Wings hyaline  | - | - | - | - | <i>collaris</i> de Meijere.     |
|    | Wings with a large sub-quadrate brown spot beyond the middle                       | - | - | - | - | <i>quadrangulum</i> de Meijere. |

*Eristalis cerealis* Fabricius.

Syst. Antl., 232, 1805.

*E. solitus* Walker, List. Dipt. Brit. Mus., iii, 619, 1849.

♀, Pahang, Gunong Benom, 6,000 ft., at light, Aug. 5, 1925 (I. H. N. Evans). ♀, Sarawak, April 1913. Also a ♂ from Darjeeling, Dec. 6, (T. D. A. Cockerell).

The species is common and widely distributed in the Oriental Region.

***Eristalis horticola* De Geer.**

*Musca horticola* De Geer, Mem. pour serv. l'hist. Ins., vi, 140. Pl. viii, f. 12, 13, 1776.

? *Eristalis basifemoratus* Brunetti, Fauna Brit. India, Dipt., iii, 175, 1923.

♂, Malay Peninsula, ex Coll. Agric. Dept.

The specimen has been labelled *horticola* and I can see no difference between it and European examples. I believe that *basifemoratus* Brunetti is based upon a female of this species.

***Eristalis quadrangulum* de Meijere.**

Tijd. v. Ent., lviii, Suppl. p. 33, 1916.

*Eristalis maculipennis* Brunetti (not de Meijere) Fauna Brit. India., Dipt., iii, 167, 1923.

♀, Selangor, Bukit Kutu, 3,500 ft., April 13, 1926; ♀, Kedah Peak, 3,000 ft., March 13, 1928 (H. M. Pendlebury).

I do not know whether this species is distinct from *maculipennis* de Meijere, but the latter is described as having a black mesonotum while the specimens before me have the mesonotum yellowish brown pollinose or even paler. They therefore agree with Brunetti's description, and, of course, with de Meijere's description of *quadrangulum*.

***Eristalis penangensis* sp. n.**

Related to *niger* Wiedemann but considerably larger and with metallic green abdomen and wholly yellow pilose anterior femora. Length, 15 mm.

*Female.* Head black; face cinereous white pollinose, a broad median vitta which is thinly pollinose in the depression and a large triangle on the front of the cheeks, shining black. Front narrow (considerably longer and narrower than in *niger*), gently widening anteriorly, across the anterior fifth with a broad shining greenish band the anterior fourth shining black and bearing a low rounded tubercle; pile short and black. Occiput cinereous white pollinose, the occipital cilia black, the pile whitish. Facial pile whitish, the tubercle large and broad, the face deeply concave above, almost perpendicular below. Antennæ brown, the arista with very short rays.

Mesonotum opaque black, with a broad cinereous fascia immediately in front of the suture. Pile brassy yellowish, black behind the suture except for an incomplete prescutellar band and on the outer surface of the posterior



calli. Pleura mostly cinereous pollinose, black on upper half in front and posteriorly. Scutellum dull black, the free border broadly metallic dark greenish. Pile brassy yellow.

Legs black; tips of femora reddish; basal half of anterior four and one-third of the posterior tibiæ, yellow. Pile brassy yellow, black on the tarsi.

Wings tinged with brown, darker anteriorly. Squamæ and halteres bright reddish-yellow.

Abdomen metallic green with opaque black markings. First segment with abundant, appressed, outwardly directed brassy yellow pile except laterally. Second segment with the apical fourth and a slender median triangle reaching to the base, opaque black, a small median apical triangle metallic green. Third segment with a broad opaque black fascia behind which is a transverse metallic triangle which does not nearly reach the lateral margins; in front with a narrow black vitta extending to the base; fourth segment rather similarly marked but the posterior green triangle is wider, the opaque black therefore forming a broad  $\Lambda$ -shaped fascia which is connected with the base by a linear projection. Fifth segment shining black apically. Pile brassy yellow; shorter and black on the opaque black markings on the second and third segments, at least toward the sides. Venter black, the apices of the segments reddish.

Described from one female, Penang Id., 1,500–2,428 ft., May 1911. (R. Hanitsch.)

The specimen is not in first-class condition but all the characters, with the exception of the extent of the black pile on the abdomen, may be readily discerned.

**Axona chalcopyga** Wiedemann.

*Eristalis chalcopygus* Wiedemann, Ausser. Zweifl., ii, 178, 1830.

♂ ♀, Kedah Peak, 3,000–3,500 ft., March 8, 15, 1928 (H. M. Pendlebury).

#### Genus **Megaspis** Macquart.

There are two species in the collection, both of which were described in my previous paper.

**Megaspis chrysopygus** Wiedemann.

*Eristalis chrysopygus* Wiedemann, Zool. Mag. i, 3, 1819.

♀, Malay Peninsula West Coast, Langkawi Island, April 14, 1928 (H. M. Pendlebury).

**Megaspis errans** Fabricius.

*Syrphus errans* Fabricius, Mantis, Ins., ii, 337, 1787.

♂ 2 ♀, Malay Peninsula West Coast, Langkawi Island, April 19, 24, May 1; ♂ ♀, Kedah, Catchment Area, near Jitra, April 8, 11, 1928, (H. M. Pendlebury).

XVII.—RECORDS AND DESCRIPTIONS OF SYRPHIDÆ  
FROM NORTH BORNEO, INCLUDING  
MT. KINABALU.

By C. H. CURRAN.

*American Museum of Natural History, New York, U.S.A.*

In the preceding paper (pp. 290–338) I have dealt with the *Syrphidæ* from the Malay Peninsula, including in the keys the species occurring in the present collection. As may be expected, many species are common to the two regions while many others are known to occur in the Dutch East Indies. It seems probable that increased collecting will result in the extension of the range of many of the forms known from only a single locality and that eventually the number of species indigenous to the Peninsula and Islands will be very greatly increased.

This report deals with two collections, a lowland one made in 1927 by Messrs. C. Boden Kloss and H. M. Pendlebury, a mountain one by Mr. Pendlebury in 1929. A survey of the specimens contained in the collections indicates two very different faunas, each typical of the environmental conditions under which the species occur. Owing to the obvious differences in the two localities (only a few specimens are from outside the two main regions), I have requested that there may be appended a description of the regions in which the collections were made.

[A collecting visit to the lowlands of British North Borneo was undertaken by the Raffles Museum, Singapore, Straits Settlements, and the Federated Malay States Museums between June and September 1927.

The bulk of the collections was made on the North East coast (1) in high forest and clearings at Bettotan, which is about twenty-two miles west-by-south of Sandakan; and (2) in small patches of forest in swampy country at Samawang which is about twenty-five miles west-by-north of Sandakan and on the South coast of Labuk Bay. Other localities visited, such as Kudat, Labuan Id. &c. are well known places.

A second visit was paid by the same Museums to British North Borneo between the beginning of March and the end of May, 1929, this time to Mt. Kinabalu, the highest mountain in Malaysia, which is 13,455 ft. in height.

Collecting was chiefly carried out at the higher altitudes, but hardly anything was found above the tree limit which varies from about 11,000 ft.—12,000 ft. A scanty fauna occurs between **Pakka Cave** (about 10,200 ft.) and the tree limit; the vegetation hereabouts is stunted, except in some of the more sheltered spots, and decreases rapidly in size as it approaches the tree limit. *Syrphidæ* were only

seen during sunny intervals; five species were taken, of which two were found lower down the mountain. The temperature was low, and the ground was always in a thoroughly saturated condition as rain fell daily from before midday until late into the night.

**Kamborangah** is a narrow, rather exposed, ridge at about 7,200 ft. The forest consists of fairly tall trees of essentially montane type. Nine species of *Syrphidæ* were found here, of which five were found elsewhere.

**Lumu Lumu** about 5,500 ft., a rather wider ridge than Kamborangah and a typical 'mossy forest' area which is kept continually damp with mists and rain through which the sun rarely penetrates: hence the scarcity of *Syrphidæ* of which only seven species were found, four of which occurred elsewhere.

**Tenompok Pass** 4,700 ft. A narrow pass through which runs the bridle path from Kotabelud—Kabayau—Dallas to Bundu Tuhan and the interior. Part of a day was spent here on the outward journey. Four species of *Syrphidæ* were collected, two of which were found in other localities.

**Kiau** is a village occupied by Dusuns at about 3,000 ft. on the south-western spur of the mountain. The forest has at one time or another been cleared all round the village and up to nearly 4,000 ft. Some patches of secondary growth have sprung up.

**Kenokok** (or Penokok) about 3,300 ft., a good area of jungle at the head of the Kenokok valley which is the next valley north of Kiau. Most of the jungle below 3,000 ft. has been cleared here, and much of the land has been, or is under cultivation by the Dusun natives. This locality produced seven species of *Syrphidæ*, five of which were not found elsewhere.

**Marei Parei** A spur below the western peaks of Mt. Kinabalu at about 5,000 ft. Vegetation on the spur itself is scanty and the ground which consists of only a shallow layer of soil over rock, is sodden. Twelve species of *Syrphidæ* were taken here, six of which were taken in other places during the visit to the mountain.

**Kabayau** 600 ft. A resthouse about eighteen miles from Kotabelud, on the bridle path to Kinabalu. Much of the original jungle has been cleared. Eight species of *Syrphidæ*, mostly lowland forms, were found during the few days spent here on the return journey. H. M. Pendlebury].

#### CERIOIDINÆ.

##### Genus *Cerioides* Rondani.

##### *Cerioides anchorata* Bigot.

*Sphiximorpha anchorata* Bigot, Ann. Soc. Ent. France, p. 318, 1883.

Three ♂, Bettotan, near Sandakan, July 28, August 12, 19, 1927, (Kloss and Pendlebury).

A beautiful large species. Bigot's description is exceedingly poor and the Latin and French portions disagree in a surprising manner. The face is yellow with a black median stripe, although in the French diagnosis it is stated to be black; the squamæ are yellow with brown base, not brown with yellow border, etc. The legs are variegated black, ferruginous and yellow. The second abdominal segment is half as long as the entire abdomen and very slender for most of its length. The pleura bear three contiguous yellow spots.

This species agrees closely with the description of *C. javana* Wiedemann but that species has brown squamæ with white border and fringe. I believe that Bigot had two species confused and hold the name *anchorata* to the Latin description, the French description applying fairly well to *javana*.

#### MICRODONTINÆ.

#### Genus *Microdon* Meigen.

Five species were taken during the collecting in Borneo. They are included in the key given in the part of this paper dealing with the Malay Peninsula species.

#### *Microdon latiscutellaris* sp. n.

Related to *stilboides* Walker but at once distinguished by the yellow pilose sides of the fourth and whole of the fifth abdominal segment. Length, about 12 mm.

*Female.* Green, more or less brassy. Head white pilose, the front black haired except across the obscure depression. Front a little narrower than the face, its sides diverging below the middle, ocellar triangle small, equilateral, situated at the upper third of the front. Face scarcely narrowed below, gently convex, strongly so below. Antennæ long, blackish, the third segment one-sixth longer than the first, the second one-fourth as long as the third; arista much shorter than third segment. Eyes with sparse, short, white pile.

Thorax with a narrow band of yellowish or whitish pile in front and on the sternopleura, otherwise black pilose, the pile not at all dense.

Legs steel-blue; posterior four coxæ and trochanters yellowish pilose, the pile otherwise black. Anterior and posterior tarsi broadened, especially at the base.

Wings dark brownish or blackish, paler posteriorly, the apical crossvein with two appendagts. Squamæ and fringe brown. Halteres pale yellowish,

Abdomen brassy, short black haired, sides of third segment posteriorly, very broad sides of fourth and whole of fifth, pale yellowish haired, the second with considerable obscure whitish pile in the middle. Apices of sternites reddish, the pile partly yellow.

Holotype, ♀, Bettotan, near Sandakan, N. Borneo, August 14, 1927, (C. Boden Kloss and H. M. Pendlebury).

**Microdon minuticornis** sp. n.

A small blackish species, fairly robust, the abdomen with steel-blue reflections, the second and third segments in part yellow dorsally; apical crossvein rectangular, straight; antennæ shorter than length of head. Length, 6 to 8.5 mm.

*Female.* Head black, rather dull, luteous pilose, a broad band of blackish pile across the upper part of the front and an incomplete one above the antennæ. Face and front narrow, the former narrowest below, the front with gently diverging sides on the lower two-thirds; ocellar triangle a little longer than wide, situated at upper third of front. Face receding, gently convex. Third antennal segment longer than first two combined, brown; second scarcely longer than wide, black; first shining black, with black hair in outer dorsal surface; arista shorter than third segment. Eyes bare.

Thorax shining blackish, with reddish tinged cinereous pile, on the disc of the mesonotum a patch of blackish pile visible in some lights. Scutellum with the apex rather narrowly and shallowly emarginate without spines.

Legs black; tips of femora, basal third of anterior four and fourth of posterior tibiæ, tips of the tibiæ and the tarsi reddish or reddish-yellow, the tarsi becoming brown apically on upper surface. Legs black haired, the coxæ with more or less white pile.

Wings cinerous hyaline, the veins more or less clouded with brownish. Apical crossvein transverse, with an appendage at its origin. Squamæ white; halteres pale yellowish.

Abdomen black; second segment with a pair of large posterior yellow triangles occupying most of the dorsum: they are connected posteriorly and usually leave only a small, oval, spot of black in the middle anteriorly; third segment with much smaller yellowish posterior triangles which do not reach the base of the segment. Pile black; on the posterior border of the second to fifth segments with a very broad, broadly interrupted band of yellowish pile, the second segment mostly pale pilose, the band on the fifth segment very broad and only narrowly interrupted.

*Male.* The head is missing. Second abdominal segment brownish-red. The pale pilose fascia on the fourth segment is in the form of two large, slightly oblique oval spots, the apex of the segment reddish. Hind tarsi not unusually large.

Holotype, ♀, Bettotan, near Sandakan, N. Borneo, July 30, 1927. Two females taken at the same place on August 20th are teneral, while a ♂, July 30, lacks its head. (Kloss and Pendlebury); allotype, ♂, Mt. Kinabalu, Kiau, 3,000 ft., March 16, 1929, (H. M. Pendlebury).

***Microdon wulpii* Mik.**

Ent. Zeitg., xviii, 143, 1899.

*Microdon apicalis* Wulp, Dipt. Sumatra Exp., 29, 1881.

N. Borneo, Kudat, Sept., 17th 1927, (Kloss and Pendlebury).

***Microdon klossi* sp. n.**

An elongate rather slender species with golden yellow fasciæ on the thorax and abdomen, the ground color blackish; legs reddish; eyes pilose; scutellar spines very small. Length 10.5 to 12 mm.

*Male.* Head with slight metallic green tinge, golden yellow or brassy pilose, a broad band at the vertex and the first two antennal segments with black pile. Face broadly yellow on the sides except above, slightly narrowing below. Front narrow, narrowing to the suture, below the suture black pilose except along the orbits; ocellar triangle longer than wide, small, situated a little before the posterior angles of the eyes. Face gently convex in profile. Proboscis yellow. Antennæ elongate, black, the third segment brown, the first as long as the apical two together, the second three-fifths as long as the third; arista mostly reddish, brown apically, shorter than third segment.

Mesonotum with three broad bands of golden or brassy-yellow pile, the first on the anterior border, second in front of the suture, the third before the scutellum, the median band connected with the anterior one at the sides and running down over the meso- and sternopleura; scutellum with similar pile which is more abundant on the border, the base and two bands on the mesonotum black pilose; apex of the scutellum more or less reddish.

Legs reddish; posterior femora black or brown; coxæ brown. Hair of legs short, yellowish.

Wings greyish hyaline, the crossveins and spur in apical cell bordered with brown, the veins brown. Apical and discal crossveins slightly curved, a little recurrent, rather sharply rounded posteriorly. Squamæ and halteres yellow, the former with yellow fringe.

Abdomen gently narrowing posteriorly, obtuse behind, the second segment widest, in its middle not more than half as long as at its sides, the first segment as long in the middle as the second. Sides of second segment more or less metallic greenish; apices of second to fourth segments rather broadly reddish. Pile short, black on the dorsum; second segment wholly, broad sides of the third and fourth, extending inwardly basally, broad posterior border of the third and almost the apical half of the fourth brassy-yellow or golden-yellow pilose, the pale pilose bands on the apices of the third and fourth segments deeply notched in the middle anteriorly and narrowed towards the sides. Genitalia and venter brownish.

Holotype, ♂, Bettotan, near Sandakan, N. Borneo, August 16, 1927.

Paratypes 24 males, same locality, August 15 to 20, 1927. All were collected by Messrs. C. Boden Kloss and H. M. Pendlebury.

#### *Microdon stenogaster* sp. n.

A peculiar elongate species with brownish wings, the abdomen very long and narrow, with almost parallel sides beyond the second segment, the fourth segment sub-cylindrical and as long as the two preceding combined. The general habitus is much like that of *Syrphinella* Hervé-Bazin but the characters are those of the *Microdontinæ*, that is, the elongate first antennal segment, presence of stump of vein extending into discal cell, etc. In the female the fourth and fifth segments are separated by a true suture and the fourth segment has the sides gently convex. Length, 12.5 to 15 mm.

*Male.* Head bluish to violaceous in ground color, pale yellowish pilose, the occiput above and the front with black pile, the sides of the front below the suture and a band across the suture, pale haired, only a very few black hairs below the suture. Front narrowest at the suture which is located at the anterior fourth, gently widening to the vertex, scarcely so anteriorly, the face gently widening below. Ocellar triangle situated near middle of upper section of front, small, longer than wide. Face with a large, low swelling below antennæ, receding, almost straight, gently convex above the oral opening. Labellæ reddish. Antennæ black, with short black hair, longer than the face, the first segment as long as the two following combined, the second one-fourth as long as the third; arista rather thick, brown, not as long as third segment. Eyes bare.

Thorax blackish with steel-blue reflections; moderately pilose, the pile pale yellowish, becoming paler on the lower part of the pleura, black on the apical third of the scutellum. Scutellum without distinct spines but the apex rather deeply and narrowly excavated.

Legs black, the femora more or less steel-blue; whitish pilose, the apical third of the femora, the anterior four in front and the tarsi black haired, the anterior four tarsi white haired in front except apically. Pile long and silvery on the tibiæ. Apical fourth of front tibiæ and the anterior four tarsi rather reddish.

Wings brownish, the second basal cell and the area behind cinereous hyaline. Squamæ whitish, the border with brown tinge, the fringe tinged with yellow. Halteres yellow.

Second and third abdominal segments reddish-brown, more or less greenish or bronzed, the first and fourth segments brown, with metallic reflections. Pile whitish, long on lateral margins, black on the apex of the fourth segment. The second segment is widest near its anterior end, gently narrowing posteriorly, in the middle shorter than the third segment but more than twice as long as the first, which is grey pollinose dorsally. Genitalia brownish, black pilose. Venter reddish-brown, pale pilose, some black pile apically.

*Female.* Front with almost parallel sides very gently widening above the depression which lies above the anterior third. Anterior four tibiæ more reddish, their tarsi reddish. Abdomen darker, more nearly unicolorous, with only a little black pile apically, the third and fifth segments of nearly equal length, the fourth considerably longer than either.

Holotype, ♂, Bettotan, near Sandakan, N. Borneo, August 18, 1927.

Allotype, ♀, Samawang, near Sandakan, in jungle, July 9, 1927.

Paratypes, ♀, same data as allotype but July 14; 35 males, Bettotan, August 14 to 24, 1927. All the specimens were collected by Messrs. C. Boden Kloss and H. M. Pendlebury.

#### VOLUCELLINÆ.

##### Genus *Volucella* Geoffroy.

##### *Volucella trifasciata* Wiedemann.

Ausser. Zweifl., ii, 196, 1830.

♀, Bettotan, near Sandakan, August 4, 1927, (Kloss and Pendlebury).

#### MILESINÆ.

##### Genus *Milesia* Latr.

##### *Milesia insistens* sp. n.

Related to *reinwardtii* Wiedemann but the wings are pale blackish-brown, not at all yellowish, etc. Face black in the middle and below. Length, 16 to 19 mm.

*Male.* Head black, the sides of the face very broadly reddish on the upper half to two-thirds; a rectangular spot



above the antennæ, a broad median facial stripe, oral margin broadly and the cheeks anteriorly, shining black. Head pale yellowish-cinereous pollinose and with yellowish pile; upper part of occiput and the vertical triangle brownish pollinose and black pilose, the vertical triangle yellow pollinose in front of the ocelli. Face in profile deeply concave, the oral margin almost or quite as prominent as the antennal base. Antennæ black; third segment slightly longer than wide; arista ferruginous.

Mesonotum opaque black, with three broad yellow fasciæ, the anterior two, on the anterior margin and across the suture, moderately interrupted the prescutellar fascia entire; pile concolorous. Pleura dull black, the propleura, a median band and an oblique band extending from the squamæ to the sternopleura, yellow or yellowish-gray; pile yellow. Scutellum shining black, the free border yellow; hair black, the ventral fringe yellow.

Coxæ black, yellow pollinose and pilose. Femora black, the apical third or more of the anterior four and the apex of the posterior pair, reddish. Tibiæ reddish-yellow, the posterior pair with the median fourth to third black. Anterior and posterior tarsi black, with the apical one or two segments reddish; middle tarsi reddish-yellow. Pile of the femora moderately long, yellow, black on the apical fifth of the posterior pair and on the under surface of the slightly broadened anterior pair. Tibial pile pale brassy-yellow, short and appressed, the middle and hind pair with many long, yellow hairs posteriorly, the posterior pair mostly black haired on the basal half. Tarsi yellow haired, the black segments with black hair. Posterior femora with strong spur.

Wings strongly tinged with brownish-black, somewhat darker in front. Squamæ and fringe yellow. Halteres reddish-yellow, with pale knob.

Abdomen black, with three interrupted yellow or orange fasciæ and an entire apical fascia. First segment more or less metallic bluish. The pale fascia on the second segment occupies more than the sub-basal half of the segment, reaches the base of the segment narrowly at the sides, is widest near the middle and is narrowly separated from the base of the segment; the segment is wholly opaque and the pale spots are separated by a narrow, subtriangular median stripe. The pale fascia on the third segment is sub-basal, narrowly interrupted, strongly widened at the lateral margins where they reach the base of the segment, their width at the middle equal to about one-fourth the length of the segment. Pale fascia on base of fourth segment about the same as the preceding but more strongly widened laterally. Apically the fourth segment bears a broad, transverse shining reddish fascia which is narrowly separated from

the apex and lateral margins and is usually more or less triangularly produced medianly. Pile black, yellow on the dull yellowish fasciæ and on the entire lateral margins. Broad apex of the third segment and the apical half of the fourth, shining. Venter yellow, the third sternite with a large, black transverse apical triangle, the fourth wholly black; pile yellowish. Genitalia shining blackish, black haired.

*Female.* Front dull blackish-brown, the sides very broadly bright yellow to opposite the ocelli. The shining black spot above the antennæ is fully twice as large as in the male. Femora more extensively reddish, with only a few, obscure short black hairs beneath the front pair; tibiæ without long hair. Fifth segment shining black.

Described from 4 ♂ 4 ♀, Mt. Kinabalu, Lumu Lumu, 5,500 ft., April 8 to 16, 1929 and ♂ ♀, Mt. Kinabalu, Kamborāngah, 7,200 ft., April 1, 3, 1929 (H. M. Pendlebury). The holotype ♂ and allotype were taken at Lumu Lumu on April 16.

### *Milesia metallica* sp. n.

Related to *doriae* Rondani but the abdomen is entirely black; wings tricolored. Length, about 21 mm.

*Male.* Face pale orange, pale yellowish pollinose. Cheeks mostly shining black. Frontal triangle shining black, the sides broadly and the upper angle narrowly yellow pollinose. Face with obscure, sparse yellowish hair; front bare. Vertical triangle bluish-black, yellow pollinose and pilose on the anterior half, black pilose above, very long, the eyes only narrowly contiguous. Posterior orbits deep yellowish pollinose, yellow pilose, with some short black hairs above. Antennæ brown; first segment and the third ventrally brownish-red; third segment twice as long as wide; arista brownish-yellow on basal half, darker apically.

Thorax blackish, with a pair of obscure, broadly separated, brownish-gray vittæ which taper posteriorly, reaching from the anterior border to the posterior fourth, and, like the spot inside the humeri, visible only from posterior view. Pile very short and tawny, with some black hair intermixed. Pleura blackish, thinly brown pollinose, with an obscure brownish-gray fascia extending over the mesopleura and sternopleura and a more grayish but less distinct one beneath the wings, the pile pale tawny. Scutellum bluish-black, the narrow, impressed margin brown; pile sparse and yellow.

Legs brown, knees reddish, tarsi black, anterior four tibiæ rather silvery. Pile of anterior four femora black above and below, brownish-red in front, posteriorly and apically; posterior femora rather tawny pilose. Tarsi black haired, anterior four tibiæ with bright yellow pile, the

posterior pair tawny pilose. The posterior four tibiæ have only a few somewhat longer hairs behind, posterior femora with a strong reddish spur.

Wings yellowish, broadly gray behind, the apical fifth brown. Squamæ grayish-yellow, with brown border and fringe. Halteres reddish-yellow.

Abdomen metallic blackish-blue, with opaque black markings. Second segment with the base narrowly and a broad fascia lying almost wholly before the middle and connected to the anterior fascia by a narrow line, opaque black, both opaque fasciæ very broadly separated from the lateral margins. Third segment with similar fasciæ, but they are not connected in the middle and the posterior one, while narrower, is less rounded apically. Pile tawny, on the apical segments almost golden, reddish-yellow basally; across the apex of the second segment broadly black, on the third erect on the basal half, on the apical half longer and appressed, on the fourth segment almost wholly appressed. The erect pile is paler than the depressed. The pile is short; long and crinkly on the sides. Venter bluish-black, with long black pile. Genitalia brownish-black, with black pile.

One ♂, Bettotan, near Sandakan, August 9, 1927, (Kloss and Pendlebury).

This species is elongate and rather slender, the abdomen with almost parallel sides.

**Milesia tenuiformis** Curran.

Journ. F.M.S. Mus., xiv, 176, 1928.

2 ♂, Kudat, Sept. 15, 18, 1927; 2 ♀, Bettotan, near Sandakan, August 16, 21, 1927, (Kloss and Pendlebury).

#### EUMERINÆ.

Genus **Eumerus** Meigen.

**Eumerus splendens** Wiedemann.

Ausser. Zweifl., ii, 114, 1830.

Three males, Bettotan, near Sandakan, August 13, 19, 23, 1927; 4 ♂, Samawang, near Sandakan, July 12, 15, 1927 (Kloss and Pendlebury).

**Eumerus deceptor** Curran.

Journ. F.M.S. Mus. xiv, 190, 1928.

Male, Bettotan, near Sandakan, August 12, 1927 (Kloss and Pendlebury); ♂, ♀, Mt. Kinabalu, Kenokok, 3,300 ft., April 24, 1929; 2 ♂, near Kinabalu, Kabayau, 600 ft., May 8, 1929 (Pendlebury).

**Eumerus marginatus** Grimshaw.

Fauna Hawaiiensis, iii, 82, 1920.

Male, Bettotan, near Sandakan, Aug. 3, 1927; ♀, Kudat, Sept. 3, 1927 (Kloss and Pendlebury).

**Eumerus auratus** Walker.

*Citibaena auratus* Walker, Proc. Linn. Soc. Lond., i, 124, 1857.

This genus, and species, was originally described from Borneo. It is impossible to determine whether the description applies to *spendens*, *deceptor* or *aurifrons* Wiedemann.

## SYRPHINÆ.

Genus **Syrphus** Fabricius.

## A. Eyes bare.

**Syrphus viridaureus** Wiedemann.

Anal Ent., 35, 1824.

4 ♀, near Kinabalu, Tenompok Pass, 4,700 ft., March 18, 1929; ♀, Mt. Kinabalu, Kiau, 3,000 ft., April 30, 1929 (H. M. Pendlebury); ♀, Kudat, Sept. 17, 1927, (Kloss and Pendlebury).

**Syrphus peteus** sp. n.

Related to *tenuiformis* Curran but with an entire yellow fascia on the second abdominal segment. Length, about 9 mm.

*Female.* Face and cheeks reddish-yellow, the former ochre-yellow pollinose and with a broad, shining brown stripe reaching almost to the antennæ. Face perpendicular, with a long, low, nasiform tubercle. Front brownish with blue reflections, the sides very broadly ochreous pollinose almost to the level of the ocelli, the frontal prominence black. Pile yellow; on the front black, the occipital cilia also black. Antennæ reddish, the basal two segments brown above, the third black above, one-half longer than wide, almost evenly rounded apically. Arista luteous, the apical third black.

Thorax metallic greenish-black, the sides of the mesonotum broadly brownish-yellow pollinose in front of the suture. Humeri, notopleura and posterior calli brownish-yellow. Mesonotum with cinereous pile. Pleura yellowish-gray pollinose and yellow pilose. Scutellum reddish-yellow, with sparse black pile.

Anterior four legs reddish-yellow, and yellowish haired. Posterior legs black, the broad base and apex of the femora and the base of the tibiæ reddish, hair black.

Wings cinereous hyaline, narrowly darker in front and apically. Squamæ and halteres reddish-yellow.

First abdominal segment yellow, with a broad, black spot in the middle. Second segment with an incomplete basal black fascia which is widest in the middle, and a shallow posterior triangle which reaches forward almost to the middle of the segment and extends broadly to the lateral

margins, the yellow fascia narrowest in the middle. Third segment with an incomplete, narrow basal black fascia and the apical half of the segment black; in the middle the posterior black band extends forward to a little in front of the middle; laterally it occupies little more than the posterior two-fifths of the segment. Fourth segment similar to the third except that the yellow fascia is slightly narrower, the basal black fascia is entire and the lateral margins appear to be very narrowly black. Fifth segment with a large, reddish, triangular spot toward either side, basally. Pile short, black; on the base of the abdomen and opposite the yellow fasciæ, yellow. Venter wholly yellowish, with black hair on the apical half.

Type, ♀, Mt. Kinabalu, Lumu Lumu, 5,500 ft., April 15, 1929 (H. M. Pendlebury).

**Syrphus malayensis** Curran.

Journ. F.M.S. Mus., xiv, 224, 1928.

4 ♂, Mt. Kinabalu, Lumu Lumu, 5,500 ft., April 16, 17, 1929; 3 ♂, Mt. Kinabalu, Kamborangah, 7,200 ft., March 29, 31, April 1, 1929 (H. M. Pendlebury).

**Syrphus tenuiformis** Curran.

Journ. F.M.S. Mus., xiv, 222, 1928.

♂, Mt. Kinabalu, Kamborangah, 7,200 ft., March 29, 1929 (H. M. Pendlebury).

**Syrphus deceptor** Curran.

Journ. F.M.S. Mus., xiv, 219, 1928.

2 ♂, Mt. Kinabalu, Kamborangah, 7,200 ft., March 27, 1929 (H. M. Pendlebury).

**Syrphus clarus** Hervé-Bazin.

*Olbiosyrphus clarus* Hervé-Bazin, Bull. Soc. Ent. Fr., 25, 1923.

3 ♂, Mt. Kinabalu, Kenokok, 3,300 ft., April 24, 25, 1929 (H. M. Pendlebury).

This species is very close to *luteifrons* de Meijere; but differs in the much wider spots on the second abdominal segment.

**Syrphus circumdatus** de Meijere.

Tijd. v. Ent. li, 306, 1908.

♀, M. Kinabalu, Kamborangah, 7,200 ft., March 30, 1929 (H. M. Pendlebury).

Related to *harvé-bazini* Curran but there is an entire yellow fascia on the second abdominal segment instead of a pair of spots.

**Syrphus kinabalensis** sp. n.

Related to *circumdatus* de Meijere but with only a pale brownish spot on the middle of the scutellum instead of the

basal black triangle. Pale band on second abdominal segment broadly interrupted in the male, entire in the female. Length, 12 to 13 mm.

*Male.* Face and cheeks pale orange, the latter with a large blackish spot on the jowls, the former with a median black vitta extending from the oral margin to the antennae, but paler above. Face wholly shining; cheeks with thin pale pollen. Frontal triangle orange, dull, with a large shining black spot in front. Vertical triangle black, thinly brown pollinose, black pilose. Pile of the head black, on the lower three-fourths of the occiput and on the cheeks, pale yellowish; occiput silvery gray pollinose. Face perpendicular, shallowly concave above, shortly but rather deeply concave below the long, nasiform tubercle. Antennae reddish-brown, the third segment basally, except above, and the second below, brownish-red; third segment only one-fourth longer than wide, obtuse apically; arista brownish, thickened on the basal half. Front not "bloated."

Thorax shining greenish-black, the disc of the mesonotum scarcely dulled by brownish pollen. Broad sides of the mesonotum reddish-yellow, the pale stripe broadly interrupted immediately in front of the posterior calli. Most of the mesopleura, and large spots on the sternopleura, pteropleura and metapleura, reddish-yellow. Mesonotum, scutellum and pteropleura black haired; pteura and the sides of the mesonotum immediately behind the humeri with yellow pile, a few black hairs on the posterior edge of the mesopleura. Scutellum yellowish, the disc transversely tinged with brown.

Anterior four legs yellowish-red, the tarsi wholly and the broad bases of the femora, black; posterior legs black, the broad bases of their tibiae reddish-yellow; hair black.

Wings strongly tinged with brown, the stigma darker. Squamae reddish-yellow, with brown border and brownish-yellow fringe. Halteres reddish.

Abdomen dull black, the lateral margins, fifth segment and apices of the segments shining. Sides of first segment broadly yellow. Second segment with a broad, arched median reddish yellow fascia which is narrowly separated from the lateral margins. The yellow fascia on the third segment is separated from the base by about half its width, widens laterally and is narrowly separated from the lateral margins; this fascia, which appears to be arched, has an average width equal to about two-fifths the length of the segment and approaches the base only a little more in the middle than at the sides. The pale fascia on the fourth segment is very similar to that on the third, but is conspicuously closer to the base of the segment, distinctly convex in front and a little more concave behind. Fifth segment with a large reddish triangle on either side. Pile black;

yellow only on the yellow spots on the second and most of the sides of the first, segment. Venter reddish.

*Female.* Front shining black, the lateral third of the sides reddish-yellow on the lower two-thirds, the median black stripe only a little widened anteriorly; pile black, that of face mostly yellowish. Lateral stripes of the mesonotum entire, the sides and pleura wholly yellow pilose. Yellow fascia on the second segment entire, narrowest in the middle. Fifth segment with the basal two-thirds reddish.

Described from ♂ 2 ♀, Mt. Kinabalu, Marei Parei, 5000 ft., April 18, 30 and May 1. H. M. Pendlebury. The type is the male. The allotype was taken on May 1.

### **Syrphus fascipleura** sp. n.

Related to *variscutatus* Curran but with much more extensively pale pleura, flat front, etc. Length, 12 mm.

*Male.* Face and cheeks yellow, the jowls blackish above and thinly grayish pollinose. Face at oral margin less prominent than at base of antennae; middle of face swollen, but with a low, nasiform tubercle, scarcely concave above. Frontal triangle reddish-yellow, more orange in front. Vertical triangle small, greenish-black, brownish pollinose and black pilose. Occiput yellow pollinose, clothed with shining yellow pile except above. Pile of the face yellow except above, of the frontal triangle and anterior half of the cheeks, black. Antennae brownish-red, the third segment broadly black above, one-fourth longer than wide, convex below, evenly rounded apically; arista blackish.

Mesonotum opaque, the median third greenish-gray, bordered laterally and posteriorly by black, the lateral margins broadly pale yellow. Upper two-thirds of pleura pale yellow, crossed by two black fasciae, the anterior one entire and occupying the anterior third of the mesopleura, the median one extending over the anterior part of the pteropleura but not extending on to the sternopleura. Pile reddish-yellow; black on the opaque black part of the mesonotum. Scutellum yellow with a large, subtriangular brown spot resting on the base and rounded apically; pile wholly black, including the ventral fringe.

Anterior four legs reddish-yellow, the tarsi black; posterior legs wholly black. Hair black except on the bases of the femora.

Wings cinereous hyaline; stigma yellowish-brown. Squamae yellow, with dark border and more or less black or brown fringe.

Abdomen black and reddish-yellow. First segment bordered laterally and anteriorly with yellow. Second segment with a pair of large, subtriangular pale spots which are rounded inwardly, oblique on the outer edge and pro-

duced broadly to the anterior corners, their posterior, gently convex edge at the posterior third of the segment. Pale fascia on third segment gently concave in front, separated from the base of the segment by more than half its median width, but almost reaching the base where it extends broadly over the lateral margins; fascia narrowest in the middle. Pale fascia on fourth segment similar to that on the third but a little narrower, situated closer to the base of the segment and extending more broadly over the lateral margins. Sides of fifth segment broadly reddish except on the narrow base. Pile black, on the sides of the first segment and the disc of the second in front of the black fascia, reddish-yellow. Sternum reddish-yellow, the second and following sternites very broadly black apically.

A single male, Mt. Kinabalu, Kenokok, 3300 ft., April 22, 1929 (H. M. Pendlebury).

B. Eyes pilose.

**Syrphus serarius** Wiedemann.

Ausser. Zweifl., ii, 128, 1830.

♀, Mt. Kinabalu, Kiau, 3,000 ft., April 3, 1929 (H. M. Pendlebury).

**Syrphus serarioides** de Meijere.

Tijd. v. Ent. lxxvii, 218, 1924.

♀, Mt. Kinabalu, Kamborangah, 7,200 ft., April 18, 1929; ♀, Mt. Kinabalu, Marei Parei, 5,000 ft., April 30, 1929 (H. M. Pendlebury).

In this species the black facial vitta is wider than in *serarius* and reaches almost to the base of the antennae and the abdominal bands are reddish, instead of metallic gray.

**Syrphus koningsbergeri** de Meijere.

Tijd. v. Ent., lviii, 152, 1914.

5 ♂, ♀, Mt. Kinabalu, Pakka, 10,200 ft., March 25, 27, 1929 (H. M. Pendlebury).

In some of these specimens the face is almost all black and the scutellum sometimes has a metallic bluish tinge.

**Syrphus torvoides** de Meijere.

Tijd. v. Ent. lviii, 155, 1914.

♂, Mt. Kinabalu, Marei Parei, 5,000 ft., April 30, 1929 (H. M. Pendlebury).

The specimens mentioned by Brunetti (Fauna Brit. Ind., iii, 94), as differing from *confrator* Wiedemann, are probably representatives of this species.

**Syrphus hirsuteron** sp. n.

Somewhat like *bifasciatus* Fabricius but with hairy eyes and dull thorax. Length, 13 mm.



*Male.* Face and cheeks brownish-yellow, cinereous pollinose, the median vitta bare, broad, brownish-red, black below the tubercle. Face not nearly as prominent below as at the antennae, gently concave above, the tubercle moderately prominent, long and nasiform. Frontal triangle brownish-red pollinose, black pilose, bare and shining black in front. Vertex triangle brown pollinose, black haired. Hair of head yellowish; occipital cilia black. Occiput cinereous pollinose. Antennae deep black; third segment oval, rather evenly rounded apically, one-half longer than wide. Arista wholly black. Eyes clothed with short black hair which becomes obsolete below.

Thorax black; mesonotum dull, the sides and posterior border bronzed. Pleura yellowish gray pollinose. Pile tawny, black on the scutellum except the narrow base.

Femora black; apical half of anterior four and one-third of the posterior pair reddish. Tibiae reddish; apical half of the anterior pair and a post-median band on the middle pair, brownish-red; the posterior pair black on the apical three-fifths; anterior four tarsi reddish-brown, paler basally, the posterior pair black. Pile tawny, black on the posterior legs except the broad base of the femora.

Wings tinged with brown; stigma dark brown. Squamae reddish, with brown fringe. Halteres yellowish-red.

Abdomen subopaque black, with three narrow reddish fasciae, the first and third narrowly interrupted, all broadly separated from the lateral margin. The band on the second segment is very slightly arched, lies wholly before the middle and is only about one-seventh as wide as the length of the segment. Pale fasciae on the third and fourth segments separated from base of segment by less than their own width, slightly widening to the sides and therefore appearing a little more arched. The pale fasciae are thinly yellowish pollinose; the apices of the segments, lateral margins narrowly and the first segment wholly, shining. Pile rather long and abundant, tawny on the base of the abdomen, the lateral margins and on the pale fasciae, the second segment with black pile only on the posterior fourth or less. Venter black, or brown, grayish pollinose on basal half, the first three sternites yellow pilose; fourth sternite with metallic blue reflections and black pilose, the preceding sternite with scattered black hairs in the middle.

Type, ♂, Mt. Kinabalau, Pakka, 10,200 ft., March 25, 1929 (H. M. Pendlebury).

#### Genus *Asarkina* Macquart.

#### *Asarkina aegrota* Fabricius.

♂, 2 ♀, Kudat, Sept. 12, 12, 16, 1927 (Kloss and Pendlebury); ♂, Mt. Kinabalu, Kiau, 3000 ft., April 5, 1929; ♂, 2 ♀, near Kinabalu, Kabayau, 600 ft., May 9, 12, 1929; ♂,

Mt. Kinabalu, Kenokok, 3300 ft., April 25, 1929; ♀, Mt. Kinabau, Marei, Parei, 5,000 ft., May 1, 1929, (Pendlebury).

**Asarkina consequens** Walker.

♂, ♀, near Kinabalu, Kabayau, 600 ft., May 8, (Pendlebury); ♂ ♀, Samawang, near Sandakan, July 13, August 6, 1927; 3 ♂, Bettotan, near Sandakan, July 26, August 6, 14, 1927, (Kloss and Pendlebury).

**Asarkina marokaensis** de Meijere.

*Syrphus marokaensis* de Meijere, Tijds. v. Ent., li, 308, 1908.

2 ♂, 3 ♀, Mt. Kinabalu, Kenokok, 3300 ft., April 22-24, 1929; ♂, Mt. Kinabalu, Lobang, 4000 ft., April 5, 1929; ♂, Mt. Kinabalu, Marei Parei, 5000 ft., April 30, 1929 (Pendlebury).

**Asarkina biroi** Bezzi.

Ann. Mus. Nat. Hung., vi, 498, 1908.

2 ♂, ♀, near Kinabalu, Kabayau, 600 ft., May 10, 13, 1929 (Pendlebury).

Genus **Sphærophoria** St. Fargeau et Serville.

**Table of Species.**

- |   |  |
|---|--|
| 1. Posterior tibiae wholly black,<br>or black with a broad yellowish<br>median band -                   | 2.   |
| Posterior tibiae yellow on basal<br>half or yellowish with<br>broad brown or black<br>median band - - - | 5.   |
| 2. Posterior tibiae wholly black -  | 3.   |
| Posterior tibiae with broad<br>yellowish median band -  | 4.   |
| 3. Antennae black, the third<br>segment reddish below<br>basally - - - -                                | <i>obscuricornis</i> de<br>Meijere.        |
| Antennae reddish-yellow, the<br>third segment blackish<br>above - - - -                                 | <i>nigrotibialis</i> Curran.               |
| 4. The yellow forms a continuous<br>band from the sternopleura to the metapleura -                      | <i>javana</i> Wiedemann.                   |
| The yellow band is broadly<br>interrupted below the<br>pteropleura - - -                                | <i>medanensis</i> de<br>Meijere            |
| 5. Third antennal segment sub-<br>cylindrical, rather pointed<br>apically - - - -                       | <i>Ischiodon scutellaris</i><br>Fabricius. |

Third antennal segment laterally compressed, obtuse apically. (This group has not been represented in the collections so far received).

**Sphaerophoria javana** Wiedemann.

*Syrphus javanus* Wiedemann, Anal. Ent. 34, 1824.

♀, Mangalum Island, July 9-15, 1928 (C. Boden Kloss).

**Sphaerophoria medanensis** de Meijere.

*S. javana medanensis* de Meijere, Tijd. v. Ent., lvii, 166, 1914.

♀, Mt. Kinabalu, Marei Parei, 5000 ft., April 30, 1929 (H. M. Pendlebury).

This species, if I have correctly identified it, is larger and more robust than *javana* has a much broader abdomen, sides of face rather narrowly yellow and the pteropleura wholly blackish.

**Sphaerophoria nigrotibialis** Curran.

Journ. F.M.S. Mus., xiv, 241, 1928.

♂, near Kinabalu, Kabayau, 600 ft., May 12, 1929 (H. M. Pendlebury).

Only the female has been described. In the male the front is dull yellowish with a black spot anteriorly. The genitalia are small and shining black.

Genus **Baccha** Fabricius.

One of the five species secured in Borneo represents an undescribed form. The key given in the paper on Malay *Syrphidae* includes the Bornean species.

Sub-genus **Baccha**.

Humeri wholly without hair.

**Baccha maculata** Walker.

Ins. Saunders. Dipt., 223, 1852.

2 ♂, Mt. Kinabalu, Lumu Lumu, 5500 ft., April 15, 1929 (H. M. Pendlebury).

**Baccha gigas** sp. n.

Scutellum wholly yellowish; wings pale brownish, brown in front; face wholly yellow. Length, 15 mm.

*Female*. Cheeks wholly, and the face, yellowish, the latter, with the exception of the tubercle, yellowish white pollinose and with pale yellow pile. Front black, the anterior border yellow; covered with brownish-yellow pollen which leaves a triangle above the antennae and the upper-fourth bare; pile yellowish, black on the upper fourth and immediately above the antennae. Occiput pale yellowish

pollinose and pilose; occipital cilia black, but shorter than the yellowish hair amidst which they are placed. Face gently receding, with a large tubercle lying mostly below the middle. Antennae brownish-red, paler below; arista brown except basally.

Thorax greenish-black, the mesonotum thinly brown pollinose. A broad lateral stripe in front of the suture, the mesopleura mostly, a large contiguous spot on the sternopleura and a large spot on the metapleura, yellowish in ground color and thickly yellow pollinose. Hair very short and yellowish, not conspicuous. Scutellum reddish-yellow, thinly yellow pollinose and with only a few scattered, short hairs; without ventral fringe.

Legs reddish-yellow; median third of the posterior femora, apical fourth of their tibiae and the basal three-fourths of the first segment of the posterior tarsi, black. Hair short, yellow; somewhat longer on the posterior surface of the anterior four femora.

Wings strongly tinged with brown; narrowly brown along the costa, the costal cell more brownish-yellow, the brown color reaching to beyond the tip of the third vein. Alula of moderate width, narrowing from apex to basal fourth. Squamae and halteres pale orange, the former with inconspicuous fringe.

Abdomen black, with yellowish-red or reddish markings. First segment reddish; second segment blackish, with a pair of very large reddish triangles on the base which are continued along the lateral margins to connect with a pair of broadly separated, inwardly convex, elongate spots situated at the apical fourth. Third segment with about the median third reddish, the base brown, the apex blackish. Fourth segment blackish, the second fourth reddish, the pale fascia very broadly separated from the lateral margins and narrowly interrupted in the middle. Fifth and sixth segments brown, the following ones reddish. The reddish fasciae on the third and fourth segments are brownish gray pollinose. Pile black, short, yellow on the first segment and sides of the second. Venter brownish and reddish; black haired.

Type, ♀, Mt. Kinabalu, Marei Parei, 5,000 ft., April 30, 1929, (H. M. Pendlebury). A second specimen, taken the following day, lacks its head.

**Baccha pedicellata** Doleschall.

Nat. Tijds. v. Ned. Ind., x, 411, 1856.

♀, Samawang, near Sandakan, jungle, July 9, 1927 (Kloss and Pendlebury).

Shiraki considers this a synonym of *amphithoe* Walker, but I cannot agree. I have no specimen agreeing with the

description of *amphithoe*, but if Brunetti has correctly identified Walker's species the two are abundantly distinct.

### Sub-genus *Allobaccha*.

Humeri with hair posteriorly.

#### *Baccha fallax* Austen.

Proc. Zool. Soc. Lond., p. 142, 1893.

♂, Samawang, near Sandakan, jungle, July 14, 1927 (Kloss and Pendlebury).

This specimen agrees in abdominal markings with the original description and figure.

#### *Baccha porphyra* Curran.

Journ. F.M.S. Mus., xiv, 254, 1928.

♀, Mt. Kinabalu, Lumu Lumu, 5500 ft., April 17, 1929 (H. M. Pendlebury).

This specimen has the abdomen largely reddish, even more so than in the female of *pulchrifrons* but it seems to belong here.

#### *Paragus serratus* Fabricius.

*Mulio serratus* Fabricius, Syst. Antl., 186, 1805.

Two males, one female, Kudat, Sept. 1, 14, 18, 1927; ♂, Samawang, near Sandakan, July 8, 1927, (Kloss and Pendlebury); ♂, near Kinabalu, Tenompok Pass, 4700 ft., March 18, 1929 (Pendlebury).

### Genus *Melanostoma* Schiner.

I have attempted to prepare a key for the separation of the known species of *Melanostoma* from India and Malaya. However, I have no representatives of two of the species described by de Meijere and the resultant table may prove inadequate in the last two or three couplets.

#### Table of Species.

- |    |   |                                   |
|----|---|-----------------------------------|
| 1. | Face with only a trace of a tubercle - - - -                                  | <i>univittatum</i><br>Wiedemann.  |
|    | Face with a conspicuous tubercle - - - -                                      | 2.                                |
| 2. | Abdomen without distinct reddish spots - - - -                                | <i>ambiguum</i> Fallen.           |
|    | Abdomen with reddish markings - - - -   | 3.                                |
| 3. | Second to fourth abdominal segments each with broad, entire reddish fasciae - | <i>quadrifasciatum</i><br>Curran. |
|    | Abdominal bands interrupted in the middle - - - -                             | 4.                                |

4. Anterior four femora black on basal half or more - - - 5.  
Anterior four femora reddish on basal half or more - 6.
5. Anterior femora black except the narrow apex; facial tubercle very prominent - *algens* sp. n.  
Anterior four femora black on about the basal half, reddish apically; facial tubercle not unusually prominent - - - 9.
6. Second abdominal segment wholly black - - - 7.  
Second abdominal segment with a pair of large, oval or circular pale spots - - - ( $\varphi$ ) *orientale* Wiedemann.
7. Pale abdominal spots in female not reaching the lateral margins - - - - - ( $\varphi$ ) *gedehensis* de Meijere.  
The pale abdominal spots extend over the lateral margins - - - - - 8.
8. Anterior femora and tibiae with broad brownish bands - - - - - ( $\delta$ ) *gedehanus* de Meijere.  
Anterior femora and tibiae wholly pale reddish yellow - - - - - *normalis* sp. n.
9. Second abdominal segment with a pair of large yellowish spots - - - - - ( $\delta$ ) *orientale* Wiedemann.  
Second abdominal segment without pale spots - - - *talamau* de Meijere.

**Melanostoma univittatum** Wiedemann.

*Syrphus univittatus* Wiedemann, Anal. Ent., 36, 1824.

3 ♀, Bettotan, near Sandakan, Aug. 2, 24, 26, 1927 (Kloss and Pendlebury); ♀, near Kinabalu, Kabayau, 600 ft., 1929 (Pendlebury).

**Melanostoma algens** sp. n.

Black, the abdomen of the male with two, of the female with three pairs of orange spots; legs practically all black; wings tinged with dark brown. Length, 7 to 7.5 mm.

*Male.* Head greenish-black, face, cheeks and occiput cinereous pollinose, the face broadly brown pollinose in the middle or the occiput and cheeks brownish yellow pollinose and the face wholly brownish; tubercle, anterior oral margin and a triangle separating the face and cheeks, shining black. Facial tubercle lying mostly below the middle of the face, very prominent, the oral margin produced but very much less prominent than the tubercle. Frontal triangle thinly brownish-gray to yellowish-brown pollinose, very narrowly bare in front; rather large and gently convex. Vertex triangle a little longer than wide, with scarcely a trace of pollen. Pile black, rather coarse, on the lower third of the occiput and the posterior half of the cheeks, yellowish or pale cinereous. Antennae entirely deep black; third segment short, not one-half longer than wide, convex below and apically; arista stout on almost the basal half and quite bare.

Thorax dark greenish-black, the mesonotum very thinly brownish-gray pollinose, the pleura with more cinereous pollen. Pile black, on the pleura brownish-yellow. Scutellum shining greenish-black, black haired.

Legs black; tips of femora and narrow bases of the tibiae sometimes reddish. Hair black.

Wings strongly tinged with blackish-brown. Squamae brownish, with brownish-yellow fringe. Halteres yellow.

Abdomen opaque black, with four rectangular dull yellow spots. First segment shining greenish-black; second with a very large rectangle on either side basally, reaching to beyond the middle of the segment subopaque, the lateral margins shining greenish-black or bronze. The yellow spots on the third segment form a basal fascia which is broadly interrupted but extends over the side margins in almost its full width and occupies almost or quite one-half of the segment. The pale fascia on the fourth segment is very similar to that on the preceding one, but the spots are usually slightly widened toward either side although they may be more or less distinctly separated from the lateral margin on their posterior half; this fascia occupies the basal half of the segment or slightly more. Fifth segment and genitalia shining greenish-black. Pile black, yellowish on the broad base of the abdomen and on the yellow spots. Venter marked much the same as the dorsum, black and reddish-yellow; thinly yellowish pollinose and with pale pile on the basal segments.

*Female.* Front very shining, aeneous, conspicuously yellowish cinereous pollinose except across the upper third, the vertex densely pollinose. Pile black. Thorax with shorter black pile than in the male, broadly pale pilose laterally and sometimes with reddish brown or even yellowish pile intermixed with the black, especially in front

of the suture. Wings cinereous rather than brown, the stigma dark brown. Second abdominal segment with the broad sides and a very large anterior rectangular spot on either side, extending from the base to beyond the middle of the segment, shining black or metallic greenish-black, and bearing near its inner posterior corner a small, roundish or oval, reddish spot. Base of the third segment bearing a very broadly interrupted reddish fascia, which extends broadly over the lateral margins. The spots thus formed are much wider on their inner half or more which is convex posteriorly, very little narrowed to the sides; the width of the spots varies, but at their widest point they do not occupy more than the basal half of the segment; fourth segment similarly marked. Fifth segment with the basal third, broadly interrupted in the middle, reddish. The abdomen is rather shining, especially laterally and apically.

Described from 7 ♂, 4 ♀, Mt. Kinabalu, Pakka, 10,000 ft., March 24, 25, 1929 (H. M. Pendlebury). The holotype ♂ and allotype were taken on March 24.

### **Melanostoma normalis** sp. n.

Related to *orientalis* Wiedemann but the second abdominal segment is without pale spots and the anterior four legs are wholly reddish-yellow. Length, 7.5 to 8.5 mm.

Male. Head greenish-black, very shining; face, cheeks, and posterior orbits whitish pollinose, the face thinly so, the tubercle, anterior oral margin and the cheeks in front, bare; facial and frontal orbits narrowly more thickly whitish or yellowish pollinose. Frontal triangle large, gently convex, with about two rows of black hairs toward the orbits; facial pile pale, inconspicuous, the posterior orbits with whitish pile; their upper fourth and the vertical triangle black haired. Vertical triangle rather small, thinly cinereous pollinose. Face gently receding below, the oral margin slightly produced, the tubercle not prominent (about as in *melinum* L. ), roundish. Antennae reddish-yellow, the third segment broadly brown above; arista brown, luteous basally, thickened on basal third; not pubescent.

Thorax very shining metallic greenish-black, the pleura thinly brownish-yellow or cinereous pollinose. Pile rather dull brassy yellow.

Anterior four legs reddish-yellow, their coxæ greenish black, the median segments of the front tarsi not or only lightly browned above. Posterior femora on subapical third, the apical two-thirds of their tibiae and the apical three segments of their tarsi, blackish, the tibiae broadly reddish apically.

Wings cinereous hyaline. Squamae pale yellowish, with brownish-yellow border and fringe. Halteres reddish-yellow.



Abdomen opaque black with two broad, interrupted reddish-yellow bands, the first segment, lateral margins and broad apex, shining. The yellow band on the third segment is narrowly interrupted in the middle, occupies less than the basal half of the segment at the sides, and usually more than half toward the middle, the posterior border gently convex except toward the sides. The band on the fourth segment is narrower than the preceding one and is usually less widened toward the inner ends of the spots which do not extend back quite to the middle of the segment. Pile pale yellowish; black on the black parts of the third, following segments and genitalia. The color of the venter and its pile agrees well with the dorsal coloration.

*Female.* Front shining greenish-black, below the middle with a rather narrow arch of cinereous white pollen, the orbits below narrowly covered with similar pollen. Hair black, on the front, on the occiput wholly yellowish. Hair of thorax somewhat shorter. Abdomen shining, with three pale orange bands all of which are interrupted in the middle. The yellow spots on the third segment are narrow at the sides, where they occupy less than the basal fourth of the segment, in the middle occupying about half the length of the segment and convex behind; the spots on the fourth segment are quite as large as those on the third, but are more gradually narrowed toward the sides. The band on the fifth segment is less widely interrupted than the preceding ones and occupies about the basal fifth.

There is a little variation in the size and shape of the abdominal spots in both sexes and especially in the female where the pale spots may be considerably reduced. Two specimens have the face much more shining than the others.

Described from 44 ♂, 21 ♀, Mt. Kinabalu, Marei Parei, April 28 to May 2, 1929; 2 ♂ ♀, Tenompok Pass, 4,700 ft., March 18, 1929 (H. M. Pendlebury). The holotype, ♂, and allotype were taken on April 29.

#### CHEILOSINÆ.

#### *Spheginobaccha macropoda* Bigot.

*Sphagina macropoda* Bigot, Ann. Soc. Ent. Fr., (6) iii, 331, 1883.

3 ♂, 3 ♀, Bettotan, near Sandakan, August 5 to 24, 1927 (Kloss and Pendlebury).

#### Genus *Callicera* Panzer.

The key which follows separates the species occurring in the Indo-Malayan region.

#### Table of Species.

- |                                   |          |
|-----------------------------------|----------|
| 1. Face with a very broad shining |          |
| black vitta                       | - - - 2. |

- Facial vitta very narrow, the pollen and pile extensive - *sackeni* Verrall.
2. Third abdominal segment brown or black pilose except on the sides; anterior four femora with only the apical sixth reddish - 3.
- Third abdominal segment yellow pilose; apical half of anterior four femora orange-red - - - *doleschalli* Verrall.
3. Anterior third of mesonotum tawny or reddish-yellow pilose; abdomen black-haired, the sides and fourth segment rather tawny or reddish-yellow style long - - - *pendleburyi* Curran.
- Mesonotum brown pilose in front; abdomen black and brown pilose dorsally; style short - - - *sumatrensis* de Meijere.

**Callicera pendleburyi** Curran.

Journ. F.M.S. Mus., xiv, 273, 1928.

♂, Mt. Kinabalu, Marei Parei, 5000 ft., April 28, 1929 (H. M. Pendlebury).

Genus **Rhingia** Scopoli.

The key which follows will serve to distinguish the species occurring in Malaya.

**Table of Species.**

1. Abdomen with the basal three segments yellow, the third blackish posteriorly (Sumatra) - - - *basalis* de Meijere.
- Abdomen either with three pairs of yellowish spots or black or brown on the apical three segments - 2.
2. Abdomen with the first segment yellowish, the following three each with a pair of transverse reddish spots (F.M.S.) - - - *chaetosa* Curran.
- Abdomen black or brown with paler base - - - 3.

3. Abdomen dark brown, lighter basally, the hind margins of the second and third segments blackish (Sumatra) - - - *robinsoni* Edwards.  
 Abdomen shining bluish-black, the base brownish-yellow - 4.
4. Wings yellowish on basal half; squamal fringe yellow - *varipennis* sp. n.  
 Wings almost uniformly tinged with yellowish-brown; squamal fringe brown - *uniformis* sp. n.

### *Rhingia varipennis* sp. n.

Shining black, the wings yellow on basal half or more. Length, including snout, 8 to 10 mm.

*Male.* Face and anterior half of the cheeks shining brownish-red, the immediate orbits gray pollinose; upper surface of snout with a broad black vitta reaching almost to the antennae. Front shining black, the orbits narrowly gray pollinose. Cheeks shining brown. Occiput gray pollinose and yellow pilose, the cheeks with paler pile. Vertical triangle small, black, thinly brown pollinose and black pilose, the occipital cilia black. Antennae reddish, third segment narrowly brown above. Arista reddish on basal half, black apically, very short plumose. Rostrum three-fourths as long as length of head at lowest third.

Thorax shining brownish-black, dulled by brown pollen which is most abundant on the anterior two-thirds of the mesonotum; pollen on the broad sides of the mesonotum anteriorly and on the anterior part of the pleura grayish brown. Pile short and only moderately abundant, mixed black and tawny, the black predominating. Scutellum shining black, with short black hair and several marginal bristles, the ventral fringe long and yellowish.

Femora black, the apices reddish; tibiae brown, the bases broadly reddish; tarsi brown. Pile black; pubescence brownish-red.

Wings yellowish on basal half or more, tinged with brown apically, the stigma pale brownish. Squamae yellow, with yellow border and fringe, the lower lobe with the border and fringe brownish near the inner end. Halteres yellowish.

Abdomen shining black or blue-black, the first segment brownish-yellow, the second often brown in the middle on the basal half or less. Pile rather obscure yellowish; black on the lateral margins. Genitalia shining black, black haired. Venter shining black, thinly brownish pollinose basally, black haired.

*Female.* Front blackish, wide, moderately dulled by very fine brownish pollen; hair sparse, black; very narrow orbits cinereous pollinose on lowest two-thirds. Pile of thorax practically all black, that on the abdomen black beyond the middle of the second segment. Squamae and fringe wholly yellow.

Described from ♂ 8 ♀, Mt. Kinabalu, Lumu Lumu, 5000–5500 ft., April 7 to 16, 1929, 2 ♀, Mt. Kinabalu, Kenokok, 3300 ft., April 22, 25, 1929 and ♂ ♀, Mt. Kinabalu, Marei Parei, 5000 ft., April 4, 28, 1929 (H. M. Pendlebury). The type male and allotype are from Lumu Lumu, April 7 and 9 respectively.

### *Rhingia uniformis* sp. n.

Resembles *varipennis* but the wings are almost uniformly colored, the brownish-gray squamae are bordered with brown and bear a brown fringe, etc. Length, including snout, 7 to 10.5 mm.

*Male.* Face and anterior half of the cheeks, brownish-red, the upper part of the face and the orbits narrowly, grayish pollinose. A broad black vitta extends along the upper surface of the snout and reaches obscurely to the antennae, the apex of the snout usually broadly blackish. Cheeks reddish-brown posteriorly. Front shining blackish, very broadly grayish-yellow pollinose laterally and above. Occiput gray pollinose, with cinereous yellow pile except above. Vertical triangle brown pollinose and black haired, the occipital cilia black. Antennae reddish, the third segment black above; arista black, very short plumose.

Thorax bluish-black, moderately brown pollinose, wholly black pilose. Scutellum shining, with short black hair above and several fine marginal bristles. Ventral fringe long and yellowish.

Femora black, brownish pollinose, their apices reddish. Tibiae and tarsi brown, the former broadly reddish basally. Hair black.

Wings lightly tinged with brown, sometimes a little luteous along the costa on the basal half; stigma pale brown. Halteres reddish, with brown knob.

Abdomen shining blue-black, the first segment usually brownish-yellow, sometimes yellow-brown, the second sometimes brownish basally in the middle. Pile sparse, black, yellowish on the first segment and basal half of the second. Genitalia shining black. Venter black, brown pollinose basally, black haired.

*Female.* Front wide, slightly narrowing above, thinly brown pollinose except below, the sides not cinereous pollinose; pile wholly black.

Described from ♂ 22 ♀, Mt. Kinabalu, Kamborangah, 7,200 ft., March 27 to April 5, 1929 and ♀, Mt. Kinabalu, Pakka, 10,200 ft., March 21, 1929 (H. M. Pendlebury). The type male and allotype were taken on April 4.

## XYLOTINÆ.

Genus *Xylota* Meigen.

1. Tibiæ wholly testaceous;  
femora chalybeous - - - *conformis* Walker.  
At least the posterior tibiæ  
broadly black or brown - 2.
2. All the femora red except the  
broad apex of the posterior  
pair - - - - *brunettii* Curran.  
At least one pair of femora  
more broadly black or  
brown - - - - 3.
3. Anterior four femora wholly  
reddish - - - - 4.  
Anterior femora partly or  
wholly blackish or metal-  
lic - - - - 5.
4. First abdominal segment  
mostly yellowish - - *annulata* Brunetti.  
First abdominal segment  
brown - - - - *annulipes* de Meijere.
5. Basal half or more of the  
anterior four femora  
reddish - - - - *doris* Curran.  
Anterior femora blackish with  
the apices reddish - - 6.
6. Middle tibiæ wholly yellow - *pendleburyi* Curran.  
Middle tibiæ largely brown in  
ground color - - - 7.
7. Thorax and abdomen metallic  
blue - - - - *morna* sp. n.  
Thorax and abdomen greenish  
black or blackish aeneous - 8.
8. Pile on apical half of posterior  
surface of middle tibiæ  
much longer than the  
thickness of the tibia - *spinipes* Curran.  
Pile of middle tibiæ short,  
appressed or sub-ap-  
pressed - - - - *nigroaenescens*  
Rondani.

***Xylota morna* sp. n.**

A large, metallic dark blue species with cinereous pilose vittae on the mesonotum and opaque black abdominal markings. Length, 13 to 15 mm.

*Male.* Face and cheeks brown in ground color, but densely covered with cinereous white pollen; face strongly receding on upper three-fifths and moderately produced below. Frontal protuberance strong, with a rectangular metallic blue spot dorsally, the frontal triangle blackish blue and densely pollinose. Vertical triangle long, bluish, yellow pilose, the ocelli situated far forward. Occiput white pollinose and pilose. Antennae black; third segment with thin cinereous pollen, sub-oval, slightly more than one-half longer than wide; arista brown, much longer than the width of the front.

Thorax and scutellum metallic dark blue, short, black pilose, the mesonotum with a pair of broadly separated cinereous pilose vittae which have a yellowish tint in some lights; notopleura pale pilose; a broad band of cinereous white pollen and pile extends over the mesopleura and sternopleura. Scutellum large, its pile mostly cinereous white, the disc with black hairs intermixed.

Legs metallic blue; tips of the femora, basal third of the tibiae (less of the hind pair) and the basal three segments of the anterior four tarsi, yellow. Femora with erect or suberect yellowish-white hair, the posterior pair black or brown haired on apical half of lower surface and on the broad apex except the dorsal line. The tibiae bear closely appressed whitish hair which gives them a silvery white sheen, the hair on the ventral surface more yellow. Basal segments of the anterior four tarsi white haired, the apical segments and the entire dorsal surface of the posterior pair, black haired.

Wings cinereous hyaline, tinged with dark brown on the apical half. Squamae white, with brownish border and fringe. Halteres reddish-yellow.

Abdomen metallic dark blue. An incomplete, sub-triangular basal fascia on the second segment, a narrow median vitta, and a transverse, sub-apical fascia, opaque black. Apical half of third segment opaque black, the sides cut off obliquely. All the black markings are broadly separated from the lateral margins and bear short, black hair, the hair elsewhere erect, short, and white. Venter reddish-brown, white pilose; fourth sternite metallic blackish-blue, thinly brown pollinose and black pilose. Genitalia with cinereous white pile.

Three ♂, Bettotan, near Sandakan, August 10, 20, 27, 1927 (Kloss and Pendlebury). The type was taken on August 10.

**Xylota nigroaenescens** Rondani.

Ann. Mus. Civ. Genova, vii, 422, 1875.

*Xylota striga* de Meijere, Tijd. v. Ent., lvii, 142, 1914.*Xylota petulans* Curran, Journ. F.M.S. Mus., xiv, 282, 1928.

2 ♂ ♀, Bettotan, near Sandakan, July 10, August 20, 21, 1927 (Kloss and Pendlebury).

These specimens agree well with the poor description given by Rondani, and I believe that they are the same as *striga*, described from Java. They do not differ from paratypes of *petulans* and I feel that the above suggested synonymy will prove to be correct when the types have been compared.

**Xylota pendleburyi** Curran.

Journ. F.M.S. Mus., 279, 1928.

4 ♀, Bettotan, near Sandakan, August 9, 21, 22, 1927 (Kloss and Pendlebury).

In the female there is no spur on the posterior trochanters and the wings are cinereous hyaline, somewhat darker on the apical half. The four brassy yellow vittae on the mesonotum are very distinct. In the key to the species of *Xylota* given in the above mentioned reference, there is little sense to the second half of the diagnosis in the complete containing this species owing to the omission of several several words. The description of the hind femora given with the complete diagnosis must be referred to in order to correct this error.

Genus **Syritta** St. Fargeau and Serville.**Syritta orientalis** Macquart.

Dipt. Exot. ii, (2), 76, 1842.

♂, Kudat, Sept. 12, 1927 (Kloss and Pendlebury).

## SERICOMYINÆ.

Genus **Pseudovolucella** Shiraki.

Mem. Fac. Sci Agr. Taihoku Imp. Univ., i, 39, 1930.

The Malayan species which I placed in the genus *Pararctophila* belongs to this genus. The following key separates the known species.

**Table of Species.**

- |  |       |    |
|--|-------|----|
| 1. At least the third abdominal segment with a reddish fascia which may be interrupted | - - - | 2. |
| Abdomen without distinct reddish fasciae   | - - - | 4. |
| 2. Second abdominal segment with one or two reddish or reddish-yellow fasciae          | -     | 3. |

- First and second abdominal segments yellowish (Japan) - - - - *decipiens* Hervé-Bazin.
3. Second abdominal segment with two fasciæ (Formosa) - - - - *mimica* Shiraki.
- Second segment with one fascia (Borneo) - - *fasciata* sp. n.
4. Front yellowish pilose; abdomen brownish-orange (F.M.S.) - - - - *malayana* Curran.
- Front black pilose; abdomen brownish (Java) - - *apiformis* de Meijere.

***Pseudovolucella fasciata* sp. n.**

Blackish, the face, legs and abdomen partly reddish. Length, 11 to 15 mm.

*Male.* Face yellowish, a broad, geminate median vitta shining brown, a stripe separating the face and cheeks brownish-yellow. Head with yellowish pollen, the facial stripe bare; frontal triangle with more brownish tinged pollen, its anterior border shining black. Vertical triangle thinly brownish pollinose. Occipital cilia and pile of the frontal and vertical triangles black; pile of face and occiput pale yellow. Antennæ black; third segment brown; arista luteous, with black apex and rays.

Thorax thinly brownish-gray pollinose, with dull reddish pile, the pleural pile paler. Humeri, posterior calli and scutellum reddish-brown to reddish. Mesonotum often with brown hair intermixed with the pale.

Anterior four legs reddish, the apical two tarsal segments brown; femora somewhat darkened apically and dorsally; pile pale yellowish, black on the tips of the femora and the apical segments of the tarsi. Posterior legs black, the femora red on the basal third to half, yellow pilose; apical half, except above and below (the apical fifth wholly) black haired; tibiae and tarsi black haired except ventrally.

Wings tinged with luteous on the anterior basal half, with a small, brown spot over the crossveins; apical part tinged with brown, otherwise cinereous hyaline.

Abdomen sub-shining, brownish-black; first segment and very narrow base of the second, dull reddish-yellow; a slightly arched, entire median fascia on the second to fourth segments shining orange or yellowish-red. The width of the bands is equal to less than one-third the length of the third abdominal segment. Pile short and black; on the broad base, immediate sides, and genitalia, longer and rather tawny. Genitalia reddish.



*Female.* Front opaque black on upper half, with a broad arch of gray pollen below the middle, the lower fourth brown pollinose. Pile of the front and upper part of the face black, the sides of the face wholly pale pilose. Front tibiae sometimes brownish in front and apically, the tarsi darker. Posterior femora much more slender and without a distinct tubercle apically. Fifth abdominal segment sometimes mostly reddish, or with only a pair of arched spots, the inner ends resting on the base of the segments medianly.

Described from 19 ♂, 2 ♀, Mt. Kinabalu, Kamborangah, 7000 ft., March 25, April 2, 4, 1929; 2 ♂, ♀, Mt. Kinabalu, Lumu Lumu, 5500 ft., April 11, 12, 16, 1929 and 3 ♂, 3 ♀, Mt. Kinabalu, Marei Parei, 5000 ft., April 1, May 1, 2, 1929 (H. M. Pendlebury). The holotype, ♂ and allotype, ♀, are from Lumu Lumu.

#### ERISTALINÆ.

#### Genus *Klossia* gen. n.

Related to *Helophilus* Meigen but with only indistinct stripes on the mesonotum and with a large tubercle on the lower half of the face. Head wholly black.

Face concave above, the tubercle as prominent as the prominent antennal protuberance, the oral margin not more prominent than the upper part of the face at the middle of the concavity. (Eyes of male undoubtedly contiguous). Eyes bare. Antennae short, the third segment oval, its lower edge almost straight; arista bare, long and slender. Mesonotum with a pair of weak, sub-median grayish vittae. Wings with the marginal cell broadly open. Legs simple, the posterior femora a little swollen, their tibiae enlarged, largest in the middle, scarcely arcuate. Abdomen short, as in *Eristalis niger*. Genotype, *K. dimidiata*, sp. n.

#### *Klossia dimidiata* sp. n.

Blackish, the wings blackish-brown on more than the basal half, the apex cinereous hyaline. Length, 9.5 mm.

*Female.* Face shining black, a median triangle below the antennae and the narrow orbits cinereous, in some lights silvery white; pile yellow, of moderate length. Front bluish-black, opaque black on upper three-fifths the lower border produced into three triangles, the ones resting on the orbits longer and in some views mostly silvery white; vertex shining; pile black, erect. Occiput silvery white, with very short yellowish pile, the upper fourth bare, and with short black pile. Antennae reddish-brown.

Mesonotum opaque black, the sides broadly behind the middle, an orbicular spot above the notopleura, the humeri and a narrow incomplete vitta contiguous to each of the entire, broadly separated brownish-gray vittae, shining

black, the lateral margins in front of the suture broadly brownish-gray pollinose; pile black, tawny on the notopleura. Pleura shining greenish-black, the mesopleura partly and an area below the squamae brownish-red; pile tawny, black on the pteropleura. Scutellum shining black, thickly black pilose, the base with a few scattered tawny hairs.

Legs black or blackish-brown, with rather abundant short black hair, that on the posterior surfaces of the anterior four femora longer. Anterior four tibiae with the basal fourth yellow and bearing white hair, the posterior tibiae with less than the basal fifth reddish and clothed with white hair above.

Wings broadly tinged with yellow beyond the brown field; third vein deeply looped into apical cell. Squamae and their fringe brown. Halteres reddish-yellow.

Abdomen brown, with opaque black and obscure brownish-red markings. First segment wholly opaque, brownish-red, the posterior border brown. Second opaque blackish-brown, with a large, obscure subtriangular brownish-red spot on either side, lying mostly on the anterior half of the segment, broadly separated from the anterior margin and connected with the lateral margin by a shining black stripe, which does not reach the posterior border of the segment. Third segment with slightly larger dull, brownish-red spots which are less widely separated from the anterior border, the shining lateral stripe narrower, the apex of the segment shining brownish-red. On the fourth segment the dull brownish-red spots are broadly separated from the triangularly produced shining ferruginous posterior border by a broad opaque blackish band. Fifth segment wholly shining brownish-red. Pile yellowish; black on the broad posterior border and middle of the second segment and on the third segment except for a few pale hairs on the reddish triangles.

Described from a single ♀, Bettotan, near Sandakan, July 29, 1927 (Kloss and Pendlebury).

#### Genus *Dissoptera* Edwards.

#### *Dissoptera heterothrix* de Meijere.

*Eristalis heterothrix* de Meijere, Tijds. v. Ent. li, 273, 1908.

♂, 8 ♀, Mangalum Island, N.W. Borneo, July 9-15, 1928 (C. Boden Kloss).

Shiraki considers *pollinosa* Edwards to be the same as *heterothrix* but I am not certain that this is the case. My specimens do not agree well with Edwards description and it seems likely that the two are distinct.

Genus *Korinchia* Edwards.

The following key separates the known species belonging to this genus.

## Table of Species.

- |  |    |                            |
|--|----|----------------------------|
| 1. Scutellum black in ground color, the margin sometimes broadly yellow or brown - - - -             | 2. |                            |
| Scutellum wholly reddish in ground color - - -   |    | <i>rufa</i> Hervé-Bazin.   |
| 2. Scutellum clothed with erect hair, which is rarely yellow on the disc - -                         | 3. |                            |
| Scutellum with dense appressed golden hair, the posterior border with several long brown hairs - - - |    | <i>aurata</i> Hervé-Bazin. |
| 3. Front tarsi wholly or mostly black - - - -  | 4. |                            |
| Front tarsi wholly reddish yellow - - - -  |    | <i>apicalis</i> Shiraki.   |
| 4. Second abdominal segment with a large reddish or yellow spot on either side                       |    | <i>formosana</i> Shiraki.  |
| Second segment with at most small reddish spot on anterior corners - -                               | 5. |                            |
| 5. Posterior calli yellow haired on outer side - - - -   | 6. |                            |
| Posterior calli wholly black haired - - - -  |    | <i>monticola</i> Edwards.  |
| 6. Scutellar pile largely blackish -   | 7. |                            |
| Scutellar pile mostly yellowish -  | 8. |                            |
| 7. Fourth abdominal segment with large yellowish-gray patch on either side - -                       |    | <i>klossi</i> Edwards.     |
| Fourth segment without grayish patch - - - -   |    | <i>robinsoni</i> Edwards.  |
| 8. Abdomen rusty reddish, wings with irregular brownish median fascia and brownish apical fourth - - |    | <i>sinensis</i> Curran.    |
| Abdomen black; wings without median fascia, the apical third brownish - -                            |    | <i>pendleburyi</i> sp. n.  |

**Korinchia pendleburyi** sp. n.

Related to *sinensis* Curran but with blackish abdomen, without brownish spot immediately above the middle of the oral margin, etc. Length, 12.5 to 16 mm.

*Male.* Face and cheeks brownish-yellow, yellowish pollinose, a broad stripe on the anterior part of the cheeks and a median vitta on the lowest two-thirds of the face bare; face in profile strongly receding above, and very gently concave above the weak tubercle. Frontal triangle brown, broadly yellowish pollinose above and laterally. Vertical triangle black haired; yellow pollinose in front. Occiput grayish-white pollinose, becoming brownish above, the pile pale yellow, the occipital cilia short and black. Face and front without pile. Antennæ rusty reddish; third segment little longer than wide.

Mesonotum slightly shining black; in front with a rather narrow yellowish pollinose fascia which is broadly darker in the middle; sutural depressions narrowly yellow pollinose, and in front of the scutellum a broader, incomplete band. In some views the broad middle of the mesonotum in front of the suture is brownish yellow pollinose. Pile yellow in front of the suture, on the narrow posterior border, and on the lateral margin except immediately behind the suture; in front of the suture with scattered black hairs. Pleura brown or brownish-red, the mesopleura pale in ground color on the posterior third; propleura and a broad band extending over the mesopleura and sternopleura, bright yellow pollinose. Scutellum black, the free border yellow; pile yellow with a few scattered blackish hairs on the disc.

Legs rusty reddish, the tibiae paler; anterior tarsi black. Hair reddish-yellow, paler on the tibiae; coarse, short and black beneath the femora, dense beneath the posterior pair. Apical segment of the posterior four tarsi and the anterior pair wholly, black haired.

Wings tinged with luteous, the apical third brownish. Squamae brownish. Halteres rusty reddish.

Abdomen black or brown, opaque. Broad posterior border and sides of the first segment bright yellow pollinose. Second segment sometimes brownish-red, shining laterally; anterior corners with a more or less distinct, rectangular reddish spot; posterior border rather narrowly ochreous pollinose. Third segment with the apex more broadly ochreous, increasingly so toward the sides; fourth segment wholly ochreous with the exception of an incomplete fascia on the basal sixth. Genitalia black, brownish-yellow pollinose. Pile bright yellow, black on the second and third segments except the sides and posterior borders. Venter very broadly reddish basally; on the sides, brownish-gray pollinose, yellow pilose, the fourth sternite almost all black haired.

Three ♂, Mt. Kinabalu, Kamborangah, 7200 ft., March 25, and April 18, 1929 (H. M. Pendlebury). The type is dated March 25.

Genus *Lathyrophthalmus* Mik.

*Lathyrophthalmus arvorum* Fabricius.

*Syrphus arvorum* Fabr., Mant. Ins., 335, 1787.

♀, Labuan Island, Sept. 23, 1927 (Kloss and Pendlebury).

*Lathyrophthalmus nigroscutatus* de Meijere.

♀, Bettotan, near Sandakan, Aug. 3, 1927 (Kloss and Pendlebury).

I place this specimen here rather than under *tristriatus* de Meijere, because the basal abdominal segment is wholly pale in ground color. In this respect it agrees much better with the description of the abdomen of the male. Females of both species were unknown to de Meijere.

Genus *Eristalis* Latreille.

*Eristalis cerealoides* sp. n.

Related to *cerealis* Fabricius, but with the face and eyes largely black pilose; differs from *bicornutus* de Meijere in having the femora wholly yellowish pilose. Length, 15 to 16.5 mm.

*Female.* Face reddish, in the middle with a broad black stripe, wholly covered with thick brownish gray pollen, above the tubercle with a subtriangular brown pollinose area. Cheeks black, gray pollinose. Face with a broad, nasiform tubercle, rather deeply concave above, perpendicular below, more than one-third lying below the lower level of the eyes. Front wide, widening anteriorly, opaque black on the upper half, opaque brown in front, between the black and brown areas very broadly gray or brownish yellow pollinose; lunula shining reddish-brown, above it a weakly shining, poorly defined black spot in which is a weak, low tubercle. Pile abundant, wholly black. Occipital cilia black. Occiput grayish white pollinose, the orbits rather silvery. Pile of occiput, cheeks and face, yellowish, black on the middle of the face above the tubercle. Antennae black; arista reddish, with long yellow rays. Eyes with abundant, moderately long pile which is pale yellow below and becomes black on the upper fourth or more.

Thorax black in ground color; mesonotum brownish-gray or cinereous pollinose, immediately behind the suture with a broad, incomplete black fascia which is gently convex posteriorly; half way between the suture and the anterior margin with a narrower, incomplete, more or less brownish fascia. Pile reddish-yellow, moderately long, the sides of the mesonotum with shorter cinereous hair intermixed. Scutellum reddish; black pilose, the free border broadly yellow pilose,

Coxae and femora black, the apical third of the anterior four and fourth or less of the posterior pair, reddish. Tibiae reddish, the posterior pair black with the base broadly brownish-red. Tarsi black, the basal segment of the anterior pair and basal two or three segments of the middle ones, reddish. Pile of the legs reddish yellow; black on the posterior and front tarsi, the apical two segments of the middle tarsi and mostly so on the posterior tibiae. Legs slender; hind tibiae gently curved.

Wings strongly tinged with luteous or brownish-yellow except apically and posteriorly. Squamae brownish, with grayish-yellow bases. Halteres reddish-yellow.

Abdomen opaque black, with orange markings and shining fasciae. First segment cinereous pollinose, with thick, sub-appressed yellow pile. Second segment with a pair of very large, dull orange triangles which extend from the base at the sides to beyond the apical fourth, their inner ends broadly separated, rounded, their anterior edge gently concave, the posterior border almost straight but nevertheless slightly oblique. Pile yellow, black on about the apical half. Third segment with a narrow, transverse orange spot on either side basally, the fourth with narrower spots which are much less broadly separated in the middle, and sometimes very narrowly connected; apices of second to fourth segments narrowly orange. Third to fifth segments with a moderately broad shining black fascia across the middle; those on the third and fourth sometimes broadly dulled in the middle but never clearly interrupted. Pile black on third and following segments. Venter mostly reddish, cinereous or brownish gray pollinose, the pile yellowish.

Described from 14 ♀ from Mt. Kinabalu: 8 ♀, Marei Parei, 5,000 ft., May 1, 2, 1929; ♀, Pakka, 10,200 ft., March 23, 1929 and 5 ♀, Kamborangah, 7,200 ft., March 30. April 1, 1929 (H. M. Pendlebury). The type is from Kamborangah.

### ***Eristalis niger* Wiedemann.**

Anal. Ent., 38, 1828.

2 ♂, 2 ♀, Bettotan, near Sandakan, July 25 and Aug. 13, 24, 1927 (Kloss and Pendlebury); ♀, Mt. Kinabalu, Kenokok, 3,300 ft., April 22, 1929 (H. M. Pendlebury).

### ***Eristalis collaris* de Meijere.**

Tijd. v. Ent., li, 258, 1908.

♂, Kudat, Sept. 18, 1927 (Kloss and Pendlebury).

This species belongs to a group which is rich in species in America but has few representatives elsewhere. The group is characterized by small size, and the presence of

one or two yellowish, orange or whitish fasciae on the mesonotum. In *collaris* the pale bands are as wide or wider than the black fascia.

***Axona chalcopyga* Wiedemann.**

*Eristalis chalcopyga* Wiedemann, *Ausser. Zweifl.*, ii, 178, 1830.

♂, Bettotan, near Sandakan, August 2, 1927; ♀, Samawang, near Sandakan, July 12, 1927 (Kloss and Pendlebury).

***Megaspis zonatus* Fabricius.**

*Syrphus zonatus* Fabricius, *Mantis. Ins.*, ii, 337, 1787.

4 ♀, Mt. Kinabalu, Marei Parei, 5,000 ft., April 24. May 1, 2, 1929, (H. M. Pendlebury).