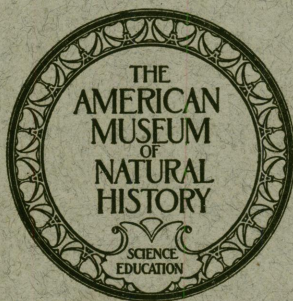


NEW AMERICAN SYRPHIDAE

By C. H. CURRAN



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Article III.—NEW AMERICAN SYRPHIDAE

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A large number of Syrphidae have been added to the Museum Collection during the past year, some of which are described in this paper. The material was contained chiefly in a collection donated to the Museum by Dr. William Procter and many small lots forwarded by Dr. C. L. Fluke who has kindly donated the types to our collection. To these and others who have contributed valuable material we extend our sincere thanks. The types, unless otherwise indicated, are in the Museum Collection.

CERIOIDES RONDANI

Ceria FABRICIUS, 1794, Syst. Ent., IV, p. 277 (nec Scopoli, 1763).

Ceriodes RONDANI, 1850, Ann. Soc. Ent. France, p. 211.

Sphiximorpha RONDANI, 1850, idem, p. 212.

Sphiximorpha RONDANI, 1856, Dipt. Ital. Prodr., I, p. 55.

Monoceromyia SHANNON, 1922, Bull. Brooklyn Ent. Soc., XVII, p. 32.

Tenthredomyia SHANNON, 1925, Ins. Ins. Mens., XIII, p. 50.

Polybiomyia SHANNON, 1925, idem, p. 56.

In his consideration of this group in 1925, Mr. R. C. Shannon employed characters for the separation of several groups that are, at first sight, of such a nature that they might well be considered of generic value. The character for the separation of *Polybiomyia* and *Ceriodes* seems at first examination to be of real importance and from a comparison of the genotypes one might conclude that the two forms were widely separated because of the great difference in the metasternum. The examination of a number of species, however, shows that there is great variation in the extent to which the metasternum is membranous and in *sackenii* Williston the membranous area is reduced to a mere line.

In considering the material in the Museum Collection, I believe that all the species of this subfamily should be retained in a single genus, in which there are six or more well-marked groups, all more or less strongly connected by intermediate forms.

In preparing the key I have included (with two exceptions) only those species of which there are examples before me, the others being included in order to show the relationship of closely related forms.

TABLE OF SPECIES

- 1.—Metasternum completely crossed by heavily chitinized band.....2.
Metasternum at least narrowly submembranous in the middle, usually very widely so.....8.
- 2.—A very conspicuous yellow marking at the outer end of the mesonotal suture.....3.
No such yellow marking.....5.
- 3.—Mesopleura at least broadly yellow posteriorly.....4.
Mesopleura wholly brownish; posterior trochanter of male with strong spur below; mesonotum with supra-alar yellow vitta. *odontomera*, n. sp.
- 4.—Mesonotum with reddish prescutellar spots and supra-alar vittae; pteropleura mostly yellow. *bassleri*, n. sp.
Mesonotum without such spots and vittae; pteropleura wholly brown.....*mikii* Williston.
- 5.—Face and anterior half of cheeks with at least four yellow or reddish vittae.....6.
Face and cheeks with only two reddish vittae.....*bigotii* Williston.
- 6.—Face and cheeks with four pale vittae.....7.
Face and cheeks with six yellowish vittae.....*capitis* Curran.
- 7.—Costal border uniformly brown on the whole length, somewhat paler basally.....*plumanni*, n. sp.
Costa blackish brown basally, more or less clearly milky whitish apically.....*wulpii* Williston.
- 8.—Antennal process at least as long as the first antennal segment.....9.
Antennal process much shorter than the first antennal segment.....16.

- 9.—Second abdominal segment strongly constricted.....10.
Second abdominal segment weakly or not at all constricted.....13.
- 10.—Abdomen blackish, with yellow markings.....*bicolor* Kertesz.
Abdomen reddish, with paler markings.....11.
- 11.—First abdominal segment yellowish on the basal half or more.....12.
First abdominal segment black in the middle except on the very narrow base.....*tricolor* Loew.
- 12.—Dark markings of the head and thorax black.....*vittipes*, n. sp.
Dark markings rusty reddish.....*lynchii* Williston.
- 13.—A yellow spot at the outer end of the mesonotal suture.....14.
No such yellow spot.....*proxima* Curran.
- 14.—A yellow stripe sublaterally on the mesonotum behind the suture...15.
No such yellow vittae.....*abbreviata* Loew.
- 15.—The yellow of the vertex is broadly interrupted behind the ocelli.....*tridens* Loew.
The yellow is not interrupted.....*ancoralis* Coquillett.
- 16.—Abdomen with yellow markings only on the base of the second segment.....17.
Abdomen with pale markings on third and other segments.....19.
- 17.—Metallic blackish blue, the wings almost uniformly blackish; face wine-red below.....*facialis* Kertesz.
Differently colored; wings hyaline posteriorly.....18.
- 18.—Male with a double patch of coarse black setulae at the base of the fourth sternite, reddish band on second segment more or less broadly interrupted.....*barbipes* Loew.
Male with short golden-yellow pilose hair patch at base of fourth sternite; second segment with the reddish band entire.....*acra*, n. sp.
- 19.—Abdomen pale reddish.....*brauerii* Williston.
Abdomen black or brown with yellowish fasciae.....20.
- 20.—Third segment with transverse pollinose fascia near the middle.....23.
Third segment with more or less U-shaped markings or none.....21.
- 21.—Third abdominal segment without distinct pollinose markings.....*sackenii* Williston.
Third segment with at least the outer arm of U-shaped marking....22.
- 22.—U-shaped markings complete on third abdominal segment.....*signifera* Loew.
Inner end of the U obsolete.....*ontarioensis* Curran.
- 23.—Scutellum with a transverse blackish spot in the middle.....24.
Scutellum yellowish.....*roederii* Williston.
- 24.—Antennae wholly reddish.....*pyrrhocera* Kertesz.
First antennal segment mostly black.....*polistes*, n. sp.

Cerioides odontomera, new species

Blackish, the second abdominal segment slender, long and cylindrical, posterior trochanter with ventral spur. Length, 12 mm.

MALE.—Head mostly black in ground color, the face with large sparse punctures from which the tiny hairs arise. Face with a very broad, yellow V, its lower end resting on the anterior oral margin, the upper ends very narrowly connected with a small orbital spot which in turn is narrowly separated from a yellow spot lying opposite the base of the antennae. The black portion of the face is rather thickly cinereous pollinose except on the lower fourth; the cheeks are shining black except for a broad stripe in front; the short broad frontal triangle is yellow above and with whitish pollen. Vertex yellow although the black of the occiput encroaches on the yellow above. Posterior orbits cinereous white. Antennal pedicel reddish, not as long as wide, antennae brown, the first segment reddish on about the basal half, first and second segments of about equal length, the third little more than half as long as the second; style short.

Thorax black, thinly cinereous pollinose, the mesonotum with a pair of broad, incomplete bare vittae, the sides above the wings also bare; humeri, a transverse spot on the outer end of the suture, incomplete sublateral vittae behind the suture and the broad base and apex of the scutellum yellow. Posterior calli brownish red.

Legs reddish, the femora brown with yellow base and tips, the bases of the tibiae yellowish. Middle femora with conspicuous and rather numerous small setigerous tubercles ventrally and posteriorly; posterior trochanters with a small spur below; posterior tibiae more or less brownish in the middle.

Wings hyaline, broadly brown in front. Squamae with yellow border and white fringe. Halteres yellow.

Abdomen slender basally, the apical portion globose and shorter than the basal two segments; black, the apices of the segments reddish yellow; second segment with rather small yellowish spot on each side basally and with indications of reddish along the sides on the median half; fourth segment with a broad, cinereous yellow fascia across the middle which is narrowly interrupted, the inner ends of the bands carried sharply forward to the basal sixth of the segment. Genitalia with cinereous pollen.

HOLOTYPE.—Male, Chapada, Brazil (Williston Collection).

This species is very similar in structure and color to *mikii* Williston, but there are many differences. The yellow facial stripes are much wider, there is no yellow on the pleura and the lengths of the antennal segments differ. In *mikii* the posterior trochanters lack the spur but are heavily setulose inwardly; there are no supra-alar yellow vittae and there are no yellow markings on the mesopleura and sternopleura.

Cerioides bassleri, new species

Black and yellowish, the mesonotum with golden pubescence and with yellow vittae; second abdominal segment slender and elongate. Length, 19 mm.

MALE.—Head reddish yellow, the occiput black with yellowish pollen; face and cheeks separated by a very broad black stripe that is divided by a pollinose stripe; the black markings on the face consist of a very broad median vitta that extends around the base of the antennal pedicel and is strongly expanded to reach the orbits at the upper edge of the face; the median vitta is abruptly narrowed at the lower third of the face to form a narrow line that does not quite reach the oral margin; the black color is overlaid with cinereous pollen. Vertex and posterior orbits reddish yellow. Antennal pedicel broader than long, reddish; antennae black, the first segment mostly brownish red, not as long as the second, the third half as long as the first; style white, half as long as the third segment.

Thorax blackish, with golden or yellowish tomentum; mesopleura, large spots on the sternopleura and hypopleura, the humeri and notopleura yellow; a broad sublateral vitta extending from the suture to the posterior calli and a pair of large oblique, oval spots in front of the scutellum orange-colored; scutellum reddish yellow with a transverse median black spot.

Legs yellow, the tarsi reddish; coxae and trochanters brown; middle femora with a large basal black spot below, the posterior femora with a shining black band near the middle.

Middle femora with numerous strong tubercles below, the posterior pair with setigerous tubercles; apical third of middle tibiae and the sides of the first segment of the tarsi with long, pale yellowish pile.

Wings pale brownish in front, the costal cell more luteous. Halteres and squamae reddish yellow.

Abdomen black, the apices of the second to fourth segments shining orange, the base of the second segment with large orange triangles on each side; third and fourth segments brownish gray pollinose on posterior half or less, the pollen broadly expanding in the middle; genitalia with brownish-yellow pollen. The cylindrical second segment as long as the two following segments.

HOLOTYPE.—Male, Upper Rio Huallaga, Peru, January, 1925 (H. Bassler).

Cerioides plaumanni, new species

Dull blackish, with yellow markings, the legs mostly reddish. Length, 15 mm.

MALE.—Middle of face with brownish pollen, the yellow stripes extending V-shaped from the anterior oral margin to the upper fourth of the face well inside the orbits, the yellow bordered by shining black; the cheeks with a narrow, yellow, cinereous pollinose vitta in front, otherwise shining black; frontal triangle rather narrowly yellow along the orbits, the face with a small yellow orbital spot above. Occiput black, the pollen golden yellow. Antennal pedicel brownish red, not as long as wide; antennae blackish, becoming brownish red on about the apical half, the second segment about as long as the first, the third more than half as long as the second; style black with white apex, silvery pollinose.

Thorax dull blackish, the pollen yellowish, rather brownish tinged on the mesonotum where it forms obscure vittae; humeri and posterior calli reddish, the posterior border of the scutellum yellow. Humeri and suture with more yellowish pollen. On the pleura a yellow stripe extends from below the squamae to the spiracle where it joins a reddish stripe that extends to the posterior coxae.

Legs reddish, the femora mostly black with brownish-yellow pollen; tibiae with obscure dark bands beyond the middle. Middle femora with sparse, shining tubercles below.

Wings yellowish brown anteriorly, darker apically. Squamae and halteres yellow.

Abdomen blackish brown, the second segment with a broad, interrupted basal yellow band; the segment strongly widening from the basal third to the apex and only slightly longer than the fourth segment; pile yellow and golden brown, becoming black on the fourth segment, the pollen brown.

HOLOTYPE.—Male, Nova Teutonia, Brazil, October 30, 1939 (Fritz Plaumann).

This species is related to *wulpi* Williston but the dark coloring of the wings is re-

versed, being paler basally while in *wulpii* the wings are almost black basally and whitish at the apex.

Cerioides vittipes, new species

Reddish yellow with black markings; antennal pedicel elongate; abdomen practically unicolorous. Length, 18 mm.

MALE.—Head pale reddish yellow, with black markings as follows: a median facial vitta that divides above to join an arch extending around the antennal pedicel and produced outward between the face and cheeks, a downwardly tapering stripe on each side of the face, the ocellar triangle and the occiput above the neck. Posterior orbits with pale yellow pollen. Antennal pedicel elongate, black, with the lower surface and upper apex reddish yellow; antennae brownish red, the first segment black, slightly longer than the second, the third shorter than the second; style white, brown in ground color on the basal half.

Mesonotum with a broad inverted black Y in the middle, the arms uniting with the sub-lateral vitta which is broadened in front of the suture and united behind with the postsutural lateral vitta, the suture broadly black. The segments of the pleura are bordered with black. The thorax is shining except for dense pale pollen on the metanotum and on the median mesonotal vittae. Scutellum yellow, with short transverse black band and narrow black base.

Coxae and trochanters reddish yellow; anterior femora yellow with broad black stripe above, the middle femora reddish yellow with the broad upper surface and the basal two-thirds of the lower surface black; posterior femora with the upper surface and lateral stripes black, the lateral stripes joining the upper stripe beyond the apical third. Middle femora with numerous strong tubercles below. Tibiae and tarsi blackish or brownish, the middle tarsi paler.

Wings yellowish brown in front. Squamae and halteres yellow.

Abdomen pale orange, the apex of the first segment and a median dash on the basal half of the second segment black, the base and apex of the second segment yellow. Second and fourth segments of about equal length, the second strongly constricted, narrowest at the basal fourth. Pile golden yellow.

HOLOTYPE.—Male, Puerto Bermudez, Peru.

This species is very similar to *lynchii* Williston but has the markings of the mesonotum and head ferruginous instead of black; *lynchii* has a wholly yellow scutellum and lacks the median black stripe in front of the scutellum.

Cerioides acra, new species

Black, with cinereous pollen; costal border broadly blackish, paler on the apical third in front. Length, 13 to 16 mm.

MALE.—Head black: a narrow stripe on each side of the face yellow; upper fourth of face and a pair of ventrally tapering vittae that join the yellow close to the oral margin brownish gray pollinose; broad border of the frontal triangle, a spot opposite the antennae and a larger orbital spot on the face above, pale golden yellow pollinose. Pollen of the occiput obscurely yellowish above, becoming whitish below. Antennal pedicel not longer than wide, somewhat brownish apically; antennae black, the third segment more or less brownish or reddish basally, about half as long as the second segment, the second almost as long as the first; style long, white.

Thorax black, slaty, the pollen cinereous yellow; free border of the scutellum dull reddish.

Legs black, the upper surface of the anterior femora on the basal half or less, the upper surface of the middle femora on the basal third or less, and large anterior and posterior basal spots on the posterior femora reddish, the tarsi more or less brown. Apical third of middle tibiae with dense brownish-yellow to golden pile, the sides of the first two segments of the middle tarsi with long, yellow pile.

Wings blackish anteriorly, paler along the costa on the apical third, the dark color expanded basally to include the base of the anal cell. Squamae grayish or pale brownish; halteres yellow.

Abdomen slaty black, the pollen cinereous, the pile yellowish; second segment with the base broadly yellow, about as long as the fourth segment, strongly narrowed on the basal third. Genitalia with mostly black pile. Base of the fourth sternite with a pair of subcontiguous golden setulose spots on slightly raised area.

FEMALE.—Frontal depressions opaque black, bordered above with golden; third antennal segment two-thirds as long as the second which is decidedly shorter than the first. Fourth sternite without the patches of setulae at the base.

TYPES.—Holotype, male, allotype, female and paratypes, 16 males and 20 females, Nova Teutonia, Brazil, October, 1939 (Fritz Plaumann), the holotype and allotype on October 26.

Cerioides polistes, new species

Black and reddish yellow, the mesonotum vittate. Length, 13 mm.

MALE.—Head yellow, a triangular spot on each side of the upper part of the face, a stripe separating the face and cheeks, a pair of oval spots above the antennae and the occiput above the neck, black, the black extending triangularly forward at the vertex but not reaching the brown ocellar triangle. Antennal pedicel about twice as long as wide, orange-red, partly black

above; first antennal segment black, dark reddish on the inner, lower half, a little longer than the second; second segment brownish red, a little longer than the third; third segment bright orange; style yellow, with white tip, appearing white from basal view, two-thirds as long as the third segment. Pile of the head wholly yellowish.

Mesonotum black, the humeri, notopleura, a supra-alar vitta and dorsocentral vittae yellowish, the dorsocentral vittae covered with golden-yellow pollen, not reaching the anterior border and interrupted behind the suture, the suture broadly golden pollinose; sides of mesonotum reddish behind the suture. Scutellum yellow with transverse black spot in the middle. Pleura yellow, with a black spot on the front of the mesopleura, another above the hind coxae, the metanotum and a stripe below the squamae black, with thin yellowish pollen; mesosternum black.

Legs reddish yellow, the posterior femora blackish above and on the base and apex, their trochanters blackish, their coxae reddish brown; tibiae with incomplete brownish bands beyond the middle.

Wings yellowish brown in front. Squamae and halteres yellow.

Abdomen dull blackish, the sides of the first segment, broad base of the second and the apices of the second to fourth, yellow. Third segment with a broad interrupted yellowish pollinose fascia lying mostly behind the middle, the fourth with a similar fascia but this expands to occupy most of the segments behind the middle on the lateral third or more. Second segment about equal in length to the fourth, strongly narrowed on the basal third. Genitalia brown, grayish yellow pollinose, the apical portion yellow.

HOLOTYPE.—Male, Nova Teutonia, Brazil, October 30, 1939 (Fritz Plaumann).

This species is very similar to *pyrrhocera* Kertész, but the black basal antennal segment will at once distinguish it.

Microdontinae

A number of generic and subgeneric names have been proposed for groups of species related to *Microdon* Meigen but it seems inadvisable to recognize these since the genus contains such a large number of diverse elements which, nevertheless, are connected by intermediate forms. There are, however, a few groups that appear to be worthy of recognition and I have prepared a key to those occurring in America and Africa. In time it may be possible to recognize other genera but our knowledge of the groups is so poor that it seems wise

to consider the great majority of the species as belonging to *Microdon*.

KEY TO GENERA

- 1.—Third vein with a long stump vein extending into apical cell near its middle.....2.
Third vein without stump of vein, the fourth vein sometimes with a stump projecting forward.....4.
- 2.—Third antennal segment clothed with long pile giving plumose appearance (Africa).....*Ptilobactrum* Bezzi.
Third antennal segment bare.....3.
- 3.—Face strongly bulbous below.....
.....*Rhopalosyrphus* Giglio-Tos.
Face perpendicular or receding below.....
.....*Microdon* Meigen.
- 4.—Arista composed of three segments, the basal very short, the second slightly longer than the third; apical cross-vein curved strongly outward at its middle.....*Aristosyrphus*, n. gen.
Arista simple, only the terminal segment elongate, or the apical crossvein straight or recurrent.....5.
- 5.—Fourth vein with a short stump projecting forward into the discal cell from the fourth vein; abdomen usually strongly constricted basally.....*Mixogaster* Macquart.
No stump of vein; abdomen with parallel sides or gently convex laterally; apical crossvein usually transverse.....6.
- 6.—First antennal segment extremely long and arcuate, the apical two segments together little more than half as long as the first.....*Rhoga* Walker.
First antennal segment relatively short, not longer than the third segment...
.....*Ceratophya* Wiedemann.

MICRODON MEIGEN

As here recognized, all of the species have a vein projecting from the third vein and continuing at least half way through the apical cell near its middle. The species lacking this vein and formerly placed here, all of which lack scutellar spines, are now placed in the genera *Ceratophya* Wiedemann and *Rhoga* Walker.

TABLE OF NEOTROPICAL SPECIES

- 1.—Scutellum with a pair of distinct spines, or very deeply emarginate and with two produced angulate projections.....24.
Scutellum without spines, even though somewhat deeply emarginate and with a pair of broadly separated mammiform processes.....2.
- 2.—Scutellum at most shallowly emarginate, the lobes not submammiform in shape.....3.
Scutellum deeply emarginate, with extremely short hair, the lobes submammiform (Panama).....
.....*panamensis* Curran.
- 3.—Second abdominal segment wider than the first and third.....7.
Second abdominal segment usually narrower than the first and third, or of equal width.....4.
- 4.—Mesonotum with three metallic pilose vittae (British Guiana).....
.....*trivittatum* Curran.
Mesonotum not vittate.....5.
- 5.—Face yellowish in ground color (British Guiana).....*beebei* Curran.
Face black in ground color or with median blackish vitta.....6.
- 6.—Face wholly blackish; wings dark brown in front (Panama).....
.....*hermetia* Curran.
Face with median brown stripe (Brazil).....*conops* Curran.
- 7.—Body and femora metallic green or bluish to violaceous.....8.
Differently colored.....9.
- 8.—Tibiae violaceous (Chile).....
.....*violaceus* Macquart.
Tibiae in large part reddish (Brazil)..
.....*remus*, n. sp.
- 9.—Wings without pale crossband.....11.
Wings with one or more orange or creamy fasciae.....10.
- 10.—Scutellum of both sexes black pilose, the female with the wings yellowish on the basal half (Brazil).....
.....*mirabilis* Williston.
Scutellum of the male with golden, of the female with black pile; wings of both sexes black with preapical orange fascia (Brazil).....
.....*arcuata*, n. sp.
- 11.—Abdomen at most only slightly narrowed beyond the second segment..
.....20.
Abdomen strongly narrowed beyond the second segment.....12.
- 12.—Thorax black and brown.....16.
Pleura yellowish.....13.
- 13.—Scutellum with four spines (Panama).....
.....*wheeleri* Mann.
Scutellum without spines.....14.
- 14.—Front yellowish; face strongly convex below (British Guiana).....
.....*lanei* Curran.
Front brown or black; face not strongly convex below.....15.
- 15.—Face with median black stripe (British Guiana).....*mackiei* Curran.
Face wholly yellowish (British Guiana).....*mixtus* Curran.
- 16.—Abdomen rusty reddish yellow (Panama).....*apicula* Curran.
Abdomen partly blackish or brownish.....17.
- 17.—Front reddish brown (Panama).....
.....*wheeleri* Mann.
Front shining black.....18.
- 18.—Mesonotum wholly black pilose (Brazil).....*trigoniformis* Shannon.
Mesonotum with spots or bands of yellow pile.....19.
- 19.—Mesonotum with an arch of yellow pile in front of the scutellum (British Guiana).....*inarmatus* Curran.
Mesonotum with a pair of broadly separated yellow pilose spots in front of the scutellum (Brazil).....
.....*triangularis* Curran.
- 20.—Face strongly carinate (British Guiana).....*carinifacies* Curran.
Face evenly convex.....21.
- 21.—Thorax black (Brazil).....22.
Thorax dull orange (British Guiana)..
.....*clavicornis* Curran.
- 22.—Face black with a pair of approximate oblique yellow spots above (Brazil).....23.
Face metallic green and violaceous (Brazil).....*willistonii* Mik.
- 23.—Front tibiae with white hair on almost the whole length posteriorly; posterior tibiae of male pale yellow pilose on the basal three-fourths (Brazil).....*procteri*, n. sp.

- Front tibiae with some scattered pale hairs on the basal fifth; posterior tibiae of male with pale hairs on basal fifth of upper surface (Brazil) *procedens*, n. sp.
- 24.—Scutellum wholly reddish; abdomen broadly pale basally and well over twice as long as wide. 25.
Scutellum usually dark colored or the abdomen much shorter and compact 26.
- 25.—Apex of the first abdominal segment black-haired (South America) *angustus* Macquart.
Apex and broad sides of fourth abdominal segment with tawny hairs (South America) *angustiventris* Macquart.
- 26.—Antennae longer than the face. 28.
Antennae conspicuously shorter than the face. 27.
- 27.—Face reddish (Brazil) *mus* Curran.
Face blackish (Brazil) *mitis* Curran.
- 28.—Legs reddish; hind femora with two broad rows of dense short bristly hairs below (Panama) *nigrispinosus* Shannon.
At least the coxae usually brown or metallic; hind femora without bristly hairs below. 29.
- 29.—Scutellum wholly dark. 36.
Scutellum with the lower border luteous or yellowish. 30.
- 30.—Abdomen and legs mostly reddish (South America) *bidens* Fabricius.
Abdomen mostly blackish, the legs sometimes mostly reddish. 31.
- 31.—Wings yellow, with fuscous apex and posterior border (British Guiana) *flavipennis* Curran.
Wings differently colored. 32.
- 32.—Wings blackish with about the apical fourth pale yellowish (British Guiana) *normalis* Curran.
Wings differently colored, smoky, or cinereous or somewhat darker on the anterior half. 33.
- 33.—Third antennal segment much shorter than the first (Brazil) *virgo* Curran.
Third antennal segment as long as the first, or the coxae reddish. 34.
- 34.—Legs wholly reddish (Brazil) *shannoni* Curran.
- Broad base of femora and coxae black or metallic (British Guiana) 35.
- 35.—Abdomen constricted basally (British Guiana) *hermetoides* Curran.
Abdomen not constricted (British Guiana) *langi* Curran.
- 36.—Apical cell angulate or sharply rounded near its middle. 41.
Apical crossvein almost straight or very broadly rounded behind. 37.
- 37.—Second abdominal segment elongate and narrower than the third (Brazil) *corona* Curran.
Second abdominal segment wide, color metallic. 38.
- 38.—Face and front with large coarse punctures as on the abdomen (British Guiana) *granulata* Curran.
Face with minute inconspicuous punctures. 39.
- 39.—Third antennal segment much longer than the first (Panama) *solitaria* Curran.
Third antennal segment not longer than the first. 40.
- 40.—Third antennal segment a little shorter than the first; mesonotum with scarcely any black hairs (Brazil) *caesar* Curran.
Third antennal segment as long as the first; disc of mesonotum mostly black-haired (Peru) *bassleri* Curran.
- 41.—Scutellum partly or wholly reddish or yellowish pilose. 43.
Scutellum wholly black pilose (Brazil) 42.
- 42.—Squamae white with brown border; thorax metallic blue or cyaneous (Brazil) *instabilis* Wiedemann.
Squamae dark brown; thorax and abdomen blackish (Brazil) *nero* Curran.
- 43.—Legs wholly blackish. 45.
At least the tibiae reddish yellow (Brazil) 44.
- 44.—Femora metallic green; disc of mesonotum black-haired behind the suture (Brazil) *marceli* Curran.
Legs reddish yellow; mesonotum wholly pale-haired (Brazil) *splendens* Wiedemann.
- 45.—Mesonotum with at most a few pale

- hairs (North America).....
 *fulgens* Wiedemann.
 Mesonotum with considerable reddish
 or yellowish pile (Brazil).....46.
 46.—Yellowish pile limited to the sides of
 the third abdominal segment (Bra-
 zil).....*barbiellinii* Curran.
 Yellowish pile forming a broad inter-
 rupted fascia on the posterior half
 of the second abdominal segment...
47.
 47.—Abdomen with a median stripe of
 golden pile, the lateral markings
 strongly oblique and narrow (Bra-
 zil).....*tigrina* Curran.
 Abdomen without median stripe of
 pale pile (Brazil)....*nestor* Curran.

Microdon remus, new species

Metallic green, bluish and violaceous; apex of scutellum shallowly emarginate; tibiae mostly reddish. Length, 12 mm.

FEMALE.—Head metallic green, violaceous on each side of the vertex; occiput cinereous pollinose. Front wide but narrower than the face; depression shallow, situated only a little above the antennae; ocellar triangle small, situated a little behind the middle of the front. Face convex, strongly receding to the oral margin, the orbits and a triangle on each side of the frontal depression cinereous pollinose. Pile whitish, broadly yellow at the vertex, the front with black pile except for a very weak band of yellow hairs on the depression. Antennae black; third segment with brown pollen, convex below on apical half, sharply rounded at upper apex; first segment almost as long as the following two combined.

Thorax green and violaceous, the disc of the mesonotum in front of the suture and the lower half of the pleura green. Pile rather short, brassy yellow, subappressed. Scutellum with the apex shallowly emarginate.

Coxae, femora and apical half of the tibiae in front metallic green, the tibiae reddish, the tarsi brown. Pile whitish, yellowish on the femora.

Wings cinereous hyaline, the crossveins weakly clouded with brown; both the apical and posterior crossveins recurrent, the apices of the cells bulbous posteriorly. Squamae with yellowish tinge, their border and the halteres yellowish.

Abdomen violaceous, green beneath the pale pile on the apical two segments. First and second segments whitish pilose. Third segment broadly white pilose on the sides, the black pile reaching the apex of the segment inside the lateral margin, thus leaving basal white triangles. Fourth segment black pilose with lateral triangles of white pile and with a very broad, broadly interrupted arch of white pile that ex-

tends from the basal third on the middle to join the lateral triangles of the fifth segment, this latter segment also with a pair of very broad white pilose stripes on the apical two-thirds. Venter pale pilose on the basal half, black pilose apically. Abdomen with the second segment much wider than the first, gently tapering behind the base of the third segment.

TYPE.—Holotype, female, Nova Teutonia, Brazil, November, 1939 (Fritz Plau-mann).

Microdon arcuata, new species

Black, including the wings; abdomen dark reddish; wings with a gently curved orange fascia at the apical sixth. Length, 11 to 13 mm.

MALE.—Head black, the front finely roughened and not shining, the occiput and facial orbits with grayish-brown pollen; pile pale brassy yellowish, a broad incomplete band of black hair across the upper part of the front and rather numerous black hairs above the antennae. Groove at the middle of the front bowed forward; ocellar triangle of medium size situated opposite the upper corner of the eyes. Face perpendicular, convexly receding below, swollen above, a few black hairs in the middle. Cheeks wide. Antennae black, the third segment with brownish pollen, widest on the basal half, the apical half curving gently upward, the upper apex acutely rounded; surface of the segment not smooth, but bearing several fine longitudinal ridges; first and third segments long, of about equal length, the second short; arista as long as the third segment.

Thorax black, with short appressed pile; pile black on the mesonotum, with broad anterior and posterior bands of brassy-yellow pile and a narrow band on the suture at each side, the bands connected along the lateral margins; pleura with brassy-yellow pile, the mesopleura with numerous black hairs. Scutellum short and broad, convex apically, the pile brassy yellow.

Legs black, with very short appressed brassy-yellow pile, the femora black pilose above, the tarsi and anterodorsal surface of the front tibiae black pilose.

Wings black, with a broad gently curved orange-yellow fascia extending from the apex of the first vein to the posterior edge of the apical cell. Apical and discal cells strongly bulbous posteriorly, the veins closing them being strongly recurrent. Squamae and halteres blackish.

Abdomen dark reddish, the first segment brown; pile short, pale brassy yellow and black. First segment and basal two-thirds of the second yellowish pilose, the second also with large yellowish pilose triangles on the ridges posteriorly; fourth segment with the apical third produced forward as large triangles in the middle and on the sides, yellowish pilose. Venter pale yellowish pilose. Genitalia black, with brassy-yellow pile, on the upper part with some black hairs.

FEMALE.—Front almost as wide as the face,

the transverse depression obsolete, the ridges strong, the pile wholly black; face with black pile in the middle. Third antennal segment larger than in the male, the ridges much stronger but the segment is irregular because it does not have the heavy chitinous shell that is usual. Thorax with black pile although there is a trace of yellow in front and in the middle of the mesonotum. Legs black pilose, the tibiae with some whitish hairs above. Abdomen with the first, fourth and fifth segments black, the second with large basal black triangle in the middle; pile black, pale only on the sides of the first segment.

TYPES.—Holotype, male, and allotype, female, Nova Teutonia, Brazil, November 24 and 11, 1937 (Fritz Plaumann).

This species is close to *mirabilis* Williston but may be readily distinguished by several characters. The yellowish fascia on the wing of *mirabilis* is not convex on the inner side and it is interrupted at the third vein, with the result that it does not appear arcuate although its posterior end is curved toward the apex of the wing. The male of *mirabilis* is not in perfect condition but it apparently has wholly black pile beyond the first abdominal segment.

***Microdon procteri*, new species**

Shining black, the face and legs partly pale; wings blackish, becoming hyaline apically and posteriorly. Length, 9 to 10 mm.

MALE.—Head shining black; face with a large spot on the sides below and a pair of yellow stripes on the upper half in the middle, the stripes diverging and widening below. Front considerably narrower than the face, narrowest at the anterior fourth, the depression deep; ocellar triangle situated opposite the posterior angle of the eyes; pile black, a few yellow hairs along the depression. Occiput with cinereous pollen, with black pile above and whitish pile on the lower half. Cheeks narrow. Face gently receding, gently convex, pale brassy-yellow pilose, a tuft of black hairs above the anterior oral margin. Antennae elongate, reddish brown, the second segment and broad apex of the first blackish; third segment with parallel sides, the apex rather sharply rounded, as long as the basal two segments combined, the second segment short.

Thorax shining black, with moderately long, erect and subappressed black pile; a median patch of anteriorly directed yellowish pile in front of the scutellum and another at the inner ends of the suture. Scutellum reddish brown with the sides very broadly black, the apex convex.

Legs black or brown, the tarsi becoming reddish apically, the posterior tibiae yellowish with the apex broadly reddish. Pile long, erect, black; on the basal two-thirds of the posterior

tibiae long and yellow, the anterior four tibiae with white pile basally on the upper surface, that on the anterior pair continued almost to the apex on the posterodorsal surface. Posterior tarsi short and broad, the basal segment not twice as long as wide.

Wings brownish black in front and basally, becoming almost hyaline apically and posteriorly, the first basal cell posteriorly and the second basal cell in front hyaline; veins closing apical and posterior cells strongly recurrent. Squamae and halteres blackish.

Abdomen shining black, black pilose; first segment and sides of the second on the basal half white pilose, the second segment with a small area of tawny pile on each side behind the middle, the posterior lateral fourth polished and without pile. Third and fourth segments separated by a very weak suture, the fourth with yellowish pile on the apical third except in the middle and on the sides. Genitalia brownish red, pale pilose.

FEMALE.—Front a little narrower than the face, wholly black pilose, the depression very weak; posterior tibiae reddish with white pile on the basal fourth of the upper surface, the long black pile becoming tawny apically. Third, fourth and fifth segments incompletely separated, the fourth black pilose except for a narrow, preapical band on each side, the fifth pale yellowish pilose except for a median triangle extending from the base to the apex.

TYPES.—Holotype, male, and allotype, female, Nova Teutonia, Brazil, September 18 and 30, 1939 (Fritz Plaumann).

***Microdon procedens*, new species**

Shining black, the face with yellow markings, the legs partly reddish, pile rather long. Length, 9 mm.

MALE.—Front moderately wide, narrowest at the anterior fourth, the depression deep; pile black; ocelli situated opposite the posterior angles of the eyes. Occiput with cinereous pollen and whitish pile on the lower half. Cheeks moderately wide. Face gently receding below, slightly convex, whitish pilose, the orbits narrowly white pollinose; in the middle on the upper half with a pair of broad yellowish stripes that diverge below; on each side below with a moderately large yellowish triangle projecting toward the oral margin; oral margin with black hairs in the middle anteriorly. Antennae with the third segment brownish red, widest on the apical half, the apex more sharply rounded above; first and second segments black, the first dark reddish basally, especially on the under surface; first and third segments of about equal length, the second short. Eyes sparsely short, pale pilose.

Thorax shining black, with erect and suberect black pile; the mesonotum with a small patch of yellow pile in the middle in front of the scutellum and another at the inner ends of the suture. Scutellum brownish red with the sides very broadly black, the pile wholly black.

Legs black or brown, the tarsi reddish or with the basal one or two segments brown; posterior tibiae dark reddish with the basal half blackish above. Pile erect, long, black; white on the bases of the tibiae above and on the postero-dorsal surface of the front pair, the dorsal hair on the posterior tibiae sometimes more or less broadly tipped with yellow. Posterior tarsi broadened, the basal segment twice as long as wide and narrowing toward the base.

Wings blackish in front and basally, becoming cinereous apically and posteriorly, with a broad hyaline stripe in the first and second basal cells; veins closing the apical and discal cells strongly recurrent. Squamae brownish, with black border and fringe. Halteres blackish.

Abdomen with the first, second and third segments with tawny pile, that on the dorsum sparse and appressed, the fourth with black pile, a few yellow hairs on each side of the middle toward the apex. Genitalia with fine, short, cinereous pile. Second segment with a conspicuous tubercle on each side near the middle behind which the segment is bare and polished.

TYPES.—Holotype, male, and paratype, male, Nova Teutonia, Brazil, October 27 and 29, 1939 (Fritz Plaumann).

This species is very similar to *procteri* but the antennae are differently shaped, the pile of the posterior tibiae is mostly black in the male and the first segment of the posterior tarsus is rather strongly narrowed from the apical third to the base.

Microdon histrio Wiedemann

WIEDEMANN, 1830, *Ausser. Zweifl.*, II, p. 83 (f.).

M. shannoni Curran may prove to be the same but the types should be compared before any decision is made.

Microdon superbus Wiedemann

WIEDEMANN, 1830, *Ausser. Zweifl.*, II, p. 82.

It is possible that *tigrina* Curran is the same as this but my material does not quite agree with the description. The types should be compared before any decision is made.

ARISTOSYRPHUS, NEW GENUS

A genus unique among the Syrphidae in possessing an arista composed of three segments, the first very short, the second greatly elongate, being somewhat longer than the third. While this character is rather commonly encountered in the muscoids it was not previously known in the syrphids. The genus is related to *Microdon* but there is no stump vein in the apical cell and the apical crossvein is carried strongly outward on its anterior half, a character that is not found in the

typical species of *Ceratophya* Wiedemann, which is also closely related.

Face with parallel sides, gently retreating, convex above; eyes widely separated but the front narrowed in the middle in the male; cheeks narrow; antennae elongate and porrect, the third segment large, more than one-half longer than the first, the second short; arista scarcely as long as the third antennal segment, jointed a little beyond the middle. Eyes bare. Scutellum convex apically, without spines. Femora moderately robust, the tibiae robust but not swollen as in *Microdon*, the tarsi slender; pile short and appressed. Wings rather broad, the anterior crossvein near the base of the discal cell; apical crossvein strongly curved outward near its middle and joining the third vein at an angle; vein closing the discal cell bowed posteriorly and slightly recurrent. Abdomen scarcely wider than the thorax, elongate, with almost parallel sides, the genitalia large.

GENOTYPE.—*Aristosyrphus primus*, new species.

It is possible that *Ceratophya luridescens* Walker belongs to this genus.

Aristosyrphus primus, new species

Blackish, the abdomen with pair of yellow spots and a broad fascia; wings rather luteous with the apex broadly brown. Length, 13.5 mm.

MALE.—Head black, black pilose, the cheeks and sides of the face with brassy-yellow pile; sides of face broadly yellow. Antennae black, the first segment shining, the third brownish gray pollinose; arista brown.

Thorax black; the humeri, posterior calli and irregular areas on the pleura brownish yellow to brownish red.

Legs black, black pilose, the tibiae and tarsi in large part brown pilose.

Wings orange, yellow in front and basally, yellowish brown posteriorly, the apical fourth brown. Squamae and halteres reddish yellow.

First and second abdominal segments yellow, the second with a broad median brown vitta and the sides brown except on the broad base and apex; third segment brownish with a broad, medianly interrupted apical band and a blackish median vitta; fourth segment black with the apex narrowly reddish, the genitalia shining black. Pile yellow on the first two segments and on very large apical triangles on the third segment, tawny on the apex of the fourth segment, otherwise black. Color of the venter following that of the dorsum but there is no median vitta.

TYPE.—Holotype, male, Nova Teutonia, Brazil, December 23, 1937 (Fritz Plaumann).

RHOGA WALKER

WALKER, 1857, *Trans. Ent. Soc. London*, IV, p. 157.

This genus is apparently distinct from *Microdon* Meigen and may be recognized by the very long first antennal segment and the absence of a stump of vein projecting from the third vein into the apical cell. The first antennal segment is very long and curved but because the antennae arise above the upper fifth of the head the antennae do not reach much more than half way to the oral margin. The second and third segments are quite short, the two together little more than half as long as the first.

***Rhoga lutescens* Walker**

WALKER, 1857, Trans. Ent. Soc. London, IV, p. 157.

From the description it is obvious that this species is very similar to *mellea* Curran but the wings are stated to be hyaline with median and apical cinereous bands. The type came from Para, Brazil.

***Rhoga mellea* (Curran)**

Microdon mellea CURRAN, 1940, Amer. Mus. Novitates, No. 1086, p. 5.

At the time I described this species I was not aware of the affinities of *Rhoga* and *Microdon*. In *mellea* the wings are rather bright yellowish, with brownish median and cinereous apical bands. The types are from British Guiana.

CERATOPHYA WIEDEMANN

WIEDEMANN, 1824, Analecta Ent., p. 14 (f.).

This genus has been placed as a synonym of *Microdon* but is readily separated by the absence of the stump of vein in the discal cell, and all the known species lack scutellar spines. It is impossible from the descriptions to determine the nature of the arista but it may be presumed to be of the normal type. Wiedemann originally included two species, the first of which, *notata*, is to be considered the type. *C. variegata* Walker, from Australia, does not belong here but may be tentatively placed in *Mixogaster* Macquart.

TABLE OF SPECIES

- 1.—Abdomen with paired yellow spots on the second segment; wings yellowish with dark apex.....2.
- Abdomen without paired spots; wings variously colored.....4.

- 2.—Scutellum yellow...*notata* Wiedemann.
Scutellum brown or blackish.....3.
- 3.—Third antennal segment about twice as long as the first...*luridescens* Walker.
Third segment nearly four times as long as the first...*longicornis* Wiedemann.
- 4.—Wings subhyaline with a whitish pre-apical fascia.....*goettei* Shannon.
Wings differently colored.....5.
- 5.—Thorax reddish; wings brown, broad, with a broad, oblique hyaline fascia beyond the middle...*macroptera*, n. sp.
Wings differently colored.....6.
- 6.—Wings brown on more than the basal half, the apical third somewhat paler.....7.
Wings with gray or luteous tinge, the crossveins darker; scutellum simple.....*flukei* Curran.
- 7.—Abdomen black, the apex sometimes reddish.....8.
Abdomen rusty reddish...*bicolor* Walker.
- 8.—Posterior tibiae tawny pilose on the basal half.....*plaumanni* Curran.
Posterior tibiae wholly black pilose...
.....*analisis* Curran.

***Ceratophya notata* Wiedemann**

WIEDEMANN, 1824, Analecta Ent., p. 14 (f.); Ausser. Zweifl., II, p. 80 (f.).

In coloration this species is somewhat similar to *Aristosyrphus primus* but it has the apical crossvein transverse and almost straight. Wiedemann described his specimen as a female but the illustration is that of a male.

***Ceratophya luridescens* Walker**

WALKER, 1857, Trans. Ent. Soc. London, IV, p. 151.

Known only from the type. May not belong to this genus. The wings are yellowish with grayish apex.

***Ceratophya longicornis* Wiedemann**

WIEDEMANN, 1824, Analecta Ent., p. 14; 1830, Ausser. Zweifl., II, p. 80.

This, too, is probably described from a male. It has not been recognized since described.

***Ceratophya goettei* (Shannon)**

Microdon goettei SHANNON, 1927, Proc. U. S. N. M., LXX, Art. 9, p. 19.

This species was described from five females from Brazil. The wings are subhyaline with a broad, whitish preapical band.

***Ceratophya flukei* (Curran)**

Microdon flukei CURRAN, 1936, Amer. Mus. Novitates, No. 882, p. 2.

This species is quite typical of the genus. In the female the face and front have practically parallel sides, the pile of the thorax is shorter than in the male and the apices of the abdominal segments are broadly dull reddish, the second segment broadly reddish in the middle and basally.

***Ceratophya bicolor* Walker**

WALKER, 1857, Trans. Ent. Soc. London, IV, p. 151.

Not recognized since it was described. It is not certain that this species belongs to the genus. The wings are blackish with grayish apex.

***Ceratophya plaumanni* (Curran)**

Microdon plaumanni CURRAN, 1940, Amer. Mus. Novitates, No. 1086, p. 3.

A shining blackish species, the wings brown with slightly paler apex.

***Ceratophya analis* (Curran)**

Microdon analis CURRAN, 1940, Amer. Mus. Novitates, No. 1086, p. 3.

Very similar to *plaumanni* but the posterior tibiae are wholly black pilose.

***Ceratophya macroptera*, new species**

Brown, the thorax reddish; wings brown with a broad, oblique hyaline band beyond the middle. Length, 11 mm.

FEMALE.—Front shining reddish brown, black below, the vertex reddish; occiput black, thinly cinereous pollinose; face and cheeks reddish yellow, the face with a rectangular black spot in the middle on the upper half that is separated from the antennae by a ferruginous band. Front and face of moderate width, the face widening slightly below, in profile slightly receding, with a low, large tubercle in the middle on the upper half; on each orbit just below the base of the antennae there is a very conspicuous tubercular swelling. Pile black. Antennae black, porrect, the second segment short, the third a little longer than the first, gently widening from base to apex, the apex broad and obtusely rounded; arista about as long as the third segment.

Thorax pale rusty reddish, clothed with tawny pile, the scutellum simple, with thick black pile.

Coxae and femora reddish, the apical third to half of the anterior four femora and the apical two-thirds of the posterior pair brown; posterior tibiae and all the tarsi black, the anterior four tibiae brown with reddish base. Pile black, yellow on the coxae and on the bases of the femora; not long and dense. Posterior femora slender on basal third, their tibiae increasing in size from base to near the apex, the basal segment of the tarsus conspicuously swollen.

Wings long and broad, brown, with a broad hyaline band extending from the costa beyond the first vein to the posterior border beyond the anal cell, the band expanded in the apical cell toward the apex of the wing and otherwise slightly irregular in width; most of the cells with linear hyaline streaks. Apex of discal cell rectangular; apical crossvein curved sharply outward near its middle and joining the third vein at an angle. Squamae obscure whitish, with black border. Halteres missing.

Abdomen shining brownish black, long, with subparallel sides, at most slightly wider than the thorax; pile short, appressed, black; basal two sternites yellowish.

TYPE.—Holotype, female, Nova Teutonia, Brazil (Fritz Plaumann).

This species differs from the others in the shape of the apical cell and the presence of tubercles on the sides of the face. It is possible that it should be placed in a separate genus but the head has collapsed in drying and it seems better to place it here pending study of *notata* Wiedemann.

NAUSIGASTER WILLISTON

WILLISTON, 1884, Trans. Amer. Ent. Soc., XI, p. 33.

This peculiar genus is represented in America by eight described species, four of which are from the United States, the others occurring in Mexico, Peru, Brazil and Argentina. I have delayed for nearly a score of years the description of the new species included here in the hope that additional material might come to hand; but since the species are poorly represented in collections no additional material has been obtained.

TABLE OF SPECIES

- 1.—The dark wing markings confined to the stigmal cell.....2.
- The wing markings extend beyond the stigmal cell.....3.
- 2.—Second abdominal segment with a horn-shaped production on each

- basal corner (Peru).....
*chrysidiformis* Shannon.
 Second abdominal segment not conically produced basally (Texas, Arizona).....*clara*, n. sp.
 3.—Dark wing markings consisting of a single spot at or beyond the middle of the wing.....4.
 Dark markings much more extensive, the wings dark at the middle and before the apex.....7.
 4.—Second vein strongly curved behind the black stigmal spot (Arizona).....
*curvinervis*, n. sp.
 Second vein practically straight....5.
 5.—The median brown spot extends almost to the fourth longitudinal vein (South America).....
¹*bonariensis* Arribalzaga.
 The brown spot does not extend behind the second vein.....6.
 6.—Abdomen with a broad sublateral stripe of pale pollen extending from base to apex; anterior pollinose section of vertical triangle almost as large as the shining ocellar area....
*scutellaris* Adams.
 Abdomen without entire broad sublateral stripe; pollinose part of vertical triangle not half as large as the shining area.....
*unimaculata* Townsend.
 7.—Apical wing spot united with the median spot.....9.
 Apical spot widely separated from the median brown area.....8.
 8.—Front with about a dozen large punctures (Arizona).....*nova*, n. sp.
 Front with numerous punctures (United States).....
*punctulata* Williston.
 9.—Both veins closing the second basal cell broadly bordered with brown, at least on the apical side.....11.
 The anterior vein closing the cell not bordered with brown.....10.
 10.—Base of the second abdominal segment bearing a strong horn-like tubercle on each side (Paraguay)....
*flupei*, n. sp.

- Base of second segment convex on each side (Texas).....*texana*, n. sp.
 11.—Base of second abdominal segment bearing a short acute tubercle on each side (Mexico, Brazil).....
*meridionalis* Townsend.
 Base of second segment convex laterally (Texas, Arizona).....
*geminata* Townsend.

***Nausigaster clara*, new species**

Black, with cinereous pollen; stigma very small, brown. Length, 5 to 7.5 mm.

MALE.—Pollen of the face and front white; the ocellar spot and the tip of the tubercle bare; the punctures small, well separated and numerous; oral border broadly reddish. Occiput cinereous pollinose. Pile very short, white. Antennae orange, the arista brown; third segment subrectangular, broader than long.

Thorax thickly cinereous pollinose, with very numerous small punctures; mesonotum with five broad greenish-black vittae, the outer ones united posteriorly. Scutellum reddish, with rather numerous black punctures. Pile very short, whitish.

Femora greenish black, thinly gray pollinose, the apices reddish; tibiae reddish with darker band on the apical third; tarsi brown; pile all pale.

Wings hyaline, with a very small stigmal spot. Squamae white. Halteres yellow.

Abdomen becoming mostly brownish red on the fourth segment, shining; the broad sides, a rather narrow incomplete sublateral stripe extending from the base and onto the base of the fourth segment, and a pair of irregular dorsal stripes, cinereous pollinose; the pollen with the usual numerous small punctures. Venter shining dark brown, the genitalia reddish.

FEMALE.—Cheeks mostly black; front shining with the broad sides and a band in front of the ocelli cinereous pollinose, the punctures larger than in the male, more numerous and some of them contiguous. Occiput broad, in some views showing a V- or Y-shaped pollinose marking behind the vertex; from posterior view the occiput is wholly pollinose. The pollinose stripes on the abdomen are wider, leaving less than half of the ground color exposed.

TYPES.—Holotype, male, Sierra Blanca, El Paso County, Texas, July 8, 1917. Allotype, female, Dragoon, Cochise County, Arizona, July 20, 1917.

This species may be at once recognized by the very small stigmal spot. In all other species I have seen, the brown spot over the stigma extends into the submarginal cell.

¹ *Peruviensis* Shannon (Peru) probably comes here and may be distinguished by its "mahogany-red" thorax.

Nausigaster curvinervis, new species

Bluish black, the abdomen black; pollen cinereous. Length, 9 mm.

MALE.—Head thickly pollinose, with rather abundant small pits, those on the frontal triangle indistinct or weak. Pollen on sides of the vertex without punctures, produced on the occiput in the form of a V. Pollen of the occiput appearing tessellate in certain views. Pile white, yellow on the vertical triangle. Cheeks, and a broad vitta extending from the oral margin to the upper edge of the tubercle, reddish. Antennae brownish red, the arista brownish apically; third segment convex apically, broader than long.

Humeri and notopleura yellowish red, the posterior calli and scutellum brownish red. Pollen cinereous, moderately thick, dense and more whitish on the pectus; mesonotum with irregular practically bare areas posteriorly, in front with a pair of abbreviated sinuous dorsocentral vittae and a pair of incomplete broader posteriorly tapering sublateral bare vittae that are broadly interrupted at the suture. The small punctures are very numerous. Scutellum more or less broadly black laterally and with numerous fairly large black punctures except on the broad median line and a preapical band. Pile cinereous yellow, white on the pleura.

Femora black, the narrow apex of the posterior pair, broad apex of the anterior four and sometimes almost the whole posterior surface of the front pair reddish. Front and middle tibiae reddish, brownish on the posterior surface except on the base, apex and in the middle; posterior tibiae brown with base, median band and apex reddish. Tarsi brown, the apical segment more or less reddish, the middle pair reddish basally. Pile pale.

Wings hyaline; stigmal spot large, deep black, the second vein curved beyond the fork in order to accommodate the spot. Squamae whitish, with pale yellow border and fringe. Halteres with brownish knob.

Abdomen black, clothed with short appressed whitish and golden brown pile arranged in small patches. The cinereous pollen is not punctured and forms a broad lateral band extending from the base of the second segment to the apical third of the fourth, the pollen expanded on the second segment where it is united with the broad basal band on the median half of the segment. In the pollinose area there is a large bare spot toward the sides of the second and third segments posteriorly and two smaller bare spots on each side of the base of the second segment. The pile is all white on the base and sides of the abdomen. Venter shining with a broad band of pale pollen on the apex of the fifth sternite. Genitalia brown, the sides reddish.

TYPES.—Holotype, male, and paratype, male, Dragoon, Cochise County, Arizona, July 20, 1917, the latter without a head.

This species is close to *unimaculata* Townsend and *scutellaris* Adams but is at once

distinguished by the curvature of the second vein behind the stigmal spot and by the absence of punctures in the abdominal pollen.

Nausigaster nova, new species

Bluish black, the thorax with large punctures; wing with two brown spots. Length, 8 mm.

FEMALE.—Head whitish pollinose; the cheeks and the tip of the facial tubercle bare, reddish; front shining on the median swelling, in the middle to the lower fifth and on the brownish ocellar triangle. Face with numerous isolated large punctures; front with about a dozen very large punctures, the vertex and occiput with many large punctures. Pile short, whitish. Antennae dull orange, the arista brown; third segment subrectangular, longer than wide, gently convex below and apically.

Thorax cinereous pollinose, with very numerous large punctures except on the pectus, the mesonotum with four obscure dark vittae, the outer ones narrow. Scutellum shining brown with the very narrow base and a large transverse apical spot brownish yellow in ground color and cinereous pollinose. Pile yellowish on the dorsum, white on the pleura.

Femora black with the apices broadly reddish, the anterior pair with the apical third reddish; all the tibiae and the middle tarsi reddish, the anterior and posterior tarsi brown. Pile white.

Wings hyaline, in the middle with a large brown cloud extending from the costa to the fourth vein; a much smaller brown spot at the end of the second vein. Squamae white. Halteres yellow.

Abdomen cinereous pollinose, with large bare spots forming four broad irregular interrupted vittae; whole abdomen with numerous moderately large punctures; pile very short, obscurely yellowish, white on the base and sides; narrow lateral margin of the abdomen yellow.

HOLOTYPE.—Female, Huachuca Mountains, Arizona, mid-June, 1920 (F. X. Williams).

This species is closest to *punctulata* Williston but is easily distinguished by the uniform size of the punctures on the thorax, the small number and larger size of the punctures on the head and the larger abdominal punctures. In *punctulata* the punctures on the mesonotum are much smaller than those on the pleura.

Nausigaster flukeyi, new species

Related to *texana*, new species, but at once distinguished by the acute tubercles on the base of the second abdominal segment. The discal cell is wholly hyaline. Length, 9.5 mm.

FEMALE.—Head black, the front somewhat

brassy or bronzed, the face and cheeks wine-red in ground color. Front cinereous pollinose; the ocellar tubercle, a subrectangular median swelling and a large incomplete transverse band above the antennae, shining; punctures large and numerous, smaller and less abundant on the upper third. Occiput with cinereous yellow pollen and numerous punctures. Face cinereous pollinose with numerous punctures, the tubercle shining. Pile cinereous, black on the bare areas of the front. Antennae orange-red.

Thorax black, with cinereous pollen, the punctures rather large and very numerous; mesonotum strongly bronzed, the pollen forming four vittae, a band before the scutellum and a spot above the base of the wings; the median vittae extend scarcely to the posterior third, while the subdorsal pair are weak behind the suture. Pile inconspicuous, whitish, black on the middle of the mesonotum and on the scutellum. Scutellum black, heavily punctured, with a broad bare reddish median vitta, the apex of which is covered with whitish pollen.

Coxae and the broad bases of the anterior four femora greenish black, the posterior femora black on the basal three-fourths, the tarsi blackish; tibiae and apices of the tarsi reddish. Pile very short, cinereous, black on the upper surface of the tarsi.

Wings hyaline with extensive brown markings; on the basal third the color is pale brown in front of the spurious vein, the submarginal cell is brown except for the apex and a broad anterior stripe extending from the stigma to the apical brown spot, marginal cell with a preapical brown cloud, discal cell brown except for a large subtriangular apical spot in the middle, the blackish-brown stigmal spot is connected basally with the brown markings, posterior crossvein closing the second basal cell broadly bordered with brown, the anal cell with a large weak brownish cloud in the middle. Squamae yellow; knob of halteres creamy white.

Abdomen black, the lateral margins narrowly yellow, the apex somewhat broadly reddish. Pollen cinereous, more luteous dorsally, forming an irregular pattern; punctures rather small but abundant. Pile very short, black, pale yellowish and whitish.

HOLOTYPE.—Female, Villarica, Paraguay, October, 1938 (F. Schade), received from Dr. C. L. Fluke.

***Nausigaster texana*, new species**

Blackish, with cinereous pollen; large median brown cloud on wing connected with the apical brown cloud. Length, 6.5 to 7.5 mm.

MALE.—Face and cheeks reddish in ground color, the sides of the face blackish; pollen cinereous, more whitish on the face and front; punctures on the face of moderate size, rather numerous, on the front minute. Vertical triangle shining brownish red across the ocellar triangle; occiput with numerous punctures. Antennae

brownish red, the arista brown, third segment slightly longer than wide.

Thorax thickly cinereous pollinose; the mesonotum with yellowish tinge on the disc, the punctures numerous, smaller on the mesonotum than on the pleura; mesonotum with four weak, nearly bare vittae and a dark median vitta on the posterior half. Scutellum reddish, with almost contiguous black punctures on the basal half, the broad apex pale pollinose and with few punctures. Pile very short, yellowish, becoming white on the lower part of the pleura.

Legs reddish; anterior femora on the basal fourth, middle pair on the basal half and the posterior pair on the basal three-fourths, brown; front and middle tarsi brownish. Pile whitish.

Wings hyaline; in the middle with a large brown spot extending from the costa to behind the fourth vein and produced broadly outward behind the third vein to join the brown spot that extends back from the apices of the first and second veins; the vein closing the posterior portion of the second basal cell broadly bordered with brown. Squamae very pale yellowish; halteres yellow.

Abdomen cinereous pollinose, with numerous punctures, and with four rows of bare spots that form obscurely defined vittae. Pile yellowish, partly black on the fourth segment, white on the sides and base. Vertex shining. Genitalia reddish.

FEMALE.—Third antennal segment slightly wider than long; front shining black on the anterior two-thirds, with the sides cinereous pollinose, the punctures on the median portion large. The femora are more extensively brown and the posterior femora are brownish apically.

TYPES.—Holotype, male, Austin, Texas; allotype, female, Gillette, Texas, July 25, 1917.

Related to *geminata* Townsend but the two brown spots are not connected in the submarginal cell as they are in *geminata*, the connection taking place in the apical cell.

CALLOSTIGMA SHANNON

SHANNON, 1927, Proc. U. S. N. M., LXX, Art. 9, p. 8.

I am still doubtful that this genus can be definitely separated from *Baccha* Fabricius, but retain it for the present. Although the new species (*annulata*) has similar abdominal markings to the other species with pale scutellum, the wing venation closely approaches that of a number of species of *Baccha*. Further material will probably connect the two groups.

TABLE OF SPECIES

- 1.—Scutellum wholly yellowish.....3.
- Scutellum mostly brown.....2.

- 2.—Posterior femora with two brown bands
.....*striata* Walker.
Posterior femora with one very broad
brown band.....*obliqua*, n. sp.
- 3.—Wings with a brown apical spot.....
.....*elnora* Shannon.
Wings without a brown apical spot...4.
- 4.—Posterior femora with a broad preapical
brown band.....*annulata*, n. sp.
Posterior femora with scarcely a trace
of brown on upper surface before the
apex.....5.
- 5.—Basal yellow fascia on the second abdom-
inal segment broadly interrupted
in the middle.....6.
Basal yellow fascia entire.....
.....*hyalipennis* Curran.
- 6.—Black fascia on the third abdominal
segment abruptly increased laterally
to at least twice the width of the
median portion.*panamensis* Curran.
Black fascia much less broadened later-
ally.....*neuralis* Curran.

Callostigma striata Walker

Ascia striata WALKER, 1852, Ins. Saunders, Dipt., p. 221.

Austen indicated in 1893 that this species belonged to a genus near *Baccha* and it is obvious from his notes that it belongs to *Callostigma*. It is known only from the type specimen from Brazil.

Callostigma obliqua, new species

Related to *striata* but without longitudinal stripes on the abdomen. Length, 7 mm.

FEMALE.—Face, cheeks and front pale yellowish, the sides of the front and the face, with the exception of the tubercle, with white pollen. Front black on the upper fifth and with a broad black median vitta extending to the lunula. Occiput black, thickly cinereous white pollinose. Pile short, fine, wholly white. Antennae reddish yellow, darker above, the third segment pale brownish on more than the upper half; arista brown.

Thorax aeneous, the broad lateral margins of the mesonotum, more than the posterior half of the mesopleura and a large spot on the sternopleura very pale yellowish; mesonotum with a narrow median vitta and a pair of broad narrowly separated vittae, cinereous pollinose; the outer vittae tapering posteriorly and not reaching the posterior margin. Scutellum yellowish, brown on a little more than the basal half and with a black basal spot on each side. Pile short and fine, cinereous.

Legs yellowish, the posterior tarsi brown; pos-

terior femora with a very broad dark brown band beyond the middle, the posterior tibiae with a moderately wide median band. Pile yellowish, obscurely brownish on the posterior surface of the middle femora.

Wings cinereous hyaline; stigma obscurely luteous; apical crossvein gently sinuous. Squamae yellow. Halteres pale orange.

Abdomen shining black, the color somewhat dulled on the disc of the second and third segments. First segment with the sides broadly yellow. Second segment with a broad, arched, medianly interrupted reddish-yellow fascia lying mostly before the middle, the outer ends extending over the lateral margins in their full width. Third to fifth segments each with a very large oblique posteriorly tapering yellow spot on each side of a broad median vitta, those on the fourth and fifth segments extending to the posterior margin, and on the basal angles of each segment a large yellow triangle. Venter reddish, the first sternite with a black spot on each side, the second with the sides black, the third and following each with a shining black triangle on each side that is widest posteriorly. Pile very short, sparse and black, pale yellowish on the base and on the venter.

HOLOTYPE.—Female, Chiva Chiva Trail, Canal Zone, November 18, 1923 (F. E. Lutz).

Callostigma annulata, new species

Reddish yellow, with brown markings; posterior femora with broad brownish band before the apex. Length, 5.5 mm.

MALE.—Face, front and cheeks shining reddish yellow, the cheeks with whitish pollen behind; a small black spot on the lunula. Vertical triangle reddish brown. Occiput brown, thickly cinereous pollinose, the pollen yellowish above. Pile whitish, obscurely brown on the ocellar triangle. Antennae pale orange, the arista brown.

Mesonotum brown except on the broad lateral margins; a weak entire median stripe of yellow pollen and indications of two broader vittae in front close to the median one. Pleura yellow, a broad, oblique brownish tinged stripe on the posterior portion. Pile pale yellowish, short; scutellum with mostly brownish or black pile.

Legs wholly pale except for the broad brownish band on the apical half of the femora, the pile yellow.

Wings hyaline, the stigma scarcely darkened. Posterior crossvein rather strongly oblique; apical crossvein sinuous and much more oblique than in the other species. Squamae with brownish border. Halteres yellow.

Abdomen reddish yellow. Second segment with the broad posterior border, an irregular slender median vitta and a weak, linear sub-basal fascia brown. Third segment with the broad posterior border strongly and abruptly expanded on the lateral fifth and a narrow median

vitta brown. Fourth segment with markings similar to those on the third except that the posterior brown fascia is narrower but much more strongly expanded laterally, extending forward to beyond the middle of the segment. Fifth segment apparently with only a narrow median brown vitta. Pile black, pale on the base and venter. Genitalia brown, small.

HOLOTYPE.—Male, Nova Teutonia, Brazil, October 20, 1937 (Fritz Plaumann).

The wing venation of this species is intermediate between that found in *Baccha* Fabricius and other members of *Callostigma* Shannon.

BACCHA FABRICIUS

With the receipt of a large number of specimens belonging to this genus it has been necessary to restudy the entire collection with the result that many new species have been discovered. Some characters previously used have been found to be unreliable in some cases, although generally of value. The ventral scutellar fringe is usually much longer in males than in females and when it is weak in the male it may be absent in the female. The alula may be wholly absent or represented by a very small apical section in the same species. In some cases the females are readily separated on structural characters while the males are extremely difficult to separate. The male genitalia often present distinctive characters and the females in certain of these groups can be separated only with difficulty.

The following key has been completely revised but includes only the species I have seen.

TABLE OF SPECIES

- 1.—Face black or with a median black or brown vitta at least above or below the tubercle.....65.
Face yellowish or reddish, the oral margin rarely blackish.....2.
- 2.—Third antennal segment much longer than the first or second.....3.
All the antennal segments of nearly equal length (Brazil).....
.....*atypica* Curran.
- 3.—Scutellum wholly black or brown..4.
Scutellum partly or wholly reddish or yellow.....6.
- 4.—Alula strongly infuscated.....30.
Alula clear hyaline or only faintly tinged with brownish.....5
- 5.—Abdomen in part steel-blue (West Indies).....*cylindrica* Fabricius.
Abdomen partly bronzed, never steel-blue (United States).....
.....*fuscipennis* Say.
- 6.—Wings with a disconnected small apical brown spot.....7.
Wings without disconnected apical spot.....9.
- 7.—Disc of scutellum shining black.....
.....*exigua* Williston.
Scutellum wholly pale.....8.
- 8.—Mesonotum dull and conspicuously vittate (Texas). *lineata* Macquart.
Mesonotum shining, very obscurely vittate (Cuba, Puerto Rico).....
.....*parvicornis* Loew.
- 9.—Ocellar triangle opaque black, strongly contrasting in color to the sides of the vertical triangle posteriorly in the male and laterally in the female; mesonotum with ochraceous or yellow pollen and almost always four blackish or metallic vittae; sides broadly yellow.....10.
Ocellar triangle at most subopaque black, and not strongly contrasting with the surrounding color, the dark color usually extending broadly to the vertex.....23.
- 10.—Second abdominal segment very definitely longer than wide, usually two or three times so.....12.
Second abdominal segment not longer than wide, or very slightly so.....11.
- 11.—Scutellum with short, sparse, black hair and no ventral fringe; wings brown in the middle and normally broadly yellowish sub-basally; second abdominal segment of male strongly constricted basally, of female twice as wide as long (South America).....
.....*flavipennis* Wiedemann.
Scutellum with longish black hair and strong yellow ventral fringe; second abdominal segment not constricted (Brazil). *anera* Curran.

- 12.—Abdomen long and narrow or strongly constricted toward the base.....14.
Abdomen broad, not constricted basally, the second segment one-half longer than wide.....13.
- 13.—Abdomen fasciate (Brazil).....
.....*iona*, n. sp.
Abdomen with narrow pale vittae (Brazil).....*zenia*, n. sp.
- 14.—The orange discal marking on the third abdominal segment is in the form of a single, very narrowly interrupted broad V (Brazil).....
.....*placiva* Williston.
The median pale markings form parallel vittae which may sometimes be united with sublateral vittae basally to form a pair of V's on each of the apical segments...15.
- 15.—Mesopleura wholly yellowish.....19.
Mesopleura broadly blackish anteriorly.....16.
- 16.—Anterior femora with black pile on the whole length; alula hyaline (Cuba).....*arx* Fluke.
Anterior femora with scattered black hairs posteriorly on the basal half, the apical pile all yellowish; alula luteous.....17.
- 17.—Posterior coxae brown; frontal triangle with large brown triangle that is connected with the brown of the antennal tubercle (Paraguay).....*obsoleta*, n. sp.
All the coxae yellow, frontal triangle with a very small brown or black spot above.....18.
- 18.—Ventral scutellar fringe composed of sparse blackish hairs, short in female (South America).....
.....*phaeoptera* Schiner.
Ventral scutellar fringe composed of abundant, long yellow hair.....
.....*persimilis* Williston.
- 19.—Ventral scutellar fringe composed of black hairs, which are usually scattered, or absent.....20.
Ventral scutellar fringe yellow, the hairs abundant, short in female (Brazil).....*diffusa* Curran.
- 20.—Mesonotum with wholly tawny or yellowish pile.....21.
Mesonotum with the pile black except on the sides.....22.
- 21.—Male genitalia of moderate size, the scutellar fringe long, pale abdominal vittae continuous (Neotropical).....*livida* Schiner.
Male genitalia large, the scutellar fringe practically absent; pale abdominal vittae not continuous from segment to segment, their posterior ends terminating in black ground (Brazil)...*macropyga*, n. sp.
- 22.—Pleura black pilose (Cuba, Florida)...
.....*notata* Loew.
Pleura and sides of mesonotum yellow pilose (Brazil)...*norina*, n. sp.
- 23.—Wings hyaline, with brown subcostal cell and a broad median band extending from the costa to behind the fifth vein.....24.
Wings differently colored, hyaline to brownish, or variously marked with brown.....25.
- 24.—Anterior crossvein situated at the basal fifth of the discal cell (western United States and Canada)...
.....*lemur* Osten Sacken.
Anterior crossvein situated beyond the basal third of the discal cell (eastern United States and Canada).....*fascipennis* Wiedemann.
- 25.—Mesopleura wholly reddish or yellowish.....37.
Mesopleura partly or wholly black or brown.....26.
- 26.—Sides of mesonotum yellow or reddish in front of or behind the suture.31.
Sides of mesonotum with only the notopleura and posterior calli yellow.....27.
- 27.—Abdomen with almost parallel sides.....28.
Abdomen strongly narrowed toward the base (Central America).....
.....*dolosa* Williston.
- 28.—Posterior tarsi rather dull reddish to brown.....29.
Posterior tarsi yellow, normally somewhat whitish except apically (South America).....
.....*gastrostactus* Wiedemann.
- 29.—Apical third of the wing hyaline in female, much paler brown in male

- (tropical America, Florida).....
*scutellatus* Loew.
 At most the apical fifth of the wing
 paler.....30.
- 30.—Male genitalia large, convex apically,
 not produced on right side; fe-
 male front black, not blue-green
 (Brazil).....*calla*, n. sp.
 Male genitalia of medium size, pro-
 duced and angular on right side
 from dorsal view; female front
 with metallic blue-green reflections
 (South America).....
*funebri* Macquart.
- 31.—Abdomen as broad as the thorax. 32.
 Abdomen very much narrower than
 the thorax.....34.
- 32.—Scutellum reddish yellow, the disc
 sometimes tinged with brown. 33.
 Scutellum black with the free border
 broadly yellow (Trinidad).....
*pinkusi* Curran.
- 33.—Base of second abdominal segment
 with a broad interrupted yellow
 fascia; wings brownish luteous
 (Panama).....*cultrina* Curran.
 Base of second abdominal segment
 without a pale fascia; wings brown
 to dark brown (South America) ...
*cultrata* Austen.
- 34.—Scutellum reddish or yellowish. 35.
 Scutellum black with yellow base
 (Cuba).....*bromleyi* Curran.
- 35.—Posterior tarsi brownish.....36.
 Posterior tarsi brown basally, the
 apical four segments yellowish
 (Brazil).....*chapadensis* Curran.
- 36.—Mesonotal pollen brown (Brazil)....
*nora*, n. sp.
 Mesonotal pollen ashy (Mexico)....
*provocans* Curran.
- 37.—Posterior tarsi wholly yellowish or
 pale orange, never brownish ba-
 sally (if doubtful the posterior
 tibiae are not annulate with the
 middle yellow).....38.
 Posterior tarsi brownish red to brown
 or with the first segment broadly
 brown above at base, or the tarsi
 becoming brownish apically....50.
- 38.—Scutellum yellowish, at most very
 weakly bicolored.....40.
 Scutellum with a large, cordate or
 transverse brown spot in the mid-
 dle apically.....39.
- 39.—Very robust species, with a pair of
 transparent spots on the second
 abdominal segment (Brazil).....
*lopesae*, n. sp.
 More slender and without trans-
 parent spots; scutellum with cor-
 date brown spot (Peru, Panama)..
*inca* Curran.
- 40.—Mesonotum with a pair of reddish
 vittae on the disc.....41.
 Mesonotal vittae, if present, due to
 pollen on dark ground.....42.
- 41.—Pleura wholly yellowish; second ab-
 dominal segment very broadly pale
 orange in the middle (tropical
 America).....*crocea* Austen.
 Pleura broadly blackish behind;
 second segment with interrupted
 pale orange fascia (Panama).....
*vierecki* Curran.
- 42.—Metapleura almost all blackish or
 brown beneath the squamae...44.
 Metapleura almost all yellow be-
 neath the squamae.....43.
- 43.—Mesonotum dull ochraceous, weakly
 vittate (Brazil).....*grata*, n. sp.
 Mesonotum with four strong, black-
 ish vittae (British Guiana).....
*prudens* Curran.
- 44.—Second abdominal segment with a
 broad yellowish fascia.....45.
 Second segment with a pair of elon-
 gate, oblique yellow spots behind
 the middle (Brazil). *prenes* Curran.
- 45.—Third abdominal segment strongly
 widening from base to apex, where
 it is twice as wide as the base of
 the second.....46.
 Third segment at most slightly wid-
 ening apically and at most 1 1/2
 times as wide as the base of the
 second.....47.
- 46.—Basal angles of the third and follow-
 ing abdominal segments black
 (South America, Panama).....
*crocata* Austen.
 Bases of third and following segments
 wholly yellow except sometimes
 for the narrow median black vitta
 (South America, Panama).....
*pumilla* Austen.

- 47.—Second abdominal segment brown basally except at the sides. . . . 48.
 Second segment with the base broadly pale orange (except sometimes in the middle) (Panama).
 *cultrina* Curran.
- 48.—The black median vitta on the fourth abdominal segment is strongly broadened anteriorly. 49.
 The black median vitta is linear in front; larger species (Brazil, British Guiana). *cultrata* Austen.
- 49.—Mesonotum strongly shining, with a pair of incomplete pale pollinose vittae (tropical America).
 *lepida* Macquart.
 Mesonotum rather dull, the pale pollinose vittae broad; pale pollen in front of the scutellum (Puerto Rico). *rica* Curran.
- 50.—Disc of the mesonotum blackish, the sides usually yellowish. 51.
 Mesonotum rusty reddish with the sides yellow, abdomen fasciate (Brazil). *tiara*, n. sp.
- 51.—Abdomen long and broad, the sides parallel (Brazil). . . . *pirata* Curran.
 Abdomen clavate or slender. 52.
- 52.—Tarsi brownish red with darker base, or the first segment black or brown, the apical segments reddish yellow. 53.
 Tarsi with the apical segments brownish, usually all brownish above. 59.
- 53.—Pleura broadly blackish or brown posteriorly. 54.
 Pleura wholly yellow (Brazil).
 *micropyga*, n. sp.
- 54.—Posterior femora practically all black-haired. 55.
 Posterior femora with yellow hair on the basal half or more (Mexico).
 *punctifrons* Williston.
- 55.—First segment of the posterior tarsi black or brown with the apical sixth or less reddish. 58.
 First segment of posterior tarsi brown basally, becoming reddish on the apical third or more, or practically all reddish. 56.
- 56.—Posterior femora reddish on the basal half or more. 57.
 Posterior femora with the basal fourth brown, the middle broadly yellow (Brazil). . . . *debasia*, n. sp.
- 57.—Second abdominal segment with a broad, narrowly interrupted orange band; wings distinctly darkened at the apex (Colombia). . . *verona*, n. sp.
 Second abdominal segment with a pair of narrow, widely separated oblique yellow spots behind the middle (Brazil). . . . *abata* Curran.
- 58.—All of the femora, but particularly the middle pair, conspicuously swollen (Brazil). . . *murina* Curran.
 Femora slender as usual (Brazil).
 *zita*, n. sp.
- 59.—Costal cell brownish, of about the same color as the stigma (Brazil).
 *prenes* Curran.
 Costal cell rather clear, very much paler than the stigma. 60.
- 60.—Second abdominal segment with the broad base and a broad post-median fascia reddish (Argentina).
 *argentina* Curran.
 Second abdominal segment differently colored. 61.
- 61.—Basal third of the posterior femora brown. 62.
 Posterior femora reddish or yellowish on more than the basal half. . . . 63.
- 62.—Middle femora mostly brownish (Brazil). *zenillia*, n. sp.
 Middle femora wholly yellow (Paraguay). *macer* Curran.
- 63.—Alula entirely absent. 64.
 Alula present apically (Brazil).
 *mara*, n. sp.
- 64.—Antennae wholly pale orange; the black median mesonotal vitta does not extend behind the suture (Brazil). *sativa*, n. sp.
 Antennae brownish above; the broad black vitta extends to the scutellum (Paraguay). . . *mentor* Curran.
- 65.—Face with a conspicuous tubercle. 72.
 Face with a scarcely perceptible tubercle. 66.
- 66.—Crossveins bordered with brown. 69.
 Crossveins not bordered with brown. 67.
- 67.—Front of male white pollinose except for a narrow median vitta; legs

- weakly annulate (Brazil).....
 *flukeiella*, n. sp.
 Front of male and female narrowly
 white pollinose on sides; legs
 strongly annulate.....68.
- 68.—The black of the third and fourth
 abdominal segments is bisected for
 most of its length by a very broad
 reddish vitta.....*gowdeyi* Curran.
 The black is not bisected by a pale
 vitta.....*gracilis* Williston.
- 69.—Mesonotum shining black.....70.
 Mesonotum reddish with brown median
 vitta in front. *rubida* Williston.
- 70.—Second abdominal segment reddish..
71.
 Second abdominal segment black..
 *incompta* Austen.
- 71.—Anterior tibiae wholly pale yellow..
 *bigoti* Austen.
 Anterior tibiae brownish red on median
 half or more.....*lanei* Curran.
- 72.—Abdomen not at all constricted on
 second segment and always shorter
 than the wings.....73.
 Abdomen constricted basally or
 longer than the wings.....75.
- 73.—Third and fourth abdominal segments
 black, with yellow vittae
 (Peru).....*idana*, n. sp.
 Abdomen not strikingly bicolored..
74.
- 74.—Wings uniformly colored on whole
 length in front. *latiusculus* Loew.
 Wings paler on apical third or more..
 *dimidiatus* Fabricius.
- 75.—Oral margin more prominent than
 the facial tubercle (United States
 to Brazil).....*clavata* Fabricius.
 Oral margin not as prominent as the
 tubercle.....76.
- 76.—Basal segment of the posterior tarsi
 brown or black on the basal third
 or more, the second and third reddish
 yellow to pale yellow.....96.
 Basal segment of the posterior tarsi
 variable but not strongly contrasting
 in color with the second and
 third segments.....77.
- 77.—Face and legs wholly blackish; third
 and fourth abdominal segments
 each with four tiny oval or orbicular
 orange spots on the disc..78.
- If the legs are wholly blackish, the
 abdomen is differently marked.79.
- 78.—Apical crossvein very little curved
 (tropics).....*signifera* Austen.
 Apical crossvein conspicuously bisinuate
 (*punctata* Shannon?) (tropics).....*adpersa* Fabricius.
- 79.—Wings hyaline, with a sharply defined,
 subtriangular median fascia
 extending from the costa to the
 anal cell (western United States)..
 *lemur* Osten Sacken.
 Wings differently colored.....80.
- 80.—Posterior tarsi wholly yellow to
 bright orange.....81.
 Posterior tarsi usually all brownish
 or blackish, at least the apical segments
 brown.....83.
- 81.—Face with a single black or reddish-
 brown vitta.....82.
 Face with a pair of broadly separated
 brown vittae (Brazil).....
 *bivittata*, n. sp.
- 82.—Anterior four femora yellow or
 orange (Cuba).....*capitata* Loew.
 Anterior four femora mostly brown
 (Brazil).....*summa* Fluke.
- 83.—The brown stigma fills the stigmal
 cell almost to the apex.....84.
 The brown stigma is limited to an
 elongate spot beyond the tip of the
 first vein (United States, Canada)
 *obscuricornis* Loew.
- 84.—Pleura wholly blackish in ground
 color.....88.
 At least the mesopleura and sternopleura
 with large yellowish spots..
85.
- 85.—Pale spots limited to the mesopleura
 and sternopleura.....86.
 Pleura extensively pale.....87.
- 86.—Costal border broadly dark brown;
 abdomen metallic dark blue, with
 opaque markings (eastern United
 States).....*costata* Say.
 Wings strongly tinged with brown on
 apical half; abdomen with reddish
 spots; very slender species (Puerto
 Rico).....*deceptor* Curran.
- 87.—Wings with a conspicuous apical
 brown spot; basal segment of posterior
 tarsi of male with long thorn

- at apex (Puerto Rico).....
*ornatipes* Curran.
 Wings rather uniformly pale brownish; tarsi simple (Brazil).....
*stenogaster* Williston.
 88.—Scutellum bright yellow (Brazil).....
*laticauda*, n. sp.
 Scutellum blackish, at most the margin obscurely reddish.....89.
 89.—Wings with a conspicuous apical brown spot; abdomen broad (Brazil).....*lativentris*, n. sp.
 Wings without isolated apical brown spot.....90.
 90.—Scutellum with erect fine whitish pile.....91.
 Scutellum with black pile which may be microscopic.....93.
 91.—Abdomen with paired yellow spots; fifth abdominal segment with black hair (Panama).....
*schwarzi* Curran.
 Abdomen without yellow spots; fifth segment whitish pilose....92.
 92.—Wings strongly brown on basal half; opaque markings on fifth abdominal segment not approximated behind (Panama).....
*shropshirei* Curran.
 Wings weakly brown on basal half; opaque markings on fifth segment narrowly separated posteriorly (Brazil).....*braziliensis* Curran.
 93.—Anterior four legs mostly reddish (Brazil, Peru)....*levissima* Austen.
 Anterior four legs mostly black or brown.....94.
 94.—Abdomen conspicuously longer than the wings.....95.
 Abdomen not or scarcely projecting beyond the tips of the wings (British Guiana).....*nero* Curran.
 95.—Disc of mesonotum with brownish pollen and three narrow opaque black vittae (Peru).....
*bassleri* Curran.
 Mesonotum slightly shining black, with a slender brown vitta in front (Peru).....*brevipennis* Schiner.
 96.—Sixth abdominal segment almost twice as long as the fourth and cylindrical; females only.....97.
 Sixth abdominal segment not greatly longer than the fourth and not cylindrical.....99.
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Baccha iona, new species

Black and orange; wings brownish; abdomen with broad orange fasciae and vittae. Length, 10 mm.

FEMALE.—Front pale orange, with a median black vitta that is broadly interrupted at the anterior fourth, the upper fourth black, yellowish pollinose behind the opaque black ocellar triangle; pile black; antennal prominence weakly developed. Occiput black, cinereous-yellow pollinose, the pile reddish yellow. Cheeks very narrow, reddish yellow. Face pale orange, with black pile above and yellow below, strongly receding below the small tubercle. Antennae reddish, the third segment missing.

Thorax reddish yellow; the pectus, metanotum and mesonotum black, the sides of the latter broadly reddish yellow, the disc with three cinereous-yellow pollinose vittae on the anterior four-fifths, the median one linear anteriorly, somewhat bronzed outside the lateral pollinose vittae. Pile cinereous; no collar in front. Scutellum shining reddish yellow, with sparse black pile.

Legs reddish yellow; posterior tibiae black with reddish base and apex, the posterior femora reddish brown with darker band beyond the middle and reddish apex. Pile reddish yellow, black on the posterior femora and tibiae (except on their apices and on the basal half of the dorsal surface of the femora) and on the posterior surface of the middle femora.

Wings brown, paler posteriorly beyond the middle; alula broad. Squamae brownish yellow. Knob of halteres reddish brown.

First abdominal segment reddish yellow with the apex rather narrowly brown in the middle. Second segment blackish with the basal fourth narrowed laterally, and a broad interrupted median fascia that is arched strongly back toward the sides. Third segment black with a very broad interrupted median orange fascia that is broadened laterally and a broadly inter-

rupted rather narrow basal fascia. Fourth segment with the narrow reddish basal fascia and a pair of large elongate oval orange spots that reach from the basal fourth to the apical third; the fifth with a pair of very broad orange vittae extending from base to apex. Pile black, yellow on the base of the first segment.

TYPE.—Holotype, female, Chapada, Brazil (Williston Collection).

The abdomen is broad with almost parallel sides. The orange markings on the fourth and fifth segments form interrupted broad vittae. The specimen is not in perfect condition but because of the characteristic color pattern I do not hesitate to describe it.

Baccha zenia, new species

Brown and reddish, with ochraceous pollen; abdomen broad, with broad pale orange vittae. Length, 12 mm.

MALE.—Face and frontal triangle pale orange, the sides of the face with whitish pollen, the upper part of the frontal triangle opaque; antennal prominence large, with a large black spot on the lunula; a small black spot near the upper angle of the frontal triangle. Vertical triangle and occiput black, the former opaque, the vertex and occiput ochraceous pollinose. Facial tubercle very large, occupying almost half the face. Pile black, bright yellow on the occiput. Antennae dull orange, the arista brown on the apical two-thirds.

Mesonotum aeneous, thickly ochraceous pollinose, with three dark vittae bordered with cinereous pollen, the median vitta broad, geminate, divided by a line of pale pollen; sides broadly reddish behind the suture, brassy in front of the suture. Pile reddish yellow, moderately long. Scutellum and the median half of the pleura mostly reddish; ventral scutellar fringe long.

Legs pale orange, the posterior femora and tibiae with broad brownish band before the apex; pile reddish yellow, black on the apical two-thirds of the posterior tibiae, on the brown femoral band and on the posterior surface of the middle femora.

Wings strongly tinged with brownish yellow, paler toward the base, and with a faint brown cloud extending from the furcation of the second and third veins to the apex of the second basal cell.

Abdomen brownish, with a pair of broad, broadly separated, pale orange vittae extending from the apical third of the second segment almost to the apex of the abdomen; the fourth segment with a narrow yellowish vitta toward each side and with the sides reddish on the basal half; first segment yellow except for a broad incomplete posterior brown fascia; third segment with the sides reddish on the basal half; the fifth with an oblique vitta on each side. Pile

generally reddish yellow on the basal half, black on the apical half; second segment with some black pile in the middle posteriorly; the third with a broad posterior band of black pile that is strongly expanded in the middle; fourth segment black pilose with large anterior triangles of yellowish pile laterally. Venter brownish red, paler basally, the pile pale on more than the basal half. Genitalia black, rather small. The abdomen is broad but distinctly narrowed from the apex of the second segment to the base.

TYPE.—Holotype, male, Nova Teutonia, Brazil, November 24, 1939 (Fritz Plau-mann).

Baccha obsoleta, new species

Face yellow, with a broad orange median stripe that is slightly darker on the sides; abdomen with longitudinal vittae. Length, 13 mm.

MALE.—Frontal triangle moderately large, dull ochre-yellowish with a large opaque black triangle above that is narrowly connected below with the reddish brown of the antennal swelling; lunula yellow with a large shining black spot in the middle. Vertical triangle opaque black with ochraceous pollen behind the ocelli. Occiput black, cinereous pollinose. Cheeks narrow, yellowish. Face yellowish, the median third pale orange with slightly darkened border; sides of face with white pollen; tubercle large and prominent. Pile black, yellow on the occiput. Antennae reddish, the arista brown on the apical two-thirds.

Thorax greenish black; mesonotum with the sides broadly reddish except behind the humeri, with three ochraceous vittae, the median one linear, the outer ones broad, bordered with dull black, the mesonotum shining between the outer black vittae and the reddish sides. Pleura with a spot above the front coxae, a broad posterior band on the mesopleura, a broad band on the upper border of the sternopleura and a somewhat obscure band extending from beneath the squamae to the posterior edge of the sternopleura reddish yellow; pteropleura almost all aeneous. Scutellum reddish, the basal corners tinged with brown. Pile black, yellowish on the sides in front of the wings and on the pleura; ventral scutellar fringe black.

Anterior four femora reddish with the base becoming brownish, their tibiae and tarsi yellow; posterior femora brown, more or less brownish-red basally, their apices reddish yellow; posterior tibiae black with the base and apex narrowly reddish yellow, the posterior tarsi very pale yellow and clothed with white pile; pile black on the femora and posterior tibiae, yellowish on the anterior four tibiae and tarsi. Posterior coxae with black hair.

Wings pale brown. Squamae luteous, with golden fringe. Knob of halteres orange.

Abdomen brownish black, marked with yellow. First segment brown with the sides broadly yellow; second segment brownish red

laterally on the basal half, at the apical fourth with a yellow spot on each side which is narrowly separated from the lateral margins; third segment with an elongate, basal sublateral triangle on each side and a pair of yellow vittae extending from the inner ends of the reddish spots to the apical fifth of the segment; fourth segment with yellow sublateral triangles that are broadly connected with the yellow vittae on the base of the segment; fifth segment with yellow vittae extending from the base to beyond the middle and with a triangular yellow spot toward either side. Pile black. Venter mostly black, the bases of the third and fourth sternites yellow. Genitalia small.

TYPE.—Holotype, male, San Bernardino, Paraguay.

***Baccha macropyga*, new species**

Face yellow; mesonotum ochraceous pollinose with narrow black vittae; wings lightly infuscated; genitalia large. Length, 8 to 10 mm.

MALE.—Face, cheeks and frontal triangle reddish yellow, the antennal prominence somewhat metallic, the upper part of the frontal triangle opaque and with a small opaque black spot above; lunula with a shining black spot in the middle. Vertical triangle opaque black, ochraceous pollinose in front of and behind the ocellar triangle. Occiput cinereous-yellow pollinose on black ground. Cheeks narrow, yellowish pollinose posteriorly. Facial tubercle large and prominent, the sides of the face with whitish pollen. Pile black, reddish yellow on the occiput. Antennae reddish, the arista and upper half of the third segment brownish except basally.

Thorax reddish yellow; the metanotum, a stripe extending from the middle coxae to the base of the abdomen and the mesonotum except on the broad sides, greenish black in ground color; the mesonotum densely ochraceous pollinose leaving four slender black vittae that are narrowly bordered with cinereous, the median pair narrowly separated and replaced on the posterior fourth by a single vitta. Pile very short and rusty reddish, black on the scutellum.

Legs reddish yellow; posterior femora with a broad preapical blackish band and with indications of brown basally, the posterior tibiae black on the apical two-thirds. Pile short, black, mostly yellowish on the coxae.

Wings lightly infuscated, slightly darker in the costal and stigmal cells. Squamae dull reddish-yellow. Knob of halteres brown basally.

Abdomen black, with orange vittae and spots. First segment with the base and sides yellow. Second segment with a broad interrupted arcuate median orange fascia and with the sides reddish on the basal half. A linear median pale vitta extends from the base of the third segment to the tip of the fourth and is narrowly separated from a second vitta which is irregular in width and is usually interrupted on the posterior border of the third segment. This vitta is not continu-

ous, being broadened on the posterior third of the third and fourth segments, thence curving outward so that it does not meet the base of the continuing portion on the following segment. On each side of the third and fourth segments there is a broad elongate basal orange spot broadly separated from the lateral margins while on the fourth there is a posterior lateral orange spot that is triangular in shape. On the fifth segment all the vittae are broad, the median ones broadly united posteriorly, the outer stripes oblique and narrowly connected along the posterior border with the inner stripes. Pile black. Venter reddish. Genitalia large, shining black, but with some reddish areas basally.

FEMALE.—Front opaque, with an anteriorly broadening narrow vitta extending half way from the ocelli to the oral margin, metallic greenish with whitish sheen, the ocellar triangle opaque black; posterior femora sometimes with a broad black basal band. The second abdominal segment has a slender median reddish vitta while the markings are otherwise much paler, being mostly yellow. The yellow vittae on the third to fifth segments follow the same pattern as described for the third and fourth segments of the male. The sixth segment may have only a median pale vitta or there may be strong indications of two pairs of oblique reddish vittae as on the fifth segment of the male. The sternites are more or less broadly black on the sides.

TYPES.—Holotype, male, allotype, female, and two paratypes, male and female, Nova Teutonia, Brazil, November 19 and 24, 1939 (Fritz Plaumann).

This species is close to *livida* Schiner but the yellow vittae on the third and fourth abdominal segments are curved outward and therefore do not form a continuous stripe as they do in *livida*. The wings do not show the yellow color on the basal half and the male genitalia are about twice the size.

***Baccha livida* Schiner**

SCHINER, 1868, Novara Reise, p. 343.

This species is widely distributed in the tropics but the exact limits of its distribution are not known because other species have been confused with it. I have specimens from Panama, Colombia, Peru and Brazil. The size usually ranges from 8 to 11 mm., but one unusually large male from Brazil measures 15 mm.

***Baccha norina*, new species**

Face yellow; thorax ochraceous pollinose, with slender black vittae, the pile on the disc of the

mesonotum black; wings lightly infuscated. Length, 9 to 12 mm.

MALE.—Face, cheeks and frontal triangle yellowish, the frontal triangle opaque above the antennal prominence, with an opaque black spot above; lunula with a shining black spot in the middle. Vertical triangle opaque black, the vertex with brownish-yellow pollen. Occiput black, cinereous pollinose. Cheeks narrow, whitish pollinose posteriorly. Face strongly receding below the moderately large tubercle, the sides with thin white pollen. Antennae reddish, the third segment brownish on the upper apical half.

Thorax reddish yellow, the metanotum and a large spot below the squamae blue-black. Mesonotum blackish, thickly ochraceous pollinose with four slender black vittae, the sides broadly reddish yellow, black vittae bordered with yellow pollen, the median pair narrowly separated and replaced by a single vitta on the posterior third. Pile short, reddish yellow, black on the disc of the mesonotum and on the scutellum, the scutellar fringe sparse but long.

Legs reddish yellow; posterior femora with a broad preapical brown band, their tibiae blackish on about the median half, the apical third or less reddish; pile yellow, short, black on the posterior tibiae, posterior surface of the middle femora and on the apical half of the posterior femora.

Wings lightly infuscated, somewhat luteous on the basal third. Squamae reddish yellow. Knob of halteres mostly brown.

Abdomen blackish, with pale orange vittae and spots. First segment with the base and broad sides yellow. Second segment with a very broad interrupted orange fascia near the middle and with a slender median orange vitta on the apical half that is continued to the end of the abdomen; narrowly separated from the median vitta is a pair of narrow vittae extending from the base of the third segment to the tip of the abdomen, the stripes very narrowly interrupted at the sutures and curving inward on the fourth segment at the tip of which they are narrowly separated from the median vitta; third and fourth segments each with an elongate sub-lateral triangular pale orange stripe on each side extending to or almost to the middle of the segment and sometimes partly united to the sub-dorsal vittae. Fifth segment with five vittae, the outer two on each side broad, oblique and narrowly separated. Venter reddish, black laterally. Genitalia shining black. Pile black, the first segment with some long yellow hairs on the sides basally.

FEMALE.—Front strongly widening anteriorly, moderately wide above, in the middle with an anteriorly widening metallic stripe extending forward from the opaque black ocellar triangle to the anterior third of the front and distinctly covered with yellowish pollen. Scutellar fringe almost absent. The second abdominal segment is brownish red basally and apparently does not have a distinct median fascia nor the median vitta. Third to fifth segments apparently as

described for the third segment of the male, the sixth with three or five reddish vittae. The abdomen of the female is somewhat discolored so it is not possible to trace fully the color pattern.

TYPES.—Holotype, male, and paratype, male, Nova Teutonia, Brazil, October 29, 1939; allotype, female, Nova Teutonia, July 1, 1937 (Fritz Plaumann).

This species is most closely related to *notata* Loew but is readily distinguished by the presence of yellow pile on the sides of the mesonotum and pleura. The front of the female is shorter and wider. Differs from *livida* in having a considerably wider front and black-haired mesonotum.

Baccha notata Loew

LOEW, 1866, Berlin Ent. Zeitschr., X, p. 37.

B. notata is known from Cuba and Florida. My material is from Florida and is not in the best of condition but it is obvious that this species is quite distinct from the species described above. The wholly black pilose thorax and abdomen offers a ready means of recognizing *notata*.

Baccha calla, new species

Blackish, the face wholly yellowish; legs in part reddish; wings dark brown; male genitalia large. Length, 10 to 12 mm.

MALE.—Frontal triangle large, very broadly dull blackish on the whole length in the middle and with metallic-green reflections in some lights, the sides broadly dull yellowish. Vertical triangle opaque black. Occiput black, cinereous-yellow pollinose except on the upper fourth. Cheeks linear, brownish. Face reddish yellow, the sides broadly white pollinose; tubercle large, the face rather strongly receding below. Pile black, pale yellow on the occiput, a row of short black occipital cilia behind the upper third of the eyes between the orbits and the pale pile. Antennae reddish, the third segment obliquely black on the upper half, the arista shining black.

Thorax black, the mesonotum more or less strongly bronzed and with brown pollen and short black pile; pleura with cinereous pollen and yellow pile, the mesopleura usually broadly reddish yellow in ground color behind; notopleura more or less reddish and with some tawny pile. Scutellum bronzed brown to reddish bronze, the base and middle darker, the pile long, sparse; no ventral fringe.

Anterior four femora sometimes almost all reddish, always partly brown above and rarely mostly brownish, their tibiae and tarsi reddish, the anterior tarsi broadened and subciliate with black hair posterodorsally. Posterior femora and tibiae brown or blackish with the narrow

bases and apices dark reddish, their tarsi reddish. Pile black, the anterior femora and the coxae with pale pile basally.

Wings blackish brown; the alula wide. Squamae luteous. Knob of halteres mostly brown.

Abdomen brownish black, subopaque, the sides irregularly and broadly brownish red; first segment shining black, the genitalia large, rounded behind, thinly brown-pollinose. Venter brownish red. Pile black, the sides of the first segment with some tawny or bright yellowish hairs. The abdomen is long and with almost parallel sides, perhaps slightly broadened apically. The large genitalia strongly narrow the fifth sternite toward the right side of the insect.

FEMALE.—Front very narrow above, dull black, sometimes slightly bronzed on the anterior half, the anterior corners usually broadly yellow, the sides rather narrowly white pollinose on the anterior half. Femora reddish, with or without broad, brown preapical bands.

TYPES.—Holotype, male, allotype, female, and paratypes, five males and four females, Nova Teutonia, Brazil, June, September and October, 1939 (Fritz Plaumann), the holotype and allotype taken on October 28.

This species is very similar to *funebria* Macquart but the male is readily distinguished by the large genitalia. In the female the color of the front appears to be the only means of separating the two species.

***Baccha funebria* (Macquart)**

Ocyptamus funebria MACQUART, 1834, Hist. Nat. Dipt., I, p. 554.

It is quite possible that two species are confused under this name but more material is necessary before this question can be determined. In some specimens the front and middle tibiae and tarsi are wholly yellow pilose, in others the pile is all black. Occasional specimens seem to be intermediate. All have the front tarsi broadened and subciliate posterodorsally, but this is less obvious in the females. The material before me ranges from Mexico to Brazil.

***Baccha nora*, new species**

Blackish, the pleura mostly shining reddish yellow; abdomen with reddish markings. Length, 10 mm.

MALE.—Frontal triangle rather small, brownish yellow or dull orange, the lunula bordered with darker above or mostly brownish and with a shining black spot in the middle below, the pile

short and black. Vertical triangle black, with brownish pollen and black pile. Occiput black, cinereous pollinose, yellow pilose. Cheeks linear, yellow. Face sulphur-yellow, darker in the middle above the tubercle, the tubercle low but prominent, the face strongly receding below it; pile yellowish, very short and fine. Antennae orange, the arista brown on the apical half.

Thorax black, more or less bronzed, the sides and the pleura for the most part shining reddish-yellow, large spots on the mesopleura and pteropleura and a posterior band blackish; mesonotum with three stripes of brown pollen on the median half, the median stripe linear anteriorly. Pile short and sparse, black on the disc of the mesonotum, yellow on the sides and pleura. Scutellum shining reddish-yellow, with a few scattered short black hairs and about four longer marginals; no ventral fringe.

Femora brownish or reddish yellow, the posterior pair darker and with paler postmedian and apical bands; anterior four tibiae and tarsi reddish yellow, the posterior tibiae brown with broad basal and median reddish bands; the posterior tarsi brown, sometimes becoming reddish basally. Pile very short, black, yellow on the front tarsi and sometimes on the anterior legs and the middle tibiae and tarsi.

Wings strongly tinged with brown, the base paler; alula absent. Squamae grayish. Knob of halteres mostly brown.

Abdomen shining blackish; the anterior angles of the first segment broadly yellowish; lateral third of the second segment reddish on the basal four-fifths, of the third on the basal three-fourths, of the fourth on the basal two-thirds. Venter brown, yellowish or reddish on the basal two-thirds of the fourth sternite and on the broad apex of the third. Genitalia small, shining black. Pile very short, sparse, black; yellow on the sides of the first segment. The abdomen is very long and slender, widening apically.

TYPES.—Holotype, male, Nova Teutonia, Brazil, May 24, 1939; paratype, male, Nova Teutonia, September 19, 1937 (Fritz Plaumann).

This species is most nearly related to *provocans* Curran but the pollinose mesonotal stripes are very much longer, and the front of the female will probably be more extensively pale along the sides below. Moreover, the alula is slightly developed in *provocans*.

***Baccha lopesae*, new species**

Robust, rusty reddish, the mesonotum black with ochraceous vittae; wings with the costal border brown. Length, 16 mm.

MALE.—Front large, reddish yellow, with a large black triangular spot in the middle that is connected with the shining black spot on the lunula, the sides of the antennal prominence

brown. Vertical triangle black, thinly brown pollinose. Eyes touching for only a short distance. Occiput black, cinereous pollinose and wholly pale yellowish pilose. Cheeks narrow, yellow. Face yellow, the sides broadly whitish pollinose, in the middle with a narrow orange stripe; moderately receding below, the tubercle large. Pile black, yellow on the lower part of the face. Antennae reddish, the third segment broadly brownish above; the arista reddish brown; third segment more than twice as long as wide, tapering to the rounded apex.

Thorax reddish yellow; mesonotum shining black with the sides yellowish red, with three broad ochraceous pollinose vittae, the median one strongly narrowed and subobsolete for a short distance in front of the middle, the lateral ones not reaching the posterior border and broadly interrupted by whitish pollen at the suture; immediately behind the suture on the sides there is a brown triangle; scutellum with a broad, brownish transverse band across the middle; pectus somewhat darkened. Pile yellow, behind the suture with a broad incomplete band of black, the scutellum black-haired with the narrow base and ventral fringe yellow.

Legs yellowish, the posterior legs and apices of the anterior four femora rusty reddish. Pile yellowish, tawny and black on the posterior legs. Middle femora with pale tawny pile, some of the hairs on the apical half of the posterior surface black. Posterior femora with thick, long, tawny, suberect hair, on the lower surface with black or brown hair which spreads onto the posterior surface basally; posterior coxae and trochanters with thick black hair but on the coxae with some tawny hairs intermixed on the outer half; hair on posterior tibiae appressed.

Wings with luteous tinge, broadly brownish along the costa. Alula large, convex behind. Squamae yellowish, the upper lobe mostly brown. Halteres yellow with reddish knob.

Abdomen rusty reddish. First segment pale orange, bulbous laterally, separated from the second by a black line. Second segment basally with a pair of large, rectangular translucent yellow spots which are narrowly separated from the lateral margin and more widely separated from each other, the stripe separating them black on more than the basal half; on the second and third segments the posterior border is broadly yellowish except laterally, the pale color forming a gently arched band by uniting with transverse triangles on the bases of the following segments; apex of fourth segment with an incomplete paler band. Pile black, long on the first segment, tawny on more than the basal half of the second and mixed tawny and black on the basal third of the third segment. Venter rusty reddish with yellowish incisions, the basal two-thirds of the second segment translucent yellowish. Genitalia of medium size, toward the left side, when viewed from above, with a tuft of black hair.

HOLOTYPE.—Male, Rio de Janeiro,

Tejuca, August 29, 1938 (Freitas E. Lopes), received from Dr. C. L. Fluke.

A very robust species, the abdomen with almost parallel sides.

Baccha grata, new species

Blackish and pale orange; abdomen with yellowish spots and bands. Length, 11 mm.

FEMALE.—Front dull orange, moderately wide above, with a narrow median vitta that expands just above the lunula, the upper sixth black and with ochraceous pollen; a large round shining black spot on the lunula, the pile short and black. Occiput black, yellowish-cinereous pollinose, the pile reddish yellow. Cheeks narrow, yellow. Face pale orange, with white pollen on the lateral third, the pile yellow; tubercle large but not prominent, the face strongly receding below it. Antennae reddish, the third segment missing.

Thorax pale orange, the mesonotum blackish in ground color except on the broad sides, thickly cinereous-yellow pollinose, with indications of four broad dark vittae, the pile very short and black except on the narrow lateral margins; metanotum, pectus and a band extending from the lower border of the metapleura to the middle coxae aeneous, the pile reddish yellow. Scutellum pale brownish, the base and posterior border narrowly yellowish.

Legs reddish yellow; posterior femora with a broad, pale brown preapical band, their tibiae black with the base narrowly reddish. Pile yellow, black on the apical half of the posterior surface of the middle femora and on the posterior tibiae and tarsi.

Wings hyaline, the costal and subcostal cells pale brownish; alula large. Squamae yellowish.

First and second abdominal segments pale orange, the first with a broad incomplete brown posterior fascia, the second with the apical fourth black, the sides of the band brown and with a broad brown fascia before the middle. Third segment with the broad base, produced laterally to the posterior third, pale orange, leaving a bell-shaped black area which contains a pair of large oblique oval yellowish spots; fourth and fifth segments very similar to the third but the median yellow spots are united with the basal pale fascia and the latter is less produced posteriorly at the sides; on the fifth segment the yellow does not reach the lateral margin but is produced backward as an acute triangle. Pile short black, the sides of the second segment with a few reddish-yellow hairs.

TYPE.—Holotype, female, Chapada, Brazil (Williston Collection).

The abdomen of the single available specimen has been partly destroyed by pests but the species is so distinct that its description is justified. The abdomen is moderately broad but of the typical clavate

shape found in *crocea* Austen and other related species.

Baccha tiara, new species

Face yellow; thorax yellowish, with ferruginous mesonotum; abdomen black with arched yellowish fascia. Length, 8 to 9 mm.

FEMALE.—Front black, reddish yellow below to the upper edge of the antennal swelling except in the middle; median two-thirds with thick grayish pollen which is more or less divided by a broad brown stripe of varying width beneath which the ground color is bronzed; in front of the ocelli there is usually a brilliant violaceous reflection while behind the ocelli there is thin brownish pollen; front narrow, not strongly widening anteriorly. Occiput black, cinereous pollinose. Cheeks narrow, reddish yellow. Face reddish yellow, the sides broadly paler and white pollinose, only a little receding, the tubercle of medium size. Pile yellow, that on the front and the upper occipital cilia black. Antennae reddish, the third segment broadly black above.

Thorax rusty reddish-yellow, the anterior half of the pleura yellow and with yellow pollen; mesonotum shining ferruginous, the sides broadly yellow pollinose in front, the disc with trace of two pale pollinose vittae anteriorly. Pile black, yellow on the pleura. Scutellum pale ferruginous with sparse rather long black hairs.

Anterior four legs reddish or reddish yellow, pale pilose, the middle femora somewhat darker, more brownish red and with black pile posteriorly. Posterior legs reddish brown, with black pile.

Wings tinged with smoky brown, somewhat darker apically, the costal and subcostal cells brownish. Alula entirely absent. Knob of halteres brown.

Abdomen black, with reddish or pale orange markings. First segment brownish red to brown, the sides narrowly paler; second segment with a broad median reddish fascia that is narrowed toward the middle posteriorly, bordered in front by a narrow opaque black band and behind by a broader opaque band that is transverse posteriorly; area in front of the anterior opaque band sometimes reddish brown. Third segment with a strongly arched reddish fascia lying mostly before the middle, separated from the lateral margins and narrowly interrupted in the middle, narrowly bordered in front and broadly bordered behind with opaque black, the posterior opaque fascia deeply emarginate in the middle, the posterior border sometimes broadly reddish except laterally; fourth segment with markings as on the third, the basal and apical shining fasciae sometimes more or less reddish; fifth segment black, with a pair of very broad reddish stripes that are sometimes produced outwardly at the base of the segment and at the posterior third. Venter black basally, reddish yellow apically. Pile short and black; some brassy-yellow hairs on the sides of the first segment.

Types.—Holotype, female, and paratypes, five females, Nova Teutonia, Brazil, August and September, 1937 (Fritz Plaumann), the holotype taken on September 14. The specimens were received from Dr. C. L. Fluke.

Baccha micropyga, new species

Black and yellow, the wings lightly infuscated; abdomen long and slender. Length, 12 mm.

MALE.—Face, cheeks and frontal triangle sulphur yellow, the cheeks linear, the frontal triangle with a diffuse narrow median orange vitta and with black pile, the antennal tubercle not developed; a small black spot in the middle of the lunula. Vertical triangle black, thinly brown pollinose, black pilose. Occiput black, with ochre-yellow pollen and bright yellow pile. Face narrow, moderately receding below, the tubercle low, rather small. Antennae orange, the third segment somewhat brown above; arista black except basally.

Thorax yellow, the disc of the mesonotum shining bronze-black, the yellow carried broadly inward inside the humeri; with a pair of broadly separated brownish-yellow pollinose vittae on the anterior half; pile yellowish, black on the disc of the mesonotum and on the scutellum. Scutellum pale brownish with the base and sides pale orange; no ventral fringe.

Legs yellowish, the apical four tarsal segments more orange; a broad preapical band on the posterior femora and the basal segment of the posterior tarsi brown or blackish. Pile yellow, black on the posterior surface of the middle femora, on the upper surface of the apical two-thirds of the posterior tibiae and on the first segment of their tarsi.

Wings strongly tinged with dark brown; alula linear. Squamae yellowish. Knob of halteres brown.

First abdominal segment yellow laterally and basally, brown posteriorly. Second segment brown with a very broad narrowly interrupted yellowish band just behind the middle. Third segment yellow with a linear median stripe and the apical fifth dull blackish, the sides with brownish stain on the basal half. Fourth segment reddish yellow with a narrow median vitta and a broad apical fascia dull blackish, the black band broadly produced forward laterally and with a triangular projection extending forward from the inner end of the produced portion. Fifth segment with a pair of broadly separated yellowish vittae on the basal three-fourths and sublateral subtriangular yellowish vittae on the basal half. Venter yellowish with the apex of the fourth sternite broadly brown. Pile black, short, long and yellow on the sides of the second segment. Genitalia small.

TYPE.—Holotype, male, Nova Teutonia, Brazil, October 19, 1939 (Fritz Plaumann).

Baccha debasa, new species

Blackish and reddish yellow, the face wholly yellow; posterior legs annulate. Length, 9 mm.

FEMALE.—Front narrow above, rather strongly widening on the anterior third; dull reddish-yellow, the upper third black and thinly brown pollinose, a median black vitta extending half way from the ocelli to the antennae in front of which the middle of the front is shining pale orange; a round shining black spot on the lunula; pile black. Occiput black, ochraceous pollinose and bright yellow pilose. Cheeks linear, yellow. Face yellow, yellow pilose, rather strongly receding below the low broad tubercle. Antennae reddish with the apex of the third segment broadly black above, the arista black except basally.

Mesonotum shining bronze-black, with a pair of broadly separated grayish and brownish pollinose vittae on the anterior half and a linear brownish median vitta in front, the sides broadly yellow. Pleura yellow except for a broad metallic brownish stripe extending from the middle coxae to the black metanotum, the pectus pale. Pile black on the disc of the mesonotum, pale on the sides and on the pleura. Scutellum dull reddish yellow, with sparse black hairs.

Legs reddish yellow, the posterior femora blackish with narrow yellowish base and apex and very broad median yellowish band, the first segment of their tarsi brownish on the basal half; pile short, yellowish, black on the posterior surface of the middle femora, on the posterior femora and tibiae and on the first segment of their tarsi except apically.

Wings tinged with luteous, the costa narrowly darker; alula narrow. Squamae and halteres brown.

Abdomen blackish, with yellow markings. First segment with the sides and broad lateral base yellow. Second segment with a pair of rather small oblique yellow triangles behind the middle and with the sides obscurely reddish on the basal half or more. Third segment with an oblique yellowish spot on each side at the middle, its inner ends produced angularly forward, the spots very widely separated from each other. Fourth segment with a pair of broad, widely separated yellowish vittae on the anterior three-fourths that are united with an oblique spot on more than their anterior half, the lateral spots narrowly separated from the lateral margin. Fifth segment with incomplete broad median vittae and with elongate subrectangular spots on the base of the segment well separated from the median stripes; the sixth segment with a pair of small reddish spots basally. Pile wholly black.

TYPE.—Holotype, female, Nova Teutonia, Brazil, September 6, 1937 (Fritz Plaumann).

The abdomen is moderately slender and clavate.

Baccha verona, new species

Black and yellowish, the face wholly yellow; posterior femora reddish on more than the basal half. Length, 10.5 mm.

FEMALE.—Front narrow, moderately widening anteriorly, dull yellowish, the upper fourth black, a slender rusty reddish stripe extending forward from the ocelli to the anterior third of the front, the middle of the front shining pale orange below; a round shining black spot on the lunula; black portion of the front with brown pollen; pile black. Occiput black, thickly ochraceous pollinose, the pile brassy yellow, the upper occipital cilia black. Cheeks yellow, linear. Face sulphur yellow, moderately receding below, the tubercle low but broad; pile yellow except on the upper angles. Antennae reddish yellow, the third segment brown above; arista mostly black.

Thorax black, the anterior half of the pleura and the broad sides of the mesonotum yellow. Mesonotum somewhat bronzed, with a pair of broad, widely separated cinereous-yellow pollinose vittae extending from the anterior border to the posterior fourth and a linear brownish pollinose vitta posteriorly. Pile black on the disc of the mesonotum, yellow on the sides and pleura. Scutellum brownish yellow, paler basally, with scattered black hairs.

Legs reddish yellow; posterior femora reddish with a very broad brown preapical band; posterior tibiae with the apical third blackish and very broad sub-basal band of brown, their tarsi with the basal third brownish. Pile yellow, black on the posterior femora and tibiae and on the posterior surface of the middle femora; at most a few brown hairs on the dorsal surface of the first segment of the posterior tarsi near the base.

Wings yellowish brown, the subcostal cell darker; alula very narrow. Squamae with brown border. Halteres brownish red.

First abdominal segment yellow with the incomplete apex broadly brown. Second segment brown basally, black apically, behind the middle with a broad, narrowly interrupted strongly arched reddish-yellow fascia. Third segment with the apical third and a broad median stripe black, the black vitta broadly united basally with a brown basal triangle that extends laterally to the middle of the segment, thus leaving a pair of large subtriangular reddish-yellow spots. Fourth segment with a pair of very broad, reddish-yellow vittae that extend almost the whole length of the segment and are united on their anterior half with broad oblique spots that extend almost to the lateral margin behind the middle of the segment. Fifth segment with a pair of broad pale orange vittae extending from base to apex and a pair of shorter sublateral orange vittae. Sixth segment with a pair of narrower complete dorsal vittae. Pile short, wholly black. Venter reddish yellow, the apical sternites with blackish lateral triangles posteriorly.

TYPE.—Holotype, female, Vista Nieve, Colombia, December 12, 1922 (H. L. Viereck).

This species is close to *debas*, and, like it, lacks the collar of hairs on the front of the mesonotum. It may be at once distinguished by the black pectus and more extensively black pleura, the much stronger pollinose vittae on the mesonotum and the more extensive pale markings on the abdomen. The frontal pile is longer and the antennal prominence scarcely differentiated.

***Baccha zita*, new species**

Black, with reddish markings, the face pale orange; wings brownish. Length, 11.5 to 13 mm.

MALE.—Frontal triangle small, pale orange with a darker, usually brownish, median area or brownish with the sides pale orange, the upper border of the lunula orange or ferruginous; a shiny black spot on the lunula; pile black. Vertical triangle black, black pilose and brown pollinose. Occiput black, thickly cinereous pollinose, the pile pale yellow, the upper occipital cilia black. Face orange to pale orange, becoming paler laterally, the pile yellow; face strongly receding below the small low tubercle. Cheeks narrow, reddish yellow. Antennae reddish, the third segment brown on the apical half or more; arista black with reddish-brown base.

Mesonotum bronze-black with the sides broadly yellow, the disc with brown pollen and with two broad, widely separated brownish-yellow vittae on the anterior half between which there is a broad black geminate vitta visible in some views, the shining black sides of the disc sometimes with violaceous reflections, the pile black. Pleura yellow with the posterior border broadly greenish black to brown, the pectus and metanotum blackish; pile yellow. Scutellum brownish yellow, with very short sparse black hairs.

Legs reddish yellow, the middle femora with brown tinge, the posterior femora brownish with reddish apex; posterior tibiae black with the basal third reddish; basal segment of the posterior tarsi black with the apex reddish; pile yellowish, black on the posterior femora, tibiae and first tarsal segment and on the posterior surface of the middle femora.

Wings brown, paler in immature specimens; alula narrow. Squamae grayish brown. Knob of halteres black.

Abdomen subopaque blackish. First segment with the anterior angles yellow. Second segment with a subtriangular yellowish spot on each side at the basal third and with the sides more or less reddish or yellowish on the basal half or more. Third segment with a broadly interrupted yellow fascia just behind the middle. Fourth segment with an interrupted broad

median yellow fascia at the middle, the band triangularly narrowed toward the inner ends so that the inner posterior end forms a short vitta. Venter brown, the fourth sternite with a broad median yellow or reddish band. Genitalia small. Pile black, a few yellow hairs on the sides of the first segment.

FEMALE.—Front narrow, the upper two-fifths black with brownish-gray or grayish-brown pollen, the anterior portion reddish yellow with a broad black median vitta that is replaced above the lunula by orange, the pile wholly black; ocelli placed far forward, the lateral ones almost touching the eyes. Middle femora and tibiae with almost all black hair. First and second abdominal segments as in the male except that the yellow spots on the second are smaller and more reddish. Third segment with a small reddish spot near each side at the middle and usually with a trace of a reddish vitta inside each spot. Fourth segment with four yellowish vittae, the median pair broadly separated and reaching from the base to beyond the middle of the segment, the outer ones curved outward posteriorly and ending at the middle of the segment inside the lateral margins. Fifth segment with four broad reddish or yellowish vittae, the median pair reaching almost to the apex of the segment, the outer ones to the middle. Sixth segment with or without a pair of reddish vittae. The pale abdominal markings vary considerably in the female. The vittae may be reddish or shortened and narrowed or almost obsolete, but are usually distinct.

TYPES.—Holotype, male, allotype, female, and paratypes, four males and six females, Nova Teutonia, Brazil, May 24, 25, 30, June 5, 6, 7 and October 25 and 31, 1939 (Fritz Plaumann), the holotype and allotype, May 25.

The abdomen is long and slender but conspicuously clavate apically and there is no collar on the front of the mesonotum. There is an additional female collected on December 17, 1936, that I believe belongs here despite differences in color. The posterior femora are dull reddish with a very broad, preapical brown fascia; the second abdominal segment is dull reddish on the basal third and lacks yellow spots laterally; the third and fourth abdominal segments are broadly obscure reddish on the sides of the basal half but there are indications on the fourth segment of the sublateral curved reddish vitta. The apical segments are wholly shining black. This color difference of the abdomen is, I think, mostly due to discolorations in drying.

Baccha zenillia, new species

Black and yellow, the abdomen with reddish markings; posterior femora annulate. Length, 8.5 mm.

FEMALE.—Front narrow, strongly widening on the anterior fourth, yellow on the anterior fourth, thence to the ocelli translucent yellowish gray with a broad, median dull black vitta, the upper part black with thick yellowish-gray pollen; a black spot on the lunula above which the color is orange; pile black, fairly long in front; no antennal prominence. Occiput black, cinereous pollinose, the pile yellow. Cheeks narrow, yellow. Face yellow, moderately receding below the low rounded tubercle, the pile yellow. Antennae reddish, the third segment brown on the apical half, the arista black.

Thorax shining black, the mesonotum with the sides broadly yellow and with a pair of very broad, cinereous-yellow vittae extending from the anterior border to the middle. Pleura yellow except on the broad posterior border. Pile black, yellow on the sides of the mesonotum and on the pleura. Scutellum pale brownish, the lower border darker, the hair sparse.

Legs reddish yellow; middle femora reddish brown; posterior femora blackish with a very broad median and narrower apical band of reddish; posterior tibiae black with about the basal fourth reddish; posterior tarsi brownish red, becoming darker apically. Pile yellow, black on the posterior legs and on the posterior surface of the middle femora.

Wings cinereous hyaline, a little darkened apically, the stigma long and brown. Squamae with brown border. Knob of halteres blackish.

First abdominal segment with the sides broadly yellow. Second segment with a broad interrupted strongly arched reddish fascia behind the middle, the sides narrowly yellowish in front of the fascia. Third segment with a broader fascia at the middle, the sides of the segment more reddish in front of the band. Fourth segment with a pair of reddish, elongate oval spots extending from near the base to beyond the middle and a pair of broader, anteriorly tapering spots on each side. Fifth segment with four very broad reddish vittae on the basal half, all broadly separated from each other, the sixth segment wholly black. Pile black, yellow on the sides of the first segment.

TYPE.—Holotype, female, Nova Teutonia, Brazil, August 1, 1939 (Fritz Plau-mann).

The abdomen is long and slender, rather strongly expanded apically; the mesonotum without collar.

Baccha mara, new species

Black and yellow, the abdomen with reddish markings; wings smoky on more than the apical half. Length, 14 mm.

MALE.—Frontal triangle lemon-yellow,

brownish in the middle above, the orbits yellowish pollinose; lunula orange, with a shining black spot in the middle below. Antennal prominence strongly developed, occupying most of the front; pile black. Vertical triangle small, slightly shining black, black pilose. Occiput black, cinereous pollinose; the pile rather silvery, the upper orbital cilia black. Cheeks yellowish, linear. Face yellow, strongly receding below the rather small prominent tubercle, the sides with white pollen, the pile yellow. Antennae reddish, the third segment slightly darkened above; arista shining black.

Thorax black, the sides of the mesonotum broadly yellow except immediately above the base of the wings where the yellow stripe is separated from the lateral margin. Mesonotum with three brown pollinose vittae that are broadly united in front of the scutellum. Pleura yellow with the broad posterior border brownish. Pile black, yellow on the pleura. Scutellum yellowish basally, the apical half or more pale brownish; the hair short, sparse, black; no ventral fringe.

Legs reddish yellow; posterior femora with a very broad preapical brown band; posterior tibiae reddish with a narrow black band before the middle, the posterior tarsi blackish with the intermediate segments brownish red. Pile black, very short.

Wings brown, with the basal third paler; alula absent except for a narrow strip apically. Squamae luteous. Knob of halteres brown.

First abdominal segment shining black, the base yellow, broadly so laterally. Second segment with a broadly interrupted, basal yellow fascia and a broadly interrupted reddish fascia beyond the middle, the sides reddish before the reddish fascia; third segment similar but the sides very obscurely reddish. Fourth segment with a very large elongate oval reddish or yellowish spot on each side extending from the base for almost one-third the length of the segment. Genitalia small, obtusely conical from dorsal view. Pile black, yellow on the first segment.

FEMALE.—Front greenish black above the antennal swelling, with numerous transverse ridges, grayish-yellow pollinose except in the middle, the orbits with white pollen; vertex brown pollinose. Mesonotal vittae complete, separated posteriorly by brown pollen. Pectus brownish yellow. Intermediate tarsal segments pale reddish. Wings only lightly tinged with brown, the subcostal cell brown. Sides of the second abdominal segment reddish yellow basally. Apical sternites yellow.

TYPES.—Holotype, male, and allotype, female, Nova Teutonia, Brazil, October 29, 1939, and December 10, 1937 (Fritz Plau-mann).

The abdomen is very long and slender, and there is no mesonotal collar. The presence of a short portion of the alula

apically places this species between those having a slender alula and those lacking it. The color of the wing of the female is probably due to the fact that the specimen is not fully colored.

Baccha sativa, new species

Black, yellow and reddish, the alula absent. Length, 10 mm.

MALE.—Frontal triangle small, translucent yellowish, the sides paler, the antennal prominence weakly developed; a small black spot on the lunula; pile black. Vertical triangle black, with brown pollen and black pile. Occiput black, densely cinereous-yellow pollinose and pale yellow pilose. Cheeks yellow, very narrow. Face yellow, strongly receding below the small prominent tubercle, the pile yellow below, cinereous on the upper half. Antennae orange, the arista black with reddish base.

Sides of the mesonotum broadly yellow, the disc bronzed, with a pair of very wide cinereous-yellow pollinose vittae that reach to the posterior fifth and are separated by a pair of narrowly separated black vittae that diverge posteriorly, the posterior fourth of the mesonotum with brownish pollen on the median third. Pleura yellow except for a broad, oblique posterior brown band, the pectus reddish yellow. Pile black, yellow on the sides and pleura. Scutellum yellowish with a few scattered black hairs.

Legs reddish yellow; posterior femora with a rather narrow brown band at the apical third, their tibiae with a narrow brownish band at the basal third and with the apical third more reddish, the posterior tarsi reddish basally, becoming brown apically. Pile mostly inconspicuous, black on the posterior leg; and on the posterior surface of the middle femora.

Wings strongly tinged with brown except on the basal fourth, the alula absent. Squamae yellowish brown. Knob of halteres brown.

First abdominal segment shining brown with the sides yellow. Second segment shining rusty reddish with the apical fifth black. Third segment with the apical third blackish, the sides reddish on the basal two-thirds with about the median third brown. Fourth segment with the sides reddish on the basal two-fifths and about the median fourth brown, the apex and following segments black. Genitalia small. Pile black, the second segment with some yellow hairs laterally.

TYPE.—Holotype, male, Nova Teutonia, Brazil, September 19, 1937 (Fritz Plaumann), received from Dr. C. L. Fluke.

The abdomen is long and slender and there is no mesonotal collar.

Baccha fluikiella, new species

Black, with yellow markings; face black with very weak tubercle; posterior legs annulate. Length, 5 to 6 mm.

MALE.—Head black, the face and occiput thickly cinereous-white pollinose and whitish pilose. Frontal triangle large, metallic greenish-black to bronzed, the lunula large and irregularly roughened, the upper section with a roughened area containing a small tubercle, the upper angle bordered with opaque black, the lower angles with whitish pollen; pile black. Vertical triangle small, greenish black, black pilose, thinly brown pollinose behind the ocelli. Upper occipital cilia black, the upper fourth of the occiput not pollinose. Cheeks linear. Face receding below the very weak tubercle. Antennae brown, the third segment broadly reddish below on the basal half or more.

Thorax shining greenish-black, the mesopleura broadly yellow posteriorly. Pile cinereous but there is a more or less complete broad band of brown pile immediately behind the suture. Scutellum wholly blackish, without ventral fringe.

Legs yellowish; posterior femora with a very broad preapical brown band, their tibiae with the median third or more brown; first and last segments of posterior tarsi brown, the intermediate segments reddish; basal segment of anterior tarsi brown above. Pile blackish, yellow on the front legs.

Wings cinereous hyaline or with slight brown tinge; alula wide. Squamae and halteres yellow.

Abdomen black, the base, broad apices of the segments and the whole of the fifth shining; second segment with a broad, interrupted yellowish fascia, the spots forming it concave posteriorly. Third and fourth segments each with a large, oblique lateral spot that may reach the base of the segment, and with a pair of narrow, widely separated reddish-yellow vittae on the basal two-thirds that may be partly connected with the yellow spots; fifth segment with a pair of yellow vittae and sublateral reddish spots on the basal half. Pile black, the sides of the first segment with some fine white hair. Genitalia small.

FEMALE.—Facial tubercle even less developed, though still visible; front narrow, metallic greenish-black with numerous transverse ridges, the orbits white pollinose, the pile whitish. Abdomen normally marked very much as in the male but the yellow spots on the sides of the intermediate segments are more transverse and less inclined to unite with the median vittae. Pile very short and whitish.

TYPES.—Holotype, male, allotype, female, and paratypes, two males and six females, Nova Teutonia, Brazil, 1937 (Fritz Plaumann), the holotype, July 18, the allotype, May 7; mostly received from Dr. C. L. Fluke.

The second abdominal segment is strongly constricted but broadens apically and the mesonotal collar is distinct. The

species has a superficial resemblance to the species of *Neoscia* Williston.

***Baccha idana*, new species**

Abdomen with parallel sides; wings luteous on basal third; face with pair of widely separated brown vittae. Length, 11 mm.

FEMALE.—Front dull orange, the upper fourth black, with a broad, anteriorly expanded black vitta extending to the anterior third; vertex ochraceous pollinose, the ocellar triangle opaque black; antennal swelling large, shining, with a large black spot on the middle of the lunula. Occiput black, cinereous-yellow pollinose. Cheeks narrow, yellowish. Face reddish, the sides broadly pale pollinose, on the lateral third with a brownish stripe extending from the upper border to below the middle; tubercle moderately large and prominent. Pile black, bright orange on the occiput. Antennae dull orange, the arista black on the apical two-thirds.

Thorax reddish yellow, the mesonotum black with the sides broadly reddish-yellow, rather thickly yellowish-brown pollinose, with four narrow black vittae that are bordered with gray, the median gray stripe entire, the median black vittae extending to behind the middle and divergent posteriorly. Pile reddish yellow, black on the disc of the mesonotum except in front and behind, the collar well developed. Scutellum dull orange, with black pile, the ventral fringe strong.

Legs pale orange, the posterior tibiae black, with reddish base and tip, posterior femora with a broad diffuse blackish preapical band; pile reddish yellow, black on the posterior surface of the middle femora and on the posterior legs with the exception of the tarsi.

Wings yellowish basally, with a rather narrow transverse brownish band just beyond the basal third, extending over the crossveins and the apex of the discal cell, the stigma brownish yellow, the wing hyaline apically. Alula very broad. Squamae and halteres orange.

First abdominal segment reddish brown with the narrow base and sides orange. Second segment reddish brown, darker apically, on each side with a narrow orange fascia extending from near the apical corner to the middle of the segment, the anterior inner ends broadly separated from each other. Third to fifth segments with five yellow vittae, the median one linear, the sublateral more or less interrupted before the sutures; sixth segment stained. The abdomen is long with almost parallel sides, the second segment at most slightly longer than wide.

HOLOTYPE.—Female, Rio Putamayo, Peru.

***Baccha bivittata*, new species**

A large black and reddish-yellow species, the wings infuscated, more or less yellowish brown on the basal half in front, the abdomen strongly clavate. Length, 13 to 16 mm.

MALE.—Frontal triangle large, dull orange, with a large, opaque black triangle above narrowly connected with a transverse blackish spot on the upper surface of the moderately strong antennal prominence, which is, in turn, connected with the large shining black spot on the lunula. Vertical triangle opaque black, with a brownish-yellow pollinose spot on each side at the vertex. Occiput black, with brownish-yellow pollen that becomes brown toward the vertex. Cheeks moderately narrow, yellow. Face yellow laterally, the orbits narrowly white pollinose, the middle pale orange, the two colors separated by a brown or brownish-red stripe that does not reach the oral margin; face moderately receding below, the tubercle moderately large and prominent. Pile black, brassy yellow on the occiput. Antennae reddish, the third segment brown on the upper half; arista black with the basal third reddish.

Thorax black, the broad sides of the mesonotum and the pleura, with the exception of a broad posterior band and the anterior half of the mesopleura yellowish, the yellow sides of the mesonotum sometimes interrupted in front of the posterior calli. Mesonotum mostly opaque, brownish pollinose behind, with three tawny pollinose vittae that are bordered with deep black for most of their length; the median opaque black vittae are united and divergent posteriorly thus forming paired black stripes that are deeper in color on their margin; outside the lateral pale vittae the narrow, deep black border is also united with a deeper black stripe which separates the subopaque lateral black stripe from the dull black area lying next to the black bordered pale vittae. Pile black, narrowly reddish yellow on the sides of the mesonotum and on the pleura, the collar reddish yellow. Scutellum translucent yellowish-brown, with the base and free border paler, the pile black.

Anterior four femora pale brownish, with the ventral half yellow on the basal two-thirds, the apex reddish yellow; posterior femora blackish with the apex reddish, their tibiae black with the narrow base and broad apex yellowish; anterior four tibiae yellow, the tarsi all reddish yellow. Pile black, yellow on the anterior four tibiae and all the tarsi and on the broad apex of the posterior tibiae.

Wings infuscated, usually broadly yellowish-brown on the basal half in front; alula broad, convex behind. Squamae brown, with brassy-yellow fringe. Knob of halteres reddish, with black base.

First abdominal segment blackish with the broad sides and base yellow. Second segment brown basally, black apically, with a pair of large, oblique yellow spots on the posterior half. Third and fourth segments dull black with a pair of very broadly separated yellow vittae that do not reach the posterior border and are broadly connected basally with a sublateral yellow triangle that extends at least to the basal fourth of the segment; fifth segment with moderately

broad dorsal vittae and narrow, oblique sublateral vittae. Genitalia black, reddish basally on under surface. Pile wholly black.

FEMALE.—Median half of the front metallic greenish-black but overlaid with pollen that appears partly white in some views, the dark stripe transversely narrowed below and narrowly connected with the dark color on the lunula, the sides dull orange. The sublateral triangles on the third and fourth abdominal segments are longer, the sublateral vittae on the fifth segment abbreviated behind, the sixth segment wholly shining black.

TYPES.—Holotype, male, allotype, female, and paratype, male, Nova Teutonia, Brazil, October 30, 1939, and September 19, 1939 (Fritz Plaumann).

While closely related to *capitata* Loew, this species is readily distinguished by the bivittate face.

Baccha laticauda, new species

Face mostly black; costal border broadly brown; abdomen cylindrical, strongly broadened. Length, 10.5 mm.

MALE.—Head black, the facial and frontal orbits, except above, narrowly yellow. Frontal triangle moderately large, the anterior median half roughened, the antennal prominence not well differentiated. Vertical triangle with brown pollen. Occiput white pollinose and silvery-white pilose. Cheeks narrow, mostly shining. Face with white pollen which is thin on the median half, moderately receding below the prominent tubercle. Pile black except on the occiput.

Thorax black, the humeri reddish; scutellum sulphur yellow. Mesonotum somewhat bronzed, with brown pollen and very short yellowish pile; pleura with whitish pollen and pile; scutellum with thin whitish pollen and inconspicuous yellow pile.

Legs blackish, the basal third of the tibiae yellow, the apices of the femora narrowly reddish; pile black, yellow on the pale portions.

Wings slightly tinged with brown, brown in front of the third vein on the apical half and more broadly so basally. Alula broad. Squamae white, with brown border. Halteres dull orange with the base of the knob brownish.

Abdomen bluish black, with opaque bronze-black areas; sides of the second segment reddish on more than the basal half, the third broadly reddish laterally to beyond the middle; the reddish color is obscurely produced in the form of large lateral triangles on the basal half of the segments: the second, third and fourth segments are triangularly opaque on the disc, this color very broadly separated from the posterior border of the segments and scarcely reaching the base, on the fourth segment excised in the middle posteriorly and weakly divided by less deep coloration. Pile short, appressed, black, white

on the first segment and on the lateral reddish or metallic triangles on the bases of the second to fourth segments. Venter black, the third sternite brownish. Genitalia large, with brownish-yellow pollen except on the right side above.

HOLOTYPE.—Male, São Paulo, Brazil (A. A. Barbiellini).

The cylindrical abdomen, with the strongly expanded fourth and fifth segments, gives this species the appearance of *Salpingogaster*. I know of no species that closely resembles it.

Baccha lativentris, new species

Black, the costal border blackish; abdomen wide, wholly black. Length, about 8 mm.

FEMALE.—Head greenish black, cinereous pollinose, the facial tubercle, cheeks, lunula and upper fourth of the front shining. Front wide, the shining black vertex broader than long; in the middle with a very large opaque blackish spot in the shape of a half oval, its transverse edge at the anterior third of the front. Pile whitish, black on the vertex and on the sides of the weak antennal tubercle. Face gently receding below, the tubercle large and prominent. Antennae reddish below, blackish above, the arista brownish red.

Thorax with cinereous pollen; mesonotum with a pair of broadly separated, posteriorly diverging narrow black vittae and with poorly defined shining sublateral vittae and an incomplete median dark line, the posterior fourth with brown pollen between the dark vittae, the inner half of the sutures with an opaque brown stripe behind which there is an obscure subopaque brownish stripe. Pile whitish, very short on the mesonotum and scutellum.

Legs black, the broad apices of the femora, basal third of the posterior tibiae, the tarsi and the anterior four tibiae reddish, the apical three segments of the posterior tarsi blackish. Pile whitish, black on the posterior femora and tibiae.

Wings with luteous tinge, blackish in front of the first vein and in front of the third vein on the basal half, the apex with a large, oblique blackish spot that is narrowly connected with the costal stripe at the apex of the first vein. Alula wide. Squamae whitish yellow. Knob of halteres sulphur-yellow.

Abdomen shining black; second segment with a subtriangular opaque black, slightly excised vitta lying mostly beyond the middle and broadly separated from the lateral margins; third and fourth segments with pair of broad, elongate, opaque brownish spots occupying most of the length of the segments, the fifth opaque brownish with the sides and apex broadly shining, the sixth wholly shining. The pile is whitish and except on the base and sides consists of sparse, decumbent, slightly squamose hairs. The abdomen is moderately broadened from the

base to the apex of the second segment, the third gently widening apically, the fourth with parallel sides. The brown markings are somewhat bronzed.

HOLOTYPE.—Female, Nova Teutonia, Brazil, October 14, 1937 (Fritz Plaumann).

Because of the broad abdomen this species resembles some of the elongate species of *Mesogramma* but the head is typical of *Baccha*.

***Baccha aster*, new species**

A long, slender, blackish species, the wings lightly to moderately infuscated; alula almost wholly absent. Length, 12 to 14 mm.

MALE.—Frontal triangle large, the antennal prominence not developed, dull black, the lunula shining and with a reddish spot above each antenna, the pollen brownish anteriorly, the sides broadly yellow. Vertical triangle black, very thinly brown pollinose. Occiput black, thickly cinereous pollinose except above, white pilose below, yellowish near the middle, black above. Cheeks brown, very narrow. Face yellow, with a median black vitta that is broad above, tapers below and does not reach the oral margin, the sides white pollinose and pilose; moderately receding below, the tubercle large. Antennae brown, reddish below, the arista shining black. Frontal pile black.

Thorax black, the mesonotum bronzed and thinly brown pollinose; posterior half of the mesopleura and a large spot on the sternopleura yellow. Pile black, tawny on the sides in front of the wings, whitish on the pleura, which are thinly cinereous pollinose; the short collar on the front of the mesonotum is cinereous. Scutellum wholly black, the ventral fringe yellowish.

Anterior four femora reddish yellow with the preapical third brown, the broad base of the middle pair usually stained with brown; anterior four tibiae brown with about the basal third yellowish, the apex narrowly reddish, their tarsi reddish with the apical one or two segments and the dorsal surface of the first segment pale brownish; pile yellow except on the posterior surface of the middle femora. Posterior legs black, the base and apex of the femora, base of the tibiae, intermediate three tarsal segments and the tip of the first reddish, the apical segment brown to black, the pile black but mostly yellow on the pale tarsal segments.

Wings usually strongly infuscated, rarely only lightly so; alula visible only at the apex. Squamae pale yellowish. Knob of halteres bright yellow.

Abdomen dull black, the sides and broad apices of the segments shining. First segment shining with the sides narrowly yellow. Second segment with an elongate oval yellow spot on each side behind the middle and with a transverse yellow triangle on each side of the apex; third with a large yellow spot on each side at the middle and a small reddish or yellowish triangle

on each basal corner; fourth with a broadly divided basal yellow fascia that reaches to the basal third of the segment and is narrowed medianly; fifth segment mostly shining, the disc more or less opaque and somewhat bronzed. Pile black, brassy yellow on the first segment. Genitalia small.

FEMALE.—Front black, more or less bronzed or greenish, the sides yellow on almost the lower half, and broadly whitish pollinose in front of the ocelli, the middle with brown pollen except on a narrow median line; the dark median portion with a number of transverse ridges; pile wholly black. Mesonotum with a pair of broad, gray pollinose vittae on the anterior three-fourths. Anterior four tibiae mostly yellow, the intermediate segments of the front tarsi and the basal three segments of the middle tarsi yellow; basal fourth of posterior tibiae pale yellow. Fifth abdominal segment usually with a yellow spot, or broadly interrupted yellowish fascia basally, the sixth wholly shining black and as long as the fifth.

TYPES.—Holotype, male, allotype, female, and paratypes, fourteen males and two females, Nova Teutonia, Brazil, November 14 to 29, 1939, and one female, May 30, 1939 (Fritz Plaumann); the types, November 24.

The abdomen is cylindrical, long and slender and not greatly widened apically. In some specimens there is scarcely a trace of the alula.

***Baccha ada*, new species**

Blackish, the mesonotum with reddish pollinose vittae; the abdomen clavate. Length, 14 to 15 mm.

MALE. Frontal triangle brownish, the orbits broadly yellowish, the antennal tubercle well differentiated, black above, the lunula reddish with a large shining black spot in the middle; front dull, the orbits with traces of white pollen. Vertical triangle shining black, thinly brown pollinose. Occiput with brown pollen above, becoming gray below, the pile pale brassy-yellow. Cheeks brownish red. Face receding, the tubercle large; in the middle very broadly brownish red to dark brown, the sides pale yellowish and with whitish pollen. Antennae dark brown or black, reddish below, the arista shining black. Pile black, pale on the lower half of the face.

Thorax black, the pleura mostly reddish except posteriorly, the sides of the mesonotum broadly reddish. Mesonotum opaque, shining toward the sides, with three reddish pollinose vittae, the median one linear, all ending well before the scutellum. Pile black, yellow laterally in front of the suture, pale yellow on the pleura, the collar pale. Scutellum brownish red with the base narrowly reddish yellow, the ventral fringe yellow.

Anterior four legs reddish, the femora somewhat brownish basally, the tibiae paler basally and usually with a broad obscure brownish pre-apical band, the apical tarsal segment brownish. Posterior legs black, the tarsi pale yellow except the base of the first segment, the apical segment reddish or brownish, the knees reddish. Pile black, tawny on the anterior tarsi, white on the posterior tarsi except at the base.

Wings light brownish, the costal border broadly darker; alula broad, gently convex behind. Squamae pale reddish. Knob of halteres mostly reddish.

Abdomen black with reddish markings, cylindrical basally, rather gradually widening apically. First segment greenish black, thinly grayish pollinose, the sides reddish. Second segment opaque, the base, sides and apex shining, the sublateral third more or less reddish. Third segment with large sublateral reddish triangles on each side at the base that usually extend to beyond the middle of the segment and are strongly produced inward at the base, and on the disc with a pair of parallel reddish vittae that occupy about half the length of the segment and are more than half in front of the middle. Fourth segment very similar to the third, the fifth with transverse lateral triangles that are usually united with the reddish vittae, which usually extend to the apex of the segment. Pile black, yellow only on the sides of the first segment. Genitalia rather small.

FEMALE.—Front black, broadly pale translucent yellowish on the sides almost to the level of the ocelli, in front of the ocelli with brown pollen which is produced as a median line almost to the antennal tubercle; behind the ocelli the pollen is darker brown; pile wholly black. The mesonotal vittae are usually yellowish brown and more nearly reach the scutellum, the free border of which is usually reddish yellow; pile short, the ventral scutellar fringe black; abdomen widest at the base of the fourth segment, thence narrowing to the tip. The pale markings follow the same general pattern as in the male, but the reddish spots are more transverse and the abdomen more shining. The sixth abdominal segment is normally all shining black and very considerably longer than the fifth. The base of the abdomen is inclined to be chiefly reddish brown or even dark brownish red with the pale spots poorly defined.

TYPES.—Holotype, male, allotype, female, and paratypes, three males and seven females, Nova Teutonia, Brazil, October 11 to November 18, 1939, and one December 8, 1937 (Fritz Plaumann); the types, November 16, 1939.

***Baccha ida*, new species**

Black, the apical fourth of the wings hyaline; abdomen mostly opaque, clavate. Length, 11–13 mm.

MALE.—Head bluish black, the pile black,

white on the occiput and lower half of the face. Frontal triangle large, shining, the upper half dull, dark brown pollinose, the orbits very pale yellow and with white pollen; an orange spot above each antennae; antennal tubercle moderately distinct. Vertical triangle rather dull, with brown pollen. Occiput thickly cinereous pollinose except above, the upper cilia black. Cheeks thinly pale pollinose above. Face with the sides broadly pale yellowish, cinereous pollinose, the tubercle mostly shining, large; the face moderately receding below. Antennae black, the third segment more or less reddish below.

Thorax black, the mesopleura and sternopleura at most with indications of yellowish markings, the pleura aeneous and with cinereous pollen, the mesonotum bronzed except on the sides, with brown pollen and three weak brownish-yellow or grayish vittae on the anterior three-fourths; pile black on the disc, cinereous on the sides, pleura and anterior margin. Scutellum black with cinereous pollen on the border and brown on the disc; ventral fringe yellow.

Legs black, the knees narrowly reddish; anterior four femora more or less brown; posterior tarsi with the intermediate segments, and broad apex of the first segment yellow, the apical segment luteous or pale brown. Pile black, pale yellow on the pale tarsal segments.

Wings dark brown, or blackish, the apical fourth hyaline. Squamae grayish yellow. Knob of halteres orange.

Abdomen opaque black and shining metallic blue-green. First segment, apical fifth of the second and large lateral triangles that are broadly united basally, metallic. Third segment with large basal triangles that extend to beyond the middle of the segment and the broad apex metallic, the sides yellow on the basal half. Fourth segment similar to the third, the disc with a pair of parallel metallic vittae and the metallic markings more extensive, usually leaving three opaque areas which are variable in size and shape in different specimens. There are rarely metallic vittae on the posterior half of the third segment. Genitalia small. Pile black, pale yellow on the sides of the first segment.

FEMALE.—Front black, with brown pollen, the sides narrowly pale yellow to above the middle; pile black. Large spots on the mesopleura and sternopleura dull reddish-yellow; pile on mesonotum and scutellum very short. The metallic areas on the abdomen are more extensive, the opaque black being divided so as to leave rather narrow median vittae and large spots on the fourth and fifth segments, and partly divided on the third; sixth segment shining black, much longer than the fifth.

TYPES.—Holotype, male, allotype, female, and paratypes, three males and one female, Nova Teutonia, Brazil, October, and one male, June 16, 1939 (Fritz Plaumann); the types, October 24.

Baccha para, new species

Black, the abdomen with very small yellow spots laterally; sixth abdominal segment of female long and cylindrical; wings dark brown, somewhat paler apically and posteriorly, in the female with a broad preapical hyaline fascia. Length, 7.5 to 12 mm.

MALE.—Head black, the sides of the face yellow, continued narrowly along the orbits to the middle of the frontal triangle; lunula pale orange with black spot in the middle. Frontal triangle large, the antennal tubercle distinct; pollen brown, white along the orbits, a narrow median stripe opaque black. Vertical triangle shining black. Occiput with cinereous yellow to cinereous pollen. Cheeks narrow, shining black. Face somewhat receding, the tubercle large and prominent. Pile black, yellow on the lower three-fourths of the occiput except that the black hairs extend to below the middle of the eyes in a double row along the orbits; sides of face broadly pale yellow pilose except above, the face ashy pollinose. Antennae black, the third segment broadly reddish below at the base.

Thorax black, the pleura with cinereous pollen, the mesopleura sometimes broadly reddish posteriorly; mesonotum strongly bronzed, with brownish pollen and only weak indications of pale vittae. Pile black, mostly pale yellow on the pleura. Scutellum with the disc more or less reddish-brown; the pile, including the ventral fringe, long. While the pile is long there is no distinct collar in front, where the hair is sometimes brownish, especially toward the sides.

Legs black, the apices of femora and broad bases of the anterior four tibiae and base of the posterior pair reddish or reddish yellow; apex of the first segment of the posterior tarsi and the following three segments pale reddish-yellow, the apical segment brownish; anterior femora sometimes brown or reddish brown. Pile black, yellow on the pale segments of the tarsi.

Wings dark brown, paler posteriorly and apically except in front but usually fairly uniform in color. Alula wide. Squamae and halteres reddish yellow, the fringe brownish yellow.

Abdomen rather greenish black on the basal half or more, the disc opaque. First segment with the disc bronzed, the sides metallic bluish. Second segment opaque black, the base, broad apex and elongate basal triangles that extend narrowly along the lateral margins to the posterior band, shining metallic, with grayish sheen. Third segment with the disc opaque, the broad apex and lateral triangles on the base shining, the sides narrowly yellowish to beyond the middle, the disc with a pair of narrow parallel reddish spots forming vittae on about the median half of the segment but these spots are variable and are often replaced by shining black or metallic stripes or are wholly obsolete. Fourth segment usually marked like the third, the disc less opaque, the fifth segment partly subopaque. Pile black, partly whitish on the sides of the first segment, sides of the second segment to beyond

the middle and on the basal triangles on the third and fourth segments. Genitalia rather small.

FEMALE.—Face with almost the lateral third yellow, the pale color reaching the sides of the oral margin, and continued narrowly along the orbits to the middle of the front; front brown pollinose and black pilose; black hair sometimes absent behind the middle of the eyes. Mesonotum with the broad sides and a pair of widely separated vittae extending to the posterior fifth, gray, and a brownish-yellow median line on the median half or more, the pile whitish laterally and on the pleura. Femora in large part brownish red, the tibiae more extensively pale. Wings with a broad, preapical hyaline band, leaving the apex broadly brown. Opaque of the abdomen reduced, sometimes in the form of lateral triangles and a median stripe separating the yellowish vittae but sometimes connected anteriorly. Sixth segment shining black, almost twice as long as the fifth, normally mostly cylindrical, the base broadened and sometimes flattened; no division into sclerite and tergite.

TYPES.—Holotype, female, allotype, male, and paratypes, seven females and twenty-two males, Nova Teutonia, Brazil, June to October (Fritz Plaumann). The types, October 28, 1939; all but two specimens collected in September and October, 1939, one in June and one in August, 1937.

Because the female is very distinct from other described species I make a specimen of this sex the holotype. It is by no means certain that all of the males belong with the females and it is possible that some of them should be placed with *alicia*. However, there seems to be no good way to separate the males of these two species. I have taken the absence of oblique yellow stripes near the middle of the second segment as being typical of *para* and their presence indicating *alicia*, since this character corresponds with the females. If the oblique spots are absent in some males of *alicia* it is impossible to identify them since they then agree perfectly with the males of *para*, providing, of course, that the males of the two species are properly associated.

Baccha alicia, new species

Wings brown, in the female with a broad preapical hyaline fascia; abdomen spatulate, with reddish markings. Length, 11–13 mm.

FEMALE.—Head black, the sides of the face broadly yellow, the frontal orbits narrowly yellow on the lower half. Front black, brown pollinose, less thinly so above; lunula shining, mostly orange, with a large black spot in the

middle. Occiput with cinereous pollen and whitish or pale yellow pile. The upper fifth with brown pollen and black hair and there are usually some black hairs immediately behind the middle of the eyes. Cheeks narrow, shining. Face with white pollen which is very thin on the tubercle. Oral margin usually wholly broadly black, the yellow color rarely extending to it. Tubercle of medium size, the face gently retreating below. Antennae black, the third segment usually broadly reddish below at the base.

Thorax black, the pleura and broad sides of the mesonotum in front of the wings cinereous pollinose; mesopleura and sternopleura with large obscure reddish-yellow spots. Mesonotum brown pollinose, somewhat bronzed, with indications of three narrow paler brown vittae. Pile short, black, the pleura and poorly differentiated collar whitish, the sides of the mesonotum sometimes mostly whitish pilose in front of the suture. Scutellum brownish red with the base and sides blackish, the ventral fringe short and black.

Femora brownish red or reddish brown, the posterior pair with a very broad preapical blackish band, the apices reddish. Anterior four tibiae pale reddish with the apical half or less black or brown except on the apex, the posterior pair with the basal fifth reddish, the rest black. Tarsi brown, the posterior pair reddish yellow with the basal three-fourths or more of the first segment black, the apical segment brownish red to brown. Pile black, yellow on the pale portions of the posterior tarsi.

Wings blackish brown, with a very broad hyaline band before the apex, the apical brown spot not extending much behind the third vein. Alula large. Squamae and halteres reddish yellow to yellow.

Abdomen black, opaque and shining, with reddish markings. First segment shining, thinly cinereous pollinose. Second segment shining with a very large subtriangular opaque black spot that is partly bordered in front on each side by an oblique reddish stripe; the opaque spot is carried obliquely toward the sides posteriorly and does not reach the base of the segment in the middle. Opaque on the third segment usually partly or wholly divided by a pair of reddish vittae, which may be connected in front with large, lateral reddish triangles that extend to the middle of the segment laterally, the vittae sometimes absent and the lateral spots reduced, the posterior border of the segment very broadly shining in the middle but only narrowly so laterally. Fourth segment with markings similar to the third, the fifth with median vittae and lateral reddish stripes on the basal two-thirds, the apex shining. Sixth segment shining, somewhat longer than the fifth. Pile black, some pale yellow pile on the sides of the first and second segments and on the basal angles of the third and fourth.

MALE.—The male is quite similar to the male of *para* and I am able to separate it only by the presence of the oblique reddish spots on the sides of the second abdominal segment.

TYPES.—Holotype, female, allotype, male, paratypes, seven females and eight males, Nova Teutonia, Brazil, September and October, 1939, and one female, May, 1939 (Fritz Plaumann); the types, October 28.

The female is very similar to *para* but has the sixth abdominal segment very much shorter and not cylindrical.

Baccha cora, new species

Shining black and metallic with reddish markings; wings brown on basal half and anteriorly on the apical half in the male; abdomen clavate. Length, 13 to 17 mm.

MALE.—Head black; the sides of the face broadly reddish yellow. Frontal triangle large, shining black, the sides and upper third metallic blue-green except for an opaque black spot above, the lunula brownish red above the antenna and sometimes above, antennal prominence strongly developed; white pollen of the orbits separated from that of the face. Vertical triangle blue-black, with brown pollen. Occiput white pollinose and whitish pilose, the upper cilia and some hairs behind the middle of the eyes black. Cheeks narrow, shining. Face moderately receding, the tubercle rather large and prominent, shining; pollen white. Pile black, mostly whitish on the face. Antennae brownish, more reddish below.

Thorax black, the pleura somewhat brownish, the mesopleura and sternopleura with large reddish or reddish-yellow spots, cinereous pollinose and very pale yellow pilose. Mesonotum thinly brown pollinose with scarcely a trace of vittae, the sides more or less reddish behind the suture. Pile very short and black, the collar whitish. Scutellum brownish red to reddish brown, with very short black hair, the ventral fringe yellow.

Legs blackish, the anterior four femora more brownish red with the tips reddish, tibiae scarcely reddish at the base. Posterior tarsi pale yellow except the basal third or less of the first segment. Pile black, yellow on the tarsi except basally.

Wings brown on the basal half and broadly paler brown beyond the middle in front, almost hyaline behind the anal cell. Alula broad, hyaline posteriorly. Squamae grayish or tinged with brown, the rim brownish. Halteres reddish yellow.

Abdomen cylindrical basally, strongly broadened beyond the second segment; black and metallic blue-green. First segment metallic, the sides at most obscurely reddish. Second segment opaque, the sides very broadly brownish-red and somewhat metallic to beyond the middle and with a broad apical fascia of the same color. Third segment opaque, the apex broadly shining except at the sides; on each side at the base with an elongate reddish or metallic triangle that extends to beyond the middle. Fourth segment with metallic markings similar to the third and

in addition with a pair of parallel metallic or reddish stripes in the middle. Fifth segment shining black with incomplete median stripe and large sublateral spots opaque. Genitalia of medium size, sharply rounded apically from dorsal view. Pile black, whitish on the sides of the second segment and on the anterior angles of the third.

FEMALE.—Front shining black on the anterior half, the sides rather broadly white pollinose, the upper half brown pollinose, thinly so across the ocellar triangle. Wings hyaline on the apical half and behind the anal cell. Abdomen much as in the male, the opaque markings somewhat reduced in size; sixth segment wholly shining black and a little longer than the fifth.

TYPES.—Holotype, male and allotype, female, and paratypes, male and female, Chapada, Brazil (Williston Collection).

***Baccha limpidadex*, new species**

Black, the sides of the face broadly pale yellow; wings brown with the apical fourth hyaline. Length, 11 mm.

MALE.—Head black, the face and occiput with ashy-white pollen. Frontal triangle large, steel-blue laterally, the middle opaque black; antennal prominence large, occupying half the front, the lunula rusty reddish with a large black spot in the middle. Vertical triangle blue-black. Occiput with pale yellowish pile. Cheeks narrow, thinly pale pollinose. Face moderately receding, the tubercle large and prominent. Antennae reddish, the third segment brown except basally on the lower half, the arista brown with reddish base. Pile black, pale on the face, the occipital cilia and some of the hair behind the middle of the eyes black.

Thorax black, the pleura bluish black, with cinereous pollen and pale yellowish pile. Mesonotum brown pollinose, the sides pale pollinose in front of the wings; pile black, the poorly differentiated collar pale yellowish. Scutellum blackish brown, the ventral fringe yellow.

Legs reddish brown, the posterior tibiae and first segment of their tarsi black. Anterior four tibiae with the basal third to half yellow, the posterior tibiae with the base reddish; apical segment of the posterior tarsi yellow. Pile black, yellow on the tarsi except the black portion of the posterior pair.

Wings dark brown, about the apical fourth hyaline; alula large, convex behind. Squamae and halteres reddish yellow.

Abdomen bluish black and opaque. First segment shining, second segment with a large opaque subtriangular area lying mostly on the posterior half of the segment and reaching the sides broadly behind. Third and fourth segments with similar opaque marking but it reaches the base of the segment broadly. Fifth segment subopaque on the disc except apically. The opaque areas appear more or less strongly bronzed. Pile black, white on the first segment,

broad sides of the second on the basal half and on lateral basal triangles on the third segment. Genitalia rather small, subangular in the middle from dorsal view.

TYPES.—Holotype, male, and paratype, male, Chapada, Brazil, November (Williston Collection).

***Baccha colombiana*, new species**

Black, the abdomen with orange markings; wings brownish. Length, 11.5 mm.

MALE.—Head bluish black, the sides of the face broadly pale yellowish. Frontal triangle large, metallic laterally, the middle very broadly opaque black, the sides whitish pollinose; antennal swelling shining black, the lunula reddish above each antenna. Vertical triangle thinly brown pollinose. Occiput thickly whitish pollinose, the pile pale yellowish, the upper cilia and some hairs behind the middle of the eyes black. Cheeks narrow, shining black. Face moderately retreating below, the tubercle moderately large; pollen whitish. Pile black, mostly cinereous on the face. Antennae blackish, the third segment broadly yellow below at the base.

Thorax black, the pleura with cinereous pollen and whitish pile, and with large yellow spots on the mesopleura and sternopleura. Mesonotum somewhat bronzed, brown pollinose, with scarcely a trace of vittae, the pile black; the weak collar and some hair along the posterior border pale yellowish. Scutellum brown and with brown pollen, the ventral fringe yellowish.

Legs brownish red, the knees and anterior tarsi mostly reddish, the anterior four tibiae yellow on the basal half or more, the posterior tibiae black except basally; posterior tarsi yellow with the basal three-fourths of the first segment black. Pile black, whitish on the pale portion of the posterior tarsi.

Wings dark brownish, paler posteriorly and apically. Alula very broad, convex posteriorly.

First abdominal segment shining greenish-black, thinly pollinose. Second segment opaque black, the sides very broadly reddish to beyond the middle, the apex broadly reddish except in the middle. Third segment opaque black, the apex broadly dull reddish except on the middle, on each basal corner with a reddish-yellow triangle extending back to the middle of the segment; on the middle of the disc with a pair of short, yellow stripes. Fourth segment like the third but the lateral triangles are broader. Fifth segment with the lateral triangles obscure, the median vittae extending from the base to the apical third. Genitalia small, the terminal portion reddish. Pile black, whitish on the sides of the first segment, yellow on the basal half of the broad sides of the second segment and on the lateral triangles on the third and fourth segments.

HOLOTYPE.—Male, Cerro Patron, Rio Frio, Magdalena, Colombia (4000 ft.), September 12, 1927 (G. Salt).

The abdomen is rather strongly clavate, the second segment long and cylindrical.

SALPINGOGASTER SCHINER

The following key includes all the species of this genus known to me. A few have been included from descriptions only, so identifications should be checked with the original diagnoses.

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Abdomen laterally compressed; posterior femora usually black basally.....16.
- 16.—Scutellum with the base and apex yellow, the disc blackish; fifth sternite with short broad lobe on each side (Brazil)..*compressa*, n. sp.
Scutellum brownish red, darker basally, becoming pale apically; fifth sternite of male with weak lobes (Brazil).....*impura*, n. sp.
- 17.—Mesonotum, from posterior view, with a pair of broad bright yellow U-shaped spots immediately in front of the scutellum (South America)..
.....*gracilis* Sack.
Mesonotum without such markings...18.
- 18.—Facial tubercle reddish, sometimes flecked with black, but no black spot above it.....19.
Facial tubercle black, or there is a black spot between it and the antennae.....23.

- 19.—Abdomen, from lateral view, suddenly widened at the third segment (Bolivia).....*bicolor* Sack.
Abdomen slender.....20.
- 20.—Scutellum unicolorous, rusty reddish (Cuba).....*bruneri* Curran.
Scutellum bicolored.....21.
- 21.—Scutellum brownish on the disc, the base and apex yellow (Cuba).....
.....*relicta*, n. sp.
Scutellum yellowish with the base blackish or brown.....22.
- 22.—Ground color of the mesonotum broadly reddish in front of the scutellum (Texas).....*texana* Curran.
Ground color of the mesonotum reddish only on the sides (Ecuador).....
.....*liposeta* Fluke.
- 23.—Pleura and legs yellow (Brazil).....
.....*costalis* Walker.
Pleura black with yellow markings.24.
- 24.—Scutellum wholly yellowish (Bolivia).....
.....*lineata* Sack.
Scutellum black on the disc.....25.
- 25.—Basal third of tibiae black or brownish (Mexico).....*limbipennis* Williston.
Basal third of tibiae whitish.....26.
- 26.—No yellow stripe below the squamae (South America).....*nigra* Schiner.
A yellow stripe below the squamae.27.
- 27.—First abdominal segment black with the sides yellow (Ecuador).....
.....*browni*, n. sp.
First abdominal segment almost wholly yellow (Guatemala).....
.....*bequaerti* Curran.

Salpingogaster flukei, new species

Face wholly yellowish; mesonotum black, with pollinose vittae; wings narrowly brown in front. Length, 15.5 to 17 mm.

MALE.—Frontal triangle brown with the orbits broadly reddish yellow; vertical triangle and occiput black, the latter cinereous-yellow pollinose; face and cheeks yellowish, the sides of the face with white pollen. Pile yellowish, black on the front and the upper fourth of the face. Antennae brown, broadly reddish below.

Mesonotum black, the sides with a yellow stripe that is broadly interrupted behind the suture, on the disc with a pair of broad, yellowish pollinose vittae that become obsolete posteriorly, and a short median vitta in front of the scutellum; pile black on the disc, yellow on the sides. Scutellum brown with the base and free border broadly yellow, the pile short and black,

the ventral fringe yellow, long. Pleura reddish, yellow in front, across the middle and below the squamae, black behind; metanotum black; pile yellowish.

Legs reddish, the posterior coxae brown; anterior four tibiae and the basal third of the posterior pair yellow. Pile yellow, black posteriorly on the middle femora and on the ventral half of the posterior pair.

Wings cinereous hyaline; brown in front of the first vein. Squamae yellow. Knob of halteres brown.

First abdominal segment brown with the anterior corners broadly reddish; second segment brownish red to brown with the base broadly yellow except in the middle; third segment blackish, the sides reddish, the basal fourth or less yellow; fourth segment black with the basal sixth reddish yellow, the fifth black with a small transverse basal triangle at each side and a broadly interrupted incomplete apical reddish band. Pile short, black, whitish basally and on the base of the third segment. Genitalia of medium size, black and reddish, with some paler areas, the left side forming a very obtuse cone. Fifth sternite with a conical protuberance at the apex on the right side and with coarse black bristly hairs on the apex on each side of the shallow emargination.

TYPES.—Holotype, male, Banos, Ecuador, July 9, 1938; paratypes, three males, Banos, July 17, 1939, and May, 1939, all collected by Mr. W. Clark McIntyre and received from Dr. C. L. Fluke.

Salpingogaster compressa, new species

A large conspicuous species with the abdomen laterally compressed, the face wholly yellow. Length, 15 to 18 mm.

MALE.—Face, cheeks and the broad upper border of the frontal triangle yellow, the face more orange in the middle; frontal and vertical triangles shining black. Occiput black, cinereous yellow pollinose, the pile yellow. Hair on frontal triangle black. Antennae brownish red to reddish brown.

Thorax black, the mesonotum rather dull; humeri, a triangle immediately behind and a broad band on the pleura yellow; usually a small reddish spot immediately below the posterior spiracle. Mesonotum with a pair of very broad cinereous vittae that are united on the posterior fourth, separated by an opaque brown pollinose stripe on the anterior part; transverse suture opaque black. Pile very short, black, yellow on the pale pollinose area behind the suture. Scutellum yellow with the disc broadly brown, the hair black.

Anterior four legs reddish yellow with the intermediate tarsal segments more or less brownish. Posterior femora brownish red on the apical third, reddish or yellowish in the middle and with the basal third more or less brown; posterior tibiae reddish brown, with the base

broadly yellow, their tarsi brown with the apical segment reddish. Coxae black. Pile yellow on the anterior four femora and tibiae, otherwise black; posterior femora with numerous short black bristles below.

Wings cinereous hyaline, luteous to dull orange on the basal two-fifths in front, the costal border narrowly brown from the apex of the first vein to the tip of the wing; broadly yellowish brown along the fifth vein to the end of the anal cell. Squamae brownish yellow to dull orange. Halteres yellow with brownish knob.

Abdomen long and slender, laterally compressed, brownish red, the second and usually the third segment with a broad brown vitta above; first segment and basal angles of the second yellow. Pile very short, black, yellow on the first and second segments. Fifth sternite concave apically, swollen laterally. Second segment of the genitalia produced as a short cone.

FEMALE.—Front shining black with two pairs of yellow spots: a very pale pair resting on the orbits just above the middle and a bright yellow pair, separated by a narrow line, extending over the ocelli; sides of mesonotum yellow in front of the suture; apical abdominal segments more or less brown above and below.

TYPES.—Holotype, male, February 21, 1939; allotype, female, February 19, 1939. Paratypes: nineteen males and seven females, January and February, 1939; male and female, February, 1937; male, February, 1938; all from Nova Teutonia, Brazil, and collected by Fritz Plaumann.

Salpingogaster impura, new species

Black and reddish, with yellow markings. Length, 16 mm.

MALE.—Similar to *compressa* in color, with the following differences: the yellow V-shaped orbital border is narrower; the mesonotum is brownish, the pleura brownish red; there is no yellow stripe between the humeri and notopleura and the scutellum is brownish red, becoming obscurely yellowish apically. The costal border of the wing is darker on the basal half. The fifth sternite is only weakly produced on each side of the middle line and does not form conspicuous lobes.

TYPE.—Holotype, male, São Paulo, Brazil, November, 1939 (M. Carrera).

Salpingogaster gracilis Sack

SACK, 1920, Zool. Jahrb., Syst., XLIII, p. 251 (f.).

This species was originally described from Vilcanota, Peru, the description being based upon a specimen of each sex. The yellow on the sides of the mesonotum in

front of the suture is more or less broadly interrupted by brown (not forming a continuous stripe as shown in the figure). Before me are two females from Nova Teutonia, Brazil, collected by Fritz Plaumann. In one of these the inner arms of the U-shaped prescutellar spots are broad and contiguous in front; in the other they are separated less widely than shown in Sack's figure. In both specimens the inner arms of the U are convex apically, not cut off squarely as illustrated. The outer arm of the U covers the posterior calli.

Salpingogaster relictæ, new species

Similar in color to *pygophora* Schiner but with dark facial vitta and differently shaped male genitalia. Length, 15 to 16 mm.

MALE.—Face and border of the frontal triangle reddish yellow, the frontal triangle brown; face with broad reddish-brown median vitta, the cheeks of the same color. Vertical triangle and occiput black, the latter cinereous pollinose. Pile whitish. Antennae orange, the arista somewhat darkened apically.

Thorax rusty brown, the disc of the mesonotum black, with a pair of broad cinereous or cinereous-yellow pollinose vittae that unite on the posterior third. Humeri, the broad lateral margins in front of the suture and a broad stripe across the middle of the pleura yellow; posterior calli partly yellow. Scutellum rusty reddish with the base and broad apex yellow. Pile inconspicuous, brownish, yellow on the sides in front of the suture.

Legs reddish, the basal third or more of the tibiae pale yellow; posterior femora with some short setulae below.

Wings hyaline, the costal border brown in front on its whole length. Lower squamal lobe rather grayish, with short white fringe. Halteres yellow with the knob mostly brown.

Abdomen rusty reddish; the second segment more reddish; third with a yellow triangle on each side well beyond the base; first segment yellow on the basal half, the apical half dark brown. Hair very short, black, yellow only on the first segment. Apex of the fifth sternite almost transverse in the middle, the sides produced as a short mammiform process. Second segment of the genitalia acute but not strongly produced.

FEMALE.—Front dark brown, the antennal tubercle paler, the lunula yellow except for a small brown spot; the sides of the front broadly yellow almost to the level of the anterior ocellus.

TYPES.—Holotype, male, and allotype, female, Vinales, Cuba, September 16–30, 1913, and September 16, 1913. Paratype, female, without head, Pinar del Rio, Cuba, September 9–24, 1913.

Salpingogaster browni, new species

Blackish, the face with median brown vitta; costal border dark brown. Length, 15 mm.

MALE.—Face, cheeks and frontal triangle yellow; facial vitta as wide as the tubercle; frontal triangle with the anterior median half ferruginous, bordered by a black V. Vertical triangle and occiput black, the latter with grayish pollen and reddish-yellow pile. Face with short fine sparse pile, the front with black pile. Antennae short, obtuse apically, brownish red, the basal segments black above.

Mesonotum black, the sides broadly yellow in front of the suture, the sides behind the suture and sometimes a large transverse rectangular spot in front of the scutellum brownish red; a broad inconspicuous median stripe of brownish pollen. Pleura brownish red, with some blackish spots; a broad yellow band across the middle and a large yellow spot below the squamae. Pile very short and black, fine and yellowish on the pleura. Scutellum blackish, with the narrow base and lower rim yellowish, without ventral fringe.

Anterior four coxae black, the posterior pair brown or brownish red; anterior four femora reddish, the basal fifth to more than half of the middle pair and the upper surface of the anterior pair on the basal fifth to three-fifths of the upper surface blackish; posterior femora black with the base, a median band and the apex reddish. Anterior four tibiae reddish yellow and with a little less than the apical third black; posterior tibiae with almost the basal third and a broad band lying mostly beyond the middle reddish, a little less than the apical third black, a dark brownish band before the middle. Tarsi all black. Pile black, short and coarse.

Wings hyaline, the costal border dark brown in front of the second vein; behind the stigmal cell the brown is expanded to reach the spurious vein and just beyond the loop of the third vein it is expanded to reach the third vein between that point and the tip of the wing. Squamae brownish, with darker border. Halteres brownish red.

Abdomen black or black and brick red, marked with yellow. First segment black with the anterior angles broadly yellow. Second segment black with a large transverse yellow triangle on each side at the base, and a longitudinal elongate oval yellow spot on each side before the middle, the apex sometimes more or less brown. Third segment black with a large yellow, subtriangular spot on each side before the middle, the apex of the segment broadly brownish red. Fourth segment black with reddish stains or brownish red with blackish stains. Genitalia dark reddish and black, produced as a broad cone in the middle. Hair black, yellow only on the sides of the first segment. Fifth sternite reddish with broad black median vitta, produced on the lateral third to form a strong blunt process, the processes and apex of the sternite separating them clothed with short coarse dense black hairs.

Types.—Holotype, male, and paratype, male, Minza Chica, Volcano Tungaruhua, Ecuador, 3200 m., April 8, 1939 (F. M. Brown), received from Dr. C. L. Fluke.

Besides differing from *bequaerti* Curran in size and color this species has several structural differences. The fifth sternite of *bequaerti* is only weakly produced toward each side and the genitalia are quite obtuse apically when viewed from above.

HELIOPHILUS MEIGEN

Heliphilus MEIGEN, 1803, Ill. Mag., II, p. 273.

Eumeros MEIGEN, 1803, idem, p. 273.

Xylota MEIGEN, 1822, Syst.-Besch. Eur. Ins., III, p. 211.

Xylotomima SHANNON, 1926, Proc. U. S. N. M., LXIX, p. 15.

Xylotodes SHANNON, 1926, Proc. U. S. N. M., LXIX, p. 22.

The separation of *Xylota* and the other two genera recognized by Shannon was based upon the absence of pile on the metasternum. In *pigra* Fabricius some specimens have only a few long hairs, so the character does not seem to be of value in this group. *Xylotodes* was based upon the triangular shape of the head and the usually longer pile, but the shape of the head varies in the same species and the length of the pile is not reliable. It therefore seems best to regard all the species falling within the three genera recognized by Shannon as belonging to a single genus unless other more definite characters can be found for their separation.

I have divided the key into two sections as follows: A.—Metasternum pilose; B.—Metasternum pubescent.

This follows Shannon's generic separation but ignores *Xylotodes* as a unit. Mr. Shannon doubted the distinctness of this from *Xylotomima*.

TABLE OF SPECIES**Section A.—Metasternum Pilose¹**

- 1.—Anterior four femora wholly bright orange or reddish.....2.
- Anterior four femora wholly or almost all black.....6.
- 2.—Posterior femora black on apical half or more; abdomen with yellowish

¹ I have been unable to recognize *sacaiwajeeae*, *dubia* and *brevipilosus* Shannon and *scutellarmata* Lovett.

- spots (southeastern United States)
.....*metallica* Wiedemann.
Posterior femora with the apex narrowly black; abdomen shining black.....3.
3.—All the coxae orange-colored (eastern)
.....*vecors* Osten-Sacken.
All the coxae black or brown, the posterior pair sometimes with a reddish spot on the anterior and outer surface.....4.
4.—Pile on posterior tibiae of male decidedly shorter than the width of the tibia; pile on under surface of posterior tibia of female of equal length, no scattered long hairs on the sides; knob of halteres black or brown.....5.
Pile on under surface of posterior tibia longer than the tibial width; of female with scattered hairs laterally that are decidedly longer than the ventral pile; halteres yellow (widespread).....*curvaria*, n. sp.
5.—Posterior coxae almost all black pilose (western).....*satanica* Bigot.
Posterior coxae with a reddish spot toward the base and wholly yellow pilose (eastern).....*plesia* Curran.
6.—Abdomen reddish with black base, the sides sometimes narrowly black..7.
Abdomen blackish, with or without paired yellowish spots.....8.
7.—Legs wholly black (generally distributed).....*pigra* Fabricius.
Basal tarsal segments reddish yellow (northern).....*libo* Walker.
8.—Abdomen blue-black, the wings brownish black (northeastern).....
.....*chalybea* Wiedemann.
Wings not brownish black.....9.
9.—Face wholly dark in ground color..10.
Lower third of the face yellow (northern).....*anthreas* Walker.
10.—Anterior crossvein conspicuously bordered with brown.....11.
Anterior crossvein with at most slightly darker cloud or all the veins bordered with brown.....15.
11.—Face wholly shining black (Alberta, Ontario).....*carri*, n. sp.
Face mostly pollinose.....12.
12.—Abdominal spots or bands shining.13.
Abdomen with six pairs of cinereous pollinose spots (western).....
.....*parvus* Williston.
13.—Mesonotum pollinose, with broad shining black vittae (western).....
.....*pigra* Lovett.
Mesonotum with opaque brown vittae.....14.
14.—Arista reddish on more than the basal half, brown apically; vertical triangle of male black pilose (Colorado east).....*metallifera* Bigot.
Arista wholly reddish yellow, the vertical triangle cinereous pollinose (Ontario).....*ontario*, n. sp.
15.—Face and frontal triangle shining black, without pollen (Alberta, Ontario).....*carri*, n. sp.
Face, and usually the frontal triangle, mostly pollinose.....16.
16.—Arista white, with yellow base; face mostly shining (New Hampshire)..
.....*aristata* Johnson.
Arista brown to yellowish; face mostly pollinose.....17.
17.—Posterior tarsi brown to black, at most obscurely reddish basally..18.
Basal two or three segments of posterior tarsi yellow.....
.....*inarmatus* Hunter.
18.—Arista wholly blackish.....19.
Arista with the base broadly reddish (widespread).....*baton* Walker.
19.—Male, and usually the female, with orange spots; front of female black pilose on upper half, the fourth abdominal segment with opaque basal and apical fasciae (western).....
.....*americana* Shannon.
Male with metallic greenish-black spots; front of female black pilose across the ocelli, the fourth abdominal segment wholly shining..20.
20.—Posterior tibiae of male with dense, short, erect pile below (western)....
.....*flexus*, n. sp.
Posterior tibiae with appressed pile below (northern)....*arcticus*, n. sp.
- Section B.—Metasternum Pubescent
- 1.—Legs wholly black, the tibiae rarely brown and with brownish-red bases; abdomen rusty reddish except at

- base(widespread) . . . *pigra* Linnaeus.
 Legs not wholly black, in part yellowish or dull orange 2.
- 2.—Third abdominal segment wholly dull orange, the sides rarely slightly darkened, arista bare 3.
 Apex of third segment black or brown; if doubtful the arista microscopically pubescent 5.
- 3.—Posterior tibiae broadly yellowish basally 4.
 Posterior tibiae black with brownish base (eastern) *bicolor* Loew.
- 4.—Anterior four tibiae yellowish; basal segments of posterior tarsi reddish yellow; posterior calli pale-haired (western) *flavitibia* Bigot.
 Anterior four tibiae mostly black; posterior tarsi wholly blackish; posterior calli black-haired (Pacific Coast and Colorado)
 *argoi* Shannon.
- 5.—Lower third of the face yellow in ground color 6.
 Face usually black, rarely obscurely brownish red in the middle or toward the sides 7.
- 6.—Fourth abdominal segment bright metallic-green (Texas)
 *nebulosa* Johnson.
 Fourth abdominal segment greenish black (Oregon) *lovetti* Curran.
- 7.—Second abdominal segment with rectangular orange spots that rest on the base of the segment in their full width *flukeyi*, n. sp.
 Second segment differently colored, the base almost always blackish . . 8.
- 8.—Males 9.
 Females 28.
- MALES
- 9.—Mesopleura with a number of black coarse hairs above, near posterior margin 10.
 Mesopleura with only pale pile . . . 14.
- 10.—Spur on hind trochanter very small, tuberculate 11.
 Spur on hind trochanter moderately strong and outstanding 12.
- 11.—Erect hairs on scutellum all pale (Colorado) *micrurus*, n. sp.
- Erect hairs on scutellum mostly black (Ontario) *tuberculatus*, n. sp.
- 12.—A complete band of black hair behind the suture (western) . . *naknek* Hine.
 Pale pile continuous along the middle of the mesonotum 13.
- 13.—Notopleura with a row of black hairs near outer edge (northern)
 *atlantica* Shannon.
 Notopleura without black hairs
 *mixtus*, n. sp.
- 14.—Abdomen wholly black, with metallic spots 15.
 Abdomen with reddish or yellowish spots or bands 17.
- 15.—Frontal triangle wholly pollinose . 16.
 Frontal triangle broadly bare above the antennae (Quebec)
 *ouelleti*, n. sp.
- 16.—Genitalia black-haired (western)
 *barbata* Loew.
 Genitalia pale pilose (northern)
 *flavifrons* Walker.
- 17.—Third abdominal segment always with trace of median vitta or wholly black 18.
 Third abdominal segment without trace of median vitta, the second and third segments almost all reddish (Nova Scotia) . *segnis* Linnaeus.
- 18.—Abdomen elongate, the second segment with a pair of parallel elongate oval yellow spots (eastern)
 *angustiventris* Loew.
 Abdomen usually robust, the spots transverse or very large and weakly separated 19.
- 19.—Apex of second segment only narrowly blackish, the reddish spots large and separated by an obscure line; arista microscopically pubescent 20.
 Apex of second abdominal segment broadly black or brown, the pale spots rather broadly separated in the middle 21.
- 20.—Posterior tarsi wholly brown (western)
 *notha* Williston.
 Posterior tarsi with the second and third segments reddish
 *subfasciata* Loew.
- 21.—Fourth abdominal segment chiefly black pilose, the sides with pale pilose triangles 22.

- Fourth abdominal segment practically all pale pilose, except on the basal half of the disc, rarely scattered black hairs posteriorly.
 *analys* Williston.
- 22.—Posterior femora with a double row of long anteroventral spines extending the whole length and all about equally strong and rather evenly spaced; frontal triangle pollinose only above and on sides (eastern).
 *ejuncida* Say.
- Posterior femora with shorter, irregularly spaced spines below, these usually only a little longer than the coarse black hair; tibiae usually mostly blackish. 23.
- 23.—Anterior four tibiae wholly yellow or with weak brown stains in front and behind apically; frontal triangle wholly pollinose; posterior tarsi with the basal two segments reddish
 *quadrifasciata* Loew.
- Anterior four tibiae brown or black on apical half or more. 24.
- 24.—Genitalia wholly pale pilose.
 *annulifera* Bigot.
- Genitalia with black pile at least above. 25.
- 25.—Posterior calli with at most one or two black bristly hairs. 26.
- Posterior calli with numerous black hairs. *hinei*, n. sp.
- 26.—Abdomen long and slender, scarcely wider than the base of the scutellum (northern). *confusa* Shannon.
- Abdomen more robust, conspicuously wider than the base of the scutellum 27.
- 27.—Frontal triangle with broad rectangular shining area in front anteriorly.
 *bigelowi*, n. sp.
- Frontal triangle with small triangular shining black area in front.
 *rainieri* Shannon.
- tangular, resting on the base of the segment only at the outer ends. . 31.
- 29.—Scutellum with long fine marginals.
 *segnis* Linnaeus.
- Scutellum with very short marginals or none. 30.
- 30.—Third segment without median black line. *notha* Williston.
- Third segment with strong median black line. *subfasciata* Loew.
- 31.—Posterior calli with only a few black bristly hairs in front. 32.
- Posterior calli with black bristly hairs abundant on anterior half or more. 34.
- 32.—Front narrow, with parallel sides. . 33.
- Front wide, almost twice as wide as the other species. *rainieri* Shannon.
- 33.—Abdomen with spots metallic, not with reddish cast. 36.
- Abdomen with orange spots or spots with reddish cast in some lights. . 39.
- 34.—Anterior tibiae wholly yellow; if somewhat stained, there is no triangle of black hair above the base of the wings. 35.
- Anterior tibiae brown or black on apical half or more; if only slightly darkened, there is a triangle of black hair above the base of the wings.
 *annulifera* Bigot.¹
- 35.—Spines on hind femora strong and erect, and all about equally strong.
 *ejuncida* Say.
- Spines on hind femora subappressed becoming weaker basally and not outstanding. *quadrifasciata* Loew.
- 36.—Front unusually pollinose, leaving rather small, more or less triangular shining area above the antennae.
 *flavifrons* Walker.
- Front with large, rectangular shining area before the depression. 37.
- 37.—Facial pollen broadly connected along the orbits with the frontal fascia.
 *barbata* Loew.
- Facial pollen connected with the frontal pollen by a linear orbital stripe. 38.
- 38.—Second abdominal segment longer than wide. *angustiventris* Loew.

FEMALES

- 28.—Pale abdominal spots large, orange; those on the third segment resting on its base in their full width and sometimes forming an entire band 29.
- Pale spots, if present, smaller, less rec-

¹ *confusa* Shannon may come here.

- Second abdominal segment much wider than long. . . . *bigelowi*, n. sp.
- 39.—Abdomen with reddish spots, the notopleura never with black bristly hairs *hinei*, n. sp.
- Abdomen with at most weak reddish spots, the notopleura with black hairs or not. 40.
- 40.—Second segment of front tarsus less than twice as long as wide. . . . 41.
- Second segment distinctly more than twice as long as wide.
- *micrurus*, n. sp.
- 41.—Four or more pairs of black scutellars *atlantica* Shannon.
- At most one pair of black scutellars. 42.
- 42.—Notopleura usually with a row of black bristly hairs. . . . *naknek* Hine.
- Notopleura with at most a single bristly. *tuberculatus*, n. sp.

Heliophilus curvaria, new species

Shining black, legs orange, the coxae, apices of the posterior femora and the posterior tibiae and tarsi black. Length, 13 to 17 mm.

MALE.—Head black, the face moderately cinereous pollinose except an incomplete, broad bare band above; frontal triangle shining, the orbits narrowly pollinose and with a few pale or black hairs on each side. Vertical triangle large, black pilose. Posterior orbits cinereous pollinose, the pile rather brassy, white on the sides of the face. Antennae brownish red, the basal segment black or brown; arista brown or very broadly reddish basally and with the apex broadly whitish, rarely almost all reddish.

Thorax shining black, the mesonotum broadly grayish brown in front except in the middle, the humeri more grayish. Pile yellowish, rather brassy, the mesonotum with scattered, erect, longer black hairs, the upper half of the pleura sometimes almost all black pilose, the mesopleura always chiefly black pilose. Scutellar pile paler than that on the mesonotum.

Legs orange, the coxae brown or black, the posterior pair rarely with a reddish sub-basal spot in front on the outer half; apical fourth of the posterior femora and their tibiae and tarsi black. Pile bright reddish yellow, long on the femora and tibiae, the black portions with black pile, the anterior coxae with appressed yellow pile on the outer half, the posterior coxae with cinereous pile on the outer surface; posterior femora rather strongly swollen, with a few black bristles on the apical third.

Wings hyaline to pale luteous, with the veins especially on the apical half bordered with brownish. Squamae whitish with brown border and fringe. Knob of halteres yellow.

Abdomen shining black, the second and third segments with broad, preapical fasciae and median stripe opaque. Pile mostly appressed, short, black, pale yellowish on the first segment and shining portion of the second. Venter pale pilose on more than the basal half; genitalia shining black and with black pile.

FEMALE.—Front shining black with a small whitish pollinose spot on each side below the middle; pile of the legs much shorter, the tibiae without long dense pile, the posterior pair with some moderately long scattered hairs on the sides of the ventral surface and with very short erect pile on the ventral surface.

TYPES.—Holotype, male, Aylmer, Quebec, July 20, 1924 (Curran). Allotype, female, Colborne, Ontario, 1931 (D. B. Dayman). Paratypes: male, Aylmer, Quebec, July 20, 1924 (Curran); female, Milwaukee, Wisconsin, 1898; male, Big Indian Valley, Catskill Mts., July 29, 1906 (R. F. Pearsall); male, Canada (Slosson Collection); male, Graylock Range, Berkshire Co., Massachusetts, July, 1912; male, Rhineland, Wisconsin, Fall, 1922 (C. L. Fluke); female, Waupaca, Wisconsin, July 9, 1920 (L. B. Gentner); three males and two females, Megantic, Quebec, June 20, 21, 1923 (Curran); male, Hull, Quebec, May 25, 1903; female, Fort Coulonge, Quebec, July 6, 1917 (J. Beaulne); male, Hemmingford, Quebec, June 28, 1924 (G. H. Hammond); female, Laniel, Quebec, August 6, 1931 (H. S. Fleming); two males, Lac le Peche, Quebec, June 25, 1919 (M. B. Dunn); male, Knowlton, Quebec, July 8, 1929 (L. J. Milne); male, Smith's Cove, Nova Scotia, July 15, 1914 (A. Gibson); female, St. Andrews, New Brunswick, June 25, 1923 (E. M. Walker); female, Painsec, Nova Scotia, August 4, 1914 (F. W. L. Sladen); three males and one female, Ottawa, Ontario; female, Ottawa, July 29, 1911 (J. Beaulne); female, Sudbury, Ontario, 1890 (Evans); female, Bobcaygeon, Ontario, June 27, 1931 (J. McDunnough); two males, Orillia, Ontario, June 14, 1927 (Curran); female, Ottawa, Ontario, June 21, 1906 (Jas. Fletcher); two males and two females, Frater, Ontario, August 7, 23 and 28, 1924 (M. B. Dunn); female, Teulon, Manitoba (A. J. Hunter); male, Lillooet, British Columbia, July 20, 1917 (A. Phair); male and two females, Colorado; male, top of Roan Mountains,

above Ute trail, Colorado, July (T. D. A. Cockerell); female, Vermont, 1871 (H. A. Cutting); female, New Hampshire (Williston Collection); male, Franconia, New Hampshire, July 11, 1915 (Mrs. Slosson); male, White Mountains, New Hampshire (Jackson); female, Wilmington Notch, Adirondacks, New York, June, 1929 (J. M. Aldrich); male, Monticello, New York, July 12, 1934.

This is the species that has been identified as *cruripes* Loew, of Europe. It differs in several details and lacks long black hair on the posterior femora. It is readily distinguished from *vecors* by the presence of the long pile on the anterior tibiae of the male and the black coxae. It differs from *satanica* Bigot by having long pile on the posterior tibiae and by having the apex of the femora much more broadly black; and from *plesia* Curran in having yellow halteres and usually black pile on the posterior coxae, long pile on the tibiae, etc. In the female there may sometimes be a reddish spot on the posterior coxae, as in *plesia*, but the color of the pile is distinctive. In *plesia* there are black hairs only on the apex of the middle coxae. The posterior tibiae are very strongly curved, as in *curvipes* and *vecors*. There are occasional specimens of *curvaria* in which the pile on the posterior coxae is mostly reddish yellow so that the length of the tibial pile must be relied upon to distinguish the species; occasionally the face is broadly reddish above the anterior oral margin.

***Heliophilus satanica* Bigot**

Xylota satanica BIGOT, 1883, Ann. Soc. Ent. France, p. 546.

In *satanica* the halteres are reddish with the knob brown to blackish and the posterior coxae are clothed with black pile except on the outer side. The erect pile on the under surface of the posterior tibiae is shorter than in *curvaria* and there are no longish hairs on the sides of the ventral surface and the black color on the posterior femora is only about half as extensive. The two species are quite distinct, the only question being whether I have correctly identified the species. Bigot indicates that

the knob of the halteres is brownish so there seems little doubt about the identification.

I have before me two females from Enumclaw, Washington, collected by J. Wilcox. Bigot's specimen came from California.

***Heliophilus plesia* Curran**

Xylota plesia CURRAN, 1925, Can. Ent., LVII, p. 45.

The blackish halteres distinguish this species at once from *curvaria* and the yellow pile on the posterior coxae separate it from *satanica* Bigot.

Since describing the species I have seen specimens from Low Bush, Ontario (N. K. Bigelow), Orillia, Ontario (Curran) and Knowlton, Quebec (W. J. Brown).

***Heliophilus carri*, new species**

A small blackish species with hyaline wings, the face and front shining. Length, 8 mm.

MALE.—Head shining black, the narrow frontal orbits and posterior orbits cinereous pollinose, the frontal triangle with short pile on the sides. Vertical triangle large, black pilose, the eyes touching for a short distance. Occiput with cinereous yellow pile. Face with scattered short pale hairs. Antennae brown, the third segment yellowish basally, a little longer than wide; arista stout, wholly yellowish. Face rather evenly and deeply concave in profile.

Thorax shining blackish, the mesonotum with a pair of broad median bronzed vittae on the anterior three-fifths and with narrow, less conspicuous dorsocentral vittae that are interrupted at the suture and narrowly separated from the median pair. Pile very short, appressed, brown; cinereous on the pleura.

Legs blackish, the tips of the femora and bases of the tibiae yellowish, the basal segments of the front tarsi possibly reddish; pile black, whitish on the coxae, basal half of the anterior and posterior femora and the whole of the middle pair; posterior femora moderately swollen, with spines on the under surface of the apical third.

Wings cinereous hyaline, the anterior crossvein at most faintly clouded with pale brown, and situated before the middle of the discal cell. Squamae white. Halteres pale yellow.

Abdomen shining black perhaps with yellowish or reddish spots on the second and third segments; second segment with the apical fifth and a broad median vitta opaque, the third with almost the apical fourth and broad vitta opaque. Pile pale yellowish, almost white in some lights, black on the third and following segment, except the shining area on the third, and on the broad, incomplete apex of the second. Genitalia wholly pale pilose. Venter with the second sternite and most of the third, reddish.

HOLOTYPE.—Male, Edmonton, Alberta, May 3, 1916 (F. S. Carr).

The male specimen is very distinct from any other known species but is somewhat teneral so that the colors cannot be described with accuracy. If there are pale spots on the second and third abdominal segments, which is very doubtful, the species will be very readily recognized because of the stout, yellowish arista, which will serve to separate it from *memorum* Fabricius and *baton* Walker.

A female, Low Bush, Lake Nipigon, Ontario, June 15, 1925 (N. K. Bigelow), in the Canadian National Collection, evidently belongs with the male and is to be considered the allotype. The face and lower third of the front are shining, the front with a broad silvery-gray band of pollen across the middle, the upper third bronzed and with black pile; arista brown; legs wholly black; crossvein narrowly bordered with brown. Abdomen black, the second and third segments with subopaque black posterior and anterior crossbands and median vitta, the anterior band and the vitta on the third segment weak; fourth and fifth segments wholly pale pilose. The length is about 9 mm.

***Heliophilus ontario*, new species**

Small, greenish or bluish black, the abdomen mostly opaque; arista reddish yellow; crossveins clouded with brown. Length, 8 mm.

MALE.—Head cinereous pollinose, the cheeks shining blackish, except broadly along the orbits; vertical triangle thinly pollinose across the ocelli. Eyes contiguous for a very short distance. Pile cinereous; face with a few hairs above, the frontal triangle with a few hairs toward each side. Antennae brown, the third segment broader than long; arista short, reddish yellow.

Thorax black; mesonotum with four bronzed vittae, the median pair narrowly separated and extending to behind the middle, the outer pair broad, interrupted at the suture and almost reaching the front and posterior margins. Hair cinereous whitish, brown on the dark vittae.

Legs black, the knees very narrowly yellow. Pile cinereous, black on the broad apex of the posterior femora, on the anterior surface of their tibiae and the upper surface of the apical four segments of the tarsi; posterior femora moderately swollen, with black bristles beneath on the apical third.

Wings cinereous hyaline, the crossveins strongly clouded with brown; anterior crossvein

situated conspicuously beyond the middle of the discal cell. Squamae white. Halteres pale yellow.

Abdomen opaque blackish; anterior corners of the first segment, very large subtriangular spots on the second and a very broadly interrupted broad basal fascia on the third and fourth segments, shining greenish black or bluish black. Pile cinereous yellow; apex of fourth segment fringed with long pale pile. Genitalia shining black, pale pilose.

HOLOTYPE.—Male, Ottawa, Canada, pupal case attached, in Canadian National Collection.

Because the specimen is somewhat teneral it is not possible to give proper color but it seems likely that fully matured specimens will be bluish black.

***Heliophilus flexus*, new species**

Black, the abdomen blue-black with opaque markings. Length, 9 to 11 mm.

MALE.—Head black, thickly cinereous pollinose and with cinereous-yellow pile, the vertical triangle with some blackish hairs in front; the frontal triangle pilose on about half its surface; cheeks bare toward the front. Face rather deeply concave, the oral margin moderately produced. Antennae blackish, the third segment more or less broadly dark reddish below, normally slightly longer than wide; arista black or brown.

Thorax aeneous, dull on the disc behind the suture; pile cinereous yellow to cinereous, a broad, incomplete black fascia behind the suture, the mesopleura with considerable black pile; posterior of mesonotum with some longer, erect black hairs posteriorly. The anterior border of the mesonotum is broadly pollinose except in the middle, cinereous laterally, brown toward the middle. Scutellum with long fine hairs on the margin.

Legs black, the knees reddish; anterior four tibiae rather brownish, the basal segments of their tarsi sometimes reddish. Pile cinereous, black on the apex of the posterior femora on the upper half and a few black hairs apically on the front femora. Posterior trochanters without spur or tubercle; posterior tibiae scarcely produced at apex.

Wings with slight brownish tinge, the stigma luteous. Squamae white with yellow border, halteres yellowish.

Abdomen blue-black to rather greenish black; first segment opaque with the sides shining; second segment opaque, with large, rectangular shining spots that are broadly separated from the basal margin except laterally; third segment shining with a broad apical fascia and median vitta opaque; fourth segment and the sides of the abdomen wholly shining. Pile cinereous, black on the opaque markings and on an elongate basal triangle on the fourth segment. Venter blackish, with pale pollen and pile, Genitalia wholly pale pilose.

FEMALE.—Front wide, cinereous pollinose, shining on the upper third except at the venter, less thinly pollinose on the anterior fourth; pile pale, black on the shining band. Mesonotum with traces of two opaque vittae, the dark band of pile more brownish. Fifth abdominal segment shining and wholly pale pilose.

TYPES.—Holotype, male, Oliver, British Columbia, May 4, 1923; allotype, female, Oliver, May 16, 1923; paratypes, three males, Oliver, May 2, 15, 19, 1923, all collected by C. B. D. Garrett. The types are in the Canadian National Collection.

The types were compared with the types of *dubia* Shannon and *brevipilosus* Shannon by Mr. David G. Hall who stated that they were evidently distinct.

Heliophilus arcticus, new species

Black, the thorax and abdominal markings aeneous; metasternum pilose. Length, 12 mm.

MALE.—Head black, thickly cinereous pollinose, the vertical triangle and anterior third of the cheeks shining; pile cinereous yellow, black on the vertical triangle, the frontal orbits with fairly long hair. Antennae brownish red, the arista and most of the third segment blackish; third antennal segment slightly longer than wide.

Thorax aeneous, the mesonotum black and black pilose behind the suture except for a narrow prescutellar band of yellowish pile; pile rather long, yellowish in front of the suture, on the pleura and on the scutellum, the latter with fine bristly hairs on the margin.

Legs black, the tips of the femora, broad bases of the tibiae and the two basal segments of the anterior four tarsi reddish. Pile whitish, black on the apical third of the posterior femora and on the apices of the anterior four. Posterior trochanter with a short spur.

Wings cinereous hyaline, the veins brown; stigma luteous. Squamae whitish with yellow border. Halteres yellow.

Abdomen aeneous and opaque black. First segment opaque in the middle; second with the incomplete anterior border, a median vitta and very broad, almost complete posterior border opaque; third with similar opaque markings, the anterior dull band narrower; fourth wholly aeneous. Pile yellowish, black on the opaque posterior fasciae and on the apex of the fourth segment. Genitalia wholly pale, pilose. Venter very thinly pollinose and with wholly yellowish pile.

HOLOTYPE.—Male, Churchill, Manitoba, July 29, 1934 (Miss A. M. Heydweiller).

Heliophilus americana Shannon

Xylotomima nemorum americana SHANNON, 1926, Proc. U. S. N. M., LXIX, Art. 9, p. 21.

? *Xylotomima dubia* SHANNON, 1926, idem, p. 22.

This species differs from the European *nemorum* Fabricius, in having the mesonotum mostly black pilose behind the suture and the presence of black hair on the mesopleura. I cannot be at all certain of the identity of *dubia* but it seems most likely that it is a specimen of *americanus* without yellowish spots. I have before me a specimen compared with the male type of *dubia* and apparently agreeing with the female mentioned by Shannon in the description but which is no longer associated with the male. The female before me is certainly *americanus* and agrees with other specimens except in the total absence of the pale spots.

I suspect that eastern records of *nemorum* should properly be referred to *baton*, and that *americanus* is limited to the West Coast and Rocky Mountain region.

Heliophilus baton Walker

Xylota baton WALKER, 1849, List Dipt. Brit. Mus., III, p. 554.

Xylota fraudulosa LOEW, 1864, Berl. Ent. Zeitschr., VIII, p. 71.

A common species in the East. The female rarely has the reddish abdominal spots obsolete. The length of the pile on the thorax varies somewhat but is always shorter than in *americanus*. The base of the arista is broadly reddish yellow.

Heliophilus inarmatus Hunter

Brachypalpus inarmatus HUNTER, 1897, Can. Ent. XXIX, p. 142.

Brachypalpus apicaudus CURRAN, 1922, Can. Ent. LIV, p. 119.

A widely distributed species in southern Canada and the northern States, but not well represented in collections. Before me are specimens from British Columbia, Idaho, Alberta, Manitoba, Wisconsin and Ontario, and it has been recorded from Maine.

In the type of *apicaudus* the anterior half of the vertical triangle is black pilose and the posterior tibiae bear mostly black hair. However I can find no other differences worthy of note. The Wisconsin specimens are darker in color but agree in all other respects. In the male from Idaho the fourth abdominal segment is scarcely emarginate in the middle and the eyes are

more widely separated than in other specimens. In some specimens the eyes are only narrowly separated but this varies in specimens from the same locality. I can find no genitalic differences in the specimens before me and conclude that all should be considered *inarmatus*.

***Heliophilus argoi* Shannon**

Xylota argoi SHANNON, 1925, Proc. U. S. N. M., LXIX, Art. 9, p. 38.

Shannon had only the female and separated the species from *flavitibia* Bigot on tarsal coloration. I have not seen the female but have three males before me that undoubtedly belong here. The species is close to *notha* Williston in appearance but I can see no trace of pubescence on the arista, and the tarsi are brownish basally, not reddish yellow. In *segnis* Linnaeus, which also belongs to this group, the basal two segments of the anterior tarsi are reddish yellow and the abdomen is distinctly more elongate.

My material is from Washington, Colorado and British Columbia.

***Heliophilus flukei*, new species**

Black, with rectangular orange spots resting on the base of the second abdominal segment; legs blackish, the knees narrowly reddish. Length, 7 to 8 mm.

MALE.—Face and the whole frontal triangle whitish pollinose, the posterior orbits with rather thin cinereous yellowish pollen on the lower half; frontal triangle without pile; vertical triangle and upper half of the occiput black pilose, the occiput cinereous pilose below. Antennae with the basal segments black, the third brown and reddish, suborbicular, longer than wide; arista rather short but still longer than the width of the face at the lower third.

Thorax black, the mesonotum more or less bronzed; pleura and sides of the mesonotum in front with cinereous pile, the mesonotum black-haired behind the suture and with brownish-yellow hair in front; posterior calli with brownish-yellow pile and a few black bristles in front; scutellum with short black hair and two black bristles.

Legs black, the femora shining, knees narrowly reddish-yellow; pile cinereous; posterior legs black pilose except the narrow base of the femora, the coxae and the basal two tarsal segments; apical segments of the anterior four tarsi black-haired; posterior trochanters with only a trace of a tubercle.

Wings with slight brownish tinge; stigma luteous; posterior crossvein slightly before the mid-

dle of the discal cell. Squamae white; halteres yellow.

Abdomen black, shining; the second segment opaque; the third with a weak opaque incomplete blackish band behind the middle and a median stripe in front. Second segment with a pair of large, almost square orange spots resting wholly on the base of the segment and extending to behind the middle; third segment with much smaller, basal, reddish spots laterally. Pile black, whitish on the base, sides of the first two segments and on the small lateral basal triangles on the third and fourth segments. Genitalia black-haired; venter black, the second sternite brownish red.

FEMALE.—Front moderately wide, shining black, with a broad medianly narrowed band of cinereous pollen across the anterior fourth; pile black, whitish on the sides of the pollinose band. Posterior femora with white pile below and in front on the basal third or less. Orange spots on the second abdominal segment rectangular, transverse; those on the third large, transverse and scarcely reaching the lateral margins; fifth segment wholly black pilose.

TYPES.—Holotype, male, allotype, female, and paratype, male, Door Co., Wisconsin, June 26 and 21, 1931 (C. L. Fluke). The female has been returned to Dr. Fluke.

This is a very distinct little species and may be at once recognized by the fact that the orange spots rest on the bases of the abdominal segments. In related species the spots are separated from the base of the second segment by a basal expansion of the median black vitta and therefore touch the base of the segment on not more than their outer half.

***Heliophilus tuberculatus*, new species**

Black, with metallic blackish-blue abdominal spots; mesopleura with coarse black hairs above in male. Length, 10.5 to 11.5 mm.

MALE.—Head thickly covered with yellowish cinereous pollen; the ocellar triangle, upper occiput and a large area on the cheeks shining black. Pile yellowish above, becoming almost white below. Frontal triangle wholly pollinose, the lunula reddish yellow. Antennae black, the third segment brown, longer than wide, the arista somewhat longer than the width of the face.

Thorax shining black, the mesonotum bronzed. Pile yellowish, rather abundant on the mesonotum where there are isolated long black hairs intermixed; scutellum with the long hairs mostly blackish or rusty brown. The grayish pollen on the humeri and pleura is rather thin. The mesonotum bears coarse black hairs immediately above the base of the wings and on the posterior calli; the black hairs on the mesopleura vary from six to fifteen.

Legs black; the basal third or more of the tibiae, the apices of the anterior four, and the basal two segments of the front four tarsi reddish; middle tibiae with the dorsal surface reddish on their whole length. Spur of posterior trochanters in the form of a rounded tubercle.

Wings tinged with brown. Squamae white; halteres yellow.

First and fourth abdominal segments metallic blackish-green, the second and third segments opaque blackish-brown, with large subrectangular metallic spots, and the fourth segment has a subtriangular metallic spot on each side basally. The pile is pale yellowish, but the opaque areas of the second and third segments, and the fourth segment, except on the metallic spots and sides, bear shorter black hair. The very broad apex of the fourth segment, the genitalia and most of the fifth sternite are brownish red. Fifth sternite with black and pale hairs intermixed. The metallic abdominal spots appear bluish in some lights.

FEMALE.—Front of moderate width, pale pilose; on the anterior third with a broad pale pollinose fascia connected narrowly along the orbits with the facial pollen. Pile of the mesonotum more brassy, closely appressed and with very few erect black hairs; notopleura and mesopleura with only one or two black hairs, or none; black hairs above base of wing abundant but the posterior calli bear fewer black hairs than in the male and they are chiefly limited to the anterior half; scutellar bristles yellow instead of black. The metallic abdominal spots are somewhat reddish, those on the fourth segment larger and transverse; fifth segment with a few pale hairs on the basal corners.

TYPES.—Holotype, male, and allotype, female, Macdiarmid, Ontario, July 14 and 30, 1923 (N. K. Bigelow).

This species is closely related to *atlantica* Shannon and *naknek* Hine, but is readily distinguished from both, in the male, by the much smaller trochanteral spur.

***Heliophilus micrurus*, new species**

Black, the abdomen with metallic-bluish spots; mesopleura of male with black hairs above. Length, 9 to 10.5 mm.

MALE.—This species is very close to *tuberculatus* but has a shorter abdomen; the mesonotal pile is conspicuously shorter and more appressed, the erect black hairs are shorter and the hair on the scutellum is all pale, only the bristles being black; the legs are more extensively pale, and the pale areas are lighter in color. Genitalia and fifth sternite almost all blackish.

FEMALE.—Front more strongly widening anteriorly and with the sides parallel above on only the upper fifth. There is no obscure area of black and pale hair intermixed on either side of the mesonotum well before the scutellum and the scutellar bristles are black. Abdominal markings practically as in *tuberculatus*.

TYPES.—Holotype, male, and allotype, female, Pingree Park, Colorado, August 22, 23, 1926. Paratypes: female, Estes Park, Colorado, August 18, 1919; female, Waterton Lakes, Alberta, July 4–11, 1923; six males and nine females, Lake City, Colorado, August 8–21, 1938, and one female, August 8–15, 1936 (C. L. Fluke); five females from Pingree Park, Colorado, August 17, 1932, and August, 1935; one female, Westcliff, Colorado, August 31, 1924 (C. L. Fluke).

This species is so close to *tuberculatus* that it can probably be distinguished only by comparison of specimens, especially in the male. The male of *tuberculatus* has longer and more abundant hair on the apex of the middle coxae and shows a number of minor differences that are apparent when the two forms are examined together. The wider front of the female of *micrurus* is apparently the best character for the separation of the two forms. The color of the scutellar bristles may not prove of value but the presence of two small areas of mixed black and yellow hair on the disc of the mesonotum at the posterior fourth should prove to be of service in separating the two. All the abdominal segments of *tuberculatus* are longer than in *micrurus*,

***Heliophilus mixtus*, new species**

Black, the abdomen with metallic-blue spots; mesopleura with black hairs above. Length, 9.5 mm.

MALE.—Face and front thickly cinereous-yellow pollinose, the occiput with cinereous pollen; frontal triangle very narrowly bare in front. Ocellar triangle shining black. Pile with slight yellow tinge. Antennae black; the third segment brown, distinctly longer than wide.

Thorax shining black, the notopleura and pleura with thin cinereous pollen, the humeri more thickly pollinose. Pile pale yellow, brassy on the mesonotum, with a broad narrowly interrupted band of brown behind the suture and a triangle of black hairs above the roots of the wings; the coarse black hairs absent on the notopleura but present on the mesopleura and abundant on the posterior calli. The coarse erect hairs and scutellar bristles are brown with more or less golden reflection. The pile is a little longer and more abundant than usual in the genus. Mesonotum with slight bronze reflections.

Legs black; tips of the anterior four femora and basal third of their tibiae and the basal fourth of the posterior tibiae reddish; apices of

the anterior four tibiae and the basal two segments of their tarsi reddish yellow. Posterior femora with double row of short bristles extending almost to the base; spur on hind trochanter short but strong.

Wings tinged with brown. Squamae white; halteres yellow.

Abdomen black, the second and third segments opaque. First segment, large rectangular transverse spots on the second and third segments, and a broad band occupying the basal third of the fourth segment, metallic blue. Pile pale yellowish, moderately long; black on the opaque areas and on the fourth segment with the exception of the sides and large sub-basal triangles. Genitalia entirely pale pilose.

HOLOTYPE.—Male, Franconia, New Hampshire (Mrs. A. T. Slosson).

Heliophilus ouelleti, new species

Black, the abdomen with metallic greenish-black spots. Length, 9 mm.

MALE.—Head cinereous pollinose; the vertical triangle, upper occiput, middle of the cheeks and an area above the antennae shining. Pile pale yellow, black on the ocellar triangle. Antennae black, the third segment brown; arista slightly longer than the facial width; third segment slightly longer than wide.

Thorax shining black; the middle of the pleura and the anterior fifth of the mesonotum aeneous. Pile cinereous yellow on the front of the mesonotum and on the pleura, otherwise black; fine hairs on the scutellum mostly pale.

Legs black; bases of all the tibiae broadly reddish; basal two segments of the anterior four tarsi reddish brown. Bristles on under surface of posterior femora extending to the basal fourth. Spur on the posterior trochanters small, tuberculate, almost apical.

Wings strongly tinged with brown; paler in the basal and anal cells. Squamae white, with pale yellow border and fringe; halteres yellow.

Abdomen with the first and fourth segment shining black, somewhat aeneous, the intermediate segments opaque brownish black and each with a pair of large subrectangular metallic greenish-black spots that extend over the side margins in their full width. Pile pale on the first segment and on the metallic spots; on the fourth segment the pale pile forms a pair of subtriangular lateral spots extending from the base to the middle of the segment and there is a large discal apical spot of the same color; the black pile shorter, coarser and subappressed. Genitalia with black hairs above. Under surface of abdomen wholly pale pilose.

TYPE.—Holotype, male, Lanoraie, Quebec, July 2, 1932 (Bro. Joseph Ouellet).

Heliophilus ejuncida Say

Xylota ejuncida SAY, 1824, Amer. Entomol., I, Pl. VIII; Complete Works, I, p. 15.

Xylota ejuncida WIEDEMANN, 1830, Ausser. Zweifl., II, p. 100.

Xylota viridaenea SHANNON, 1926, Proc. U. S. N. M., LXIX, Art. 9, p. 33.

The identification of this species has been confused by the general determination of other forms under the name *ejuncida*. Say's original description leaves no doubt about the identity of the species he described, the statement, "posterior pair femora not remarkably dilated, exterior series of spines nearly equal from near the base to the tip," can apply only to this species. The type, a male, came from Florida. A second specimen, taken near Philadelphia, is mentioned, but there is no way of determining whether this was conspecific. I have before me one female from Florida, one from Maryland and a male from New York City. Shannon described *viridaenea* from Georgia so it appears that the species is widely distributed along the Atlantic coast.

In his review of the xylotine syrphids Shannon has confused matters by retaining the name *elongata* Williston as a variety of *ejuncida*. Williston had previously placed *elongata* as a synonym of *angustiventris* Loew, basing his action on the female from New Hampshire and placing the second female under *anthreas* Walker. This action by Williston definitely disposes of his *elongata* and the name is not available for use, regardless of the identity of the second female, which is, apparently, a melanistic form of one of the species related to *ejuncida*.

Heliophilus quadrimaculata Loew

Xylota quadrimaculata LOEW, 1865, Berlin Ent. Zeitschr., IX, p. 165; Cent., VI, No. 56.

Related to *ejuncida* Say but the bristles on the posterior femora are limited to the apical third or less. Length, 8 to 12 mm.

MALE.—Head black in ground color, only the apex of the frontal triangle reddish yellow; face, frontal triangle and occiput with grayish-white pollen, the frontal triangle usually with brassy tinge and pollinose quite to the lunule. Vertical triangle and upper occiput with brassy-yellow pile, the pile on the lower occiput becoming whitish. A shining black triangle on the middle of the cheeks. Antennae varying from black to reddish brown, the third segment always very broadly reddish beneath; arista brown, slender.

Thorax black, the mesonotum and scutellum more or less aeneous or bronzed; the pile brassy

yellow, appressed, on the dorsum above the base of the wings a few black bristly hairs; posterior calli without black hairs; scutellar bristles pale. Pleura in large part pale pollinose.

Legs black, the tibiae and basal two tarsal segments yellowish and with very short, appressed, pale yellow pile, the basal segments of the posterior tarsi often partly pale reddish-brown above; posterior tibiae brown on the apical two-thirds; tips of all the femora reddish yellow; spur on posterior trochanter moderately strong. Bristles on the posterior femora limited to the apical fourth, the under surface with abundant very short black bristly hairs.

Wings cinereous hyaline, sometimes with brownish tinge; the stigma brown.

Abdomen greenish black, the second and third segments opaque except on the sides and each bearing a pair of large subrectangular yellow spots which vary somewhat in size and shape but are usually widest laterally; when reduced in size the spots are replaced by metallic color. The fourth segment may be all black but is usually more or less brownish-red apically and sometimes on the base and sides. Pile yellowish; black on the opaque areas and on the fourth segment except laterally where the pale pile occupies a triangle extending from the base to the apex; the pale pollinose areas occupying not more than the lateral fourth of the segment. Pile of genital segments wholly yellowish.

FEMALE.—Front with a broad whitish pollinose fascia across the lower third; yellow abdominal spots smaller, more transverse, sometimes almost wholly absent or with strong metallic color. The pale abdominal pile is white, the pale pilose spots on the fourth segment larger, extending inward beyond the lateral fourth; the ground color beneath them with a bluish sheen; fifth segment wholly black pilose. Certain females of this species may have the front four tibiae almost wholly yellow in ground color. These may be distinguished by the presence of a triangle of black hair above the bases of the wings and the blackish posterior tarsi.

This species is common and widely distributed in the eastern half of the United States and Canada.

***Heliophilus annulifera* Bigot**

Xylota annulifera BIGOT, 1883, Ann. Soc. Ent. France, p. 545.

Very similar to *quadrimaculata* Loew but the anterior four tibiae are black or brown in ground color on more than the apical half, and there is a moderately large triangle of black hair on each side of the mesonotum above the root of the wings. The pollen of the frontal triangle is less inclined to be brassy and extends quite to the lunule. Arista blackish. Pile of the mesonotum more abundant and longer, being less

closely appressed; one or two bristly black hairs usually present on the posterior calli. Posterior tarsi wholly brown or black; posterior femora with bristles only on the apical third. Genitalia wholly pale-haired. In addition to the above characters it may be noted that the anterior crossvein is situated nearer to the middle of the discal cell than in *quadrimaculata* but there seems to be a slight variation in its position.

Specimens before me are from Connecticut, New Hampshire, New York, Montana, New Brunswick, Ontario, Quebec, Wisconsin and Tennessee.

***Heliophilus hinei*, new species**

Differs from *quadrimaculata* Loew in having the anterior four tibiae more than half black, the genitalia with black hair above, an almost complete band of black hair on the mesonotum behind the suture and the presence of coarse black bristly hairs on the posterior calli. The gray pollen on the frontal triangle leaves a rather broad bare space above the lunule, the pile of the mesonotum is more abundant and much less brassy; the bristles on the posterior femora extend irregularly to the basal fourth but are very much shorter than in *ejuncida* Say. In fresh specimens there are rather numerous erect fine hairs in front of the scutellum but these are delicate and are easily rubbed off.

The females have the spines on the posterior femora shorter but they are conspicuous due to the absence of thick hair.

TYPES.—Holotype, male, and allotype, female, Aylmer, Quebec, June 24, 1924. Paratypes: two males, three females, Aylmer, June 24, 27, 1924; female, Hemmingford, Quebec, June 26, 1923; female, Orillia, Ontario, May 21, 1921 (Curran); male, Kazubazua, Quebec, July 17, 1927 (W. J. Brown); male, Putnam, Ontario, June 26, 1925 (G. S. Walley); female, Sudbury Township, Ontario, July 10, 1925 (M. B. Dunn); male, Fredericton, New Brunswick, August 14, 1922 (A. B. Baird); female, Beulah, Manitoba, July 13, 1927 (E. S. Criddle); two males, one female, Sugar Lake, British Columbia, September 1, 5, 1924 (E. R. Buckell); male, Departure Bay, British Columbia, September 6, 1908; female, Hague, N. Y., July 17, 1915; male, Price County, Wisconsin, August 27, 1897 (W. M. Wheeler); male, Clark County, Wisconsin, July 13, 1919; male, Melborn's Mill, near Halfway, Baker Co.,

Oregon, July 5, 1923 (W. J. Chamberlin); male, Door County, Wisconsin, August 25, 1927 (C. L. Fluke).

Heliophilus bigelowi, new species

Black, the mesonotum slightly bronzed; abdomen of male with four reddish spots, abdomen of female with metallic spots; frontal triangle of male broadly bare in front. Length, 9 to 11 mm.

MALE.—Face and front with cinereous pollen, that on the front sometimes strongly tinged with dull yellowish. Frontal triangle very broadly shining in front, above with whitish hairs on the sides. Vertical triangle black, with cinereous yellow pile. Occiput with whitish pollen and pile. Cheeks thinly pollinose. Antennae black, the third segment brown or brownish red, normally distinctly longer than wide but sometimes appearing almost orbicular due to drying; arista brown.

Thorax black, the dorsum slightly bronzed; pile yellowish to pale tawny, rather abundant; the pleura, sides of the mesonotum in front and the scutellum with whitish hair; the scutellum with four poorly differentiated whitish marginals. A small tuft of coarse black hair above the base of the wings; posterior calli with two or three black bristly hairs in front.

Legs blackish; the basal third or less and the tips of the anterior four tibiae, the basal three segments of their tarsi and the basal fourth of the posterior tibiae reddish yellow; the basal two segments of the posterior tarsi sometimes brownish red. Pile whitish, black on the apical third of the posterior femora and on the apical tarsal segments; the posterior femora with black bristles below except basally.

Wings cinereous hyaline, more or less brown tinged on the apical half; stigma luteous; anterior crossvein well beyond the middle of the discal cell. Squamae white; halteres yellow.

Abdomen opaque black; the base, sides and fourth segment, except the narrow base, shining. Second and third segments each with a pair of widely separated orange or reddish-yellow spots well separated from the base, the sides of the segments metallic greenish. Pile black, pale yellowish on the base, on the yellow spots and on the large anterior angles of the fourth segment. Genitalia mostly black or brown-haired. Venter sometimes almost all reddish, usually about half black.

FEMALE.—Front narrow, strongly widening below, above the anterior fourth with a broad band of cinereous pollen that is very narrowly connected along the orbits with the facial pollen; pile all whitish. Pile of mesonotum short and appressed, paler, a large triangle of black hair on each side behind the suture. Abdomen without distinct pale spots.

TYPES.—Holotype, male, Low Bush, Ontario, July 14, 1925; allotype, female, Camp No. 23, Lake Abitibi, Ontario, July

8, 1925 (N. K. Bigelow). Paratypes: male and female, Low Bush, Lake Abitibi, Ontario, July 14, 1925; male, Macdiarmid, Ontario, July 12, 1922 (N. K. Bigelow); male, Sault Ste. Marie, Ontario; male, Stonewall, Manitoba, June, 1919 (J. B. Wallis); female, Teulon, Manitoba, July 8, 1920; female, Selkirk, Manitoba, June 27, 1922; female, Winnipeg, Manitoba, July 12, 1920 (A. J. Hunter); female, Lake Mills, Wisconsin, July 4, 1935 (Fred Snyder).

This species bears a strong resemblance to the European *H. florum* Fabricius but differs in several details, but more obviously in having longer pile on the thorax of the male.

Heliophilus rainieri Shannon

Xylota rainieri SHANNON, 1925, Proc. U. S. N. M., LXIX, Art. 9, p. 34.

Shannon compared this species with *flavifrons* Walker but it seems to be closer to *analis* Williston and is actually rather difficult to separate. The presence of black pile on the posterior half of the fourth abdominal segment of the male makes this segment appear darker than in *analis* in which the color of the segment appears more metallic green because of the cinereous or yellowish pile. In the females before me the front is almost twice as wide as in such species as *quadrimaculata* Loew and allies and may be readily separated by this character. In the female the orange spots are reduced or wanting and were it not for the brownish-red arista they might well be referred to another species. The arista is not much paler than in specimens of *analis* (of which I have only males) and I suspect that the females of the two species will be difficult to separate.

This species is known from Washington, California and Oregon.

PLANES RONDANI

RONDANI, 1863, Arch. Zool., III, p. 9.

SHANNON, 1926, Proc. U. S. N. M., LXIX, Art. 9, p. 13.

Planes was established by Rondani with *Xylota vagans* Wiedemann as the type. The name was placed in the synonymy of *Syrrita* and remained there until the revision by Shannon of the American xyloine

syrphid flies, when he recharacterized the genus and added several species. Shannon separated the genus from his *Xylotomima* and *Xylotodes* on the subcarinate face and the presence of a keel or ridge on the lower slopes of the metanotum inside the posterior spiracle. An examination of the material before me shows that there is considerable variation in both these characters with the result that the separation in *Planes* and the two Shannon genera is rather difficult and some of the species placed in *Planes* are better placed in his *Xylotomima* which I consider to be no more than a group of *Heliophilus*. Several of the species belonging in *Xylotomima* have the metanotal keel well developed but none of them have the face quite so sharply rounded as the species I place in *Planes*, all of which are similar to *vagans*. I doubt that *Planes* can be logically retained as a distinct genus, but pending the study of more abundant material, keep it separate for the present. In *Planes* both sexes either possess or lack a tubercle on the posterior trochanter. This tubercle may be acute or rounded and apparently does not vary in the sexes of the same species, a condition which does not exist in *Heliophilus* in which only the males are spurred.

The number of species that belong in *Planes* in the strict sense is evidently quite large. In addition to those included in the key are *Syritta americana* Schiner, *Syritta mexicana* Bigot, and *Planes schildi*, *boliviensis* and *minor* Shannon. Of the other species included by Shannon I have seen only *pretiosa* Loew which I should place in *Heliophilus*. I have not been able to identify any of the species before me with those named above.

TABLE OF SPECIES

- 1.—Anterior four tarsi with the apical two or three segments black or brownish.....3.
- Anterior four tarsi with the apical segments reddish yellow.....2.
- 2.—Male genitalia cinereous-yellow pilose; posterior tarsi brownish (Brazil) . . .
.....*armatipes*, n. sp.
- Male genitalia with coarse black pile; basal three segments of posterior tarsi yellow (British Guiana).....
.....*palitarsis* Curran.
- 3.—Third abdominal segment with black or brown pile above except on the sides.....4.
- Third segment with brassy-yellow pile on the apical half (Brazil).....
.....*bidens*, n. sp.
- 4.—Apex of abdomen metallic steel-blue (Cuba).....*pachymera* Loew.
- Apex of abdomen metallic greenish-black.....5.
- 5.—Front of female and vertical triangle of male wholly pale pilose.....8.
- A broad band of black pile across the ocelli.....6.
- 6.—Pollinose band of the front of the female with V-shaped emargination extending half way through it from above (Panama)..*panamena*, n. sp.
- Pollinose band gently or not at all emarginate above.....7.
- 7.—Two apical segments of the tarsi blackish (Brazil, British Guiana)....
.....*vagans* Wiedemann.
- Three apical segments of the anterior four tarsi black (Panama).....
.....*lyrica*, n. sp.
- 8.—Pollinose band of front of female longer than the transverse width; border of squamae wholly dark brown (Brazil).....*ariel*, n. sp.
- Not with both these characters.....9.
- 9.—Pollinose band of front of female longer than the transverse width; squamae without brown; fifth sternite of male broadly produced on each side and bearing dense, erect, reddish-yellow pile (British Guiana).....
.....*smartii*, n. sp.
- Pollinose frontal band of female transverse; fifth sternite of male not so.....10.
- 10.—Frontal triangle of male more than half pollinose (Brazil).....
.....*frontalis*, n. sp.
- Frontal triangle with only the orbits pollinose.....11.
- 11.—Two segments of the front tarsi black (Panama, Brazil).....*puma*, n. sp.
- Three segments of the front tarsi black (Honduras).....*azteca*, n. sp.

***Planes armatipes*, new species**

Black with orange markings, the face yellow below; male with a stout, obtuse spur near the base of the femora below. Length, 9 to 10 mm.

MALE.—Head black, clothed with cinereous pollen which is tinged with yellow on the frontal triangle and upper part of the occiput and brownish yellow on the vertex; lower half of the face yellow in ground color. Frontal triangle shining black except on the orbits, luteous in front; about a dozen fine yellow hairs on each side. Vertical triangle very long, the ocellar triangle shining, the pile and that on the upper occiput bright brassy-yellow, on the lower occiput white; several short black bristly hairs behind the eyes above. Cheeks shining below. Face obscurely carinate and moderately concave. Antennae brownish; third segment mostly black, twice as long as wide, the apex convex; arista shining brown.

Thorax black, the posterior calli brownish red, the scutellum broadly bordered with reddish on the free margin. Mesonotum with bright brassy-yellow pile so arranged that, from oblique posterior view it forms a pair of dorsocentral vittae which are connected with a posterior fascia; on the disc behind the suture with black pile which projects triangularly forward in the middle and there is black hair above the roots of the wings. Pleura with cinereous pollen and white pile.

Coxae and femora black, the trochanters reddish, the posterior femora with a short, obtuse spur below near the base; apices of the femora reddish yellow; anterior four tibiae and tarsi yellowish, the apical segment slightly darkened; posterior tibiae brownish red or pale brownish with yellow base, their tarsi reddish brown. Pile whitish on the tibiae and tarsi, yellowish on the femora, the posterior femora with black bristles on the apical half of the ventral surface.

Wings lightly infuscated or pale brownish. Squamae white, with brown border and fringe. Halteres reddish yellow.

First abdominal segment dull black, reddish in the middle. Second segment brownish red on almost the whole length laterally and with a pair of reddish-yellow spots which extend from near the base to the apical third, the broad median vitta and posterior border opaque, the anterior dull fascia pale brownish. Third segment with an interrupted basal reddish fascia that occupies about one-third in the middle and a little more than one-half laterally, the anterior angles with a shining black triangle, the median vitta and posterior portion opaque black; the fourth segment and genitalia shining greenish-black. The sides of the abdomen are wholly broadly shining. Pile bright brassy-yellow, white on the first segment and sides of the second. Genitalia cinereous pollinose. Venter with cinereous pollen and pale yellow pile.

FEMALE.—Front narrow, shining black, more or less metallic, with a very broad band of yellowish-cinereous pollen lying chiefly in front of

the middle, the pile wholly yellowish. Posterior femora without tubercle. Lower squamal lobe with pale border exteriorly. The reddish spots on the second abdominal segment are almost as in the male but those on the third segment are replaced by metallic black; third segment with some black hair posteriorly, the pile generally pale yellowish; fifth segment short.

TYPES.—Holotype, male, allotype, female, and paratype, female, Nova Teutonia, Brazil, September 5 and 4, 1938, and April 26, 1938 (Fritz Plaumann).

***Planes bidens*, new species**

Third abdominal segment wholly pale pilose above, the second segment without conspicuous pale spots. Length, 9 to 10 mm.

MALE.—Head wholly black, the pollen yellowish cinereous, whitish on the occiput but on the upper occiput strongly yellowish or with brownish tinge. Frontal triangle shining except on the orbits, metallic. Vertical triangle with sericeous pollen in front which becomes brownish well in front of the ocelli, shining behind. Occiput thickly pollinose, the pile brassy yellow above, white below. Cheeks broadly shining black in front. Face rather shallowly, angularly concave, thickly pollinose, the anterior oral margin with trace of narrow shining V. Antennae blackish or with the basal segments rather brownish; arista brown or dark reddish with broad black apex. Hairs of the frontal triangle and the pile on the vertical triangle brassy yellow.

Thorax black, the posterior calli reddish or brown, the pleura thinly white pollinose and with fine white pile. Mesonotum bronzed, with short, pale brassy-yellow pile: from posterior view with pair of brassy-yellow dorsocentral vittae that are connected posteriorly and at the suture with a sublateral brassy vitta; in the middle with an incomplete stripe of black pile, the median and lateral vittae separated by black and there is a small patch of black pile sublaterally in front of the suture and another above the roots of the wings. The black hair is very short and not easily seen. The scutellar pile is wholly pale yellowish.

Legs black, the knees reddish; basal two or three segments of the anterior four tarsi yellowish, the apical segments black. Pile whitish, yellow beneath the posterior femora, which bear only very short black bristles on the whole length below and some black bristles on the apical half, the upper apex broadly brown pilose; apical two segments of the posterior tarsi black-haired.

Wings tinged with brown, the stigma dark brown. Squamae white with brown border, the knob of the halteres partly brownish.

Abdomen black, the third segment with a broadly interrupted sub-basal reddish fascia that does not reach the lateral margin. First segment with thin whitish pollen, rather dull in

the middle; second opaque with the sides rather narrowly shining. Third segment opaque with the broad apex and sides shining, somewhat metallic greenish. Fourth segment shining, strongly brassy. Genitalia with cinereous yellow pollen. Pile brassy yellow, whitish on the first segment and the sides of the second to beyond the middle.

FEMALE.—Front moderately broad, with a very broad band of yellowish-brown pollen that becomes cinereous toward the sides and sometimes anteriorly; the apices of the femora and the broad bases of the tibiae yellowish; the apex of the posterior femora with black hair above. Second abdominal segment sometimes with small reddish subtriangular spots near the middle, the third with metallic instead of reddish spots; fifth segment wholly metallic.

TYPES.—Holotype, male, and allotype, female, Nova Teutonia, Brazil, December 12, 1936, and October 7, 1937 (Fritz Plau-mann). Paratype, female, Chapada, Brazil, November (Williston Collection).

Planes panamena, new species

Shining black, the abdomen with four reddish spots; anterior tibiae wholly pale, the apical two tarsal segments brownish. Length, 8 mm.

FEMALE.—Front narrow above, shining greenish-black, below the middle with a broad, whitish pollinose band that is triangularly excised in the middle above for almost half its width; pile whitish, black on about the upper third. Occiput cinereous pollinose and white pilose, above with short tawny pile and black bristles. Cheeks shining black in front. Face gently concave, yellow on more than the lower half, thickly whitish pollinose. Antennae black, the base of the third segment below and much of the second segment reddish; arista reddish with brown apex.

Thorax black, the posterior calli more or less dark reddish; pleura with cinereous pollen which forms a dense band across the middle. Mesonotum greenish black, bronzed on the disc, the pile bright brassy yellow, the vittae broad; the black pile is limited to above the wings, and the stripe separating the dorsocentral and sublateral yellow vittae. Scutellum wholly black, yellow pilose.

Legs black, the apices of the femora, whole of the anterior four tibiae and the basal third of the posterior tibiae pale reddish-yellow; anterior four tarsi yellow with the apical one or two segments brown. Pile pale yellowish, white on the tibiae, tarsi and upper surface of the posterior femora, black on the apex of the posterior femora, on the sides of the posterior tibiae and on the apical two segments of their tarsi. The posterior tibiae are mostly ferruginous, their tarsi brown.

Wings cinereous hyaline. Squamae white with yellowish fringe. Halteres yellow.

Abdomen greenish black with four pairs of

reddish-yellow spots. First segment wholly shining. Second segment opaque black on the disc, with a pair of broad yellow spots that widen laterally and expand broadly along the margins to reach the base and the apical sixth. The spots on the third segment occupy about the basal half and are broadly separated from the lateral margins and widest laterally; sides of the third segment and the whole of the following segments shining. Pile yellowish, black on the black portions of the posterior half on the third segment, on the opaque portions of the third segment and on the disc of the second segment to beyond the middle.

TYPES.—Holotype, female, Barro Colorado Island, Canal Zone, February 21, 1929; paratype, female, Corozal, Canal Zone, January 22, 1929 (Curran).

In specimens in which the anterior tarsi may be pale apically the narrow front will at once distinguish this species from *armatipes*.

Planes lyrica, new species

Shining black, the abdomen with four reddish-yellow spots; apical three tarsal segments black. Length, 10.5 mm.

MALE.—Frontal triangle shining black, the orbits cinereous-yellow pollinose. Vertical triangle narrow, shining, golden-yellow pollinose in front of the ocelli, the pile reddish yellow. Occiput whitish pollinose and pilose, the upper orbital cilia black. Cheeks shining black in front. Face yellowish on almost the lower half, white pollinose, tinged with yellow above, very weakly concave in profile. Antennae black, the arista reddish with the apex broadly black.

Thorax black, the pleura with cinereous pollen and white pile. Mesonotum with short brassy-yellow pile and three black pilose vittae which are very broadly separated from the posterior margin, the median one ending a little behind the middle, the outer ones very broadly united with the black pile above the wings.

Legs black, the tips of the anterior four femora, basal third of the front and half of the middle tibiae and the basal two segments of the anterior four tarsi yellow; narrow base of the posterior tibiae yellow, the apex of the femora and most of the tibiae dark reddish, the middle tibiae brownish on the apical half. Pile whitish, yellowish on the sides of the posterior tibiae, black before the apex and with the black bristles extending to the base; apical two segments of all the tarsi with black hair.

Wings strongly tinged with brown. Squamae white with brown border and fringe. Halteres reddish yellow.

Abdomen with the base, sides and fourth segment shining black. Second segment opaque, with a pair of very large, reddish-yellow spots lying mostly before the middle, their inner side convex, their outer border straight and broadly

separated from the lateral margin. Third segment opaque with a pair of sub-basal reddish-yellow spots that reach behind the middle of the segment and extend over the lateral margins in their full width. Pile pale yellowish-brown on the posterior third of the second segment and on the opaque portion of the third, except laterally, black on the disc of the basal half of the fourth. Genitalia with cinereous yellow pollen and pile.

HOLOTYPE.—Male, Corozal, Canal Zone, January 22, 1929 (Curran).

This species is close to *vagans* Wiedemann but differs in having the metasternum less swollen and three, instead of two, of the front tarsal segments black. This latter character may not be constant but it is very striking and may serve for the differentiation of the female.

***Planes ariel*, new species**

Black, the second abdominal segment with small reddish spots. Length, 11 mm.

FEMALE.—Head thickly white pollinose, the upper half of the front, a large rectangle above the antennae and the anterior half of the cheeks shining black, the face yellow on the lower fifth. Front narrow, the pollinose band higher than its greatest width, connected along the orbits with the facial pollen. Pile whitish, yellow on the ocellar triangle and the upper part of the occiput. Face strongly receding and rather evenly concave. Antennae black, the arista brown; third segment broad, about one-half longer than wide.

Thorax black, the pleura with cinereous pollen and whitish pile. Mesonotum with pale brassy-yellow pile, the pilose vittae white, the black-haired vittae narrow, the outer ones broadly interrupted at the suture, the median one visible only from posterior view. Narrow apex of the scutellum brownish red, the hair whitish.

Legs black, the bases of the tibiae narrowly yellow, the tips of the anterior four femora reddish; anterior four tarsi reddish yellow basally, becoming brown or blackish apically. Pile white, broadly black on the apex of the posterior femora above; more yellowish on the apical segments of the tarsi.

Wings cinereous hyaline, the stigma dark brown. Squamae white with brown border and fringe. Halteres reddish yellow.

Abdomen with the base, lateral margins and the fourth and fifth segments shining black, the first segment opaque brownish in the middle. Second segment opaque black with a pair of sub-rectangular reddish spots on the middle. Third segment opaque with an entire sub-basal shining fascia that occupies more than half the length of the segment but is narrowed both in front and behind by a small triangular projection of opaque black on each side of the middle line. Pile pale brassy-yellowish, whitish on the sides of the basal half.

HOLOTYPE.—Female, São Paulo, Brazil (Barbiellini, No. 642).

***Planes smarti*, new species**

Shining greenish-black, the abdomen with four orange spots. Length, 7.5 to 9 mm.

MALE.—Frontal triangle shining black, the orbits broadly cinereous. Vertical triangle very long and narrow, silvery pollinose in front of the ocelli, shining above, the pile pale brassy-yellow. Occiput white pollinose and pilose, the upper portion with brassy-yellow cilia. Cheeks shining brown in front. Face moderately concave, cinereous white pollinose, yellow on less than the lower half. Antennae brownish, the arista luteous with black apex.

Pleura cinereous pollinose and white pilose, the pollen dense across the middle. Mesonotum with bright brassy-yellow pile, the vittae very weak, the sides black-haired above the wings; a cupreous median vitta. Scutellum wholly dark, with brassy pile.

Femora black, with reddish-yellow apices, the pile pale yellowish, black on the apex of the upper surface of the posterior pair. Anterior four tibiae and tarsi reddish yellow, the apical two tarsal segments black or brown, the pile white; posterior tibiae and tarsi brownish, the tibiae with about the basal third reddish yellow.

Wings cinereous hyaline, the stigma brown. Squamae white, with partly brown border. Halteres yellow.

First abdominal segment, the lateral margins and the fourth segment shining. Second segment with very large, sub-basal orange spots that are expanded laterally to reach almost to the apex of the segment; third segment with very large basal spots that reach the posterior fourth of the segment on the sides. Pile pale yellowish, whitish basally, black on the opaque portions of the second and third segments and on the disc of the fourth basally.

FEMALE.—Front narrow, the pollinose band whitish, considerably higher than wide, the pile pale yellow, becoming brassy above. The spots on the third abdominal segment are almost square, well separated from the base and broadly separated from the lateral margins. There is little, if any, black pile on the fourth abdominal segment and the fifth is wholly shining and pale pilose.

TYPES.—Holotype, male, and allotype, female, in copula, Kaieteur, British Guiana, September 10, 1937 (Richards and Smart), in British Museum of Natural History.

***Planes frontalis*, new species**

Frontal triangle more than half pollinose; abdomen with four reddish or metallic spots. Length, 10 mm.

MALE.—Head black, thickly cinereous white pollinose; a rectangular spot on the antennal prominence, the upper half of the vertical triangle and the anterior half of the cheeks shining; lower

third of the face reddish. Pile yellowish, white on the lower two-thirds of the occiput, the frontal triangle with much more pile than usual, the upper occiput with yellowish pollen. Face very slightly concave below. Antennae brownish red, the third segment mostly brown; arista reddish with the apex broadly brown.

Thorax black, the scutellum with the free border narrowly brownish; pleura with whitish pollen and pile, the pollen forming a dense median band. Mesonotum with the pale pollinose vittae very pale yellowish, the median ones united before the scutellum; the three black pilose vittae are broad, the outer ones broadly interrupted at the suture.

Femora black, the anterior four with yellow apices, the posterior pair with the apex broadly reddish. Tibiae brownish red to reddish brown, almost the basal half of the front four yellowish, the posterior pair with the basal fifth yellowish; tarsi reddish yellow with the apical two segments black, the posterior tarsi becoming darker from the base to the apex of the third segment. Pile whitish, black on the apex of the posterior femora above and the usual black bristles present. Posterior trochanters with a very small subacute tubercle.

Wings cinereous hyaline, the stigma yellowish brown. Squamae whitish with brown border and fringe except on the outer third of the lower lobe. Halteres reddish yellow.

Abdomen metallic greenish-black, the apical fourth of the fourth segment broadly reddish, the intermediate segments opaque except laterally. Second segment with a pair of very broadly separated elongate reddish spots that may be broadly separated from the lateral margin except posteriorly; third segment with sub-basal reddish spots that extend to the posterior third of the segment laterally, their posterior edge oblique: since the spots are more or less metallic the reddish area may be greatly reduced. Pile whitish on the basal three segments, black on the opaque portions except on the base of the second segment; brassy yellow on the fourth segment but there may be some black hair on the disc basally. Genitalia rather reddish, white pollinose and pale yellow pilose.

HOLOTYPE.—Male, Chapada, Brazil, November (Williston Collection). A second male, that apparently is the same species, lacks its head.

The male may be at once recognized by the extensively pollinose front. The vertical triangle is wide and appears short. The female should have a wide front and probably a very broad whitish pollinose band.

***Planes azteca*, new species**

Black, the face reddish on the sides below, the abdomen with a pair of reddish spots. Length, 10.5 mm.

FEMALE.—Head black, with cinereous white pollen; pile whitish, pale brassy-yellow on the upper part of the front and upper occiput, some black cilia behind the orbits behind the upper fifth of the eyes. Front of medium width, shining, with a broad pollinose band on the anterior half that is brownish yellow in the middle. Sides of the face broadly reddish below, the face shallowly but sharply concave. Antennae blackish, the basal segments reddish brown; arista reddish on basal two thirds.

Thorax black, not very shining, the pleura thinly white pollinose and white pilose. Mesonotal vittae whitish, the pile generally pale yellowish, but there is a broad black band behind the suture.

Femora black, the tips of the anterior four yellow, the apex of the posterior pair reddish brown; tibiae brownish with the basal fourth or less yellow; anterior tarsi with the basal two, the middle tarsi with three segments yellow, the apical segments and the posterior tarsi brownish or black. Pile white, black on the apex of the posterior femora below and on the apical two segments of the tarsi, the posterior femora with short black bristles below. Posterior trochanters with a very weak rounded tubercle.

Wings cinereous hyaline, the stigma brown. Squamae white with brown border and fringe except on the outer half of the lower lobe.

Abdomen shining with dull metallic-greenish reflections; the intermediate segments opaque black, the second with a pair of moderately large reddish spots that are well separated from the lateral margins, the third apparently with an entire metallic fascia that seems to be obscurely interrupted in the middle and is interrupted on at least its basal half. Pile pale cinereous-yellowish, whitish basally, black on the opaque portion of the second and third segments except basally and on the disc of the fourth segment on the broad base.

HOLOTYPE.—Female, Puerto Castilla, Honduras, March 27, 1924 (J. Bequaert).

This species is unusually dull in appearance. There may be a few black hairs about the ocelli but they appear to be all pale in the single specimen before me.

***Planes puma*, new species**

Greenish black, the abdomen with four reddish-yellow spots; face reddish yellow below. Length, 9 to 9.5 mm.

MALE.—Head black, the lower third of the face yellowish but usually all blackish in the middle; pollen white, yellowish tinged on the frontal triangle; pile pale yellowish, white on the lower portion of the occiput. Frontal triangle shining black with the orbits broadly pollinose. Vertical triangle broad, shining black behind the anterior ocellus. Cheeks shining black in front. Face gently concave. Antennae with the basal segments brownish red to

brown, the third segment black, the arista reddish.

Thorax black, the pleura with cinereous pollen and white pile. Mesonotum somewhat bronzed, the pile pale brassy-yellow, the black vittae conspicuous, the outer ones weakly interrupted at the suture.

Femora black, the apices of the anterior four narrowly reddish-yellow or yellow the posterior pair with reddish apex. Tibiae reddish brown with the basal third or less yellow. Anterior four tarsi with the basal three segments yellow, the apical two segments of all the tarsi black, the basal segments of the posterior tarsi reddish to brown. Pile whitish, black on the apical two segments of the tarsi and on the upper surface of the posterior femora above, in large part yellowish on the femora. Posterior trochanter with a small acute tubercle.

Wings cinereous hyaline or tinged with brown, the stigma dark brown. Squamae white with brown border and fringe except on the outer half of the lower lobe.

Abdomen shining greenish-black, the disc of the intermediate segments opaque black with elongate reddish spots that are separated from the base of the segment and usually from the lateral margins. Pile pale brassy-yellow, black on the disc of the fourth segment basally and on the opaque portion of the second and third segments except basally. Genitalia reddish or brownish, with cinereous pollen and brassy-yellow pile.

TYPES.—Holotype, male, Barro Colorado Island, Canal Zone, January 10, 1929. Paratypes: two males, Corozal, Canal Zone, January 22 and 31, 1929, and one male, Fort Sherman, February 5, 1929 (Curran).

There are two other specimens from Brazil that agree in most respects with the above but the tubercle on the posterior trochanter is smaller and rounded apically. They may represent a different species.

