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REVISION OF THE NEOTROPICAL SYRPHINI RELATED TO
SYRPHUS (DIPTERA, SYRPHIDAE)

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This revision is based upon extensive material from Ecuador through the courtesy of F. Martin Brown; the collections of Fritz Plaumann of Nova Teutonia, southern Brazil; John Lane of Sao Paulo, Brazil; Souza Lopes of Rio de Janeiro, Brazil; F. Schade, Paraguay; and the loan of specimens from F. M. Hull, and from C. H. Curran of The American Museum of Natural History.

I wish especially to thank Dr. Curran for the loan of types and other specimens and for material help in the preparation of the keys. The types are deposited in the American Museum. Paratypes, when available, have been sent to Souza Lopes and Lane.

[After the manuscript was finished the following paper was called to my attention: G. Enderlein, 1937, "Beitrag zur kenntniss der Syrphiden," Gesellschaft Naturforsch. Freunde Berlin, Sitzberichte. An attempt was made to work out possible synonymy, but that will be difficult without examination of the types.]

MODIFIED TABLE TO GENERA OF NEOTROPICAL
SYRPHINI RELATED TO *Syrphus*

- A.—Arista dorsal, humeri and region between destitute of pile; anterior cross-vein placed well before the middle of the discal cell. Syrphinae.
- B.—Face partly or wholly yellow. Syrphini, 1.
- 1.—Metasternum bare, abdomen emarginate, broad and oval. (*Baccha* and *Mesogramma* not included.) 2.
- Metasternum hairy; abdomen not emarginate, the edges rolled. 4.
- 2.—Lower lobe of squamae hairy above. 3.
- *Syrphus* Fabricius, sensu stricto.
- Lower lobe of squamae bare above. 3.
- 3.—Head large, inflated; wings glassy.
- *Scaeva* Fabricius.
- Head normal; wings villose.
- *Metasyrphus* Matsumura and Adachi.
- 4.—Facial tubercle very low, the oral margins

- much less prominent than the tubercle, antennae narrowly separated (except in *A. browni*, new species) abdomen frequently narrow. 5.
- Facial tubercle strong and prominent, the oral margin often more prominent than the tubercle, at least as prominent as the upper base of tubercle; antennae often widely separated. (Abdomen may be either narrow or oval.) 6.
- 5.—Sides of the mesonotum yellow in ground color, at least between the humeri and suture, fourth segment of abdomen usually with oblique yellow spots and geminate median vittae.
- *Allograpta* Osten Sacken, sensu stricto.
- Sides of the mesonotum dark in ground color, although the notopleura often with golden pruinescence; fourth segment of abdomen without geminate median vittae.
- *Epistrophe* Walker, sensu stricto.
- 6.—Larger species; abdomen oval, as wide or wider than the thorax; abdominal markings arranged in pairs of spots usually oval and oblique; antennae widely separated. 7.
- Smaller species; abdomen slender, usually narrower than the thorax, fasciate or spotted. (This includes several forms formerly in *Allograpta*.)
- *Epistrophe* Walker.
- 7.—Oral opening about twice as long as broad, front inflated, cheeks very large.
- *Claraphumula* Shannon.
- Oral opening four or more times as long as broad. *Epistrophe (Fazia)* Shannon.

The above table has been prepared to give some indication of the difficulty of separating these groups into distinct genera. *Epistrophe*, *Fazia* and *Allograpta* are scarcely separable. By the above plan *Allograpta* is limited to those species with a low tubercle and non-protruding oral margin. *Fazia* is considered only a subgenus of *Epistrophe*. It is interesting to note that all the known species of *Epistrophe* of South America and of *Allograpta* have hairy metasterna. In several species the hairs on the metasternum are limited,

not more than four or five being present, but the presence of these hairs will help to distinguish them from *Mesogramma* and *Baccha*.

A careful study of the genitalia of the males of *Allograpta*, *Fazia*, *Claraphumula* and *Epistrophe* shows the close relationship of these groups. Typical *Fazia* species have a well protruding oral margin and large cheeks, but all gradations exist, and I cannot find a good character to separate them. The following key to the species of these groups is therefore somewhat artificial. If specimens cannot be located in one genus they should be tried in the other keys. My desire has been to enable ready identification. Perhaps some synonyms have been created, but the older descriptions are almost worthless, especially since even the generic concepts have never been clearly understood. There are undoubtedly many new species yet to be described, but it is hoped that this contribution will stimulate more efforts to an understanding of the Syrphini of South America. *Mesogramma*, *Baccha*, *Sphaerophoria* and *Scaeva* are not included.

F. Lynch Arribalzaga (1891, Ann. Soc. Cien. Argen., XXXII) described six species of *Syrphus* from the Argentine, five of which are probably recognized in this paper. The following is a list of these species with designations of their possible relationships:

- S. ribesii* Linnaeus. He probably refers to *phaeostigma* Wiedemann.
- S. macquarti* Blanchard. Not specifically recognizable.
- S. 8-maculatus* Walker. This is perhaps what I have labeled *gayi* Blanchard.
- S. patagonus*, new species. Undoubtedly this is one of the new species under *Epistrophe*. His brief description will not permit identification.
- S. walkeri* (for *unicolor* Walker). He compares this with *Melanostoma fenestratum* Macquart.

SYRPHUS FABRICIUS, SENSU STRICTO

Lower lobe of the squamae hairy above, metasternum without hairs, abdomen emarginate and oval. As limited very few species of this genus occur in the Neotropical region.

TABLE OF SPECIES

- 1.—Abdomen with three pairs of yellow spots, eyes hairy? *gayi* Macquart. Abdomen yellow fasciate.....2.
- 2.—Third segment of the antennae distinctly pointed.....3.
Third segment rounded, spots on the second tergite distinctly reach the sides (Mexico)? *vitripennis* Meigen.
- 3.—Femora almost entirely yellow (Chile)
.....*similis* Blanchard.
Femora black at the base.....4.
- 4.—Spots on second tergite narrowly reach the side margins, fascia on third and fourth tergites broader and reach the sides in their full widths (Mexico, Ecuador) ... (*bisinuatus* Williston) *willistoni*, new name.
Spots on second tergite isolated; fascia on third and fourth tergites quite narrow, especially on female, and usually distinctly narrowed at the sides (Brazil)
.....*phaeostigma* Wiedemann.

Syrphus phaeostigma Wiedemann

Figure 3

WIEDEMANN, 1830, Auss. Zweif. Ins., II, p. 130.

MALE.—Face yellow, covered with whitish pollen, the median stripe shining and sometimes reddish diffuse in color, pile yellow except black surrounding the tubercle. Antennae elongate, the third segment pointed; dark brown above, yellowish red below.

Thorax dull with a grayish green cast, the pile all yellow; scutellum with black pile. Legs yellow, black as follows: coxae, trochanters, basal half or slightly less of the four front femora and all but the apical sixth of the hind femora; a broad apical ring on the hind tibiae and the upper sides of the tarsi brownish. Hairs on the apex of the hind femora mostly yellowish. Squamae yellow, upper fold slightly infuscated.

Spots on the second tergite of the abdomen are isolated and almost spherical in shape. Bands on the third and fourth tergites are quite narrow, reaching the side margins narrowly; both bands undulate, and the first has a small projection in the middle on the anterior margin. Second to fourth sternites each with a black apical band.

FEMALE.—Very similar, including the black hind femora. The abdominal bands

and spots are narrower, and each band has a notch in the middle on the posterior edge.

Twenty-one specimens, all from Nova Teutonia, Brazil (Fritz Plaumann) and Rio de Janeiro (Lopes). This species, *similis* Blanchard and *willistoni* (*bisinuatus* Williston) are all very closely related.

Syrphus willistoni, new name

Figure 2

Syrphus bisinuatus WILLISTON (*nec* Palma), 1891, Biol. Cent. Amer., III, p. 17.

A very common species along the western Andean country of Ecuador; twenty-eight specimens from Banos, Tungurahua, 1,500 to 2,100 meters; nine from Juives, 1,950 meters; and six from Pichincha, Hda. San Rafael, Rio San Pedro, 2,700 meters; collected by F. M. Brown and by W. C. Macintyre. I have also a female from the Cali District, western Cordillera, Colombia (Herbert Schwarz); a male from Mexico City, 7,400 feet (H. G. Meyer); and a female from El Volcan, Chiriqui, Panama (W. J. Gertsch).

Williston described the species from Mexico and Costa Rica.

Syrphus similis Blanchard

BLANCHARD, 1852, Hist. de Chile, Zool., VII, p. 410.

Syrphus reedi SHANNON, 1927, Proc. U. S. Nat. Mus., LXX, Art. 9, p. 27.

Entirely like *willistoni* except for the yellow legs. The spots on the second tergite reach the sides only very narrowly, but the fasciae are not narrowed at the sides.

Syrphus vitripennis Meigen

MEIGEN, 1882, Syst. Besch., III, p. 308.

Two male specimens from Mexico City environs, 10,000 feet elevation, I place here with considerable doubt. They are slightly larger than the average of this species, the pile of the face is all black, and the spots on the second tergite are quite narrow. There are other differences, but they may all be only variations.

Syrphus ? *gayi* Macquart

Figure 1

MACQUART, 1842, Dipt. Exot., II, p. 90.

SHANNON, 1927, Proc. U. S. Nat. Mus., LXX, Art. 9, p. 27.

A single male specimen from Angol, Chile; it may not be *gayi*, as the three pairs of large spots are widely separated from the side margins. The eyes are briefly hairy. A female from "Miramar" (probably southern Argentina) is quite similar, although the face is not so receding as in the Chilean specimen.

Macquart's description is not clear in regard to the abdominal spots. His description indicates globular spots, but his comparison with *lunulatus* implies that the spots should reach the side margins, and Shannon has so described specimens from Chile. These specimens may be *S. 8-maculatus* Walker.

METASYRPHUS MATSUMURA AND ADACHI

Metasyrphus lotus (Williston)

Syrphus lotus WILLISTON, 1886, Synopsis, p. 75.

This genus is limited to species with an oval and emarginate abdomen and without hair on the disc of the squamae (1932, Wisconsin Acad. Sci. Arts and Let., XXVIII, p. 77). Under this designation there are very few species in South America. I have a single, slightly crippled male from Pichincha, Ecuador (F. M. Brown) taken at 3,300 meters altitude that appears to be *M. lotus*. The only difference is the absence of a brown stripe on the face. Since the specimen is discolored the stripe may be diffused into the reddish opalescence of the rest of the face. A specimen from Mexico City at 10,000 feet elevation (H. G. Meyer) is definitely *lotus*.

CLARAPLUMULA SHANNON

A rather distinctive genus, although it is definitely related to *Fazia* Shannon. The broad puffed out face, inflated front and large yellow spots on the abdomen which reach the sides are characteristic. The genital styles are more elongate than typical triangular ones on *Fazia*. The apical cross vein turns backward before reaching the third vein.

Claraplumula latifacies Shannon

Figures 4 and 5

SHANNON, 1927, Proc. U. S. Nat. Mus., LXX, Art. 9, p. 8.

The type has not been seen, but a male specimen from Hda. Talahua, Bolivar, Ecuador, 3,100 meters, April 28, 1939 (F. M. and H. H. Brown), agrees in every essential detail with the description. Shannon does not indicate that the yellow spots of the abdomen reach the side margins but does state that the anterior corners are yellow. The specimen from Ecuador may represent a different species.

EPISTROPHE WALKER

Lower lobe of squamae without long hairs on upper side; abdomen with the sides rolled, either oval or narrow; oval species usually with non-protruding face, narrow species usually with protruding face; South American species have hairy metasterna.

A very difficult genus to limit if *Allograpta* and *Fazia* are recognized as distinct. The extremes are readily separated, but there are many intergrading forms. The narrowly separated antennae and a protruding face will not always apply, as there are species having non-protruding face and widely separated antennae, and there are those with produced face and narrowly separated antennae.

TABLE OF SPECIES

- 1.—Facial tubercle very low, the oral margin much less prominent than the tubercle, many broad species. (*Epistrophe*, sensu stricto). 19.
- Facial tubercle strong and prominent, the oral margin often more prominent than the tubercle, mostly narrow species. 2.
- 2.—Third and fourth abdominal tergites with similarly shaped yellow spots, mostly oblique. 3.
- Third tergite fasciate. 10.
- 3.—Spots on third and fourth tergites reach the side margins, face without definite stripe. *luna*, new species.
- Spots on these tergites decidedly oblique and separate from the side margins, face frequently with broad black stripe. 4.
- 4.—Scutellum yellowish on disc. 6.
- Scutellum partly opaque brown or black on the disc. 5.
- 5.—Brownish to blackish spot on scutellum surrounded by yellow (Brazil). *hermosa* Hull.
- Black area on disc of scutellum continuous to the sides, not surrounded by yellow. *remigis*, new species.
- 6.—Spots on fifth tergite large and very narrowly separated, giving the appearance of an arched fascia, squamae yellow (Mexico). *eupellata* Bigot.
- Spots on fifth tergite widely separated. 7.
- 7.—Face with a distinct black shining stripe. 8.
- Face yellow, if slightly brownish not limited to a definite stripe, more diffuse. 9.
- 8.—Abdomen oval, squamal fringe dark brown to black. *imitator* Curran.
- Abdomen narrow with parallel sides, squamal fringe light brown to yellow. *altissima*, new species.
- 9.—Squamal fringe black. *robustus*, new species.
- Squamal fringe yellow (Chile). *bullaeophora* Shannon.
- 10.—The yellow markings on the fourth tergite consist of an oblique spot on each side, each inner end connected with a narrow yellow vitta. 11.
- Yellow vittae on fourth tergite absent, the fascia rarely interrupted in the middle. 12.
- 11.—Hair of anterior tibiae mostly black, yellow vittae on fourth tergite separated from base of segment. *colombia* Curran.
- Hair of anterior tibiae practically all yellow; yellow vittae on the fourth tergite reach the base of the segment. *similis* Curran.
- 12.—Humeri yellow. 13.
- Humeri brown; front of male broadly opaque black above. *armillata*, new species.
- 13.—The yellow of the humeri is separated from the yellow notopleura. 14.
- The sides of the mesonotum are wholly broadly yellow in front of the suture. 15.
- 14.—Oral angles as prominent vertically as the anterior oral margin. *fasciata* Curran.
- Oral angles much less prominent than the anterior oral margin. *stukei* Curran.
- 15.—Fifth abdominal tergite with a broad, arched yellow fascia that is deeply notched behind or interrupted in the middle; larger, more oval species. *argentipila*, new species.
- Fifth tergite typically with four spots, never with a rather uniform, regular arched fascia; slender species. 16.
- 16.—Scutellum yellowish, the disc black or brown. 17.
- Scutellum uniformly yellowish on the disc. 18.
- 17.—Yellow fascia on fourth abdominal tergite interrupted; pleura of male and female with regular yellow spots; black of scutellum sharply defined. *colombia* Curran.
- Yellow fascia entire; pleura of male almost without yellow, of female with usual spots; disc of scutellum brown, the color diffuse (*flavomaculatus* Hull). *alta* Curran.
- 18.—The facial black stripe is wide above the tubercle. *micrura* Osten Sacken.

There is a slender brown median vitta on the upper half of the face.....
.....*pecticauda* Bigot.

Epistrophe, sensu stricto

- 19.—Face yellow.....20.
Face with a black stripe or largely black..22.
20.—Third and fourth abdominal tergites each with a pair of basal yellow spots and a median arched fascia. *decipiens* Williston.
These tergites each with a single fascia. 21.
21.—Pile of the mesonotum of the male black, coxae of female yellow.....
.....*virga*, new species.
Pile of the mesonotum of the male yellow to brown, coxae of both sexes dark.....
.....*volcana*, new species.
22.—Fourth abdominal tergite yellow with two small spots and a median vitta black..
.....*jactator* Loew.
Fourth tergite yellow fasciate.....23.
23.—Front of both sexes inflated, the male with the ocular border velvety black, notopleura yellow in ground color.....
.....*armillata*, new species.
Front normal, of male not velvety black along the eyes, notopleura black but if yellow very densely pollinose.....24.
24.—Second abdominal tergite bifasciate....25.
Second tergite with a pair of large yellow spots.....27.
25.—Abdomen mostly black beyond the second segment; scutellum with a brown basal band, apex yellow.....*erratica* Williston.
Third and fourth tergites bifasciate, scutellum yellow or darkened around the edges.....26.
26.—Abdominal fascia gently arched (*biarcuata* Fluke).....*caldus* Walker.
Posterior fascia on fourth tergite inverted V-shaped.....*caldus*, variety.
27.—Yellow fascia on fifth abdominal tergite narrowly interrupted in the middle, venter without a distinct narrow continuous black median vitta (Brazil)....
.....*ampla*, new species.
This fascia never interrupted, venter with a distinct narrow continuous black median vitta (Ecuador).....28.
28.—Eyes hairy.....*pteronis*, new species.
Eyes bare.....*trabis*, new species.

Epistrophe pteronis, new species

Eyes hairy; abdominal fasciae broad, the one on fifth tergite continuous. Length, 10–11 mm.

MALE.—Face yellow with a broad black stripe reaching from the oral edge to the antennae, pointed above; face yellowish, pollinose, more shining on the tubercle, pile all black with just a few pale hairs around the mouth; cheeks yellowish to reddish, pile white; frontal triangle dark, shining black just above the antennae, elsewhere rather heavily pollinose, pile black; ocellar triangle black with black pile; occiput

narrowed above with black cilia, broader and with white pile below; eyes white pilose; antennae short, first two segments black, third rounded, reddish below, black above; arista black.

Mesonotum dull olivaceous; the post alar callosities somewhat reddish, pile yellow and black intermixed; pleura bluish with yellow to brownish pile, a heavy tuft on the upper posterior corner of the mesopleura; scutellum dull yellow with long black pile; metasternum distinctly hairy.

Legs black, the knees broadly yellowish red, the posterior pair less so. Wings hyaline, lightly tinged with yellow, the stigma brown. Halteres yellow with brown stalks. Plumule and squamae yellow, the fringe of the latter brown.

Abdomen oval, opaque black, the apices of the segments narrowly shining; first tergite with a pair of broad yellow spots which reach the sides, their inner ends pointed. Third and fourth tergites each with a broad yellow fascia which broadens on the anterior corners but not quite reaching the sides; fifth tergite with a yellow fascia which is narrow at the middle and reaches the sides, touching the base entirely across the abdomen, leaving only the apex black. Venter yellow with a distinct black median vitta which is narrowed on the fifth sternite; pile black, yellow on the basal corners and basally on the venter.

TYPE MATERIAL.—Holotype, male, and three paratype males, Minza Chica, Volcan Tungurahua, Ecuador, April 8, 1939, 3,200 meters altitude (F. M. Brown).

A female from Hda. Talahua, Bolivar, Ecuador, may belong here, but the pile of the eyes is very sparse; the four front tibiae are yellow, the abdominal fasciae are narrower, and the front has a greenish hue.

This is the only *Epistrophe* that I know of from South America with hairy eyes.

Epistrophe trabis, new species

Figure 6

Very similar to *pteronis*, but the eyes are bare; the facial stripe is narrower and does not reach the antennae; the pile of the face is pale on the lower half; the antennae are paler, the first two segments almost yellowish brown; pile of the mesonotum nearly all yellowish brown, the pile black posteriorly; legs paler, the four front tibiae and the apical halves of their femora yellow, the tarsi reddish brown; the squamal fringe yellowish brown. The abdominal pattern is quite similar to *pteronis*.

A single female is slightly teneral and is almost indistinguishable from the female noted under *pteronis* except the eyes are entirely bare.

TYPE MATERIAL.—Holotype, male, Run-

tun, Volcan Tungurahua, Ecuador, November 22, 1938, 2,900 meters (F. M. and H. H. Brown). Allotype, female, Cuicocha, Imbabura, Ecuador, May 27, 1939, 3,200 meters (F. M. and H. H. Brown). Paratypes: five males, same data as holotype; two males, same data as allotype; and one male, Pichincha, Paramo of Pasachoa, Ecuador, November 12, 1938 (F. M. Brown).

Epistrophe ampla, new species

Figure 7

Black stripe of the face broad; triangular spots on the fifth tergite narrowly separated; very similar to *trabis*. Length, 9–12 mm., average, 10 mm.

MALE.—Face yellow with a broad shining black stripe which is lightly dusted with golden pollen above the tubercle; sides of face heavily whitish pollinose which is more yellowish next to the median stripe, the pile pale; cheeks yellow with yellow pile, a dark spot just above the facial slit; frontal triangle heavily golden pollinose with black pile except for a large shining black area above the antennae; occipital pile yellow above, white below; ocellar triangle with dark pollen and black pile; eyes bare. Antennae dark brown, the undersides of the segments yellow.

Mesonotum dull greenish gray with golden pile, the sides more pollinose especially on the notopleura; the pleura dark in ground color, upper edge of sternopleura and nearly all the mesopleura thickly golden pollinose, pile all yellow except a few black hairs on the pteropleura; scutellum yellow with black pile, the ventral fringe in part yellow.

Legs dark brown to black, the four front tibiae and the apical halves of their femora yellow. Wings hyaline, the stigma brown. Squamae, halteres and plumule yellow.

Abdomen black, the first tergite and incisures of the others shining, yellow as follows: second tergite with oval spots which are widely separated and reach the sides and base of the tergite; third and fourth fasciate, the fascia located on the anterior half of the tergite, narrowed toward the middle, the ends well separated from the sides; fifth with large basal triangles, very narrowly separated. Venter yellow, with a broad black median vitta, but distinctly interrupted at the sutures.

FEMALE.—Front golden pollinose on the sides as far as the ocelli, the median area dark pollinose except for the shining spot above the antennae; the spots on the second tergite more triangular and larger, those on the fifth often united.

TYPE MATERIAL.—Holotype, male, Nova Teutonia, Brazil, October 28, 1939 (Fritz Plaumann). Allotype, female, same

place, October 21, 1939. Paratypes: three males, same place, October 4 and 28, 1939, and November 12, 1936; two females, same place, October 28 and 30, 1939; eleven males and nine females, Pompela, Sao Paulo, Brazil, November, 1939 (Barretto).

This species has undoubtedly been described, but I have been unable to associate it with any of the catalogue names from Brazil. Apparently it is quite a common species. There are some very closely related forms which I am as yet not sure of. All of the specimens named above are quite uniform as to the broad black stripe of the face and the isolated fascia of the abdomen.

Epistrophe volcana, new species

Figure 8

A large oval species with yellow face, fasciate abdomen and black coxae in both sexes. Length, 12–13 mm.

MALE.—Face reddish yellow, the sides golden pollinose, the pile black on the slopes of the rounded tubercle, elsewhere yellow; cheeks yellow with yellow pollen and black pile; a large shining black spot above the antennae. Occipital pile all yellow, ocellar triangle dark brown, pollinose, the pile black. Antennae dark brown, yellowish below, arista dark. Eyes bare.

Mesonotum dark, opaque, the pile brownish to yellowish becoming black in front of the scutellum; notopleura and callus yellow with golden pollen and pile; pleura dark, the upper half golden pollinose and all with golden pile; scutellum opaque yellow, the pile long and all black. Metasternal pile yellow.

Legs dark brown to black, apical third of the hind femora and the hind tibiae reddish brown; apical two-thirds of the four front femora and their tibiae yellow; tarsi dark above; pile almost all black except on the four front tibiae where it is yellow.

Wings slightly tinged with brown, the stigma darker; squamae yellow with golden fringe; halteres and plumule yellow.

Abdomen opaque black, slightly shining along the sides and on the apex of the fourth tergite; yellow as follows: first tergite on extreme sides; second with a pair of broad spots which reach forward to the base of the segment and go over the sides in their full widths; third and fourth each with a broad fascia which reaches forward on the sides to the base of the segment and goes over the sides; fifth tergite yellow, very narrow basal corners and the broad apex black. Venter shining yellow, a large dark smudge on the second and third sternites, the fourth nearly all dark.

FEMALE.—Front is pollinose above the shining black spot; ocellar triangle dark brown, pollinose. Legs are paler, front and middle femora black only on their extreme bases, hind femora yellow on the basal one-third and narrow apex. Spots on the second tergite almost quadrate and their fore margins close to the base of the segment.

TYPE MATERIAL.—Holotype, male, El Volcan, Chiriqui, Panama, February 29, 1936 (F. E. Lutz). Allotype, female, Santa Ines, Rio Pastaza, Ecuador, 1,200 meters, September 25, 1938 (F. M. Brown).

The only yellow faced *Epistrophe* that this species might be confused with is *virga*; *volcana* is more oval, and the legs are paler.

Epistrophe virga, new species

Figure 9

Face yellow, front with a small shield-shaped spot just above the antennae, sides of mesonotum yellow, abdomen elongate and fasciate. Length, 11–12 mm.

FEMALE.—Face orange yellow, pollinose, the well rounded low tubercle shining, pile sparse and mostly black with more yellowish hairs around the mouth; cheeks yellowish with whitish pile, a small black streak just above the facial slit; front yellow on basal half with a small shining shield-shaped black spot just above the antennae; front greatly narrowed above, upper half velvety dark greenish, lower edge arched so that the outer ends of the velvety area are opposite the antennae, pile all black; ocellar hump elongate and also velvety green, pile black; occipital pile black on upper one-third, becoming yellow, then white below. Antennae short, first segment yellow, second reddish, third brown above, arista black.

Mesonotum dull with a greenish hue, three faint median vittae; the sides yellowish from humeri to scutellum, yellowish pollinose; pile black, anterior half with yellow hairs intermixed. Pleura dark and lightly pollinose, pile all yellow; indistinct yellow markings on posterior edge of mesopleura, anterior half of pteropleura and upper edge of sternopleura. Metasternum yellow, both in front and behind the hind coxae, the hairs few in number. Scutellum dull yellow with black pile.

Legs black; the coxae and trochanters yellow; hind femur at apex, middle femur at apical one-fourth, front femur at apical third, hind tibia at basal third, middle and front tibia at basal one-half yellow to reddish, more yellowish on the inner side; pile black except at the base of the legs. Wings with an even blackish tinge, stigma brown to black; squamae, halteres and plumule yellow.

Abdomen opaque black, yellow as follows: first tergite on the basal corners, second with a pair of large triangular spots which widen to the

sides going over the edges and reaching the basal margin; third to fifth each with a broad fascia which widens laterally and goes over the edges; sixth with the anterior corners yellow. Venter yellow, darker laterally.

MALE.—Similar, a broad black area across the facial slits from the mouth to the eyes. Front inflated, the ocular edges very narrowly velvety greenish. Legs darker, the hind pair almost completely black except coxae and trochanters.

TYPE MATERIAL.—Holotype, female, Cuicocha, Imbabura, Ecuador, 3,200 meters, May 27, 1939 (F. M. and H. H. Brown). Allotype, male, same data; two paratype females, same data.

The spot on the front should make this distinct species easily recognizable.

Epistrophe erratica (Williston)

Figure 10

Syrphus erraticus WILLISTON, Trans. Amer. Ent. Soc., XV, p. 264.

Face with a broad black stripe; antennae pointed; mesonotum with three opaque black vittae; scutellum with a brown basal band; abdomen mostly black, the second tergite with two yellow bands, the second highly arched; wings with the narrow fore margin dark brown. Recorded from Chapada, Brazil; apparently not seen since.

Epistrophe decipiens (Williston)

Figure 11

Syrphus decipiens WILLISTON, 1891, Biol. Cent. Amer., III, p. 18.

Face yellow; front without a black spot immediately above the antennae; mesonotum with two median faint gray vittae on the anterior half; hind femora with the basal one-third yellow; abdominal tergites two to four bifasciate, in this respect quite similar to *caldus* Walker.

Originally described from Guerrero, Mexico, and I have at hand a "cotype" male. Two females and a single crippled male from Brazil are practically identical except for a black spot above the antennae and slightly different shape to the abdominal markings. These may be a different species, but the material at hand does not permit a definite decision.

Epistrophe caldus (Walker)

Syrphus caldus WALKER, 1852, Dipt. Saunders, p. 232.

Epistrophe biarcuata FLUKE, 1937, Amer. Mus. Novitates, No. 941, p. 4.

A common species in southern Brazil; in addition to the types of *biarcuata* I have at hand twelve typical specimens from Nova Teutonia, Brazil (Fritz Plaumann), and three atypical specimens from Pompeia, Sao Paulo, Brazil, November, 1939 (Barretto), which differ in the markings on the third and fourth tergites; the arched fasciae on these tergites are inverted V-shaped, and in the male the basal spots on the third are united into a fascia.

Epistrophe luna, new species

Figures 12 and 13

Oral margin greatly extended, the opening four times as long as broad; tubercle of face prominent; antennae widely separated; abdominal spots reach the side margins. Length, 9–10 mm.

MALE.—Head brownish red, the face slightly darker between the tubercle and the more prominent oral tip, thence to facial slits and just below the mouth opening; more yellowish on the face next to the eyes; narrowly opaque black along the orbits of the front; pile everywhere black, rather long and heavy on the front, except a few of the upper cilia and lower occiput which are yellowish; ocellar triangle black. Facial contour with almost a right angle at juncture of tubercle, the oral edge almost straight. Antennae short, reddish, the upper third of third segment brown, the arista black.

Mesonotum dark brown to aeneous with faint semi-shining vittae, the pile brown and black mixed; notopleura and calli reddish, almost brown in some specimens; pleura characteristic with a patch of white hairs on the upper part of mesopleura and pteropleura; ground color of pleura blackish below and reddish above, especially the mesopleura, pteropleura and upper edge of sternopleura; all is covered with dark or brownish pollen; there are a few black hairs on the lower half of the pleura and occasionally scattered black pile on the pteropleura and mesopleura. Scutellum yellowish brown, the basal corners black especially when viewed from below, pile long and black.

Legs yellowish to reddish brown, the tarsi darker, pile practically all black. Wings uniformly brownish tinged, the stigma darker; halteres yellow, the stalks brown; squamae brown, yellow at the base, the fringe black; plumule prominent and white.

Abdomen black with four pairs of yellow spots

which are all connected with the side margins, the first three pairs all attenuated before reaching the margin, the first pair separated from each other by twice their width and narrowly connected with the sides; second and third pairs slightly arcuated, their fore margins concave and their rear margins convex. Venter yellow. Genitalia black with yellow, broadly triangular shaped styles. Pile of abdomen mostly black, yellow hairs on the first three pairs of yellow spots and intermixed with the black hairs on the venter.

TYPE MATERIAL.—Holotype, male, Minza Chica, Volcan Tungurahua, Ecuador, 3,200 meters, April 8, 1939 (F. M. Brown). Paratypes, two males, Hda. Talahua, Bolivar, Ecuador, 3,100 meters, April 28, 1939 (F. M. and H. H. Brown).

Epistrophe hermosa (Hull)

Figure 14

Fazia hermoza HULL, 1941, Psyche, XLVIII, p. 45.

Face with a broad shining black stripe, scutellum with a discal brown to black spot, abdomen with five pairs of yellow spots mostly oblique. Length, 10–12 mm.

MALE.—Face and cheeks yellowish orange; a broad evenly wide black stripe on the face from oral edge to the front; the extreme upper edge of the mouth yellow; the stripes just opposite the eyes slightly darkened; pile black over the face and on a narrow band between mouth and eyes, yellow just above and on the cheeks; frontal triangle orange with an oval opaque black spot above the shining black arc just above the antennae; there is a narrow black streak reaching to the apex of the triangle, pile all black. Facial tubercle prominent, upper edge almost at right angles with the face, the oral edge slightly more prominent than the tubercle. Vertical triangle large, dull brownish with black pile; cilia black above becoming yellowish on the occiput below. Antennae small, orange, the third segment darker above.

Thorax brownish, the mesonotum faintly vittate, the pile brownish yellow; humeri dark, notopleura broadly yellow; calli yellow; posterior two-thirds of mesopleura and upper edge of sternopleura yellow; pile of pleura all pale. Scutellum

yellow with a large brown oval spot on the disc, undersides and basal corners black, pile black, a few yellow hairs underneath.

Legs reddish brown to black; the bases of the hind femora, apices of all the femora, bases of the tibiae more yellowish, the tarsi black; pile all black except on the hind coxae. Wings decidedly infuscated brown, the stigma dark brown. Squamae yellowish brown, the fringe dark brown, plumule yellow, halteres yellow, the stalks darker.

Abdomen opaque black, the incisures shining, with five pairs of yellow spots; on the first tergite the corners broadly yellow, on the second the spots are triangular with their rear margins oblique, outer margins free from edges; next two pairs less triangular, more oblique and elongate thus closer together; next pair on the fifth tergite smaller, inner ends close and pointed, outer ends rounded. Pile of the tergites yellowish brown anteriorly, black posteriorly; venter mostly shining yellow. Genital styles broad, dark brown.

FEMALE.—Pile of face nearly all pale; a few black hairs on the slopes opposite the tubercle; oval spot of front connected with the broad dark vertex by an indefinite reddish brown area at the middle, the pile short but black; antennae longer and more yellowish; mesonotal pile paler and shorter, pleura more yellowish but rather indefinitely marked, the humeri yellow, abdominal spots more oval.

Described from ten specimens, six males and one female, Rio de Janeiro, Tijuca, August 8, 1939 (Frietas E. Lopes); one female, Angra dos Reis, E. do Rio, Brazil (Trovassos et Lopes); one female, Jussaril, Angra, April, 1934 (Penido and S. Lopes); one female, Nova Teutonia, Brazil, March 10, 1937 (Fritz Plaumann).

The dark spot on the scutellum and more yellowish pleura will separate this species from *altissima*. The paler pile and shape of the scutellar spot will identify it from *remigis*.

Since the above was written I have made comparisons with the type.

Epistrophe remigis, new species

Figure 15

Face with a black stripe, scutellum with disc opaque black, abdomen with pairs of oblique spots. Length, 10–11 mm.

MALE.—Face moderately protruding, the tubercle short and protruding slightly more than the oral tip, yellow with a sharply limited black stripe which connects between the antennae with an opaque black triangle on the front, its base at the antennae and apex reaching upper corner of the frontal triangle; cheeks reddish yellow; pile of face and front black, of cheeks yellowish with a few black hairs next to the facial slit; optical edges of the frontal triangle narrowly black opaque; occiput very thin above, the cilia black, occipital hairs below yellow; ocellar triangle black with black pile. Antennal pits rather widely separated, slightly less than the diameter of a single pit; antennae brownish black, the arista black.

Thorax dark, the mesonotum mostly opaque with three faint shining vittae; humeri, notopleura, calli, posterior half of mesopleura, upper edge of sternopleura and a small area on pteropleura at plumule, yellow; pile of mesonotum black with intermixed brownish hairs on the disc toward the front, on the pleura mostly black becoming brownish on the meso- and metasterna. Scutellum black, the base and isolated apical margin yellow; pile long and black; fringe black.

Legs brownish to black; the tibiae and femora, especially on the anterior legs, somewhat reddish.

Wings smoky tinged, plumule yellow, squamae black with yellow base, halteres black stalked but with yellow knobs.

Abdomen opaque black, first tergite with the anterior corners broadly yellow, second to fourth tergites each with a pair of very oblique isolated elongate yellow spots; fourth with a pair of yellow spots which are pointed on their inner ends; rounded on their outer ends. Venter shining and yellowish. Pile of abdomen mostly black, brownish hairs toward the base.

FEMALE.—Very similar, the front with a median opaque black stripe, and the ocular edges are also narrowly opaque black; abdominal markings less oblique.

TYPE MATERIAL.—Holotype, male, Minza Chica, Volcan Tungurahua, Ecuador, 3,200 meters, April 8, 1939 (F. M. Brown). Allotype, female, Hda. Tala-hua, Bolivar, Ecuador, 3,100 meters, April 28, 1939 (F. M. and H. H. Brown). Paratype male, same data as allotype.

The oblique markings on the abdomen are more oblique and elongated than on the related species.

Epistrophe (Fazia) eupeltata (Bigot)

Figure 16

Syrphus eupeltatus Bigot, 1884, Ann. Soc. Ent. France, p. 91.

Mouth opening elongate; face with a brown median stripe, pile of face white, sparse; cheeks yellowish red with pale pile; front yellow with a brown spot immediately above the antennae; ocellar area black which is extended as a narrow streak on each side along the eyes; antennal pits widely separated. Posterior three-fourths of the mesopleura, upper edge of the sternopleura, the humeri, the notopleura, the posterior calli and the scutellum yellow. Legs reddish to brown, paler on four front tibiae and femora. Squamae yellow, plumule white, halteres reddish.

Anterior corners of first tergite yellow; second to fifth tergites each with a pair of large, slightly oblique, nearly rectangular reddish yellow spots which do not reach the sides; those on the fifth nearly joined to form a strong arch.

A single female from Mexico, D. F. (J. Rinda), in the U. S. National Museum which has been identified as such by Knab. I am unable to verify the determination, but the specimen definitely is a member of this group (*Fazia*).

Epistrophe altissima, new species

Figure 17

Mesonotum with two gray vittae anteriorly, scutellum yellow, abdomen with four pairs of spots. Length, 8–10 mm.

MALE.—Face yellow with a broad shining black stripe which connects with a large oval opaque spot on the front; cheeks yellowish to orange, an irregular line of black along the lower edge of the slit from the eyes and continuing below the oral margin, pile of face and front all black, on the cheeks short, sparse and yellowish; pile of the occiput brownish yellow above becoming lighter in color below; front narrowly opaque yellow along the orbits; ocellar triangle shining aeneous with black pile. Oral margin protruding beyond the rather prominent tubercle similar to species of *Fazia*. Antennae separated by the diameter of one pit; first two segments short and dark brown, the third more yellowish above; arista short and dark brown.

Thorax brown, the mesonotum semi-opaque with a median pair of gray vittae on the anterior best half, seen from behind; humeri, notopleura and calli yellowish brown; pile of mesonotum

brown to black, more yellowish in the middle and along the sides, but there are a few black hairs on the posterior half of the calli. Scutellum dull yellow, the underside and extreme basal corners black; the pile long and black including the ventral fringe. Pleura mostly black, weakly yellow just above and posterior to the front coxae, upper edges of the sternopleura, pteropleura and hypopleura; the pile mostly yellowish, a few black hairs intermixed on the pteropleura. Legs mostly brown to black, the apices of the femora and bases of the tibiae yellow, especially on their inner surfaces; in some specimens the tibiae mostly yellow to reddish. Wings pellucid hyaline, the stigma yellow. Squamae brown, the edges and fringe brownish yellow; halteres brown.

Abdomen opaque black; the first segment shining, with four pairs of isolated spots: the first pair, on second tergite broadly separated, inner ends rounded, outer ends broad; next two pair oval and oblique, separated by the distance of the diameter of the spots; pair on the fifth tergite triangular, inner ends touching the base of the segment; pile yellow, black apically and at the segmental corners. Venter yellow with yellow pile. Genitalia black, the styles reddish.

FEMALE.—Front broad below, rapidly narrowing to the vertex; a large oval black spot above antennae which narrows above, then broadens to include the entire front at the ocelli; pile all black.

Black facial stripe becomes only reddish brown between the antennae; pile of the lower slopes of the face white. Yellow markings of the pleura larger and more distinct. First abdominal segment decidedly yellow on anterior angles. Pile as a whole paler than the male and the legs more yellowish, especially the femora and basal two-thirds of the tibiae.

TYPE MATERIAL.—Holotype, male, Hda. Talahua, Bolivar, Ecuador, 3,100 meters, April 28, 1939 (F. M. and H. H. Brown). Allotype, female, Pundoa, Ecuador, 2,800 meters, July 17, 1939 (W. C. Macintyre). Paratypes: two males and two females, same data as holotype; two males, Pichincha, Ecuador, Parama of Cerro, Pasachoa, 3,300 meters, November 12, 1938 (F. M. Brown); one male and one female, Pichincha, Ecuador, Hda. San Rafael, Rio San Pedro, 2,700 meters, November 6, 1938 (F. M. Brown); one male and one female, Pichincha, Ecuador, Uyumbicho, 2,650 meters, November 4–15, 1938 (F. M. Brown); one male, Pichincha, Ecuador, Hda. San Rafael, 3,000 meters, November 12, 1938 (F. M. Brown); and one female, Cuicocha, Imbabura, Ecuador,

3,200 meters, May 27, 1939 (F. M. and H. H. Brown).

***Epistrophe (Fazia) roburoris*, new species**

Figures 18 and 19

A large species related to *E. (Fazia) bullaephora* Shannon, differing in the dark brown hairs and border of the squamae and the general shape of the abdominal spots. Length, 10–12 mm.

MALE.—Face yellow to orange, more orange over the equally prominent tubercle and upper oral edge, pile black; upper oral edge darkened; cheeks large, yellow, with white sparse pile; frontal triangle swollen, opaque yellow with the area immediately above the antennae with a double arc of polished black and this bordered with an opaque black area, a narrow velvety black area next to the eyes reaching to opposite the antennae, pile all black; antennae black, small arista black; pits widely separated, the chitinous area separating them as great as the diameter of a single pit; ocellar triangle opaque black with black pile; occiput yellow with light yellow pile below becoming darker with brownish pile above, a few black cilia overhanging the eyes. As is usual in this group there are two facial slits, one in the usual position on the lower side of the face with a slight elevation toward the mouth and a second smaller slit just below the eyes.

Mesonotum brownish, dull, the pile yellowish brown intermixed with black pile, especially posteriorly; humeri dark; notopleura, posterior calli and scutellum yellowish, the latter black underneath and at the basal corners; pile of notopleura and scutellum black, the ventral fringe of hairs on the scutellum yellow; pleura and sternum dark, covered with gray pollen, a slight indication of yellow background on the upper edge of the sternopleura; pile yellow, a few black hairs on the mesosternum, metasternum, and a patch on the upper hump of the mesopleura. Legs yellowish brown; basal half of the posterior femora, basal one-fourth of the four front femora, and all the tarsi black to dark brown; pile black, whitish at the base of the hind femora. Wings brownish tinged, the stigma brown, veins black; squamae yellow, the upper fold brownish, the border and fringe dark brown; plumule white; halteres yellow, the stalks darker.

Abdomen opaque black, slightly shining along the sides and along the incisures; with four pairs of isolated large oval slightly oblique yellow spots, the second and third pairs the largest; anterior corners of the first tergite yellow; venter yellow with long upright yellow pile predominating, a few black hairs intermixed.

FEMALE.—Very similar; front black above and extending along the eyes to give the yellow area an evenly arched appearance. Upper edge of the sternopleura, posterior third of the mesopleura, upper edge of hypopleura and a

faint spot on the metapleura, yellow. Legs paler, only the coxae, trochanters and tarsi black.

TYPE MATERIAL.—Holotype, male, Hda. Talahua, Bolivar, Ecuador, 3,100 meters, April 28, 1939 (F. M. and H. H. Brown). Allotype, female, same data. Paratypes: seven males and thirteen females, same data.

***Epistrophe (Fazia) australis* (Shannon)**

SHANNON, 1927, Proc. U. S. Nat. Mus., LXX, Art. 9, p. 26.

I have been unable to recognize this species based upon Shannon's comparative description. One of the new species described here may be *australis*, but his statement that the spots on the abdomen are larger than those of *bullaephora* will not apply to any known to me.

***Epistrophe (Fazia) imitator* Curran**

Figures 20 and 21

CURRAN, 1925, Ann. Mag. Nat. Hist., (9) XVI, p. 351.

This is one of the earlier described species of this group, and if *Fazia* is accepted it definitely belongs to it. The scutellum is yellow, the face has a definite black stripe, and the squamal fringe is black. *E. bullaephora* is its nearest relative, but that species never has a black facial stripe. I have at hand a paratype female from Colombia; a female from Rio Mapoto, east Ecuador, 1,400 meters, March 24, 1939 (F. M. Brown); and a male from Cali District, western Cordillera, Colombia (Quanterro).

***Epistrophe (Fazia) bullaephora* (Shannon)**

Figure 22

SHANNON, 1927, Proc. U. S. Nat. Mus., LXX, Art. 9, p. 25.

The description of the male of *roburoris*, new species, will apply equally to the male of *bullaephora* except for the generally paler condition of the latter throughout; the abdominal spots are larger, and the squamae are white with the upper fringe only light brown in color.

I have at hand a male without locality label and a female labeled "Miramar," collected February 15, 1922.

***Epistrophe armillata*, new species**

Figures 23 and 24

Front and cheeks large and inflated, third to fifth abdominal tergites yellow fasciate. Length, about 10 mm.

MALE.—Face shining yellow with a broad black stripe that ends above the tubercle which is large and prominent, upper oral edge less prominent, pile all black; cheeks shining yellow, pile yellow except just below the eyes and facial slits; the cheeks are very prominent and inflated; front yellow and opaque, black opaque from opposite the antennae along the eyes, wider above, the pile all black, longer and heavier on the black area; antennal pits separated by diameter of a pit, the general area darkened; frontal triangle opaque black with black pile; occiput thin above, the cilia all black; antennae small, first two segments black, the third yellowish brown below, arista black. Eyes bare.

Mesonotum mostly opaque black with two faint median gray vittae, the pile reddish brown anteriorly, almost all black posteriorly. Notopleura, callus, scutellum, posterior third of the mesopleura, upper edge of the pteropleura and a very narrow edge of the sternopleura, yellow; pile of scutellum and sternum black, elsewhere more brownish. Legs reddish brown to black, the four front femora on the apical thirds and their tibiae on their basal halves, yellow; pile mostly black. Wings smoky, the stigma darker, apical cross vein slightly recurved to meet the third longitudinal; squamae dark, their anterior bases yellowish, the fringe black; halteres yellow; the plumule dense with whitish yellow pile.

Abdomen black with yellow fascia; first tergite yellow only on extreme corners; second with two large triangular spots which reach the sides broadly; third and fourth each with a yellow band which broadens widely at the margins, reaching the basal corners but not the posterior corners; these bands are irregularly enlarged in the middle; fifth with a similar but narrower band. Venter yellow. Genital styles yellow and broadly triangular.

FEMALE.—Similar, the pile of the face pale on the sides; front with a yellow arched band between the black area around the antennae and the velvety black of the upper part of the front; yellow on the pleura slightly more extensive.

TYPE MATERIAL.—Holotype, male, Hda. Talahua, Bolivar, Ecuador, 3,100 meters, April 28, 1939 (F. M. and H. H. Brown). Allotype, female, and two paratype males, same data.

This species is very distinct with its broad face and cheeks and the inflated front. In some respects it approaches Shannon's *Fazia*, but the oral margin is not extended forward.

***Epistrophe colombia* (Curran)**

Figures 25 and 26

Allograpta colombia CURRAN, 1925, Ann. Mag. Nat. Hist., (9) XVI, p. 349.

Face protruding with a broad shining black stripe; scutellum with a broad black band; second and third tergites fasciate, the fourth with a broad and arched band which is narrowly interrupted in the middle. Length, 9–11 mm.

MALE.—Face lemon yellow with a broad black shining stripe which reaches from the oral angles to the frontal triangle leaving a narrow yellow ocular border on the front; the tubercle as prominent as the oral tip, longer than broad; cheeks yellow but partly black above along the facial slits; pile of face and cheeks pale, of the front black; black area of frontal triangle devoid of pile, but the upper half is covered by a bi-arcuated patch of brown pollen. Ocellar triangle black with black pile; occipital cilia short, black above but becoming yellowish to white below. Antennae brown, the third segment yellow below at the base.

Thorax aeneous, the mesonotum shining, slightly pollinose anteriorly in the middle; sides yellow from humeri to notopleura and on the calli, pile yellow to brown; pleura lightly pollinose and yellow as follows: a spot above front coxae, posterior half of mesopleura, upper edge of sternopleura and a small narrow spot connecting with a larger one above the spiracle; the pile all yellow. Scutellum yellow with a broad black opaque band which reaches the basal corners, the pile black, fringe sparse and mostly black.

Legs yellowish to brownish, the hind pair definitely darker, particularly the tibiae and tarsi. The wings slightly tinged with brown, the stigma very little darker; squamae brown, halteres and plumule yellow.

Abdomen slender with parallel sides; first tergite shining, others opaque on the disc, broadly shining on the sides and basally and apically; first tergite broadly yellow on the sides; second with a yellow fascia which is broad at each side but narrow in the middle; third with an arched fascia with the outer ends pointed; fourth

with a similar but broader fascia which is narrowly interrupted and with posteriorly pointed projections from their inner edges; fifth with four spots, the median pair small vittae, the outer pair more oval but both pairs indefinite. Pile black, longer and yellow on the basal corners. Venter yellowish. Basal corners of the tergites pale but not definitely yellow.

FEMALE.—Quite similar but paler; the black band on the scutellum does not reach the corners, the fascia on the third tergite narrower and less arched, the spots on the fifth tergite definitely larger and more distinct.

The above description was made from six males and one female, all from Brazil (Nova Teutonia and Therezopolis) and at the time were considered a new species. More material from Colombia and Ecuador has since come to hand, and I can see no decided differences from these and *colombia* Curran. Thirty-four specimens of both sexes from Ecuador differ from the Brazilian forms in being darker; the hind legs of the male black except the apical one-fifth of the hind femora and basal ring on the tibiae, middle femora except the apical one-fourth, front femora except the apical one-half, and the four front tibiae which are yellowish to reddish. The scutellum often has the black spot limited to the disc. The basal corners of the third to fifth abdominal tergites yellow, the fifth tergite with a pair of irregularly shaped spots, the fourth with the two spots frequently narrowly connected. The female is quite similar to the male.

The Ecuadorian material comes from Banos at 2,100 meters altitude (W. C. Macintyre); Pichincha, 2,700 meters; Sucua, 900 meters; and Cuenca, 2,500 meters (F. M. Brown).

***Epistrophe similis* (Curran)**

Figure 27

Allograpta similis CURRAN, 1925, Ann. Mag. Nat. Hist., (9) XVI, p. 350.

Eight females of this species from Sao Paulo and Nova Teutonia, Brazil, do not seem to differ from the type female which was collected in Colombia. The vittae on the fourth tergite extend forward and

then expand toward the sides. The fascia on the second tergite is broadly interrupted on the Brazilian specimens and only narrowly interrupted on the type, but there is usually considerable variation in this character.

***Epistrophe fasciata* (Curran)**

Figures 28 and 29

Allograpta fasciata CURRAN, 1932, Amer. Mus. Novitates, No. 519, p. 4.

Fazia fasciata CURRAN, 1936, Amer. Mus. Novitates, No. 882, p. 13.

Originally described from Peru. On hand are four specimens from Juives, Ecuador, 1,900 meters (W. C. Macintyre); one from Banos, Ecuador, 1,900 meters (W. C. Macintyre); and two from Cuicocha, Imbabura, Ecuador, 3,200 meters (F. M. Brown).

This species is characteristic with its well produced face, narrow cheeks, widely separated antennae, yellow scutellum with the entire border narrowly black, narrow abdomen and the four yellow fasciae.

The male is entirely like the female except the fascia on the second tergite is separated into two triangular spots. Both sexes have a golden pruinose spot on the notopleura.

***Epistrophe flukei* (Curran)**

Allograpta flukei CURRAN, 1936, Amer. Mus. Novitates, No. 882, p. 13.

This species was described from a male from Cuba and apparently has not been recorded since.

***Epistrophe argentipila*, new species**

Figure 30

Mesonotum dull, pleura with conspicuous white pile, scutellum yellow, abdomen fasciate. Length, 9–10.5 mm.

MALE.—Face protruding, the upper oral edge extending farther forward than the tubercle; a brownish black stripe from the mouth to the antennae and continued to an oval spot on the front which leaves a broad yellow border next to the eyes; cheeks black just below the facial slits, more yellowish below; pile of front and face black, on the lower slopes of the face and cheeks whitish; ocellar triangle dull blackish brown, the pile black; occipital pile brown on upper third, white below. Antennae yellow, the third segment darker above, the arista yellow; antennae widely separated.

Mesonotum dull, brown, the pile yellowish brown, more blackish on the calli and in front of the scutellum. Humeri to notopleura yellow, calli yellow. Pleura bluish with light coating of whitish pollen, the pile long and white; upper edge of sternopleura faintly yellow; there is also a faint yellow spot above the front coxae and one below the plumule. Scutellum yellow, the narrow base and corners black, pile long and black, ventral fringe partly yellow.

Legs yellowish to light brown, the tarsi and hind legs darker, but no definitely defined dark areas; pile mostly yellow, black on the femora above and apically. Wings with a light brownish tinge, the stigma darker, squamae yellow, the fringe darker; halteres yellow, the knob darkened; plumule white.

Abdomen black, shining along the sides and the incisures. First tergite with the outer corners broadly yellow; second with a pair of broad triangular yellow isolated spots, the outer ends rounded, the inner ends pointed; third to fifth each with a broad arched fascia, narrower in the middle, broader to the outer rounded ends which are separated from the margins; anterior margins more nearly straight until they approach the sides where they slope backward, the posterior margins concave. Pile white, black on the disc and apex of each tergite; venter yellow.

FEMALE.—Pile of face white; facial stripe becomes light brown between and just below the antennae; lower two-thirds of front broadly yellow on the sides; basal segments of the antennae black. Abdominal spots and fascia narrower than on the male. Well matured specimens have darker legs than those described for the males, particularly the hind legs.

TYPE MATERIAL.—Holotype, male, Puyo, Oriente, Ecuador, 1,000 meters, December 3–15, 1938 (F. M. and H. H. Brown). Allotype, female, Pichincha Uyumbicho, Ecuador, 2,700 meters, November 4–13, 1938 (F. M. and H. H. Brown). Paratypes: one male, same data as holotype; one male, Cuicocha, Imbabura, Ecuador, 3,200 meters, May 27, 1939; one female, Banos, Ecuador, Runtun Trail, 2,100 meters, November 26, 1938; one female, Pichincha, Hda. San Rafael, Ecuador, 3,000 meters, November 12, 1938; one female, Cuenca, Azuay, Ecuador, 2,500 meters, February 22, 1939; one female, Banos, San Pablo, Ecuador, 2,200 meters, October 15, 1938; two females, Hda. Talahua, Bolivar, Ecuador, 3,100 meters, April 28, 1939. All of these specimens were collected by F. M. and H. H. Brown.

This high altitude species is related to

Fazia, although the antennae of the females are less separated than those of the males, and there is also considerable variation in this respect.

Epistrophe alta (Curran)

Figure 31

Allograpta alta CURRAN, 1936, Amer. Mus. Novitates, No. 882, p. 15 (Colombia).

Allograpta flavomaculata HULL, 1937, Wash. Acad. Sci., XXVII, p. 169 (Colombia).

Definitely related to *micrura* Osten Sacken, but the scutellum has a definite brown to black spot on the disc. Specimens are from Banos, Ecuador (F. M. Brown and W. C. Macintyre); Juives, Ecuador (W. C. Macintyre); and Popayan, Colombia (E. I. Huntington). I feel that the synonymy is correct. The markings on the abdomen vary considerably, and Hull's description will cover certain individuals. It is interesting to note that most of the females have the basal corners of the abdominal tergites yellow, and these yellow areas appear briefly on some of the males.

Epistrophe micrura (Osten Sacken)

Figure 32

Sphaerophoria micrura OSTEN SACKEN, 1877, Western Diptera, p. 330.

I have been unable to satisfy myself as to the differences between *micrura* Osten Sacken and *picicauda* Bigot. All of the specimens I possess have been assigned to *micrura*, and I have used a character in the key given me by C. H. Curran. He also uses the absence of the metapleural yellow spot to designate *micrura* (1936, Amer. Mus. Novitates, No. 882, p. 12), but I find this spot sometimes absent on the males but always present on the females. If the two species should prove to be the same the name *picicauda* will hold.

My specimens are from Sucua and Macas, Ecuador (F. M. Brown); Honduras (Edwards); Mexico City (H. G. Meyer); Alhambra, Berkeley and Sierra Nevada Mountains, California; and Rainier National Forest, Washington (S. E. Crumb).

Epistrophe picticauda (Bigot)

Sphaerophoria picticauda BIGOT, 1884, Ann. Soc. Ent. Fr., p. 102.

I have been unable to recognize this species, unless those related to *micrura* Osten Sacken, in which the facial stripe nearly fades out above the tubercle, can be considered distinct enough to be *picticauda*.

Epistrophe jactator (Loew)

Figure 33

Syrphus jactator LOEW, 1861, Berl. Ent. Zeit., Cent., I, p. 40.

The abdominal pattern and the irregularly darkened wings should make this species readily recognizable. There are a few hairs on the metasternum, and for this reason the species is removed to *Epistrophe*. I have at hand a female from Havana, Cuba (A. R. Otero). Knab also recorded it from Biscayne Bay, Florida.

ALLOGRAPTA OSTEN SACKEN, SENSU STRICTO

Elongate, small species with non-protruding face, hairy metasternum and mesonotum with yellow lateral stripes. The genus was originally established in the presence of median and oblique side spots that are so frequent on the terminal abdominal segments, but if Osten Sacken could have seen the many species that occur in the Neotropical regions he never would have limited the genus to that extent. The genus is actually difficult to separate from *Epistrophe*. The few hairs found on the metasternum will eliminate difficulty with *Baccha* and *Mesogramma*.

TABLE OF SPECIES

Allograpta, sensu stricto

- 1.—Scutellum wholly yellowish, practically unicolorous. 7.
- Scutellum with the disc black or brown. 2.
- 2.—Third as well as fourth abdominal tergite with oblique side spots and parallel vittae (Ecuador) . . . *geminata*, new species.
- Third tergite differently marked, usually fasciate. 3.
- 3.—Squamae brown except basally; front of male black pilose. 4.
- Squamae at most slightly infuscated; front of male almost all yellow pilose. 5.
- 4.—Mesonotum shining (West Indies).
- *fuscisquama* Curran.

- Mesonotum with brown opaque vittae (South America) . . . *falcata*, new species.
- 5.—Blackish spot on scutellum produced laterally almost to the base, at least as a brown stripe (Brazil).
 - *hastata*, new species.
 - The black spot is elongate oval and limited to the disc. 6.
 - 6.—The black median spots on the bases of the third and fourth abdominal tergites are triangular (Virgin Islands).
 - *venusta* Curran.
 - The black median spots are orbicular or cordate. *cubana* Curran.
 - 7.—Pteropleura black on lowest two-thirds or more. 11.
 - A yellow band extends over the upper part of the sternopleura, lower part of the pteropleura, and onto the hypopleura. 8.
 - 8.—Fourth abdominal tergite with broad, entire pale fascia; face of female black vittate. *splendens* Thomson.
 - Fourth tergite with median black vittae and with a pair of parallel yellowish stripes. 9.
 - 9.—Sides of mesonotum continuously yellow, not interrupted at suture. 10.
 - Yellow stripe interrupted at suture.
 - *obliqua* Say.
 - 10.—Third abdominal tergite with a pair of oblique yellow spots, antennae widely separated (Ecuador).
 - *browni*, new species.
 - Third tergite with a yellow arc, antennae narrowly separated; facial tubercle brownish, stripe ends below tubercle.
 - *teligera*, new species.
 - 11.—Fourth abdominal tergite with paired longitudinal yellowish vittae connected anteriorly with the oblique spots. 12.
 - Fourth tergite without the parallel vittae, or without the oblique spots. 15.
 - 12.—Mesonotum wholly shining. 13.
 - Mesonotum with four opaque brownish or blackish vittae. 14.
 - 13.—Pteropleura, hypopleura and sternopleura black; yellow on mesonotum limited to notopleura (Ecuador).
 - *tectiforma*, new species.
 - Hypopleura yellow; sides of mesonotum yellow from humeri to suture.
 - *exotica* Wiedemann.
 - 14.—Band on third tergite interrupted to form two oblique spots, disc of second tergite opaque black (British Guiana).
 - *aperta*, new species.
 - Band on third tergite entire, second with a yellow band or pair of spots.
 - *neotropica* Curran.
 - 15.—Pale yellow spots of the abdomen sub-parallel (Peru). *piurana* Shannon.
 - These spots are oblique. 16.
 - 16.—Scutellum wholly black pilose, abdominal spots isolated (Chile). . . *hortensis* Philippi.
 - Scutellum almost all yellow pilose, spots

on third tergite often united and reach the side margins (Chile).
 *pulchra* Shannon.

the dark squamae should readily identify this species.

***Allograpta geminata*, new species**

Figure 34

Third and fourth tergites each with a pair of median vittae and side spots; face with a broad median shining black stripe, scutellum black, base and apex yellow. Length, 5.5 mm.

FEMALE.—Black stripe of face broad, narrowing to the tip of the oral margin, yellow margins of the front ending at the ocelli; cheeks brown to black; pile of face sparse and pale, of cheeks white, of front black. Facial tubercle low and broad. Antennae brown, lighter on the underside.

Thorax shining black; sides of mesonotum yellow in front of suture, post alar callosities yellow; pile yellow. Pleura shining black with whitish pile, yellow spots on posterior half of mesopleura, upper edge of sternopleura, small spot next to wing base on pteropleura, and hypopleura above spiracle. Scutellum with a broad black band from corner to corner, leaving the narrow base and broader tip yellow, pile mostly black.

Legs yellow; tarsi, apical half except tip of hind femora, basal and apical thirds of the hind tibiae and coxae reddish brown to blackish. Wings hyaline, squamae and halteres yellow, plumule white.

Abdomen distinctive with broadly interrupted narrow fascia on second tergite, with a broad black opaque area posteriorly, and duplicated markings on third and fourth tergites, consisting of median parallel vittae and oblique side spots which are almost triangular in shape, not touching median vittae, sharply pointed at their outer ends; fifth and sixth tergites each with four parallel vittae. Venter yellow.

MALE.—Very similar; frontal triangle entirely bordered with yellow, pile of thorax longer, hind tibiae lacking the basal dark ring.

TYPE MATERIAL.—Holotype, female, and allotype, male, Santa Ines, Rio Pastaza, Ecuador, 1,200 meters, September 25, 1938 (F. M. Brown). Three paratype females, same data.

***Allograpta fuscisquama* Curran**

Figure 35

CURRAN, 1927, Amer. Mus. Novitates, No. 245, p. 4.

This species was described from the West Indies, Porto Rico, St. Thomas, and Mona Islands. I have two imperfect specimens reared on thrips from Havana, Cuba (A. R. Otero). The black spot on the scutellum, the shining mesonotum and

***Allograpta falcata*, new species**

Figure 36

Squamae brown, mesonotum opaque and vittate, face with broad shining black stripe, disc of scutellum black. Length, 7 mm.

MALE.—Head shining black; sides of face, ocular margins of frontal triangle and cheeks yellow; yellow of face separated from cheeks by a broad black band; pile of face and cheeks whitish, of front and ocellar triangle black. Antennae reddish, yellowish below; separated by the diameter of the pits.

Mesonotum greenish brown opaque with three slightly shining greenish vittae, the median one narrower than the other two; yellow on the sides from the humeri to the suture and on the posterior calli; the pile yellowish. Pleura more shining with a greenish tint, only the posterior edge of the mesopleura yellow; pile yellow. Scutellum yellow, the disc broadly black; the pile, including the fringe, black.

Legs reddish brown, the knees and the four front tibiae yellow. Wings hyaline, the stigma dilutely yellow. Squamae brown, yellow at base and below; halteres yellow, their stalks brown.

First tergite of abdomen black with the anterior corners yellow; second with an interrupted fascia, inner ends pointed, outer ends broad but do not go over side margins; third with an arched fascia, the outer ends pointed, band narrower at the middle; fourth with the usual pair of median vittae and oblique side spots which are connected with the median vittae; fifth with four vittae. All the yellow spots are surrounded with opaque black, leaving mainly the base and apex of each tergite shining. Pile black and yellow, mostly yellow toward the base.

FEMALE.—Front shining black, yellow on the sides below the ocelli; mesonotal vittae more pronounced than on the male; in addition the pleura is marked with yellow on the upper edge of the sternopleura and above the spiracle on the hypopleura; abdominal yellow markings narrower than on the male; fascia on the second tergite often complete.

TYPE MATERIAL.—Holotype, male, and allotype, female, Nova Teutonia, Brazil, September 2, 1936 (Fritz Plaumann). Paratypes: three females, same place, July 6, 1936, July 20, 1937, and September 20, 1937; three females, Mt. Duida, Venezuela, December 1 and 23, 1928; two females, Banos, Ecuador (W. C. Macintyre), one, July 9, 1938, 1,800 meters, and one, May 3, 1939, 2,200 meters;

one female upper Putamayo River, Colombia (B. Guevara).

The dull and vittate mesonotum will separate this species from *fuscisquama*; the yellow scutellum and more yellowish antennae will separate out *neotropica*.

***Allograpta hastata*, new species**

Figure 37

Face with a black stripe, mesonotum shining, scutellum partly black. Length, 7 mm.

FEMALE.—Face and front shining, the black stripe running from the tip of the oral margin to the ocelli, broader at the antennae but narrowing both above and below except at ocelli where it occupies all of the area between the eyes; a black stripe from eyes to oral margin just above the yellow cheeks. Pile of face yellow, of the front short and black. Antennae brownish, more yellowish below.

Thorax shining aeneous, yellow as follows: from humeri to suture, alar calli, a spot above front coxae, posterior half of mesopleura, broad upper edge of sternopleura, and a large spot above hind spiracle; pile sparse and pale. Scutellum dull yellow with the disc black which is continued to the corners as a narrow stripe; pile black, the fringe yellow.

Legs yellow; the tarsi, except hind basitarsus, a preapical band on hind femora, and basal and apical bands on the hind tibiae dark brown to blackish. Wings hyaline, the stigma dilutely yellowish; halteres, squamae and plumule yellow.

First tergite shining black, the anterior corners yellow; second with a median fascia which goes over the sides in its full width, bordered with opaque black, the apex, base and sides shining; third with a broad arched fascia which does not reach the sides, outer ends near apex of tergite and pointed, broadest in middle and only narrowly separated from base of tergite in middle, surrounded by opaque black; fourth with usual median vittae and oblique side spots which are separated from the vittae, surrounding opaque black not so prominent as on basal tergites; fifth with four vittae, the median two more slender; venter mostly yellow, somewhat darker basally.

HOLOTYPE.—Female, Sao Paulo, Brazil, November, 1933 (Collector "B. A. R.").

***Allograpta venusta* Curran**

Figure 38

CURRAN, 1927, Amer. Mus. Novitates, No. 245, p. 5.

MALE.—Cheeks brownish to black; face with a broad shining black stripe which narrows below the tubercle and widens to surround the antennae, forming a large

black area just above the antennae; pile of head all yellow. Thorax shining, yellow as follows: broadly from humeri to suture, post alar calli, broad edges of the scutellum, posterior edge of mesopleura, upper edge of pteropleura, a spot above spiracle, and all the legs except the tarsi and apical rings on the hind femora and tibiae and a basal ring on the hind tibiae.

Abdomen peculiarly marked, the second tergite with an interrupted yellow band broadly reaching the sides; the third with a pair of irregular spots which leave a median basal black triangle, outer ends of the yellow spots pointed and oblique but not reaching the sides; the fourth more normal with median vittae connected to abbreviated oblique side spots; fifth with a pair of inverted V-shaped spots.

Described from a paratype male from St. Croix, Virgin Islands.

***Allograpta cubana* Curran**

Figure 39

CURRAN, 1932, Amer. Mus. Novitates, No. 519, p. 3.

Very similar to *venusta* Curran; can be readily told by the presence of a rounded median black basal spot on each of the third and fourth tergites. It is a Cuban species.

***Allograpta splendens* (Thomson)**

Figure 40

Syrphus splendens THOMSON, 1869, *Eugenies Resa*, Dipt., p. 501.

Described from Galapagos. It is recognized by its yellow scutellum, black stripe on the face and fasciate fourth abdominal tergite.

***Allograpta browni*, new species**

Figures 41, 42 and 43

Face broad with an abbreviated black stripe; antennae widely separated; mesonotum shining, sides continuously yellow. Length, 8.5 mm.

MALE.—A dark species. Face shining yellow, the black stripe narrow and ends below just over the broad low tubercle, the pile black; front shining black just above the antennae, opaque black on the disc, opaque yellow along the eye margins, the pile black and rather long; cheeks reddish, separated from the yellow of the

face by a shining black area between eyes and oral margin, pile of cheeks black; occiput white pilose on lower half, black on upper; ocellar triangle black with black pile. Antennae small; brownish in color, yellow below, the arista black. The antennae are widely separated, about twice the diameter of a single pit.

Thorax shining black, yellow as follows: from humeri to scutellum, from humeri to front coxae, posterior half of mesopleura, upper edge of sternopleura which is connected to the yellow of hypopleura above spiracle; the pile dark brown to black, yellow on the hypopleura. Scutellum dull yellow, black on extreme basal corners; pile black including fringe.

Legs yellowish to brown; the front legs, particularly the tibiae and femora, lighter than the hind legs which are almost black on the outer end of the femora, the knees and an indefinite ring on the hind tibiae and femora yellow; pile mostly black and rather long. Wings dilutely brownish hyaline, squamae dark brown, halteres yellowish brown, plumule yellow.

Abdomen opaque, shining at the incisures; first tergite mostly yellow, the narrow middle black; second tergite with an interrupted yellow fascia, the inner ends pointed, the outer going over the side margins, rear margin of outer edge separated from apex of segment about width of fascia, third tergite with a pair of oval oblique yellow spots which do not touch the sides or base of tergite; fourth tergite with usual parallel median vittae and oblique side spots which do not connect with the median vittae; fifth with four vittae, the outer ones slightly wider and vary slightly divergent, none reaches the apex of the tergite. Pile of abdomen mostly black, even on the sides toward the base.

HOLOTYPE.—Male, Cuicocha, Imbabura, Ecuador, 3,200 meters, May 27, 1939 (F. M. and H. H. Brown).

The appearance of this species with the widely separated antennae but non-protruding face suggests that the first character is not of generic value.

***Allograpta teligera*, new species**

Figure 44

Face with a very narrow black stripe which does not reach the oral tip, sides of mesonotum yellow from humeri to scutellum. Length, 7–7.5 mm.

FEMALE.—Face and cheeks yellow, a narrow blackish stripe runs from antennae to base of tubercle, becoming reddish brown on the tubercle; a narrow black stripe from eyes to oral opening; pile pale; front shining black, sides yellow on the lower two-thirds, pile black; ocellar triangle black with black pile; occipital pile yellow. Antennae yellow, more brownish above.

Thorax shining black, the mesonotum continuously yellow, the disc with two very faint median vittae; the pile on the type black on the mesonotum, some yellowish hairs on the disc of the specimen from Ecuador. The pleura mostly yellow, entirely above the front coxae, the posterior two-thirds of the mesopleura, the upper edge of the sternopleura and connected by yellow on the hypopleura to the yellow spot above the spiracle, and this spot is connected with that of the mesopleura by a stripe across the upper border of the pteropleura; the pile is yellow. Scutellum yellow, the disc slightly infuscated brownish, the pile bristly black.

Legs yellow; apical two-fifths of the hind femora, the hind tibiae and all the tarsi brownish to black. Wings hyaline, the stigma yellow; squamae except base brown, halteres and plumule yellow.

Abdomen opaque black, the sides, apex and base of each tergite shining. First tergite yellow, the narrow apex black; second with a narrow yellow fascia, slightly arched, the outer ends not reaching the sides and just reaching the apical shining border; third with a similar but broader, more arched fascia, the middle of the arch near the base of the tergite; fourth with a median pair of vittae and a pair of isolated oblique spots which are pointed at their outer ends; fifth and following with four yellow vittae each; pile yellow at the base, mostly black beyond the second tergite. Venter mostly yellow.

TYPE MATERIAL.—Holotype, female, Nova Teutonia, Brazil, July 20, 1937 (Fritz Plaumann). Paratype, female, Banos, Ecuador, 1,800 meters, May, 1939 (W. C. Macintyre).

These two females, I believe, belong to the same species in spite of the differences in mesonotal pile.

***Allograpta tectiforma*, new species**

Figure 45

A dark species, face with a black stripe, mesonotum shining, scutellum yellow. Length, about 7 mm.

MALE.—Face yellow, a broad shining black stripe gradually narrowing from antennae to oral tip, the pile yellow and black mixed, all black opposite the antennae; cheeks reddish yellow, separated from the yellow of face by a broad black area, pile yellowish white; front black on the disc, yellow on the ocular borders, the pile black; occiput with white pile below, yellow above, the cilia black; ocellar triangle black with black pile. Antennae short; first two segments brown; third yellow, upper third brown; arista brown.

Thorax shining aeneous with brassy reflections, yellow limited to the notopleura and very

inconspicuously on the anterior edge of humeri. Pile of mesonotum black, a few yellowish hairs anteriorly and on the sides of the pleura yellow, mostly black on the pteropleura. Scutellum dull yellow but black underneath, the pile black including the fringe.

Legs yellowish to light brown, the hind legs darker except for a median ring on the hind tibiae and the apex of the hind femora, all the tarsi dark. Pile rather abundant and mostly black. Wings hyaline, the stigma yellow; squamae yellowish, halteres reddish with darker stalks, plumule white.

Abdomen opaque black, the sides and incisures shining. First tergite yellow only on the extreme anterior corners; second with a pair of fasciate spots which are separated from each other by more than the width of a spot and scarcely reach the sides; third with a pair of very oblique oval spots which are distinctly separated anteriorly, their posterior ends not reaching the sides but almost reaching the apex of the tergite; fourth with a pair of similar oval oblique spots which are broadly connected with a pair of very narrow vittae which reach to three-fourths the length of the tergite; fifth with a pair of inverted V-shaped spots. Tergites shining yellow, the sides broadly black.

FEMALE.—Differs as follows: the black spot separating the cheeks and face narrower, front shining black, only the sides below narrowly yellow, pile on the mesonotum more yellowish in front, slight indication of red on the calli, spots on the second tergite connected and reach the sides, oblique spots on the third tergite also connected and not so oblique, legs paler.

TYPE MATERIAL.—Holotype, male, Cuicocha, Imbabura, Ecuador, 3,200 meters, May 27, 1939 (F. M. and H. H. Brown). Allotype, female, same data. Paratypes: one male, same data; five females, same data; one female, same place, 3,500 meters, May 31, 1939.

I believe the females belong with the two males described as they were all taken at the same time at the same high altitude and in the absence of related species.

Allograpta obliqua (Say)

Figure 46

Scaeva obliqua SAY, 1823, Jour. Acad. Nat. Sci. Phil., III, p. 89.

This is a common species in North America, and I have specimens also from Villarica, Paraguay; Banos, Ecuador; Vera Cruz, Mexico; and Cartavio, Peru.

A single male specimen from Haiti is entirely like *obliqua* except for a narrow black facial stripe and black spot on the

front. This is undoubtedly a variation from typical *obliqua* and may be the form *securifera* described by Macquart from a female taken in Savannah. Osten Sacken, who examined the type, claimed it a synonym of *obliqua*.

Allograpta exotica (Wiedemann)

Figure 47

Syrphus exoticus WIEDEMANN, 1830, Auss. Zwief. Ins., II, p. 136.

A common species throughout the Neotropical region. Specimens from Nova Teutonia, Brazil; Villarica, Paraguay; Juan Fernandez Island, Chile; Banos and Juives, Ecuador; Rikitea Island (Crocker Expedition); and California. Until 1926 it was known in North America as *A. fracta* Osten Sacken.

Allograpta aperta, new species

Figure 48

Face with a broad black stripe, mesonotum vittate, scutellum yellow, disc of second tergite opaque black. Length, 7.5 mm.

MALE.—Face shining black, only the narrow sides whitish yellow between upper cheeks to a point opposite the antennae; cheeks yellowish to reddish, becoming shining black above to near upper oral margin; pile of face and cheeks pale. Front shining black, the ocular borders yellow, the pile black; ocellar triangle black with black pile; occiput white haired below, yellow to bronze above, none of the cilia black. Antennae somewhat longer than average for this group, mostly yellow, the upper two-thirds of the third segment brown; arista pale, darker at the tip.

Thorax shining aeneous with bronze reflections, disc of the mesonotum opaque dark brown with three shining vittae (the median one narrowest) which do not reach the scutellum, pile all yellowish to bronze; a yellow arc from humeri to suture and continuing onto the posterior margin of the mesopleura; a yellow spot above the metaspiracle. Scutellum and calli yellow, pile of scutellum long and black, the fringe mostly yellow.

Legs yellow; the coxae, apical half of the hind femora, the hind tibiae and all the tarsi brown to black. Wings hyaline, the stigma yellow; squamae and fringe dark brown, plumule and halteres yellow.

Abdomen opaque black; the broad sides, base and apex of each tergite, shining bronze; yellow as follows: first tergite on anterior corners; second without yellow; third with a pair of oval oblique spots which touch the base of the tergite but are widely separated, fourth with pair of inverted V-shaped spots, the median

edges sub-parallel; fifth with four vittae. Pile of abdomen long and yellow along the sides, shorter and becoming black on the fourth and fifth segments. Venter shining with mostly pale pile. Genitalia black.

HOLOTYPE.—Male, Kaieteur, Savannah, British Guiana (Richards and Smart. B. M. 1937-776).

This species is closely related to *neotropica* Curran but lacks any yellow markings on the second tergite.

***Allograpta neotropica* Curran**

Figure 49

Allograpta neotropica CURRAN, 1936, Amer. Mus. Novitates, No. 882, p. 14.

Specimens are at hand from Nova Teutonia and Sao Paulo, Brazil; Mt. Roraima, Brazil, at altitudes of 5,200 and 8,600 feet; Banos and Santa Ines, Ecuador.

***Allograpta piurana* Shannon**

SHANNON, 1927, Proc. U. S. Nat. Mus., LXX, Art. 9, p. 9.

This species has not been seen. Shannon's description is brief, but his figure leaves no doubt about its recognition. The face has a black stripe and the "meta-pleura" (hypopleura) a yellow spot. The abdominal spots are narrow, and the last three pair are nearly parallel. It is undoubtedly related to *hortensis* Philippi to which Shannon compares it. It was described from a single female from Peru.

***Allograpta hortensis* (Philippi)**

Figure 50

Syrphus hortensis PHILIPPI, 1865, Verh. Zool.-Bot. Ges. Wien, XV, p. 746.

Face with a narrow shining black stripe; mesonotum shining; propleura, pteropleura and hypopleura black; scutellum yellow; abdomen with four pairs of narrow isolated spots. Length, 7.5 mm.

MALE.—Face and cheeks yellow, a rather broad shining black stripe from the oral margin to the antennae and reaching to an oval spot above the antennae; black spot on lower face between oral margin and eyes not prominent on the specimen at hand; pile of cheeks and face pale, black on the frontal triangle and along the eyes below the antennae.

Thorax shining with considerable black

pile on the mesonotum; sides in front of the suture yellow; yellow on pleura limited to the posterior half of the mesopleura and upper edge of the sternopleura. Scutellum yellow but with black pile. Legs yellow, the posterior legs more brownish.

Abdomen with four pairs of yellow isolated spots, the first pair with their inner ends pointed and their outer ends reaching the sides; other spots oblique and separated from the sides.

FEMALE.—Front is mostly shining black, only the narrow ocular edges below yellow; spot just above cheeks definite; spots on second abdominal tergite do not reach the margins.

Described from a male, Angol, Chile, December 3, 1926; female, Cerros de Nahuelbuta, Angol, Chile, 200 meters, September 19, 1933 (D. S. Bullock).

***Allograpta pulchra* Shannon**

Figure 51

SHANNON, 1927, Proc. U. S. Nat. Mus., LXX, Art. 9, p. 25.

Face with a black stripe, mesonotum shining, scutellum yellow with yellow pile. Length, 6.5 mm.

MALE.—Face yellow with a shining black stripe which extends to a small area just above the antennae; cheeks yellow; frontal triangle yellowish white and opaque except for the shining black area next to the antennae (Shannon states the front is entirely yellow); pile of face, cheeks and front yellow.

Thorax shining black with brassy reflections, yellow along the sides from humeri to suture; pleura yellow as follows: a small spot above the front coxae, posterior half of the mesopleura, a small spot on the upper edge of the sternopleura, a large spot above the spiracle, and only a narrow edge on the pteropleura just beneath the plumule. Scutellum and post alar calli yellow, pile of the thorax including the scutellum entirely yellow. Legs mostly yellow; hind femora with an apical ring, the hind tibiae with a median and apical ring, and all the tarsi brownish.

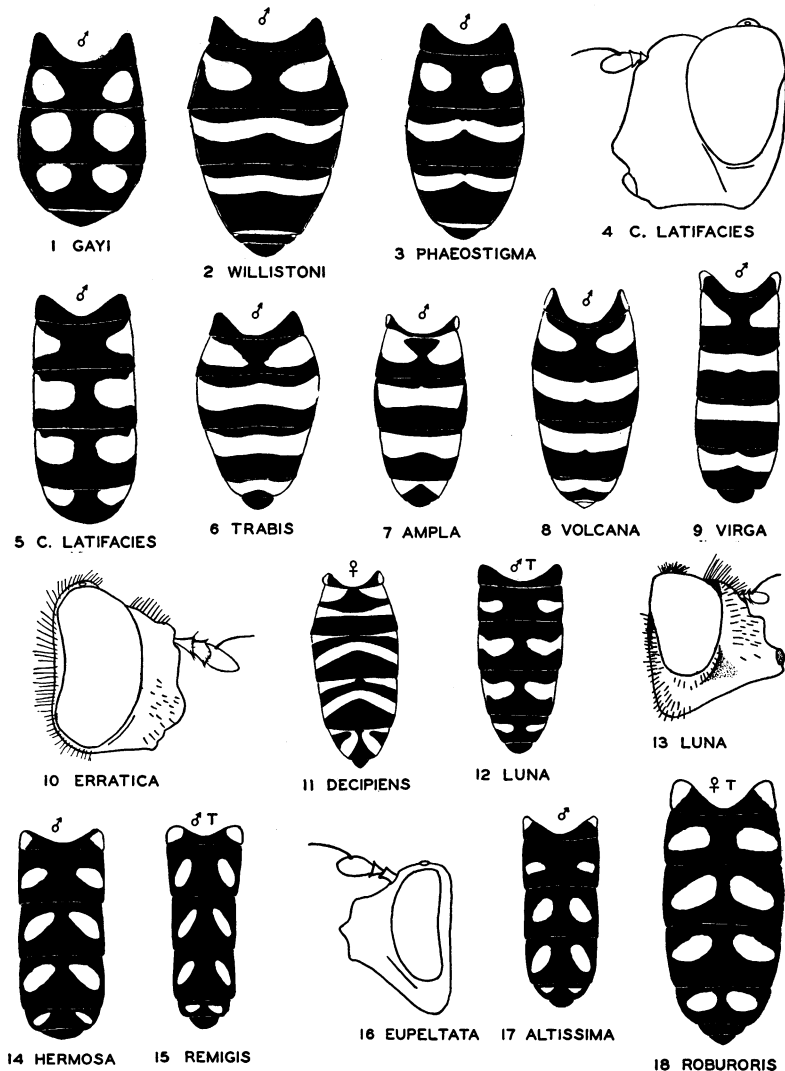
Abdomen with pairs of broad yellow spots, those on the second to fourth tergites reaching the sides; those on the third

tergite narrowly connected; isolated and widely separated on the fifth tergite.

FEMALE.—Similar to the male; facial stripe slightly narrower, becoming broad above the antennae. Abdominal spots

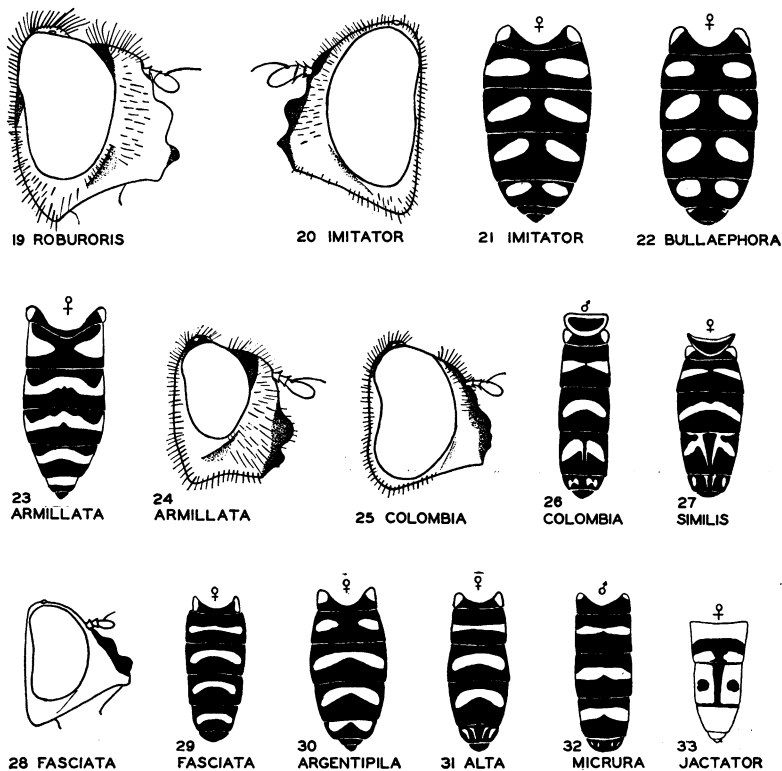
are narrower and the band on the third tergite complete.

Described from a pair from Angol, Chile: the male caught May 9, 1929; the female, December 20, 1926.



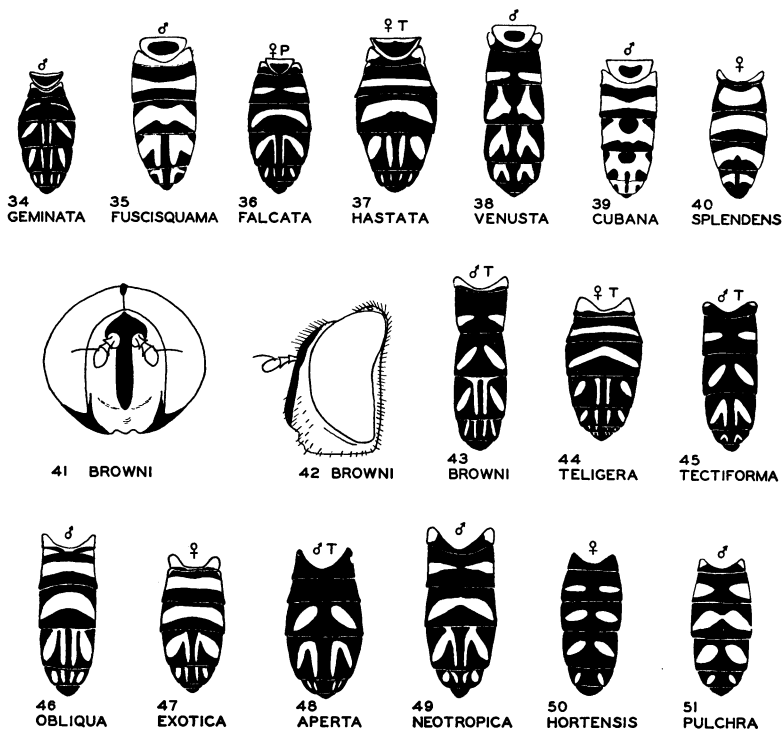
- Fig. 1. *Syrphus ? gayi* Macquart, abdominal pattern of male.
 Fig. 2. *Syrphus willistoni*, new name, abdominal pattern of male.
 Fig. 3. *Syrphus phaeostigma* Wiedemann, abdominal pattern of male.
 Fig. 4. *Claraplumula latifacies* Shannon, profile of head of male.
 Fig. 5. *Claraplumula latifacies* Shannon, abdominal pattern of male.
 Fig. 6. *Epistrophe trabis*, new species, abdominal pattern of male.
 Fig. 7. *Epistrophe ampla*, new species, abdominal pattern of male.
 Fig. 8. *Epistrophe volcana*, new species, abdominal pattern of male.
 Fig. 9. *Epistrophe virga*, new species, abdominal pattern of male.
 Fig. 10. *Epistrophe erratica* Williston, profile of head of male.
 Fig. 11. *Epistrophe decipiens* Williston, abdominal pattern of female.
 Fig. 12. *Epistrophe luna*, new species, abdominal pattern of male.
 Fig. 13. *Epistrophe luna*, new species, profile of head of male.
 Fig. 14. *Epistrophe hermosa* Hull, abdominal pattern of male.
 Fig. 15. *Epistrophe remigis*, new species, abdominal pattern of male.
 Fig. 16. *Epistrophe eupeltata* Bigot, profile of head of female.
 Fig. 17. *Epistrophe altissima*, new species, abdominal pattern of male.
 Fig. 18. *Epistrophe robutoris*, new species, abdominal pattern of female.

All drawings were made with the aid of the camera lucida with the exception of Fig. 16. The abdominal patterns were made to the same scale.



- Fig. 19. *Epistrophe roburoris*, new species, profile of head of male.
 Fig. 20. *Epistrophe imitator* Curran, profile of head of female.
 Fig. 21. *Epistrophe imitator* Curran, abdominal pattern of female.
 Fig. 22. *Epistrophe bullaephora* Shannon, abdominal pattern of female.
 Fig. 23. *Epistrophe armillata*, new species, abdominal pattern of female.
 Fig. 24. *Epistrophe armillata*, new species, profile of head of male.
 Fig. 25. *Epistrophe colombia* Curran, profile of head of male.
 Fig. 26. *Epistrophe colombia* Curran, abdominal pattern of male.
 Fig. 27. *Epistrophe similis* Curran, abdominal pattern of female.
 Fig. 28. *Epistrophe fasciata* Curran, profile of head of female.
 Fig. 29. *Epistrophe fasciata* Curran, abdominal pattern of female.
 Fig. 30. *Epistrophe argentipila*, new species, abdominal pattern of female.
 Fig. 31. *Epistrophe alta* Curran, abdominal pattern of female.
 Fig. 32. *Epistrophe micrura* Osten Sacken, abdominal pattern of male.
 Fig. 33. *Epistrophe jactator* Loew, tip of abdomen of female.

All drawings were made with the aid of the camera lucida. The abdominal patterns were made to the same scale.



- Fig. 34. *Allograpta geminata*, new species, abdominal pattern of male.
 Fig. 35. *Allograpta fuscisquama* Curran, abdominal pattern of male.
 Fig. 36. *Allograpta falcata*, new species, abdominal pattern of female.
 Fig. 37. *Allograpta hastata*, new species, abdominal pattern of female.
 Fig. 38. *Allograpta venusta* Curran, abdominal pattern of male.
 Fig. 39. *Allograpta cubana* Curran, abdominal pattern of male.
 Fig. 40. *Allograpta splendens* Thomson, abdominal pattern of female.
 Fig. 41. *Allograpta browni*, new species, front view of head of male.
 Fig. 42. *Allograpta browni*, new species, profile of head of male.
 Fig. 43. *Allograpta browni*, new species, abdominal pattern of male.
 Fig. 44. *Allograpta teligera*, new species, abdominal pattern of female.
 Fig. 45. *Allograpta tectiforma*, new species, abdominal pattern of male.
 Fig. 46. *Allograpta obliqua* Say, abdominal pattern of male.
 Fig. 47. *Allograpta exotica* Osten Sacken, abdominal pattern of female.
 Fig. 48. *Allograpta aperta*, new species, abdominal pattern of male.
 Fig. 49. *Allograpta neotropica* Curran, abdominal pattern of male.
 Fig. 50. *Allograpta hortensis* Philippi, abdominal pattern of female.
 Fig. 51. *Allograpta pulchra* Shannon, abdominal pattern of male.

All drawings were made with the aid of the camera lucida. The abdominal patterns were made to the same scale.