

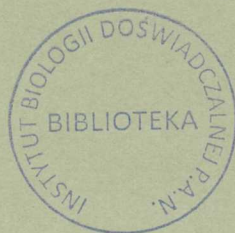
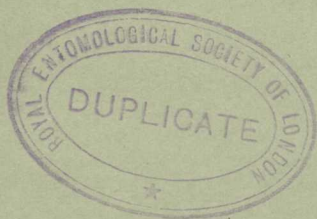
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AMERICAN TWO-WINGED FLIES OF THE GENUS STYLOGASTER MACQUART

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The present paper contains keys to the species of the genus, a discussion of generic and specific characters and the adult habits, and descriptions of all the known species from North and South America, 20 in number, of which 12 are new to science.

Besides the collections of the United States National Museum, important material has been examined from the American Museum of Natural History, the Museum of Comparative Zoölogy, the Canadian National Collection, and the collections of Prof. A. L. Melander and Mr. H. J. Reinhard. Credit is given under the species for the borrowed material. A small but important collection, mostly of South American specimens, which is referred to several times, was purchased a few years ago by the United States National Museum from Dr. O. Kröber, of Hamburg.

Genus *STYLOGASTER* Macquart

Stylogaster MACQUART, Hist. Nat. Dipt., vol. 2, 1835, p. 38; Dipt. Exot., vol. 2, pt. 3, 1843, p. 174 (sep. p. 17).—WILLISTON, Trans. Conn. Acad. Sci., vol. 6, 1883, p. 91; Kans. Univ. Quart., vol. 1, 1893, p. 120; Manual N. A. Dipt., 1908, p. 263.—ROEDER, Wien. Ent. Zeit., vol. 11, 1892, p. 287.—TOWNSEND, Ann. and Mag. Nat. Hist., ser. 6, vol. 19, 1897, p. 25.—DEMEIJERE, Tijdsch. v. Ent., vol. 55, 1912, p. 202.—KRÖBER, Ent. Mitteil., vol. 3, 1914, p. 338; Arch. f. Naturgesch., vol. 83, Heft 9, 1919, p. 40. *Stylomyia* WESTWOOD, Proc. Zool. Soc. Lond., vol. 18, 1850, p. 270. *Ptychoproctus* BIGOT, Revue et Magazin de Zoologie, vol. 11, 1859, p. 308.

The type species is *Conops stylata* Fabricius, it being the only one mentioned in the original publication of the genus. Macquart in establishing the genus ventured to make a figure of the species, although he had never seen it. Naturally his figure is very misleading, although interesting from a psychological standpoint. The original description of *stylata* is very brief, after the manner of the

time. Wiedemann, in redescribing it, had several other specimens, probably three species in all, and made a combined description, mixing the characters, as Williston has shown, so that it is impossible to tell what the Fabrician specimen was. Thus the matter has stood up to the present. It was assumed that the type is not now in existence; but the writer, noticing that Fabricius mentions the Sehesstedt collection, and recalling that this collection is now in the Zoological Museum in Copenhagen, sent to that Museum for comparison a specimen which seemed to come rather close to *stylata* in the character of the front being yellow. Dr. William Lundbeck very kindly compared it with the type and reports it to be the same. So at length the genotype of *Stylogaster* is established, and is described farther on.

The type species of *Stylomyia* is *leonum*, new, and that of *Ptychoproctus* is *complexus*, new; in both cases only one species was mentioned, and both are from South Africa. Both genera were placed in synonymy by Williston in 1883.

A list of the known species is given by Kröber in 1915 and 1919. Since 1919 the following species have been published:

bakeri BEZZI, Philippine Journ. Sci., vol. 12, 1917, p. 157.—Philippine Islands.

orientalis BRUNETTI, Fauna Brit. India, vol. 3, 1923, p. 272.—India.

nitens BRUNETTI, Ann. and Mag. Nat. Hist., ser. 9, vol. 15, 1925, p. 111.—Ashanti, Africa.

horvathi SZILADY, Ann. Mus. Nat. Hung., vol. 24, 1926, p. 592.—Costa Rica.

This I have included as a synonym of *stylosa* Townsend.

biannulata var. *argentina* KRÖBER, Konowia, vol. 8, 1929, p. 174.—Northern Argentina. This I take to be a synonym of *stylata*.

varifrons MALLOCH, Annals and Mag. Nat. Hist., ser. 10, vol. 5, 1930, p. 465.—S. Rhodesia, Africa.

Generic characters.—The genus *Stylogaster* is readily distinguished from the rest of the Conopidae by the very short and narrow anal cell, which is hardly as long as the second basal and is usually a little drawn in (never prolonged) on the anal vein; the long, thin, geniculate proboscis; the very narrow cheek, which is hardly visible in side view; the distinct chaetotaxy; and the striking, long ovipositor of the female. The arista is subapical, three jointed, the first two joints short. The eyes have greatly enlarged facets in the part facing directly forward, the same size in both sexes. The labella are setaceous, more or less rolled outward, and white in color. The chaetotaxy is distinct and very uniform, offering specific characters, however, in three points. The only bristles of any size on the head are a pair of postverticals, which are long, straight, parallel, and bent backward. The thorax has the following: Dorsocentral 1 (near scutellum); humeral 0 or 1; prothoracic 1; notopleural 1 or 2; supraalar 1 or 2; pteropleural 1; postalar 2; scutel-

lar 1. All these bristles are large, contrasting strongly with the insignificant hairs occurring elsewhere on head and thorax.

Specific characters.—The relative length of the second and third antennal joints; size of frontal triangle; color of front; extent of pale color bordering humerus behind and mesially; extent of pleural dark stripe; color of lateral bristles of first and second abdominal segments and of the area on which they arise; curvature of last section of fourth vein; direction of hind crossvein; length of second vein; number of humeral, notopleural, and supraalar bristles. The males show some good genitalic differences, and the female ovipositor has several striking differences in color and length of its joints. In all, these specific characters are very substantial, and good specimens of either sex are not hard to identify.

I have considered that the short apparent sixth segment forms the base of the ovipositor, making the organ three jointed; this basal joint is sometimes so closely united with the following or first long joint that the suture can hardly be made out.

The genitalia of the male are difficult to spread so that they can be described in detail. I have contented myself with such items as can be seen with comparative ease, and in describing the "forceps" have adopted the terms used in muscoids, where the posterior and anterior (or inner and outer) forceps are usually well marked. I find both these structures quite recognizable in *Stylogaster*, but of softer consistency and paler than in Tachinidae; the anterior fold diagonally across under the posterior ones in repose. The apparent seventh segment is the last and principal genital segment, the sixth being very narrow, or in rare cases retracted out of sight.

Distribution.—Two very distinct species occur in the United States, 1 of which extends into Mexico; 6 previously described species and 12 here described as new range from tropical Mexico to Brazil, Paraguay, and Bolivia; 5 are from tropical and southern Africa; 1 from India; and 1 from the Philippine Islands. No specimens have been seen or reported from the West Indies.

Habits.—Bates, in his famous *Naturalist on the River Amazons*, first edition, 1863 (vol. 2, p. 365), says in discussing several species of the ant genus *Eciton*, which march in large columns in the Amazon region:

The armies of all *Ecitons* are accompanied by small swarms of a kind of two-winged fly, the females of which have a very long ovipositor and which belongs to the genus *Stylogaster* (family Conopsidae). These swarms hover with rapidly vibrating wings at a height of a foot or less from the soil over which the *Ecitons* are moving, and occasionally one of the flies darts with great quickness toward the ground. I found they were not occupied in transfixing ants, although they have a long needle-shaped proboscis, which suggests that conclusion, but most probably in depositing their eggs in the soft bodies of insects, which the ants were driving away from their hiding places. These eggs would

hatch after the ants had placed their booty in their hive as food for their young. If this supposition be correct, the *Stylogaster* would offer a case of parasitism of quite a novel kind.

Sumichrast,¹ says: "I have observed, sometimes, that little flies, of the family Syrphides, follow, flying above them, the column of *Eciton*, but can not give any account of the evolutions of these Diptera." This observation was made at Potrero, near Cordoba, Mexico.

Williston² says: "*Stylogaster*, it is thought, may be parasitic upon Termites."

Townsend³ gives the following interesting account of his capture of *Stylogaster stylosa*, *ethiopa*, and *minuta*, in 1896, near San Rafael, Vera Cruz, Mexico:

Fifty-one specimens of this interesting genus were taken, hovering over the front ranks of a moving army of ants, in a "cafetal" at Paso de Telaya during the last hour or two of daylight on March 29. In company with them were numerous specimens of *Hyalomyia* and some other small tachinids. The ants have been determined by Mr Theo. Pergande as *Eciton foreli* Mayr. Mr. Pergande adds that they are the most northerly forms of that species, which is a widely distributed one in the American Tropics. The column of ants was about 15 feet wide and 25 feet long, and moved slowly but surely in a straight line through the "cafetal," swarming rapidly over the thick covering of dead leaves, branches, and other obstructions that strewed the ground under the coffee trees. The specimens of *Stylogaster* hovered continually over the ants, now and again darting at them, without doubt for the purpose of ovipositing in their bodies. During the whole three months of my collecting in this locality I saw not a single specimen of *Stylogaster* at any other time; but on this occasion, during the short time that I had before dark overtook me, I succeeded in capturing 51 specimens by sweeping closely with the net over the front ranks of the ants.

De Meijere⁴ says, "*Stylogaster* verfolgt Termiten," and repeats the same in volume 55 (1912, p. 206), where he cites in confirmation "Bates, 1863 (vol. 1, p. 151)"; but I can find no such reference in Bates, nor in the extensive quotations from him in Hagen's monograph of the Termites.⁵

Dr. William Mann, Director of the National Zoological Park, gives me the following note regarding the species he captured in Lombardia, Honduras, in 1924 (*ethiopa*, *pectinata*, *apicalis*, and *minuta*):

The *Stylogasters* that I collected in Honduras were hovering over the front end of a column of *Eciton praedator*. At the front of such column, the ants spread out, and it seems that this is a good time for the fly to oviposit. Further along in the column the workers are much more closely massed, and it is very dangerous then for any insect to attack one.

¹ Trans. Amer. Ent. Soc., vol. 2, 1868, p. 41.

² Trans. Conn. Acad., vol. 6, 1885, p. 389.

³ Annals and Mag. Nat. Hist., ser. 6, vol. 19, 1897, p. 23.

⁴ Tijdsch. v. Ent., vol. 46, 1903, p. 151.

⁵ Linnaea Ent., vol. 12, 1858, pp. 270-287.

Mr. C. H. Curran, of the American Museum of Natural History, who has collected more specimens of the genus than anyone else, has kindly given me the following note on his observations in the Canal Zone:

During almost three months spent in the Canal Zone I observed representatives of the genus on several occasions, usually associated with moving armies of ants. However, as is only reasonable to expect, occasional specimens may be found disassociated from ants, and on many occasions I captured or observed them along the trails. When found singly they were hovering in small patches of sunlight, and I found them in those locations on Barro Colorado Island, Corozal, and France Field. The inference to be drawn from this is that they normally occur singly and associate themselves with the ants as the army travels, their numbers being augmented as the column moves along.

There is certainly a close relationship between the flies and the ants. However, I failed to find any trace of oviposition on the ants, although, not having read Townsend's article at that time, I arrived at the same conclusion which he had reached, namely, that certain flies darting toward the ants were ovipositing. Later observations have almost convinced me that I was wrong. The flies were observed to hover over any part of the moving column, and thus differed from the other flies associated with the ants. The Tachinids, *Oestrogaster* and *Allophora*, were almost invariably found near or in front of the head of the column, and it is reasonably certain that they oviposited in cockroaches which were "flushed" by the ants. But *Stylogaster* seemed to take no interest in these. In fact, they seemed intent only on hovering in patches of sunlight over the army.

I do not think that they oviposit on the ants, at least during the daytime. Perhaps they do in the evening. They can not be internal parasites of the army ants which I observed, because they are many times larger than the ants. If they are parasitic on the ants, it must be as predators upon the immature stages. If such is the case, the eggs might be deposited on the adult ants and carried into the nests. Assuming that this is true, Townsend's conclusions and my first one might have been correct. Both were made during the last hours of daylight. During other observations, in the morning and early afternoon, no indication of oviposition was seen.

KEY TO SPECIES OF *STYLOGASTER*

Males

1. Ocellar triangle long, almost or quite reaching lunule.....2.
Ocellar triangle much shorter, rarely extending a little beyond middle of front.....5.
2. Ocellar triangle opaque; third antennal joint four or more times the second on outer side (eastern United States).....*neglecta* Williston.
Ocellar triangle shining.....3.
3. Middle tibia with brush of long black hair on apical half of flexor side...4.
Middle tibia plain (Panama).....*indistincta*, new species.
4. Middle basitarsus with a row of half a dozen erect black spinose hairs on a swelling on anterior side before middle; front coxae with a tuft of hairs at tip which are black in front, pale behind (Brazil).....*ornatipes* Kröber.
Middle basitarsus straight, without swelling but with a few black hairs on anterior side; front coxae with only a few hairs at tip (Costa Rica).
decorata, new species.

5. First abdominal segment pale at sides where the lateral bristles arise....6.
 First abdominal segment dark at sides where the lateral bristles arise...13.
6. Abdomen yellow with faint brown bands on hind margins of the segments
 (New England to Texas).....*biannulata* Say.
 Abdomen much darker.....7.
7. Third antennal joint on outer side fully three times the second; lateral
 bristles of first and second abdominal segments wholly pale (British
 Guiana).....*fasciata*, new species.
 Third antennal joint not over twice the second; lateral bristles of first and
 second abdominal segments mostly black.....8.
8. Abdomen unusually short and broad, second segment shortened in middle of
 dorsum; third paler in color with a narrow transverse dark band in mid-
 dle, approaching the hind margin at sides (British Guiana).
breviventris, new species.
 Abdomen of usual form, not as described.....9.
9. Front except narrow lateral margins of uniform reddish-brown color; ocel-
 lar triangle very short, rounded off close to median ocellus; mesonotum
 with ill-defined median wide brown stripe (Panama).
currani, new species.
 Front and mesonotum not as described.....10.
10. First posterior cell not wider than submarginal, last section of fourth vein
 nearly straight; proboscis yellow halfway to geniculation.....11.
 First posterior cell wider than submarginal, last segment of fourth vein
 strongly bowed; proboscis yellow only at base.....12.
11. Hind edge of last sternite with a complete transverse comb-like row of back-
 wardly directed black spinules, and just before this a pair of small groups
 of black setules, less conspicuous; outer forceps swollen, white, with a long,
 slender yellow apical process extending across the median line (Central
 America).....*pectinata*, new species.
 With no apparent spinules on last sternite; the outer forceps slender, with
 jagged tips, without such processes (Central America).
rectinervis, new species.
12. Front coxae with brush of long pale hair at tip (Brazil).....*stylata* Fabricius.
 Front coxae with black hair at tip (Mexico, Central and South America).
stylosa Townsend.
13. Last sternite with a small cluster of black setules on each side of the median
 rounded notch (Mexico, Central America).....*minuta* Townsend.
 Last sternite not with clusters of setules.....14.
14. Middle third of hind femur and penultimate fifth of hind tibia whitish, well
 defined (Panama).....*banksi*, new species.
 Hind femora and tibiae almost unicolorous, brownish (Honduras).
apicalis, new species.

Females

1. Ocellar triangle long, almost or quite reaching lunule.....2.
 Ocellar triangle much shorter, rarely extending a little beyond middle of
 front.....5.
2. Ocellar triangle opaque; third antennal joint four or more times the second
 on outer side (eastern United States).....*neglecta* Williston.
 Ocellar triangle shining.....3.
3. Lateral bristles of first abdominal segment wholly pale.....4.
 Lateral bristles of first abdominal segment mostly black (Peru).
peruviana, new species.

4. Hind crossvein almost parallel with hind wing margin; hind tibiae strongly annulate with white near tip (Mexico, Central America).
ethiopa Townsend.
Hind crossvein nearly erect, hind tibiae not annulate with white (Panama).
panamensis, new species.
5. Second and third abdominal segments wholly yellow (Bolivia).
abdominalis Kröber.
Abdomen yellow with faint dark apical bands on all segments (New England to Texas)-----biannulata Say.
Abdomen much darker-----6.
6. First abdominal segment with only pale bristles at sides-----7.
First abdominal segment with coarse black bristles at sides-----8.
7. Second segment of ovipositor snow white and with white hair on basal half or more (Panama)-----speciosa, new species.
Second segment of ovipositor black on basal half; front wholly yellow on anterior third or half; fourth vein greatly bowed, joining third almost at a right angle (Brazil)-----stylata Fabricius.
8. Front uniform light reddish brown in color except narrow sides; ocellar triangle very short, hardly continuing beyond median ocellus (Panama).
currani, new species.
Front yellow on anterior edge, gradually becoming black upward; ocellar triangle equilateral, extending beyond median ocellus only about twice the width of the latter (Mexico, Central America)-----stylosa Townsend.
Front dark, at least above; ocellar triangle more acute anteriorly-----9.
9. Abdomen unusually short and broad; third segment rather pale, with narrow arcuate black crossband near middle which curves backward near sides (Dutch Guiana)-----breviventris, new species.
Abdomen of ordinary form, not with such crossband-----10.
10. Second segment of ovipositor snow white except base (Panama).
apicalis, new species.
Second segment of ovipositor not white-----11.
11. Hind tibia with distinct band of white ground color on penultimate fifth (a little obscured by dark hairs) (Panama)-----banksi, new species.
Hind tibia not banded-----12.
12. The lateral black bristles of the first abdominal segment arise from a spot of dark ground color (Mexico to Central America)-----minuta Townsend.
The lateral black bristles of the first abdominal segment arise from an area of white ground color (Central America)-----rectinervis, new species.

STYLOGASTER STYLATA Fabricius

Conops stylata FABRICIUS, Syst. Antliatorum, 1805, p. 177.

Myopa stylata WIEDEMANN, Ausserourop. Zweifl. Insekten, vol. 2, 1830, p. 243.

Stylogaster stylata MACQUART, Hist. Nat. Dipt., vol. 2, 1835, p. 39; Dipteres Exotiques, vol. 2, pt. 3, 1845, p. 174 (separate p. 17), pl. 2, fig. 3.—ROEDER, Wien. Ent. Zeitung, vol. 11, 1891, p. 287.—WILLISTON, Kans. Univ. Quart., vol. 1, 1893, p. 120.—TOWNSEND, Annals and Mag. Nat. Hist., ser. 6, vol. 19, 1897, p. 24.—KRÖBER, Entom. Mitteilungen, vol. 3, 1914, p. 347; Arch. Naturgesch., vol. 83, 1917 (1919), p. 43.

Stylogaster stylosa (part) KRÖBER, Entom. Mitteilungen, vol. 3, 1914, p. 347.

Stylogaster biannulata var. *argentina* KRÖBER, Konowia, vol. 8, 1929, p. 174.

Male.—Front rather wide, velvet black above, changing to yellow a little below middle; frontal triangle almost equilateral, rounded anteriorly, reaching only to middle of front, its outer margins somewhat yellowish. Face rather wide, silvery yellow; second antennal joint a trifle longer than third, blackened on upper edge beyond base; third joint brown, reddish below and on inner side; back of head black in ground color with coarse whitish hair, becoming delicate and quite dense below near the edge of oral cavity. Mesonotum black on disk; humeri whitish, the color extending back to suture and down to front coxae as well as nearly halfway to the middle line of mesonotum. Behind the suture the dark color extends broadly down the mesopleura. Above the wings the color is yellow and there is a median divided yellow area beginning a little back of the suture. Margin of scutellum yellow, metanotum black in middle. Humeral bristle absent; notopleural only one; supralaral one.

Abdomen mostly yellow; first segment broadly black above, the sides whitish and bearing only delicate white bristles; second segment black, the sides yellow, broadly expanded toward the middle above so that the black color is correspondingly narrowed, a stout row of black bristles laterally at the base; third, fourth, and fifth segments yellow with broad black hind margins extending forward in the middle to form a median stripe; the pale portion of the fourth segment is distinctly white pruinose; sixth segment very narrow, yellow; seventh (genital segment) largely yellow with black basal spot on each side of middle; forceps yellow, inclosing between them an oval area mostly filled with delicate pale hairs arising from the inner sides of the forceps. Front legs yellow, last tarsal joint blackened; tip of coxa with conspicuous long delicate pale hairs in front and behind. Middle legs yellow; coxae with mixed smallish pale and dark hairs. Tibia with an erect, short, black spine at tip on flexor side; tarsi black at tip and the apices of the first four segments slightly infuscated. Hind femora yellow with two brown annuli, the erect pile on the inner side extending only a little beyond middle. Hind tibia yellow, apical third except extreme tip black, inner surface with dense erect pile from above the middle. Hind tarsi black, first segment more brownish in middle.

Wing light brown, first posterior cell much widened beyond middle, last section of the fourth vein broadly curved, joining third a little before tip, the united veins joining costa rather far before apex; hind crossvein almost parallel with wing margin, longer than last section of fifth vein and almost as long as penultimate section of fourth. First posterior cell much wider than submarginal. Tip of second vein slightly farther from base of wing than anterior end of hind crossvein.

Female.—Ovipositor rather short and thick, the short basal segment blackish, following one brown, indistinctly yellow at apex; last segment black, apical half yellowish. Front coxae with ordinary smallish black bristles.

Length, male 7.5 mm., female 6.5 mm. to ovipositor, which is nearly 3 mm. long.

Redescribed from four females and one male; all but one female were taken at Santa Cruz, Rio Grande do Sul, Brazil, and were received from Dr. O. Kröber, under the name of *stylosa* Townsend, and were so mentioned by him in his revision of the genus; the other female is from San Bernardino, Paraguay (K. Fiebrig). One of the Santa Cruz females has been compared with the type in the Zoological Museum in Copenhagen by Doctor Lundbeck, who writes:

The type of *Stylogaster stylata* Fabricius is in our collection (Sehestedt Collection), but it is a very bad specimen, and the abdomen is lost, so that the important characters of this can not be identified. Otherwise the two specimens are quite alike; the color and shape of the head, the ocellar triangle, the antennae, the legs, and the venation of the wings, all are quite the same, so that I think it certain that the two specimens are the same species.

STYLOGASTER STYLOSA Townsend

- Stylogaster stylosa* TOWNSEND, Annals and Mag. Nat. Hist., ser. 6, vol. 19, 1897, p. 24.—KRÖBER, Ent. Mitteilungen, vol. 3, 1914, p. 344 (part); Arch. Naturgesch., vol. 83, 1917 (1919), p. 44, pl. 8, figs. 55, 55a, 55b.
Stylogaster horvathi SZILADY, Ann. Mus. Nat. Hung., vol. 24, 1928, p. 592, fig. 2.

Male.—Greatly resembles *stylata*, agreeing in the absence of the humeral bristle, the single notopleural, and one supraalar. Frontal triangle a little shorter, the black color of the front extends farther forward, fading gradually close to the lunule or sometimes reaching it; the second antennal joint is much blacker; the bristles on the sides of the first abdominal segment are nearly all black, arising from the white part of the segment; those at the tip of the front coxae are entirely black, the erect pile on the inner and under side of the hind femur continues to the end; and the first posterior cell is narrower, the last section of the fourth vein being much less strongly curved. The first posterior cell is, however, wider than the submarginal. The second abdominal segment is much darker; the genitalia appear to be nearly the same, the oval aperture inclosed between the posterior forceps is very distinct with its margin of pale hairs.

Female.—Ovipositor about as in *stylata*, its basal joint mostly yellow.

Length, male 6.5 mm., female 5.5 mm. to ovipositor, the latter about 3 mm.

Redescribed from 60 specimens: 25 taken by C. H. Curran, 2 by S. W. Frost, 1 by Nathan Banks, and 2 by R. C. Shannon, all on Barro Colorado Island, Canal Zone; 1 Frijoles, Canal Zone, by Nathan Banks; 1 at Tabernilla, 1 at Lion Hill, Canal Zone, collected by August Busck; 1, Cano Saddle, Gatun Lake, Canal Zone, by R. C. Shannon; 2 from Paraiso, Panama, from J. Zetek; 2 from Lombardia, Honduras, collected by W. M. Mann; 10 from La Suiza de Turrialba, Costa Rica, collected by Pablo Schild and received from Prof. A. L. Melander; 11 from Higuito, San Mateo, Costa Rica, collected by Pablo Schild; 1, Trece Aguas, Alta Vera Paz, Guatemala, collected by Schwarz and Barber.

Townsend described the species from six male and eight female specimens taken near San Rafael, Vera Cruz, Mexico. None of his types of *stylosa*, *ethiopa*, and *minuta* are in the National Museum, nor are they in the University of Kansas. Kröber mentions one co-type of *stylosa* and one of *ethiopa* in the Bezzi collection, now in the museum in Milan. Mr. Edwards, in reply to an inquiry, says that the British Museum has two or three of each of the species, presumably types, though not so marked. I am unable to trace the remainder of the type material of the three species.

STYLOGASTER BIANNULATA Say

Myopa biannulata SAY, Journ. Acad. Nat. Sci. Phila., vol. 3, 1823, p. 81; Complete Works, vol. 2, 1859, p. 72.

Myopa stylata WIEDEMANN, Aussereur. Zweif. Ins., vol. 2, 1830, p. 243—ROEDER, Wien. Ent. Zeit., vol. 11, 1892, p. 287.

Stylogaster stylata MACQUART, Dipt. Exot., vol. 3, pt. 2, 1843, p. 175 (separate p. 18), pl. 2, fig. 3.—OSTEN SACKEN, Cat. N. A. Dipt., 1878, pp. 140, 259.

Stylomyia confusa WESTWOOD, Proc. Zool. Soc. Lond., vol. 18, 1850, p. 271, pl. 19, fig. 4. (Syn. by Loew, Schaum's Jahresbericht, 1851, p. 133.)

Stylogaster biannulata WILLISTON, Trans. Conn. Acad., vol. 6, 1883, p. 93; vol. 6, 1885, p. 394, pl. 61, fig. 8; Kans. Univ. Quart., vol. 1, 1893, p. 120.—SNOW, Kans. Univ. Sci. Bull., vol. 2, 1903, p. 216.—TUCKER, Kans. Univ. Sci. Bull., vol. 4, 1907, p. 99.—JOHNSON, Ann. Rept., N. J. State Mus., 1909 (1910), p. 772; Bull. Amer. Mus. Nat. Hist., vol. 33, art. 3, 1913, p. 69.—PETERSON, Ill. Biol. Monographs, vol. 3, 1916, fig. 359.—BRITTON, Check-list Ins. Conn., 1920, p. 189.—JOHNSON, List. Dipt. New England, 1925, p. 180.—JOHANNSEN, List Ins. New York, 1928, p. 803.

Male.—Front rather wide, triangle shining brown, except in center, reaching to middle of front; lower third of front yellow, which extends farther up along the sides; antennae yellow, tip of third joint brown; second joint on outer side about as long as third (in one specimen only three-fourths as long). Thorax yellow, the dark mesonotal spot smaller than usual, well-defined, widely separated from lateral margins and deeply notched behind. Mesopleura with only a faint brownish mark above, which is not connected with the dorsal

spot; no humeral bristle, one notopleural, one supraalar. Scutellum with a small brown spot covering about two-thirds of the disk; metanotum with a small blackish spot, narrower than first abdominal segment.

Abdomen almost entirely yellow; first segment faintly brown above, and second to fourth segments with a faint brown posterior cross-band, not reaching the sides; first segment with only pale bristles laterally, arising from whitish ground color. Genitalia yellow, a striking row of pale hairs along the lower edge of the fifth tergite. Hairs of the abdomen quite dense and uniform, brown in color. Lateral bristles of second segment black, in a single row anteriorly. Most of the specimens of both sexes show two small brown spots on the second abdominal segment near its base.

Legs yellow, front and middle ones rather whitish. Front coxae with only pale hairs at tip; middle with mixed pale and dark. Hind femora and tibiae with the usual villosity on the inner side; hind femora yellow with two faint brown rings; hind tibiae yellow at base, whitish toward middle, the apical two-fifths decidedly black, the whitish part covered with white hairs behind. Hind tarsi brown.

Wing nearly hyaline, the first posterior cell wide beyond the middle on account of the broad curve of the last section of the fourth vein, wider than submarginal. Hind crossvein parallel with wing margin. Tip of second vein farther from base than anterior end of hind crossvein.

Female.—Ovipositor yellow on the two basal joints, the apical one black except at extreme tip, the ovipositor as a whole decidedly shorter than the remainder of the abdomen.

Length, male 6.4 mm.; female 6 mm., to ovipositor, which is about 3 mm.

Redescribed from 6 males and 14 females: One pair from the Riley collection has no locality; 1 male, Delaware (Ridings), also from Riley collection; 1 male from Texas, but collector unknown, received from Dr. O. Kröber; 1 female, Victoria, Tex., collected by E. A. Schwarz; 4 males and 8 females, College Station, Tex., collected by H. J. Reinhard; 1 female, Turkey Run, Ind., collected by J. M. Aldrich; 2 females, Chichenitza, Yucatan, Mexico, from American Museum of Natural History, differ in having largely black bristles on sides of first abdominal segment.

STYLOGASTER NEGLECTA Williston

Stylogaster neglecta WILLISTON, Trans. Conn. Acad., vol. 6, 1883, p. 91, pl. 61, fig. 8.—TOWNSEND, Trans. Amer. Ent. Soc., vol. 22, 1894, p. 64.—JOHNSON, Cat. Ins. N. J., 1899, p. 665; 1909 (1910), p. 772; List Dipt. New England, 1925, p. 180.—SNOW, Kans. Univ. Sci. Bull., vol. 2, 1903, p. 216.—JONES, Canad. Ent., vol. 39, 1907, p. 251.—WILLISTON, Manual

N. A. Dipt., 1908, p. 262, fig.—BANKS, Ent. News, vol. 23, 1912, p. 109; Annals Ent. Soc. Amer., vol. 9, 1916, p. 200.—DAECKE, Ent. News, vol. 24, 1913, p. 45.—KRÖBER, Entom. Mitteilungen, vol. 3, 1914, p. 349.—BRITTON, Check-list Ins. Conn., 1920, p. 189.—JOHANNSEN, List Ins. New York, 1923, p. 803.

Male.—Easily recognized by the large, opaque, pale yellow frontal triangle, the elongate slender tip of which just reaches the lunule. The front outside the triangle is brown in color, becoming somewhat darker at vertex; the orbits are shining light yellow below, gradually changing into brown above. The antennae are also quite striking, the first antennal joint is longer than usual, second very short and the third fully four times the second and of orange color except a dark stripe along the upper edge. Mesonotum mostly black, which extends to the mesopleura behind the suture. Humeri white with a yellowish area behind to the suture and mesially halfway to the middle. Before the scutellum a yellowish area extends from one wing to the other. Humeral 1; notopleural 2; supraalar 2. Scutellum brown in middle. Metanotum with distinct black spot not reaching sides nor upper edge. Halteres with yellow knob.

Abdomen yellow, somewhat more brownish toward the apex. First segment brown above, its sides pale yellow, all the lateral bristles of the first and second segments yellow; the third, fourth, and fifth segments have a pale pollinose band at base; genital segment yellow, bearing a pair of backwardly directed black bristles standing far apart.

Front and middle legs pale yellow, tarsi gradually darker; hind femora yellow with two narrow dark rings; hind tibia yellow on basal two-thirds, then more whitish, the apical sixth or eighth quite black, as are also the tarsi. Hind trochanters and femora without villous hairs; front and middle coxae with only small pale hairs at tip.

Wing subhyaline, first posterior cell hardly wider than the submarginal cell immediately in front of it; tip of second vein much farther from base than anterior end of hind crossvein.

Female. Front and antennae as in male. Ovipositor slightly longer than the remainder of the insect, the principal joint very long and only slightly tapering, the terminal joint about three-fifths as long, black on basal half, snow white on apical half, the minute appendages at the tip darker; the hair on the last segment corresponds with the ground color. It is almost impossible to distinguish the very small basal joint.

Length, male 5.5 mm., female the same to the ovipositor, which measures 7 mm.

Redescribed from 27 specimens: 1 Wilmerding, Pa., no collector; 2 from Connecticut (Williston); 1 Riverton, N. J. (no collector, re-

ceived from Dr. O. Kröber); 4 Pemberton, Wenonah, and Riverton, N. J. (G. M. Greene); 3 Castle Rock, Pa. (G. M. Greene); 2, Auburndale, Mass. (C. W. Johnson); 1 College Park, Md. (G. M. Greene); 5 near Plummer Island, Va. (H. L. Viereck); 4 Falls Church, Va. (Nathan Banks and E. A. Chapin); 1 Magnolia, W. Va. (R. C. Shannon); 1 Anderson, Indiana (J. M. Aldrich); 1 Onaga, Kansas (Crevecoeur); 1 without locality.

STYLOGASTER MINUTA Townsend

Stylogaster minuta TOWNSEND, Annals and Mag. Nat. Hist., ser. 6, vol. 19, 1897, p. 27.—KRÖBER, Entom. Mitteilungen, vol. 3, 1914, p. 348; Archiv Naturgesch., vol. 83, 1917 (1919), p. 43.

Male.—Front rather narrow, frontal triangle shining black, reaching about halfway to lunule, remainder of the front rather uniform dark brown, hardly at all paler anteriorly; first antennal joint white, second brown, third reddish yellow, broadly infuscated at apex. Proboscis yellow almost to middle of basal joint. Mesonotum subshining black, the humeri white with only a narrow pale margin behind and mesially. Mesopleura dark brown to sternopleura. Posterior part of mesonotum opaque brownish, scutellum almost of the same color. Middle portion of metanotum black. Humeral 1; notopleural 2; supraalar 1.

Abdomen blackish, the second, third, and fourth segments with uninterrupted pale crossband basally which becomes slightly wider at the sides. First segment narrowly white at base, the lateral bristles black and rather stout, arising from a distinctly blackish spot; second segment with a single row of black lateral bristles; fifth segment shining blackish with only a slight basal, paler band, which encroaches a little on the preceding segment in the middle; sixth segment short, black; seventh segment also black. Genitalia yellow, the posterior forceps fleshy and thick, approximated to each other in most of their length. The last sternite has a very distinct rounded excavation in the middle, on each side of which is a striking patch of small black setules.

Front and middle legs pale yellow; tarsi a little darker; front coxae with some black bristles at apex in front and behind; hind femora brown with a lighter brown annulus in the middle and with dense pile below and on inner side to about the middle; hind tibia light brownish yellow with only a very faint trace of subapical lighter annulus; hind tarsi black.

Wing brownish, first posterior cell of the same width as the submarginal; second vein quite short, tip nearer the base of the wing than the anterior end of the posterior crossvein.

Female.—Front tibiae with rather striking long, pale, apical, bristles, two somewhat united and usually longer than half the

basitarsus. Ovipositor shorter than the remainder of the abdomen, yellow at base and on the side to about the middle, the principal segment about twice as long as the last one; terminal organs yellow.

Length, male 4.8 mm., female about 4 mm. to ovipositor, which is 2 mm. long.

Redescribed from 10 males and 5 females; 13 specimens were collected on Barro Colorado Island, Canal Zone (10 by C. H. Curran, 3 by Nathan Banks); 1 male, 1 female, Lombardia, Honduras (William M. Mann).

Originally described from 10 male and 7 female specimens, taken near San Rafael, Vera Cruz, Mexico. See note under *stylosa* as to these types.

STYLOGASTER ETHIOPA Townsend

Stylogaster ethiopa TOWNSEND, Annals and Mag. Nat. Hist., ser. 6, vol. 19, 1897, p. 26.—KRÖBER, Entom. Mitteilungen, vol. 3, 1914, p. 351; Archiv Naturgesch., vol. 83, 1917 (1919), p. 43, pl. 8, fig. 54.

Stylogaster aethiops SZILADY, Ann. Mus. Nat. Hung., vol. 24, 1928, p. 592, fig. 3.

Female.—Front rather wide, the ocellar triangle large, shining, brownish black, reaching almost to the lunule; the remainder of the front is opaque velvety black, except a narrow silvery orbit, an extension of the facial color which reaches fully to the middle of the front. Antennae rather short, second joint on outer side not much more than one-half the third and nearly black in color; third joint black with narrow reddish border below. Mesonotum rather shining uniform black, the humeral and a narrow space close to it pale yellow, the black of the dorsum extending down on the mesopleura, posterior part of mesonotum very slightly paler; humeral 1; notopleural 2; supraalar 2.

Abdomen quite dark, anterior third or half of each segment dark yellow except a median continuation of the black part. First segment black above, with only pale bristles on the sides, the area from which they arise being very faintly brownish. Ovipositor black, short basal segment yellow, base of second and third segments yellow, the combined length slightly more than the rest of the abdomen. Hind femora with two broad black ill-defined annuli; hind tibia with striking white color, beginning beyond the middle and reaching almost to the apex, the white portion has white hairs behind; hind tarsi entirely black.

Length, 5.5 mm. to ovipositor, the latter a little over 3 mm.

Redescribed from 9 female specimens: 3 were from Higuito, San Mateo, Costa Rica (Pablo Schild); 2 La Suiza de Turrialba, Costa Rica (P. Schild, received from Prof. A. L. Melander); 3 Lombardia, Honduras (W. M. Mann); 1 Cano Saddle, Gatun Lake, Canal Zone (R. C. Shannon).

Originally described from 20 female specimens, taken near San Rafael, Vera Cruz, Mexico. See note under *stylosa* as to these types.

STYLOGASTER ORNATIPES Kröber

Stylogaster ornatipes KRÖBER, Entom. Mitteilungen, vol. 3, 1914, p. 350; Archiv. Naturgesch., vol. 83, 1917 (1919), p. 43, pl. 8, fig. 58.

Male.—Frontal triangle very large, shining black, blunt anteriorly, almost touching the lunule, a faint light streak extending forward from the median ocellus; remainder of front velvety black, except a silvery marginal streak ascending from the face and rapidly narrowing to about the middle of the frontal orbit. First joint of antennae rather dark yellow; second brown; third blackish except on under side and near base, broader near base than in most of the species, a little more than twice the length of the second joint. Mesonotum shining black, the humerus white and with a narrow yellowish border behind and mesially. Scutellum blackish; hind edge of mesonotum brown. Metanotum black on middle, the usual brown stripe on the mesopleura extends to the pteropleura and sternopleura where it is somewhat lighter in color. There is also a brown spot in front of the base of the halteres. Humeral 1; notopleural 2; supraalar 2.

Abdomen blackish, with the usual lateral paler triangles on the third and fourth segments, very slightly developed on the fifth. First abdominal segment with dense pale bristles at the sides, arising from a slightly darker area; second segment with numerous, irregularly arranged, large white lateral bristles among which two or three of the upper are black; sixth segment wholly brown, longer and more conspicuous than usual; seventh segment also brown. Genitalia yellow, posterior forceps small and not distinctly visible, anterior forceps very wide with a row of conspicuous dark hairs on the hind edge, partly concealing the posterior forceps.

Front legs pale yellow, the coxae with a tuft of black hairs at tip on the front side and a few pale ones on the posterior side. Middle femora rather stout, somewhat brownish above; middle tibiae yellow, gradually enlarged and pale; beyond the middle on the flexor side, a very striking cluster of long black hairs extending far beyond the apex. Anteriorly this brush is united with a group of much shorter black hairs; middle tarsi yellow, the first joint enlarged on the dorsal side before the middle and bearing five or six black erect spines in a row; hind femora with the usual two dark annuli, the basal one being quite diffused and brownish. The usual villous hairs on the inner side at the lower edge are comparatively few in this species and form a single, or partly double, erect row of about uniform length, the trochanter being entirely bare and shining brown in color;

hind tibiae black except for a white annulus covering about the penultimate fifth; hind tarsi black.

Wing somewhat brownish, first posterior cell not wider than the submarginal; tip of second vein farther from base than anterior end of hind crossvein.

Length, about 7.5 mm. (the abdomen having been detached and glued on the mount, the length can not be positively given).

Redescribed from one male, Santos, Brazil, received from Doctor Kröber, under the name of *ethiopa* Townsend.

This might be a male of *speciosa*, except for the marked difference in the length of the third antennal joint, which does not seem to vary in the two sexes in any of the other species.

STYLOGASTER DECORATA, new species

Male.—Precisely like *ornatipes* in most of the characters, the only differences that I can make out being as follows: The third antennal joint is not only broad near base, somewhat bulging below, but continues rather wide to the apex; the second joint is a little shorter than in *ornatipes* so that the third is about three times its length; the dark pleural stripe extends upon the sternopleura, but not upon the pteropleura. The front coxae have ordinary short bristles at tip, the middle femur is less thickened, the middle tibia, although enlarged from the middle, is not so broad as in *ornatipes*; it has a cluster of black hairs on the flexor side beginning slightly before the middle and confined to a narrow space along that side; although striking, it is much less so than the corresponding tuft in *ornatipes*. The front side of the tibia also has a few unusually long hairs on the apical half, but they do not form a conspicuous tuft. The middle basitarsus is not enlarged, but has, beginning almost at the middle, a series of five small suberect setules. The bristles of the first and second abdominal segments are the same.

Wing: The first posterior cell distinctly narrower than submarginal.

Length, 6 mm.

Described from two males; the type from Higuito, San Mateo, Costa Rica; the other from La Suiza de Turrialba, Costa Rica, both collected by Pablo Schild, and the second received from Prof. A. L. Melander, to whom it is returned.

Type.—Male, Cat. No 43025, U.S.N.M.

STYLOGASTER CURRANI, new species

Male.—Frontal triangle very short, the shining portion extending in front of the median ocellus hardly more than the diameter of the latter. Entire front reddish brown, very little paler close to lunule, bordered on each side by a narrow, darker brown orbital stripe. Antennae brown, first joint and extreme base of second white, third joint slightly reddish below and around the tip, about

one and one-tenth times as long as second; mesonotum mostly blackish, but with an ill-defined paler median stripe which is usually quite conspicuous. Humeri white, the area on the mesial side light brown halfway to middle line and the same color extending back above the notopleura to the transverse suture; mesopleura dark brown, gradually lighter close to sternopleura; posterior part of mesonotum yellowish brown. Humeral 1; notoplural 2; supraalar 1. Scutellum blackish on the disk, the remainder brown. Metanotum black on median region, sharply defined, the sides yellow.

Abdomen blackish, the first segment black across the disk, whitish in front and behind and the lateral area entirely white, bearing a large tuft of spiny black bristles; second segment black, indistinctly paler in the middle, bearing a few outstanding black bristles on the sides at base; second and third segments with an opaque posterior black crossband including about one-third of the length, extending forward in the middle to the anterior edge to form a median stripe; fifth segment more extensively black, shining in certain directions with an indefinite brown area on the sides anteriorly; remaining segments light yellow without any distinct dark markings. The genitalia show a pair of erect compressed lobes side by side, rounded apically, and bearing black hairs behind almost to the tip.

Front and middle legs very pale yellow, tarsi gradually infuscated. Front coxae with numerous long black hairs at tip in front and behind. Hind femora black, extreme base and tip and a rather narrow annulus just before the middle white. Tibia pale for about three-fourths of the length, the remainder blackish; hind tarsi entirely black.

Wing uniformly infuscated, the costa with rather longer hairs than usual. Last section of fourth vein considerably bowed so that the first posterior cell is perceptibly wider than the submarginal. Tip of second vein decidedly farther from base of wing than anterior end of hind crossvein.

Female.—Front as in male; front coxae with much shorter and fewer black hairs at tip; hind coxae at extreme tip with a single row of rather striking but not very long black hairs. Ovipositor longer than remainder of abdomen, dark yellow at extreme base, then black, a pale yellow ring at the tip of the middle segment, the apex yellow.

Length, male 8 mm., female about 6.2 mm. to the ovipositor, which is 4 mm.

Described from seven males and three females collected on Barro Colorado Island, Canal Zone, by C. H. Curran. Type in American Museum of Natural History.

Paratype.—Male, Cat. No. 43026, U.S.N.M.

STYLOGASTER BANKSI, new species

Male.—Frontal triangle extending to middle of front, the latter blackish, a little reddish close to lunule. Antennae brown except first joint and extreme base of second; third joint blackish, the apex red below, about one and two-tenths times the length of the second. Mesonotum mostly black, which extends in a broad stripe down the mesopleura. Humerus white, adjacent parts brownish. Hind part of dorsum yellowish brown. Scutellum with a dark spot on disk and the extreme lateral corner black. Lower part of metanotum black in middle. Humeral 1; notopleural 1 (or 2 very close together); supraalar 1.

Abdomen largely black; first segment black above, lateral bristles numerous, black, arising from a distinctly brownish spot; second segment black except extreme base, with three or four black bristles at the side anteriorly; third and fourth segments with light yellow lateral triangles at base, which in the third reach nearly to hind margin at the side, in the fourth not so extended; fifth segment shining black except basally and along the sides below; sixth segment very narrow, blackish, shining; seventh segment blackish at sides, a conspicuous whitish spot occupying most of its surface and reaching front margin in middle. Genitalia rather pale, the posterior forceps strongly hooked and rather sharp at the tip, the anterior or outer forceps have a long process at tip which closes in repose so as to project on the opposite side for a considerable distance (this, of course, might be concealed in some specimens); the posterior forceps are rather far apart at base so as to inclose an oval space partly filled with pale hairs projecting from the forceps.

Front and middle legs pale yellow, the tarsi a little darker; hind femora yellow at base and tip and with a broad yellow median annulus; hind tibiae pale at base, becoming black in middle, the penultimate fifth rather distinctly white, remainder and tarsi black. The erect pile of the inner side of the femur is rather sparse and only extends to about the middle.

Wing uniformly light brownish, the first posterior cell wider than the marginal; second vein decidedly shorter than usual, ending nearer base of wing than the anterior end of hind crossvein.

Female.—Ovipositor a little longer than remainder of abdomen, yellow at base, the remainder black, extreme tip and its appendages yellow.

Length, male 6.3 mm., female 5.5 mm. to ovipositor, which measures 3.9 mm.

Described from 16 males and 10 females, all collected at Barro Colorado Island, Canal Zone, one male by Nathan Banks, the remainder by C. H. Curran.

Type in American Museum of Natural History.

Paratype.—Male, Cat. No. 43027, U.S.N.M.

STYLOGASTER BREVIVENTRIS, new species

Male.—Frontal triangle of medium size, brownish, shining, the sharp apex slightly exceeding middle of front; front black above, becoming yellow on the lower third or fourth; first antennal joint whitish, second whitish at base, remainder yellow; third joint yellow with infuscated upper edge, of the same length as the second; proboscis yellow to the middle of the first joint. Mesonotum shining brownish black, the humeri white and the same color extending back to the suture and mesially for a little distance; pleural stripe much paler than usual, indistinct except above, the posterior opaque brown area of the mesonotum rather large. Scutellum brown, metanotum blackish in middle; humeral 1; notopleural 2; supraalar 1.

Abdomen considerably wider and shorter than usual. First segment mostly yellow, only a brownish shade extending across near the hind edge and a small dark spot in middle, the lateral bristles black, numerous, and arising from a pale spot; the second segment more widened at apex, pale at base, then brown, a darker brown line bordered with a row of large hairs extending across at about three-fourths the length, the remainder bare and slightly paler; lateral bristles black, few, and large; third segment shorter and a little wider than second, with a brown somewhat arcuate band across the middle, bordered by a row of large hairs, the space behind this being bare; this arcuate band approaches the hind margin at the sides; fourth segment as wide as the third but a little shorter, mostly dark brown, having like the preceding two segments, a noticeable bare area behind; fifth segment fully as long as the two preceding segments taken together, brown except along the sides; it has at the posterior edge a peculiar somewhat globose area in the middle which widens forward in the form of two ridges extending toward the sides and including at the front edge almost the whole width of the segment; sixth segment short, blackish; seventh segment also blackish. Viewed from the side, the shining brown fifth segment is large and conspicuous and is longer than the two preceding.

Front and middle legs pale yellow; front coxae with only a few small dark hairs at tip; hind femora brown with a broad pale annulus in the middle, very few villous hairs on the inner side near base; hind tibiae yellow on basal half, slightly brownish beyond, with faint indications of a pale annulus before tip; flexor side with minute, erect hairs beyond middle; hind tarsi brown, blackish at tip. Hind trochanters without usual pile.

Wing slightly brown, first posterior cell as wide as submarginal; second vein shorter than usual, the tip nearer the base than anterior end of hind crossvein.

Female.—Abdominal segments two and three as in the male; fourth segment brown, almost as wide as third and a little longer, its apical half or more bare, of soft appearance and corrugated lengthwise; this peculiar area is wider in the middle than at the sides. Fifth segment rapidly narrowing, dark brown in color. Ovipositor longer than remainder of the abdomen, its short basal segment dark yellow, principal segment black, terminal segment dark brown, yellow at base and tip.

Length, male 5 mm., female 3.7 mm. to ovipositor, which is 2 mm.

Described from six males and three females, Kartabo, British Guiana, received from Canadian National Collection, to which the type is returned.

Paratype.—Male, Cat. No. 43028, U.S.N.M.

STYLOGASTER FASCIATA, new species

Male.—Front not quite so wide as in *stylata*, the frontal triangle brown, extending to the middle of the front, where it is not very sharply defined; remainder of front brown except silvery orbits ascending from the face for a short distance. Second antennal joint brown, third reddish but broadly brown above and at tip, almost three times the length of the second. Dorsum of thorax black, a broad brown stripe extending from notopleural suture down across mesopleura and sternopleura, including all the lower part of the latter. Humeri pale yellow, hind part of mesonotum brownish yellow. Scutellum brown, its sides more yellowish. Metanotum with a distinct black spot not as wide as the first abdominal segment. Humeral 1; notopleural 1; supraalar 2.

Abdomen dark brown, the first segment white at the sides with only white lateral bristles; second segment with a very narrow white pollinose basal crossband and only white lateral bristles; third, fourth, and fifth segments with white pollinose basal crossbands occupying about one-third of the segment; pale hairs on sides of fifth conspicuous; seventh segment dark yellow. Front coxae with inconspicuous mixed light and dark hairs at tip.

Front and middle legs pale yellow, tarsi a little darker toward tip. Hind femora with two wide blackish annuli and without any erect pile on the inner side, hind trochanters bare. Hind tibiae yellow at base, dark brown in the middle, then slightly enlarged and white nearly to tip, the extreme tip being black; there are no villous hairs on the tibiae; hind tarsi entirely black.

Wings slightly infuscated, first posterior cell a little wider in the middle than the submarginal cell just before it. The second vein

longer than usual, the costal segment between its apex and that of the third vein about as long as the hind crossvein.

Length, 8.2 mm.

The proboscis in this specimen extends directly forward and has a length of 9 mm.

Described from one male, collected at Bartica, British Guiana, and received from C. W. Johnson. Type in Museum of Comparative Zoölogy.

STYLOGASTER APICALIS, new species

Male.—Frontal triangle rather large, extending somewhat more than halfway to the lunule; front brown from the lunule upward, almost black at vertex. Antennae pale at base, third joint red with dark upper border and more widely around apex. Mesonotum black, humeri white, a broad brown stripe extending down the mesopleura, ending at the sternopleura. Humeral 1; notopleural 2; supraalar 1.

Abdomen mostly blackish, first segment dark above except extreme base, the lateral bristles black and arising from a brown or blackish spot; second segment with basal fourth yellowish, which becomes wider at the sides, lateral bristles black, in a single row; third, fourth, and fifth segments mostly black with basal yellow band narrowed in middle.

Front and middle legs yellow, the tarsi slightly brownish apically; hind femora brown, the middle third a little lighter. Villous pile of coxae, trochanters, and inner sides of femora almost entirely absent. Hind tibiae brownish, the penultimate fifth a little paler; hind tarsi entirely black.

Wing slightly brownish, first posterior cell beyond its middle about equalling in width the submarginal; last section of fifth vein equal to one-half the hind crossvein. Tip of second vein nearer base than anterior end of hind crossvein.

Female.—Ovipositor slightly longer than the remainder of the abdomen, short basal segment yellow, second black, the apical segment white except on basal third, the tip becoming brown and the appendages yellow.

Length, male 4.8 mm., female 4 mm. to ovipositor, which is 2.3 mm.

Described from 5 specimens: 2 males, including the type, from Lombardia, Honduras (W. M. Mann); 2 females Barro Colorado Island, Canal Zone (C. H. Curran); the fifth is also from Lombardia, Honduras (W. M. Mann), but has lost the abdomen and the sex is uncertain.

Type.—Male, Cat. No. 43029, U.S.N.M.

STYLOGASTER SPECIOSA, new species

Female.—Frontal triangle large, shining black, almost reaching lunule, slightly blunt at tip, often with a distinct light streak in front of the anterior ocellus; remainder of front velvet black to the lunule except a rather wide silvery orbital stripe which extends from the face and disappears before the vertex. First and second antennal joints yellow, the latter slightly brown above; third joint reddish with the upper edge blackened to the arista, which is almost at the apex; third joint about one and four-tenths times the second. Mesonotum mostly shining black; the humerus white, but the black color approaches close to it behind and on the mesial side; the usual dark stripe on the mesopleura disappearing at the beginning of the sternopleura. Hind edge of the thorax dark brown. Scutellum blackish. Metanotum distinctly black on its middle portion. Humeral 1; notopleural 2; supraalar 2.

Abdomen largely black, the sides of segments 2 to 5 yellow except posteriorly, the color forming an interrupted crossband, more widely interrupted on the fifth, less so on the fourth; first segment with only white bristles on the sides, but in most of the specimens they arise from a spot which is distinctly darker making a somewhat unusual combination; second segment with a row of large lateral black bristles also on a dark spot, the lower one or two bristles may be pale. Ovipositor somewhat longer than the remainder of the abdomen, the basal short segment yellow, principal segment black except extreme base. Last joint snow white for half its length, gradually darkening so that the apical third is shining black; appendages also black and with black hair.

Front and middle legs pale yellow, tarsi darker beyond the first joint. Hind femora pale yellow with comparatively narrow blackish annuli. Hind tibia black for a little more than half its length, then pure white with white hair, the apical sixth black together with the hind tarsi.

Wing slightly brownish, first posterior cell not wider than submarginal. Tip of second vein farther from base than anterior end of small crossvein.

Length, 6 mm. to ovipositor, the latter 4.2 mm.

Described from seven females, collected on Barro Colorado Island, Canal Zone (five by C. H. Curran and two by Nathan Banks).

Type in American Museum of Natural History.

Paratype.—Female, Cat. No. 43030, U.S.N.M.

STYLOGASTER PECTINATA, new species

Male.—Front rather narrow, uniform brown to the lunule, hardly darker above, the shining brownish triangle reaching middle.

Antennae rather short, first joint white, the other two brown, the third reddish below, as long as second. Proboscis yellow to middle of basal joint. Mesonotum brownish black, the color reaching the white humerus behind and mesially. Mesopleura brown to sternopleura. Posterior part of mesonotum opaque dark brown. Scutellum and middle of metanotum brown. Humeral 1; notopleural 1; supraalar 1.

Abdomen dark brown, first segment with rather numerous black lateral bristles arising from a white area; second segment whitish on basal fifth, yellow along sides with a few large black lateral bristles in a single row; third and fourth segments with narrow basal yellow band wider at sides; fifth segment brown, narrowly yellow at base and with yellow sides; sixth segment narrow, blackish; seventh segment blackish. Genitalia yellow, last sternite not excavated posteriorly, with a distinct median groove basally, the hind margin with comb of fine black setules and before these two separated small dark spots bearing minute black hairs.

Front and middle legs yellow, not very pale; hind femora brown with median paler area not very conspicuous, inner and lower sides of femora with long hairs on basal half; hind tibia light brown with numerous erect fine hairs on flexor side from middle; hind tarsi brown.

Wing slightly brownish, the first posterior cell barely wider than submarginal, hind cross vein almost continuous with last section of fourth vein, which is nearly straight. Tip of second vein nearer to base than anterior end of hind crossvein.

Length, 5.2 mm.

Described from two males. The type is from Lombardia, Honduras (W. M. Mann); the other male is from Laristal, Peru, received from Dr. O. Kröber.

Type.—Male, Cat. No. 43031, U.S.N.M.

STYLOGASTER RECTINERVIS, new species

Male.—Frontal triangle rather large, shining brown, hardly reaching beyond middle of front; front dark reddish brown, almost uniform to lunule, the lateral orbital extensions of the facial color hardly perceptible; first antennal joint whitish, second and third dark yellow, third brown at tip and just equalling length of second. Proboscis yellow to middle of basal joint. Mesonotum brownish, not so dark as in most species, the dark color, however, comes close to the humerus behind and on the inner side. Mesonotum with only a trace of dark, the dark color is interrupted across the transverse suture and behind that is principally confined to three spots with lighter margins. Scutellum and middle of metanotum dark brown. Humeral 1; notopleural 2; supraalar 1.

Abdomen dark brown, second to fourth segments with a yellow triangle on each side reaching the hind margin laterally; first segment distinctly white at the sides, with stout black bristles, second segment with a single row of erect, black bristles; fifth segment mostly brown; sixth segment very narrow, blackish; seventh also blackish. Genitalia pale yellow, the posterior forceps of soft appearance, strongly hooked at the anterior end.

Front and middle legs pale yellow, the tarsi only a little darker; hind femora yellow with two rather narrow and distinct dark annuli, the erect pile on the inner and lower surface is longer than in any of the other species but extends only to the middle of the femur; basal third of the femur strongly shining; hind tibia brown with a whitish ring on penultimate fifth, not very striking, its flexor side with numerous, short, erect hairs on the apical half; hind tarsi brown.

Wing brownish, first posterior cell wider than submarginal; second vein short, tip nearer the base than the anterior end of the hind cross vein. Petiole of first posterior cell joining costa almost exactly at the tip of the wing, the last section of the fourth vein being nearly straight.

Female.—Ovipositor about as long as remainder of abdomen; black, yellow at incisures and apex; the short basal segment yellow. Hind femora not shining and hind tibiae brownish without annulus.

Length, male 5 mm., female 4 mm. to ovipositor, which is 2 mm.

Described from two males and one female; one male and the female are from Kartabo, British Guiana (received from Canadian National Collection), the other male, which is headless, is from La Suiza de Turrialba, Costa Rica (Pablo Schild, received from Prof. A. L. Melander). In this specimen the femora are not shining on the basal third; the male from Kartabo is taken as the type and the other specimens show slight differences which in more material might possibly prove specific. The type is returned to the Canadian National Collection.

Allotype.—Female, Cat. No. 43032, U. S. N. M.

STYLOGASTER INDISTINCTA, new species

Male.—Frontal triangle very large, occupying almost the entire front, its apex broadly touching the lunule and leaving only a narrow strip on each side which is dark brown, together with a slight extension of the silver of the face on the lower part of frontal orbit. First antennal joint white, second and third brownish yellow, the latter more red below and about two and two-tenths times the second. Proboscis black to the extreme base. Mesonotum dark brown above with indications of two lighter submedian stripes, the dark color almost joins the humerus behind and on the mesial side,

the dark pleural band extends to the middle coxae. Hind part of mesonotum brownish yellow. Scutellum not very dark brown, the dark color of the mesonotum limited to a triangle below the scutellum.

Abdomen mostly black, not in very good condition in the single specimen, the lateral bristles of the first segment are all pale and arise from a pale area; the second segment shows an unusual character in having the lateral bristles extending all the way along the sides instead of being limited to a small area near the front of the segment.

Front and middle legs pale yellow, the hind femora yellow with two ill-defined dark annuli; hind tibiae dark yellow except the apical fifth, which is brown. Hind tarsi brown. Hind trochanters bare and femora without noticeable pile on the inner side.

Wing a little brownish; hind cross vein more erect than usual, its anterior end almost exactly at the same distance from the base of the wing as is the tip of the second vein, which is, however, nearer the base than usual.

Length, 3.8 mm.

Described from one male, Cano Saddle, Gatun Lake, Canal Zone (R. C. Shannon).

Type.—Male, Cat. No. 43033, U.S.N.M.

STYLOGASTER PERUVIANA, new species

Female.—Frontal triangle large, shining black, brown anteriorly, its blunt apex just touching the lunule; the silver of the face extends up the orbits to an unusual extent, comprising almost half the front outside the triangle, the intervening space being velvet black; first antennal joint dark yellow, second brown, third broadly reddish below, about one and four-tenth times the second. Mesonotum shining brownish black, the white humeri only slightly bordered with brownish yellow behind and mesially; posterior edge of mesonotum dark brown. Mesopleura with a wide but rather short brown stripe. Scutellum dark brown on disk, elsewhere light brown. Metanotum with a triangular bulging portion black. Humeral 1; notopleural 2; supraalar 2.

Abdomen mostly shining brownish black; first abdominal segment with black bristles laterally, arising from a brownish spot; second segment with irregularly arranged lateral bristles of decreasing size, becoming hairlike only at the hind edge; second to fifth segments with lateral triangles of yellow, which are successively smaller and more widely separated at the middle. Ovipositor as long as the remainder of abdomen, its narrow basal joint yellow, the following two of almost equal length, narrowly yellowish at base, tip of last segment and the median process yellow.

Front and middle legs rather pale yellow; hind femora with the usual two dark annuli, base and tip distinctly yellow; hind tibiae yellow at base, becoming blackish at middle, penultimate fifth distinctly whitish but with almost entirely black hair; hind tarsi black.

Wing almost hyaline, last section of fourth vein considerably curved, but the first posterior cell not perceptibly wider than the submarginal; tip of second vein slightly farther from base than anterior end of hind crossvein.

Length, 6.5 mm. to ovipositor, which is 4.5 mm.

Described from one female, Laristal, Peru, received from Dr. O. Kröber.

Type.—Female, Cat. No. 43034, U.S.N.M.

STYLOGASTER PANAMENSIS, new species

Female.—Head and thorax as in *peruviana*, including chaetotaxy.

Abdomen considerably darker; first segment wholly blackish above except at base, the lateral bristles all white and arising from pale ground color; second segment dark brown, very obscurely yellow at base, the lateral bristles as in *peruviana*, but the ground color is dark to the lateral margin except in front of the main row of bristles; third, fourth, and fifth segments with rather indistinct and obscure yellow lateral markings. Ovipositor longer than remainder of abdomen, its short basal segment and the base of each of the following ones yellow, the rest dark brown including apex.

Legs as in *peruviana*, but the hind tibiae almost uniformly dark yellow with only a slight trace of a median dark ring and a more distinct apical infuscation.

Wing rather indistinctly brownish, last section of fourth vein not very broadly curved, toward apex quite straight; first posterior cell distinctly narrower than submarginal; hind crossvein rather erect, tip of second vein farther from base than anterior end of hind crossvein.

Length, about 4 mm. to ovipositor, which is 2.5 mm.

Described from two females, Barro Colorado Island, Canal Zone (N. Banks); type in Museum of Comparative Zoölogy.

Paratype.—Female, Cat. No. 43035, U.S.N.M.

STYLOGASTER ABDOMINALIS Kröber

Stylogaster abdominalis KRÖBER, Entom. Mitteilungen, vol. 3, 1914, p. 352.

Female.—Front and vertex deep velvet black to lunule. Antennae dark yellowish brown; first joint nearly square; second darker apically, above almost black-brown; third about one and one-half times the second, gradually narrowed, with a black-brown spot near

tip above. Mesonotum black, strongly shining, with depressed black hair; pleura with usual dark stripe. Metanotum opaque black in middle. Abdomen shining; first segment reddish brown above, its lateral bristles entirely white; second, third, and basal half of fourth segments wholly reddish yellow; remainder black except basal third of fifth. First long joint of ovipositor shining black, its base and the short basal joint reddish yellow with white pruinosity; terminal joint opaque black, white at base. Front and middle legs pale yellow; hind femora biannulate; hind tibiae blackish brown, before the tip with a whitish ring which bears yellowish-white hair. Wings grayish.

Length, 10.5 mm.

One female, Mapiri Sarampioni, Bolivia. Type in Dresden Museum.

I have not seen this species, but have given the more important characters from Kröber's description. The pale abdomen seems very unusual, and will probably suffice to distinguish the species.

STYLOGASTER BIANNULATA var. *ARGENTINA* Kröber

Stylogaster biannulata var. *argentina* KRÖBER, Konowia, vol. 8, 1929, p. 174.

Front above and vertex deep velvet black; pleura with broad, brown diagonal stripe; halteres wholly yellow. First abdominal segment black, somewhat yellowish only at the sides; second to fifth segments pale yellowish brown with black posterior crossband, which is drawn out forward in the middle, reaching anterior margin on second and fifth; sixth clear reddish yellow with two black spots on hind edge; seventh entirely yellow. Lateral bristles of second segment unusually long, black. Middle and hind coxae with white hair.

Length, 8 mm.

One male from Tapikiöle, Northern Argentina.

(Translation of Kröber.)

I make this out to be a specimen of *stylata* with the abdomen slightly lighter in color than the ones I describe. Only an examination of the type to determine the other characters I am using will settle its status.



up above. Mesonotum black strongly shining with depressed black line; pleura with broad dark stripe. Mesonotum opaque black in middle. Abdomen shining; first segment entirely black above, its lateral border entirely white; second third and basal half of fourth segments wholly reddish yellow; remainder black except basal third of fifth. First long joint of ovipositor shining black, its base and the front basal joint reddish yellow with white pubescence; remaining joint opaque black white at base. Pyost and middle legs pale yellow; hind femora translucent; hind tibiae blackish brown, below the tip with a whitish ring which bears yellowish white hairs. Wings grayish.

Length, 1.65 mm. Type, female. Locality, Rio de Janeiro, Brazil. Type in possession of the author.

I have not seen this species, but have given the more important characters from Krombein's description. The male abdomen seems very unusual, and will probably differ to distinguish the species.

HYALINUS BRUNNEUS (Krombein)

Abdomen brownish black, its middle border reddish yellow, the rest black. Pyost and tibiae deep red; hind tibiae black; pleurae with broad brown diagonal stripe; palpi yellow. First abdominal segment black; second yellowish gray in the sides; second to fifth segments pale yellowish brown with black posterior crossband, which is thence cut inward to the middle reaching anterior and not to second, and this reddish black reddish yellow with two black spots on hind edge; seventh entirely yellow. Lateral bristles of second segment, unusually long black. Middle and hind coxae with white hairs, and eighth and ninth segments with long white hairs. (For male, see description of *Hyalinus brunneus*.) (Translation of Krombein.)

I make this out to be a specimen of *Hyalinus* with the abdomen slightly lighter in color than the ones I describe. Only an examination of the type to determine the other characters I am using will settle its status.



