New or little-known crane-flies from Colombia, Ecuador and Peru (Tipulidae, Diptera)

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NEW OR LITTLE-KNOWN CRANE-FLIES FROM COLOMBIA, ECUADOR AND PERU (TIPULIDAE, DIPTERA) [1]

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The present paper is the result of the study of numerous specimens of crane-flies received from Mr. H. S. Parish, who collected the material in the countries above mentioned during 1914, and from Prof. C. H. T. Townsend, while Entomologist in Peru. I am much indebted to Mr. Parish and to Prof. Townsend for this material. The types and uniques are deposited in the collection of the author. I have secured a brief account of his trip from Mr. Parish and this is given herewith in order to complete the data.

Mr. Parish's Account of His Trip:

Colombia.—We sighted Buenaventura about six o'clock on the evening of May 5th, 1914, and as darkness falls quickly here in the tropics we had to content ourselves with staying one night longer aboard the steamer. Next morning we were up bright and early and bartered with the natives for a small boat to paddle us ashore. Viewing the town from the sea it appeared to be quite a pretentious place, but after we got ashore it lost all of its beauty as far as the outskirts went, but in the center the town appeared quite clean. Near the coast and for quite a

[1] Contribution from the Entomological Laboratory of Cornell University.

distance up the mountains it rains nearly every day. The second day after my arrival I took a train for Cisneros, which is at an altitude of 525 feet above the sea-level. On the road up there is a great forest extending as far as the eye can reach, broken only by the huts of the Indians or the thatched cottages of the Negroes. One could see the insects gathered around a muddy pool left by the rain and some of these were splendid in their coloring. At times one would see a blue flash while looking into the woods and those who are acquainted with the denizens of the tropics would recognize a *Morpho*. The train had to go slowly up the mountain and that left time to look around. Soon we arrived at Cisneros and after luncheon we proceeded on our journey, this time on horse-back for about twenty miles along a mule track where there was just enough room for two mules to pass at one time. In many instances we had to crowd our horses toward the inside when we met a pack-team and it would often require ten or fifteen minutes to pass. After some hours' ride we caught another train which took us up 4400 feet to the town of Caldas, which is a rather pretty place. I stopped here for about ten days although it was not a very good location for a naturalist, since the land is highly cultivated and most of the trees have been cut away. A small stream flowed through the middle of the town, however, and that made it attractive for some species of crane-flies and other insects. After my ten days were up I took a train that brought me still higher to a place called La Cumbre. This is on the edge of the mountain at an altitude of 6600 feet and is an ideal place for anyone in my calling. Some of the nights were cold and windy, others were cold but would allow my putting out the lights to attract insects. At night there were but few specimens, but these were worth while. From here I rode over the first range of mountains until I began to descend, and far in the distance we could see the Cauca River, like a silver line, winding its way toward the Caribbean Sea. In a short time we arrived at Cali, which is about 500 feet above the sea. Cali is a large town and they keep it about as clean as any South American town is kept. It is no place for work, however, and after remaining there my usual time I hired a couple of horses and returned to La Cumbre and thence to the coast, because I had

a slight attack of malaria, prevalent in this climate. I just had time to catch the boat that plies between Balboa and Guayaquil.

Ecuador.—We arrived here about six days after leaving Colombia and after going up the river for about thirty miles we came to the city of Guayaquil, and right across the river Duran, where I remained for about three days. During the daytime I went after specimens as usual and captured a number of all orders, but night was when I reaped a harvest. There was a gasolene lamp that hung overhead and I spread a sheet on the table underneath and the insects would swarm around and finally fall on the sheet. Leaving there I went on to Huigra, which is at an altitude of 4500 feet, and there I took more specimens than I ever remember taking, before or since. It was getting too high up for the large specimens, but the smaller ones were still numerous. I went as far as Alaousi (9450 feet) and found the ground all cultivated and did not remain over two days, as the climate, due to the altitude, was very cold. From there I went down to Huigra, and after remaining there two days back to Duran and Guayaquil. After a wait of a day or two I caught the boat to Peru.

Peru.—Calloa is situated on the sea while Lima, the capital, is about seven miles inland and 500 feet above the sea. Lima has a very large population and is an up-to-date city. Collecting is very good down by the river-beds. Chosica (2800 feet) was the first mountain town that I visited and I found collecting very good. There is little more vegetation around Chosica than at Lima. Matucana was the next, a very small place among the mountains that rise up a thousand feet on either side of the railroad. It was not a very good place for collecting, but I caught some rare and interesting specimens. Then I came to Oroya (12178 feet) and scarcely expected to find insect life very abundant since it is so high up, and I was glad to put on some extra clothing. About 10.30 A. M. I went out and in a sheltered part of the mountains was surprised to find insect life quite abundant, especially Diptera and Lepidoptera. After remaining there about five days I went to Jauja (11878 feet) and then to Huancayo (10636 feet). I kept along the mountain tops and should have liked to have gone to the other side of the Andes, and except for the war coming on I should have done so.

The general European holocaust had its effect down in Peru, for the bank in which my money was deposited was closed and I had to go back to the United States.

Family TIPULIDAE

Subfamily LIMNOBINAE

Tribe *Limnobini*

Genus **DICRANOMYIA** Stephens

Dicranomyia virilis sp. n.

Thoracic dorsum with four stripes; femora broadly tipped with yellowish; wings pale yellowish subhyaline; abdominal segments with a pale terminal annulus.

Female.—Length, 8.5 to 8.6 mm.; wing, 10.8 to 11.2 mm.

Rostrum and palpi dark brown. Antennae with the basal segments dull yellow, flagellum dark brown; the segments of the flagellum oval or slightly elongate oval. Head light gray.

Pronotal and cervical sclerites prolonged, dark brown. Praescutum reddish-brown with four dark brown stripes, the middle pair being long and narrow, extending almost the entire length of the sclerite; lateral stripes shorter and broader, the entire sclerite sparsely pollinose; scutum with the lobes dark, median area paler; scutellum pale gray on the basal two-thirds, the caudal third dull yellow; postnotum brownish yellow, sparsely gray pollinose. Pleura dull brownish yellow, the dorsal sclerites darker brown. Halteres rather long, slender, pale yellow, the knob dark brown. Legs with the coxae reddish yellow; trochanters dull yellow; femora light brown, toward the tip slightly darkened, the actual tip broadly pale yellow; tibiae and tarsi brown. Wings pale yellowish subhyaline, stigma oval pale, veins brown. Venation: (see plate I, fig. 5) *Sc* moderately long, Sc_2 about one-fifth the length of Sc_1; the tip of Sc_1 opposite or slightly before the origin of *Rs*; *Rs* long, arcuated, twice the length of the basal deflection of R_{4+5}; basal deflection of Cu_1 just before the fork of *M*.

Abdominal tergites dark brown, the caudal margin of the sclerites slightly paler; sternites dull yellow.

Habitat.—Peru. Holotype, ♀, Matucana, Peru, altitude 7788 feet, July 14, 1914. (Parish coll.) Paratype, ♀, topotypic.

This species suggests *D. insignifica* Alexander [2] in the wing-venation but the thoracic dorsum is quadrivittate instead of trivittate, the femora are conspicuously paler at their apices, the segments of the abdomen ringed with paler at the caudal margin and other characters are different.

[2] 1912. *insignifica* Alexander, Canadian Entomologist, xliv, p. 363, pl. XL, fig. i; (*Furcomyia*).

Dicranomyia mulsa sp. n.

Dark brown; head grayish, antennae black; legs uniformly colored; wings dusky with a quadrate brown stigmal spot; the radial sector sinuate near the tip, basal deflection of Cu_1 long.

Male.—Length, 7.6 mm.; wing, 10 mm.

Female.—Length, 8 to 8.2 mm.; wing, 11.3 to 11.8 mm.

Rostrum and palpi black. Antennae black, rather short, the flagellar segments oval. Head with a brownish gray bloom.

Thoracic dorsum with the pronotum yellow on the sides, darker above; praescutum very deep reddish brown with dark brown stripes which merge insensibly into the ground color; these stripes cover most of the sclerite, the ground color being brightest before the pseudosutural foveae; scutum with the lobes deep liver-brown, the median area and the scutellum with a yellowish or grayish yellow bloom; postnotum dark brown medially, paler on the sides and here with a sparse grayish bloom. Pleura dull yellow with a broad interrupted pleural stripe extending from the fore coxa to the sides of the postnotum. Halteres rather short, base of the stem pale, tinged with pale green, remainder of the stem and the knobs dark brown. Legs with the fore and middle coxae dark, hind coxae pale; trochanters brownish; remainder of the legs uniformly brown. Wings slightly suffused with darker; a large quadrate stigmal spot and a broad brown seam along the cord. Venation: (see plate I, figs. 1, 2) *Sc* short, ending opposite the origin of *Rs*; Sc_2 about one-half the length of Sc_1; *Rs* sinuate near its tip; basal deflection of Cu_1 very long in the male, half as long again as Cu_2 alone.

Abdominal tergites dark brown, the basal sternites more yellowish, the apical sternites dark brown.

The female sex is similar to the male but the basal deflection of Cu_1 of the wings is not as long and cell Cu_1 is consequently not so wide.

Habitat.—Peru. Holotype, ♂, Matucana, Peru, altitude 7788 feet, July 14, 1914. (Parish coll.) Allotype, ♀, topotypic. Paratype, ♀, topotypic.

This species is readily separated from related species by the deep liver-brown color and the peculiar wing-venation.

Dicranomyia regifica sp. n.

Color of the head and thorax light gray, unmarked; antennae dark brown; femora light brown, yellow at the tip; wings with an ocellate brown pattern; abdomen banded black and yellow.

Male.—Length, 7 to 7.2 mm.; wing, 10 to 10.2 mm.

Female.—Length, 6.8 mm.; wing, 10.3 mm.

Rostrum rather short, light brown, palpi dark brown. Antennae dark brown throughout, rather short. Head brownish gray.

Thoracic dorsum dull opaque gray pollinose, the scutellum much paler, almost white. Pleura light gray. Halteres rather long, stem pale, the knob dark brown. Legs with the coxae and trochanters light yellow, femora pale

brown, obscurely tipped with yellow, tibiae and tarsi dark brown. Wings whitish or subhyaline with rather small to medium rounded brown spots on the membrane arranged as in the figure, many of these markings being interrupted ocelliform; these markings are clearest on the cephalic half of the wing, more indistinct, pale grayish, in the caudal cells. Venation: (see plate II, fig. 1) *Sc* ending at about one-third the length of *Rs*; Sc_2 about one-third the length of Sc_1; *Rs* long, angular at its origin; basal deflection of Cu_1 before the fork of *M*.

Abdominal tergites light yellow, segment one with a broad brown patch on the sides of the sclerite; segment two with a broad brown subbasal annulus; remaining tergites with about the basal half dark brown, very conspicuous; pleurites of the male hypopygium dark brownish black, the pleural lobes yellowish, a little browned at the base; sternites mostly light yellow, the extreme base of the segments obscurely brown, this occupying from the basal quarter to one-half of the segment.

In the female, the brown bands on the abdominal sternites are subequal in width and position to the tergal annuli so that the abdomen presents an evenly striped appearance.

Habitat.—Peru. Holotype, ♂, Matucana, Peru, altitude 7788 feet, July 14, 1914. (Parish coll.) Allotype, ♀, topotypic. Paratypes, 3 ♂, Jauja, Peru, altitude 11,878 feet, June 23, 1914. (Parish coll.)

In its spotted wings this insect suggests a number of Andean species. *Limnobia guttata* Philippi [3] (now *Dicranomyia chilensis* Alexander) is described as having 16-segmented antennae and the thorax with a brown stripe; *L. polysticta* Philippi [4] (Chile) has the spots on the wings very abundant and the thorax with three darker stripes. *D. muscosa* Enderlein [5] (Ecuador) and *D. tricincta* [6] Alexander (Peru) have a supernumerary cross-vein in cell R_3 of the wings.

Dicranomyia gibbera sp. n.

Antennae black; thorax brown or gray with a broad darker median stripe; wings with a radial sector very short, about equal to the basal deflection of R_{4+5}.

Male.—Length, 4 to 5 mm.; wing, 5.1 to 5.5 mm.

Female.—Length, 6 to 7 mm.; wing, 7 mm.

Rostrum, palpi and antennae black, the latter short with the segments of the flagellum subglobular. Head with the front light gray, the vertex and occiput grayish brown; a brownish blotch on the middle of the vertex in front.

[3] 1865. *guttata* Philippi, Verh. k.-k. zool.-bot. Ges. Wien, xv, p. 613. 1913. *chilensis* Alexander, Proc. U. S. Nat. Mus., xliv, p. 487.

[4] 1865. *polysticta* Philippi, Verh. k.-k. zool.-bot. Ges. Wien, xv, p. 613.

[5] 1912. *muscosa* Enderlein, Zool. Jahrb., xxxii, pt. I, pp. 75, 76, fig. W^1.

[6] 1913. *tricincta* Alexander, Ent. News, xxiv, p. 405.

Mesonotum very gibbous, brownish with a very broad brown median stripe and shorter, less distinct stripes on the sides of the praescutum; scutum with the lobes gray, the middle area brownish; scutellum and postnotum grayish. Pleura light brown with a sparse gray bloom, deepest and brightest on the sclerites just in front of the base of the halteres. Halteres short, the stem pale, knob brown. Legs with the coxae and trochanters dull yellow, femora pale brown, a little darkened at the tips, tibiae and tarsi dark brown. Wings hyaline, the stigma present or absent, varying from subhyaline to a dark brown, in shape full and rounded. Venation: *Sc* short, ending far before the origin of *Rs*; Sc_1 about five times as long as Sc_2; *Rs* short, about equal in length to the basal deflection of R_{4+5}.

Abdomen dark brown with a sparse gray bloom.

Habitat.—Peru. Holotype, ♂, Lima, Peru, altitude 500 feet, August 19, 1914. (Parish coll.) Allotype, ♀, topotypic, August 11, 1914. Paratypes, 20 ♂, ♀, topotypic, August 3 to 30, 1914; Matucana, Peru, altitude 7788 feet, one ♂, July 14, 1914. (Parish coll.)

This insect agrees most closely with *D. vernalis* Philippi [7] (Chile), which is a larger species having the stigmal spot of a different shape and the abdomen of a very distinct pattern. In the shortness of the radial sector *D. gibbera* suggests *D. omissa* Alexander [8] which has the cell *1st* M_2 open.

Dicranomyia invalida sp. n.

Antennae dark brown; thorax gray with darker stripes; wings with a brown blotch at the fork of *Rs*; abdomen dark gray, the hypopygium yellowish.

Male.—Length, 5.5 mm.; wing, 8.5 mm.

Female.—Length, 5.8 to 6.3 mm.; wing, 8.9 to 9.6 mm.

Rostrum dull yellowish brown, palpi dark brown. Antennae dark brown, the flagellar segments subrounded to oval. Head light gray.

Thoracic dorsum dull grayish yellow with brownish stripes, the median one broad, divided by a very narrow, pale median line, lateral stripes short, behind becoming confluent with the middle stripe; scutum, scutellum and postnotum light gray. Pleura gray. Halteres pale, the knob darker. Legs with the coxae dull yellow with a pale greenish tinge, trochanters pale, femora pale yellowish brown, a little darkened toward the tip, tibiae and tarsi brown. Wings whitish subhyaline, stigma subquadrate, brown; an oval mark at the fork of *Rs* connected with the stigma; seaming along the cord and outer deflection of cell *1st* M_2 very narrow and indistinct. Venation: (see plate I, fig.4) *Sc* rather short, ending about opposite the origin of *Rs*; Sc_2 about one-fifth

[7] 1865. *vernalis* Philippi, Verh. k.-k. zool.-bot. Ges. Wien, xv, p. 612 (*Simnobia*).

[8] 1912. *omissa* Alexander, Can. Ent., xliv, p. 340, pl. XI, fig. o (*Furcomyia*).

the length of Sc_1; basal deflection of Cu_1 far before the fork of M, this distance equal from one-third to almost the length of the deflection.

Abdomen dark brownish gray, the lobes of the male hypopygium yellowish.

Habitat.—Peru. Holotype, ♂, Matucana, Peru, altitude 7788 feet, July 14, 1914. (Parish coll.) Allotype, ♀, topotypic, Paratype, ♀, topotypic.

This species comes closest to *D. andicola* Alexander [9] but differs in the conspicuous gray coloration of the body.

Genus **RHIPIDIA** Meigen

Rhipidia (**Arhipidia**) **vicina** sp. n.

Thorax broadly edged with yellow in front; wing-pattern heavy; pleural stripe broad.

Female.—Length, 8 mm.; wing, 7.4 mm.

Rostrum and palpi dark brownish black. Antennae black, excepting segments 12 and 13 which are pale yellowish white. Head brownish gray.

Pronotum above dull light yellow. Mesonotal praescutum rich chestnut-brown, in front broadly margined with dull light yellow; scutellum and middle line of the scutum dull yellow; lobes of the scutum brown with a margin of darker brown, most distinct on the caudal and proximal sides of the lobe; scutellum at the base with a brownish spot on either side of the middle line; postnotum brownish. Pleura with the dorsal portions clear light yellow, a broad black band extending from the sides of the pronotum to the base of the abdomen, the dorsal margin of the stripe sharply defined, the ventral margin passing into paler brownish black; an indistinct narrow dark brown stripe beginning on the fore coxa, traversing the mesosternum and ending on the hind coxa. Halteres dull yellow, the knob only a little darker. Legs with the coxae dull yellow, more or less browned at or near the base as described above; trochanters dull yellow; femora and tibiae brown, the tips of the segments slightly darkened; tarsi brown. Wings light gray or subhyaline, brighter, more yellowish, on the costal portion; a few large brown spots as follows: at the tip of *Sc*, at the origin of *Rs*, at mid-length of *Sc*, along the cord and outer deflection of cell *1st* M_2; paler grayish brown clouds in all the cells, these clouds and dots large and becoming confluent. Venation as in plate II, fig. 2.

Abdominal tergites dark brown, darkest on the caudal margin; sternites dull yellow.

Habitat.—Colombia. Holotype, ♀, La Cumbre, Colombia, altitude 6600 feet, May 20, 1914. (Parish coll.)

In my key to the species of the genus *Rhipidia* [10] this species runs down to *R. schwarzi* Alexander [11] of the Greater Antilles

[9] 1912. *andicola* Alexander, Can. Ent., xliv, p. 362, pl. XI, fig. h (*Furcomyia*).

[10] Bull. Brookl. Ent. Soc. viii, pp. 7, 8, 1912.

[11] 1912. *schwarzi* Alexander, Bull. Brookl. Ent. Soc., viii, p. 13, pl. I, fig. *e*.

and Florida. It is a much larger and more vigorous species with the black pleural stripe broader, the wing-pattern much heavier and better defined.

Rhipidia (Arhipidia) annulicornis Enderlein

1912. *Rhipidia annulicornis* Enderlein, Zool. Jahrb., xxxii, pt. 1, pp. 80, 81, fig. V[1].

One female from La Cumbre, Colombia, altitude 6600 feet, collected May 15, 1914, by H. S. Parish.

Rhipidia (Arhipidia) domestica Osten Sacken

1859. *Rhipidia domestica* Osten Sacken, Proc. Acad. Nat. Sci. Phila., 1859, p. 208.

Several specimens. Cali, Colombia, altitude 500 feet, May 25, 1914 (Parish). La Cumbre, Colombia, altitude 6600 feet, May 18, 1914 (Parish). Lima, Peru, altitude 500 feet, July 29 to August 24, 1914 (Parish).

Genus **GERANOMYIA** Haliday

Geranomyia lachrymalis sp. n.

Color dull black, the thoracic dorsum without distinct stripes; legs dark brown except the bases of the femora which are yellowish; wings dark colored without a distinct stigmal spot.

Male.—Length, excluding rostrum, 5.6 mm.; wing, 7.1 mm.; rostrum, 2.5 mm.

Female.—Length, excluding the rostrum, 4.5 mm.; wing, 5.6 mm.; rostrum, 3 mm.

Rostrum and palpi black. Antennae black. Head blackish gray.

Mesonotal praescutum dull black without apparent stripes; scutum with the lobes dull black, the middle portion more brownish; scutellum black, the caudal margin more reddish; postnotum dull blackish brown. Pleura gray. Halteres rather short, the base dull yellow, the knob dark brown. Legs with the coxae and trochanters yellowish brown, femora yellowish at the base, soon passing into dark brown; tibiae and tarsi dark brown. Wings tinged with blackish, stigma scarcely distinct, veins dark brown. Venation: (see plate II, fig. 3) *Sc* ending just beyond the origin of *Rs*; in the holotype, cell *1st* M_2 is long and narrow, the cross-vein *r-m* obliterated by fusion of R_{4+5} and M_{1+2}, the basal deflection of Cu_1 at the fork of M; in the allotype, cell *1st* M_2 is shorter, cross-vein *r-m* present, the basal deflection of Cu_1 before the fork of M.

Abdomen dark grayish black.

Habitat.—Ecuador. Holotype, ♂, Huigra, Ecuador, altitude 4500 feet, June 13, 1914 (Parish coll.). Allotype, ♀, topotypic.

G. lachrymalis differs from *G. tristis* Loew[12] in the lack of distinct stripes on the thoracic dorsum, the indistinct stigma, etc.

Geranomyia insignis Loew

1851. *Aporosa insignis* Loew, Linnaea Entomologica, v, p. 395.

Nineteen specimens of both sexes from Duran, Ecuador, at the sea-level, collected June 25, 1914, by H. S. Parish.

Geranomyia plumbeipleura sp. n.

Rostrum black, paler at the tip; antennae black; head silvery gray, black on the vertex; thoracic stripes broadened in front, the pleura plumbeous; wings nearly hyaline, the caudal cells grayish, the tip infuscated, a few dark brown spots.

Male.—Length, excluding the rostrum, 7.2 to 7.5 mm.; wing, 7.3 to 8 mm.; rostrum, 3.2 mm.

Female.—Length, excluding the rostrum, 9.4 mm.; wing, 8.8 mm.; rostrum, 3 mm.

Rostrum long, nearly half as long as the body in the male, black, paler near the tip. Antennae dark brownish black. Front and the sides of the vertex adjoining the eyes light gray, remainder of the head blackish.

Mesonotal praescutum light yellowish brown, the region before the pseudosutural foveae light yellow; three dark brown stripes, the middle one broadest in front where it suffuses the anterior end of the sclerite, narrowed behind; lateral stripes narrow, subsinuous; scutum with the lobes dark brown, the middle portion grayish; scutellum and postnotum dark brown, the latter tinged with grayish plumbeous; in some specimens the scutellum is pale gray. Pleura grayish plumbeous including the lateral margins of the mesonotal praescutum; sternum yellowish brown, paler than the pleura. Halteres pale, the knob a little darker. Legs with the coxae yellow, the outer faces of the fore and middle coxae a little suffused with brown; trochanters yellow; femora pale greenish yellow at the base soon passing into brown, the tip broadly yellowish and including a broad subapical dark brown ring; tibiae and tarsi dark brown. Wings with the costal half nearly hyaline, the caudal half more grayish, the tip infuscated; a few dark brown markings as follows: at the base of *Rs*, a large mark at the stigma; along the cord and outer end of cell *1st* M_2, on the supernumerary cross-vein in the subcostal cell; veins brown, paler in the pale areas on the costal half. Venation: (see plate II, fig. 4) *Sc* moderately long, ending slightly beyond the base of *Rs; Sc*$_2$ at the tip of *Sc*$_1$; *Rs* about twice the length of the basal deflection of R_{4+5}; cross-vein *r-m* very short, punctiform or obliterated by fusion; cell *1st* M_2 elongate; basal deflection of Cu_1 just before the fork of *M*.

Abdominal tergites dark brown, the sternites much paler, yellowish.

The female is similar to the male; the gray color of the front continues back to the occiput as a narrow stripe, isolating a dark brown mark on the vertex

[12] 1851. *tristis* Loew, Linnaea Entomologica, v, p. 396 (*Aporosa*).

on either side of the middle stripe; the pronotum shows a dark brown dorsal line continuous with the median praescutal vitta and a short dark brown lateral stripe; praescutum with the ground color more grayish, the lateral stripes broadened toward the caudal end; pleura with the dorsal pleurites grayish plumbeous, the sclerites underneath the wing yellowish; wings with *Sc* a little longer, sometimes extending to about half the length of *Rs*.

Habitat.—Colombia, Ecuador, Peru. Holotype, ♂, Huigra, Ecuador, altitude 4500 feet, June 16, 1914 (Parish coll.). Allotype, ♀, topotypic, June 19, 1914. Paratypes, 6♂ ♀, Caldas, Colombia, May 11, 1914 (Parish); La Cumbre, Colombia, altitude 6600 feet, May 12 to June 1, 1914 (Parish). Huigra, Ecuador, topotypic. Lima, Peru, altitude 500 feet, August 19, 1914 (Parish coll.).

Related to *G. insignis* Loew[13] which has the antennal flagellum light brown, not black; stripes on the praescutum narrow, the middle one not broadened out in front; pleura yellow, not grayish; the wings more uniformly yellowish, not infumed with darker, the brown markings neither so dark nor so extensive. With *G. numenius* Alexander[14] it agrees in the color of the antennae and the head but the antennae are shorter, the individual flagellar segments being much more rounded; the thorax is plumbeous, not yellowish as in *numenius*, and the wing-pattern is entirely different; the rostrum of *numenius* is much longer than in *plumbeipleura*.

Geranomyia townsendi sp. n.

Rostrum very long and slender, in the male almost as long as the body; head silvery and black; thoracic coloration reddish with indistinct narrow stripes; femora with a brown subapical ring; wings light gray with large rounded brown clouds.

Male.—Length, excluding the rostrum, 7.3 to 8.2 mm.; wing, 8.8 to 9 mm.; rostrum, 7.1 to 7.4 mm.

Rostrum very long and slender, black, a little paler at the tip. Palpi two-segmented, black. Antennae rather long, the flagellar segments elongated, the segments dark brown with a gray bloom, the extreme tips of each segment indistinctly reddish. Head with a narrow median pale gray silvery mark, a dark brown patch on the vertex on either side of this pale mark; vertex adjoining the eyes and the occiput gray.

Thoracic dorsum reddish brown with narrow indistinct brown stripes as follows: a dark brown median stripe extending the length of the praescutum, more or less indistinct lateral stripes behind the pseudosutural foveae; scutum

[13] 1851. *insignis* Loew, Linnaea Entomologica, v, p. 395. (*Aporosa*.)

[14] 1913. *numenius* Alexander, Entom. News, xxiv, p. 406, pl. XIV, fig. 3.

with the lobes deep reddish brown, the middle portion of the scutum and the scutellum with a pale whitish bloom; postnotum reddish with a very narrow brown median stripe, this latter sometimes indistinct. Pleura reddish brown with a sparse grayish bloom on the dorsal sclerites. Halteres pale, the knobs dark brown. Legs with the coxae and trochanters dull yellowish, the margins of the trochanters and the bases of the femora black; femora pale yellowish brown, the tip broadly yellowish and including a rather broad subapical dark brown annulus; tibiae and tarsi dark brown. Wings with a pale grayish tinge, the costal cell more yellowish; large rounded brown markings or clouds as follows: mid-length of *Sc*, at the origin of *Rs*, at the tip of *Sc*, at the stigma, at the tip of R_{2+3}; brown seams to the cord and outer end of cell *1st* M_2; veins brown excepting *R* between the dark markings where it is golden-yellow. Venation: (see plate II, fig. 6) *Sc* long, extending about two-thirds the length of *Rs*; Sc_2 at the tip of Sc_1; *Rs* long, about four times the length of the basal deflection of R_{4+5}; cell *1st* M_2 long and narrow, as long as the veins issuing from it.

Abdominal tergites dark brown; sternites, especially the basal ones, paler, more yellowish.

Habitat.—Peru. Holotype, ♀, Matucana, Peru, altitude 7800 feet, April 22, 1913 (C. H. T. Townsend coll.). Paratypes, 3 ♂, topotypic.

The insect was found in caves in the day-time.

The species is not closely related to any of the described forms and requires no comparison with any of them.

Geranomyia scolopax Alexander

1913. *Geranomyia scolopax* Alexander, Entom. News, xxiv, p. 408.

One male from Huigra, Ecuador, altitude 4500 feet, June 19, 1914, agrees with the type in all of the essential characters, differing as follows: femora with the tips rather broadly yellowish; wings with the dark markings larger, more conspicuous; venation (see plate II, fig. 5), basal deflection of Cu_1 before the fork of *M*.

Geranomyia glauca sp. n.

Light green, thoracic stripes rather indistinct except on the sides of the praescutum; femora with two brown bands; wings spotted with brown.

Male.—Length, excluding the rostrum, 6.1 mm.; wing, 6.6 mm.; rostrum, 3. mm.

Rostrum black, the lobes paler toward the tip. Antennae dark brownish black, extending to about one-half the length of the rostrum. Head brownish gray.

Mesonotal praescutum pale yellowish green with indistinct brownish stripes; the middle stripe is broad but is represented only by two dark lines on the caudal portion of the sclerite near the transverse suture; lateral stripes a little more distinct; scutum yellowish green with the lobes conspicuously dark brown;

scutellum greenish, unmarked; postnotum broadly brown above, greenish white laterally. Pleura yellowish green. Halteres yellowish green, the knobs darker. Legs with the coxae and trochanters yellowish with a green tinge, a broad pale brown ring just before mid-length and a broad dark brown ring before the tip, tip broadly pale; tibiae yellowish with a green tinge; tarsi greenish brown. Wings yellowish subhyaline, costal region still more yellowish; conspicuous brown markings as follows: at the base of the wing, midway between the base of the wing and the origin of *Rs*; at the origin of *Rs*; a stigmal blotch connected with a broad seaming on the cord; outer end of cell *1st* M_2 and the tips of several of the longitudinal veins; veins brownish green. Venation: (see plate II, fig. 7) *Sc* long, extending about to mid-length of *Rs*; *Rs* long, some three to four times as long as the deflection of R_{4+5}; cell *1st* M_2 long and narrow; basal deflection of Cu_1 just beyond the fork of *M*.

Abdomen bright green throughout, the lobes of the hypopygium more yellowish.

Habitat.—Ecuador. Holotype, ♂, Huigra, Ecuador, altitude 4500 feet, June 16, 1914 (Parish coll.).

From the described green or greenish species of *Geranomyia* (*virescens* Loew[15] *philippii* Alexander[16]) this species differs in the spotted wings and brown bands on the femora.

Geranomyia tibialis Loew

1851. *Aporosa tibialis* Loew, Linnaea Entomologica, v., p. 397.

Several specimens taken at Lima, Peru, altitude 500 feet, collected from July 29 to August 24, 1914, by H. S. Parish.

Tribe *Antochini*

Genus **TEUCHOLABIS** Osten Sacken

Teucholabis jocosa Alexander

1913. *Teucholabis jocosa* Alexander, Entomological News, xxiv, pp. 440, 441, pl. XVI, fig. 3.

Two males from Cali, Colombia, altitude 500 feet, May 28, 1914, collected by Parish. One male from La Cumbre, Colombia, May 18, 1914, taken by Parish.

Genus **TOXORHINA** Loew

Toxorhina brasiliensis Westwood

1835. *Limnobiorhynchus brasiliensis* Westwood, Ann. Soc. Entom. France, iv, p. 683.

[15] 1851. *virescens* Loew, Linnaea Entomologica, v, p. 398 (*Aporosa*).

[16] 1865. *virescens* Philippi, Verh. k.-k. zool.-bot. Ges. Wien, xv, p. 597, pl. XXIII, fig. 1, (*Plettusa*). 1913. *philippii* Alexander, Proc. U. S. Nat. Mus., xliv, p. 487.

Two males from Lima, Peru, altitude 500 feet, August 19, 20, 1914, collected by Parish.

Genus **ORIMARGA** Osten Sacken

Orimarga andina sp. n.

Light gray, the thoracic pleura with a broad silvery stripe; wings subhyaline; legs medium brown.

Male.—Length, 8.6 mm.; wing, 5.8 mm.

Female.—Length, 8.5 mm.; wing, 6 mm.

Rostrum and palpi dark brownish black. Antennae very dark brown, the first segment dusted with gray. Head light gray, brightest on the front.

Thoracic praescutum plumbeous with a gray bloom; an indistinct darker median stripe; lateral margin of the sclerite brightest; scutum light gray, each lobe with a darker mark, these markings almost contiguous on the middle line, scutellum pale brown; postnotum with a pale gray bloom. Pleura light silvery gray with an indistinct narrow brown line from the cervical sclerites to the base of the halteres; sternites darker, brownish, the sternum and the pleura together enclosing a broad silvery stripe. Halteres with the extreme base orange brown, stem white, knob brown. Legs with the coxae and trochanters orange-brown with a very sparse gray bloom; remainder of the legs brown. Wings with the extreme base orange-brown; remainder subhyaline; veins brown. Venation: (see plate I, fig. 7) basal deflection of Cu_1 about mid-length of the radial sector.

Abdomen dark brown with a sparse gray bloom, the hypopygium reddish.

Habitat.—Colombia. Holotype, ♂, La Cumbre, Colombia, altitude 6600 feet, May 15, 1914 (Parish coll.). Allotype, ♀, topotypic.

The described American species of this genus may be separated by the following key:

1. Wings subhyaline with dots on the cross-veins and deflections of veins [color of the body blue-gray; legs pale, almost white]. (British Guiana) *punctipennis* Alexander[17]

   Wings subhyaline or suffused with darker, not spotted with brown.... 2

2. Tips of the tarsi white. (Panama) *niveitarsis* Alexander[18]

   Tips of the tarsi not white.

3. Thoracic pleura without a silvery band; legs pale yellow with the tip of the femur, base and tip of the tibia black. (Southwestern United States) *arizonensis* Coquillett[19]

   Thoracic pleura with a broad silvery band; legs with the segments uniform in color throughout..... 4

[17] 1914. *punctipennis* Alexander, Trans. Am. Ent. Soc., xl, p. 239, pl. IV, fig. 3.

[18] 1915. *niveitarsis* Alexander, Proc. U. S. Nat. Mus., xlix, p. 765, pl. 75, fig. 5.

[19] 1902. *arizonensis* Coquillett, Proc. U. S. Nat. Mus., xxv, pp. 83, 84.

4. Dark brownish black; legs dark brown; wings uniformly suffused with dark, the veins almost black. (Guatemala) *argenteopleura* Alexander[20]

Light brown with a gray bloom; legs medium brown; wings subhyaline, the veins pale brown. (Colombia) *andina* sp. n.

Genus **ATARBA** Osten Sacken

Atarba brunneicornis sp. n.

Antennae brown; femora uniform in color throughout; wings very light yellow.

Male.—Length, 4.8 mm.; wing, 5.3 mm.

Rostrum rather long, dark brown; palpi dark brownish black. Antennae very long and slender, longer than the head and thorax together; the flagellar segments elongated, covered with a thick white pubescence and with one long hair on the outer face; antennae with the basal segments reddish brown, the flagellum dark brownish black. Head with a delicate impressed line extending from the occiput cephalad to a slight frontal tubercle which is provided in front with two small hairs; head brown, thinly whitish pollinose.

Thoracic dorsum dull yellow without apparent darker stripes. Pleura whitish yellow. Halteres pale, the knob brownish. Legs with the coxae and trochanters dull yellow; femora yellow; tibiae and tarsi brownish yellow. Wings very light yellow, iridescent, a faint brown ill-defined suffusion in the region of the stigma; veins pale brown. Venation: (see plate I, fig. 6) *Sc* ending opposite the origin of *Rs*; *Rs* straight or nearly so, oblique; cell *1st* M_2 twice as long as broad; basal deflection of Cu_1 under the middle of cell *1st* M_2.

Abdominal tergites dark brown, the apex of the segments rather paler; hypopygium brownish yellow; sternites dull yellow. Hypopygium (see plate IV, fig. 2) with the pleurites rather long and slender, bearing two chitinized appendages, the ventral apical appendage rather flattened, the caudal or outer edge with about five sharp teeth, the tip produced into a point; the dorsal apical appendage is slender, subcylindrical, curved slightly dorsad, and slightly longer than the ventral appendage; guard of the penis a little shorter than the pleurites, cylindrical.

Habitat.—Colombia. Holotype, ♂, La Cumbre, Colombia, altitude 6600 feet, May 18, 1914 (Parish coll.).

A. brunneicornis is allied to *A. columbiana* Alexander[21] also from Colombia but the two forms may be separated by means of the following key:

Femora with a brown ring just before the tip; *Rs* longer, arcuated; cell *1st* M_2 short and almost square; basal deflection o Cu_1 just beyond the fork of *M*. *columbiana* Alexander[22]

[20] 1913. *argenteopleura* Alexander, Psyche, xx, p. 48, pl. 2, fig. f.

[21] Journ. N. Y. Ent. Soc., xxi, p. 199, 1913.

[22] 1913. *columbiana* Alexander, Journ. N. Y. Ent. Soc., xxi, p. 199, pl. 5, fig. 4.

Femora unicolorous, without a brown ring before the tip; *Rs* short, straight, oblique; cell *1st* M_2 longer, almost twice as long as broad; basal deflection of Cu_1 about mid-length of cell *1st* M_2. *brunneicornis* sp.n.

These two species are the only American forms so far discovered with unicolorous antennae, the remaining species, *picticornis* Osten Sacken[23] and *varicornis* Alexander,[24] having the antennal segments bicolorous.

Tribe *Eriopterini*

Genus **ERIOPTERA** Meigen

Subgenus **Mesocyphona** Osten Sacken

Erioptera (**Mesocyphona**) **caloptera** Say, var.

1823. *Erioptera caloptera* Say, Journ. Acad. Nat. Sci. Phila., iii, p. 17.

Three males and one female from Huigra, Ecuador, altitude 4500 feet, collected by Parish; two males from Lima, Peru, altitude 500 feet, Parish collector.

This insect, which seems to be a variety of the common *caloptera*, has a broad dark brown premedian and apical band on the femora, the pale band enclosed by them being a little more extensive than in typical *caloptera*.

Erioptera (**Mesocyphona**) **annulipes** Williston

1896. *Erioptera annulipes* Williston, Trans. Ent. Soc. Lond., p. 294.

Two males from Caldas, Colombia, May 12, 1914; a male and a female from Cali, Colombia, May 23, 1914; collected by Parish.

Erioptera (**Mesocyphona**) **eiseni** Alexander

1913. *Erioptera* (*Mesocyphona*) *eiseni* Alexander, Proc. U. S. Nat. Mus., xliv, p. 516, pl. 67, fig. 26.

One female from Cisneros, Colombia, June 3, 1914; two males, three females from La Cumbre, Colombia, altitude 6600 feet, May 18, 1914; collected by Parish.

Genus **GONOMYIA** Meigen

Subgenus **Leiponeura** Skuse

Gonomyia (**Leiponeura**) **recurvata** Alexander

1914. *Gonomyia* (*Leiponeura*) *recurvata* Alexander, Journ. N. Y. Ent. Soc., xxii, p. 121, pl. 11, fig. 6.

[23] 1869. *picticornis* Osten Sacken, Monogr. Dipt. N. Am., iv, p. 128, pl. I, fig. 13.

[24] 1913. *varicornis* Alexander, Ent. News, xxiv, p. 448, pl. XIV, fig. 10.

A male and a female from Alaousi, Ecuador, altitude 9450 feet, June 18, 1914; one male and one female from Huigra, Ecuador, altitude 4500 feet, June 13 to 16, 1914; collected by Parish.

The genitalia of the male differs somewhat from the description of the typical Costa Rican specimens, but I do not think at this time that the material represents a distinct species. These differences are: the two chitinous points at the tip of the recurved ventral gonapophyse are longer; the fleshy lobe near the middle of the intermediate apical appendage is not tooth-like or conical as in typical *recurvata*, but is truncated at the apex which bears two large hairs.

Gonomyia (**Leiponeura**) near **alexanderi** Johnson

1912. *Elliptera alexanderi* Johnson, Psyche, xix, p. 3, fig. 6.

Abundantly represented in the collection from Lima, Peru, altitude 500 feet, collected by Parish; both sexes are represented in the material which is dated from August 4 to August 21, 1914. This fly probably represents a new species closely related to *alexanderi*.

Subgenus **Gonomyia** Meigen

Gonomyia (**Gonomyia**) **jejuna** sp. n.

Basal segments of the antennae yellow; a conspicuous dark brown pleural stripe; wings with cell *1st* M_2 open.

Male.—Length, 3.8 to 4 mm.; wing, 5 to 5.3 mm.

Female.—Length, 4.4 to 4.6 mm.; wing, 5.5 to 5.7 mm.

Rostrum and palpi very dark brown. Antennae rather long and slender, in the male if bent backward, extending beyond the wing-root, the scapal segments orange-yellow, flagellar segments oval, dark brown with a rather dense silvery pubescence. Head light yellow with darker markings on the vertex.

Thoracic praescutum brown with a sparse yellowish brown bloom, the sclerite darker in front but without distinct stripes; scutellum and postnotum darker, plumbeous. Pleura pale yellowish white with a broad dark brown stripe from the sides of the pronotum to the base of the halteres. Halteres brown, the knobs darker. Legs dull yellowish, the femora, tibiae and tarsi more brown. Wings nearly hyaline, the veins brown. Venation: (see plate I, fig. 8) *Sc* short ending far before the origin of *Rs*; R_{2+3} shorter than R_3 alone; *Rs* in a line with R_{4+5}, the deflection of the latter being obliterated; cell *1st* M_2 open due to the atrophy of the outer deflection of M_3; basal deflection of Cu_1 at the fork of *M*.

Abdominal tergites dark brown, the basal sternites paler, more yellowish. Hypopygium (see plate IV, fig. 1) with the pleura (a) rather short and stout, cylindrical, the inner dorsal angle with a fleshy lobe projecting dorsad and in-

ward. Two apical appendages, the outer appendage (b) fleshy, slender at the base, gradually enlarged into the flattened tip and here provided with numerous long hairs, the dorsal margin produced into a single subappressed sharp chitinized spine; this appendage is bent inward and the flattened expanded tips almost meet on the middle line; the inner pleural appendage (c) fleshy, bent at the middle, the tip directed dorsad. The penis-guard (d) is represented by a central subfleshy lobe with the tip constricted and ending in an obtuse point beneath, on either side with a very slender, chitinous hook whose tip is bent ventrad.

The female is quite as in the male, the antennae a little shorter but still longer than is usual in this genus of flies; lateral margin of the praescutum whitish; a more or less conspicuous white band on the pleura beneath the brown pleural stripe; ovipositor with the valves long and slender.

Habitat.—Peru. Holotype, ♂, Lima, Peru, altitude 500 feet, July 29, 1914 (Parish coll.). Allotype, ♀, topotypic; August 19, 1914. Paratypes, 10 ♂, ♀, topotypic, July 29, to August 31, 1914.

The three related species, *cognatella* O. S., *delicata* Alex. and the present form may be separated by the following key:

1. Wings hyaline or nearly so; *Sc* short, ending far before the origin of the radial sector 2

   Wings tinged with yellow; *Sc* long, ending nearly opposite or just before the origin of the radial sector. (Eastern United States) *cognatella* O. S.[25]

2. Mesonotum broadly edged with yellow in front and on the sides; two brown pleural stripes. (Guatemala) . . . . . *delicata* Alex.[26]

   Mesonotum without a conspicuous yellowish margin; a single broad brown pleural stripe. (Peru) . . . . . *jejuna* sp.n.

The members of the *cognatella* group have the following common characters: Cell R_2 of the wings large, vein R_2 being oblique; cell *1st* M_2 open by the atrophy of the outer deflection of N_3; basal deflection of Cu_1 at the fork of M; basal segments of the antennae yellow.

Gonomyia (Gonomyia) velutina sp. n.

Head gray; pleura with a prominent white longitudinal band; wings sparsely spotted with brown.

Male.—Length, 5.3 mm.; wing, 7–7.4 mm.

Female.—Length, 6.5 mm.; wing, 6.8 mm.

Rostrum dark brown; palpi dark brownish black. Antennae dark brownish black, rather short, the segments of the flagellum oval to slightly elongate-oval. Head dark brown, dusted with gray.

[25] 1859. *cognatella* Osten Sacken, Proc. Acad. Nat. Sci. Phila., p. 230, pl. 4, fig. 17.

[26] 1913. *delicata* Alexander, Proc. U. S. Nat. Mus., xliv, p. 506.

Pronotum dark brown, whitish laterally. Mesonotal praescutum dark brown, thinly dusted with gray, the pseudosutural foveae very prominent, elongate; scutum light gray; scutellum very pale grayish white; postnotum grayish medially, broadly and abruptly whitish on the sides. Pleura brownish gray with a very broad white band extending from behind the fore coxa to the base of the abdomen. Halteres brownish. Legs with the coxae brownish, more yellow at the base; trochanters dull yellow; femora dull yellow, a little darkened at the tip; tibiae dull yellow, the tip narrowly brown; tarsi brown. Wings light gray to brownish subhyaline, usually with distinct brown clouds as follows: stigmal, base of *Rs*, along the cord, cross-vein *m*, middle of cell *M*, above the tip of *2nd A*. Venation: (see plate II, figs. 9, 10) *Sc* varying in length, the distance beyond the base of *Rs* sometimes one-half the length of *Rs*, at other times only about one-quarter of this length.

Abdominal tergites yellowish brown; sternites dull brownish yellow.

Habitat.—Peru. Holotype, ♂, Matucana, Peru, altitude 7700 feet, April 22, 1913 (C. H. T. Townsend coll.). Allotype, ♀, topotypic, altitude 7788 feet, June 14, 1914 (Parish coll.). Paratypes, 2♂, 1♀, topotypic, same data as for the allotype but taken June 15, 1914.

This species agrees quite closely with *Gonomyia* (*Gonomyia*) *slossonae* Alexander [27] but the gray head, different thoracic coloration and the spotted wings will serve to separate the two forms.

Genus **MOLOPHILUS** Curtis

Molophilus capricornis sp. n.

Color medium brown; antennae short; wings with a brown blotch at the cord; ventral pleural appendage of the male hypopygium almost straight, pointed at its tip, the inner margin with obscure teeth.

Male.—Length, 4.2 mm.; wing, 5.1 mm.

Female.—Length, 3.9–4 mm.; wing, 4.3 mm.

Rostrum and palpi dark brownish black. Antennae short, the segments oval, clothed with long, pale hairs, the organ black throughout. Head dark colored with a gray bloom.

Mesonotal praescutum light brown; a row of hairs on either side, just inside the proximal end of the pseudosutural foveae; the region anterior to the pseudosutural foveae is light yellow; ends of the pronotal scutellum light shiny yellow. Pleura plumbeous. Halteres pale, the elongate knob only a little darker. Legs with the coxae light yellowish brown; trochanters light brown; remainder of the legs dark brown. Wings light brown, a darker coloration amounting to a spot in the vicinity of the cord and caused by the abundance of hairs at that place. Venation as in plate I, fig. 9.

Abdomen dark brown. Male hypopygium with the ventral pleural appendage (see plate IV, fig. 3) heavily chitinized, almost straight, or the tip directed

[27] Proc. Acad. Nat. Sci. Phila., 1914, p. 588, pl. XXVII, fig. 26.

a little proximad; the base is cylindrical, smooth, at about mid-length widened out into a subflattened blade whose inner margin is provided with about a dozen very obscure, appressed teeth, the tip produced into a long, sharp point.

Habitat.—Colombia, Peru. Holotype, ♂, La Cumbre, Colombia, altitude 6600 feet, May 18, 1914 (Parish coll.). Allotype, ♀, topotypic, May 15, 1914. Paratypes, 2♂, 2♀, topotypic, May 18, 1914; 1♂, Matucana, Peru, altitude 7788 feet, June 15, 1914.

Molophilus tenebricosus sp. n.

Color dark brownish black; antennae elongate, sub-nodulose; ventral pleural appendage of the male hypopygium simple, curved, acutely pointed.

Male.—Length, 3.5 to 3.6 mm.; wing, 4.6 to 4.8 mm.

Rostrum and palpi dark brownish black. Antennae elongate, if bent backward extending nearly to the base of the abdomen, sub-nodulose, the segments enlarged at the base, the apex more slender, the segments clothed with long, outstretched hairs; antennae black throughout. Head dark brownish black with a gray bloom.

Thoracic dorsum dark brown with a sparse gray bloom, the anterior margin of the praescutum before the pseudosutural foveae and the lateral margin of the pronotal scutellum very pale yellow. Pleura grayish brown. Halteres rather stout, the base pale yellow, the knob more brownish. Legs with the coxae light yellow; trochanters yellowish brown; remainder of the legs dark brown. Wings dark brown, the venation as in plate I, fig. 10.

Abdomen dark brownish black. The male hypopygium with the ventral pleural appendage (see plate IV, fig. 4) heavily chitinized, simple, slender, curved and ending in a sharp point. From between the pleurites there projects an elongate, straight appendage of a yellow color which is presumably the penis-guard.

Habitat.—Colombia. Holotype, ♂, La Cumbre, Colombia, altitude 6600 feet, May 18, 1914 (Parish coll.). Paratypes, 3♂, topotypic, May 15 to 20, 1914.

Genus **TRIMICRA** Osten Sacken

Trimicra andensis sp. n.

Male.—Length, 6.2 to 6.4 mm.; wing, 9.8 to 10 mm.

Head and thorax gray, the latter with three brown stripes; wings gray spotted with brown on the cross-veins.

Rostrum, palpi and antennae dark brownish black. Head light gray with several long black hairs.

Thoracic dorsum light gray with three narrow dark brown lines on the praescutum; several long black hairs along these stripes; lobes of the scutum indistinctly browned; scutellum pale, whitish; postnotum light gray. Pleura pale gray. Halteres pale brown, the knobs darker. Legs with the coxae dark brown; trochanters yellowish brown; femora light brown, broadly infuscated

at the tip; tibiae brown soon passing into dark brown; tarsi dark brown; legs densely hairy. Wings rather narrow, grayish; distinct brown clouds along the cord and outer deflection of cell *1st* M_2; veins dark brown. Venation as in plate II, fig. 8.

Abdominal segments dark brown, the lateral margins narrowly and abruptly pale; hypopygium reddish; abdomen provided with numerous long pale hairs.

Habitat.—Ecuador, Peru. Holotype, ♂, Alaousi, Ecuador, altitude 9450 feet, June 17, 1914 (Parish coll.). Paratype, ♂, Matucana, Peru, altitude 7788 feet, July 14, 1914.

Similar to the North American *T. anomala* Osten Sacken[28] but the thorax is much clearer gray, the head gray instead of brownish, the wings gray instead of brown, the cell *1st* M_2 smaller and the veins issuing from it much longer. I would have identified this with the *Limnophila trichopus* Philippi,[29] but the latter is described as having five posterior cells to the wings.

Genus **GNOPHOMYIA** Osten Sacken

Gnophomyia pervicax Alexander

1914. *Gnophomyia pervicax* Alexander, Ent. News, xxv, p. 208, pl. IX, fig. 7.

One female from La Cumbre, Colombia, altitude 6600 feet, May 18, 1914, collected by Parish.

Tribe *Limnophilini*

Genus **EPIPHRAGMA** Osten Sacken

Epiphragma gracilicornis sp. n.

Wings diversified, not banded; antennae elongated.

Female.—Length, 11 mm.; wing, 11.2 mm.; antennae about 3.8 mm.

Rostrum and palpi dark brownish black. Antennae very long and slender, in this sex, if bent backward, extending about to the base of the abdomen; segments 1 and 2 black, segment 3 yellow with a brown ring about mid-length; segments 4 and 5 dark brown with the apical fourth to third dull yellow; remaining segments dark brown with the extreme tip slightly paler. Front very narrow between the eyes, head dark gray.

Pronotal scutum dull yellow with a brown cross-band about mid-length; scutellum dull yellow. Mesonotal praescutum rich chestnut with darker markings as follows: the extreme cephalic margin is brown and sends back a narrow median point to almost mid-length of the segment; lateral margin behind broadly dark brown, at the pseudosutural fovea sending a short point proximad; a large quadrate spot on either side of the middle line on the posterior end of the sclerite just before the caudal margin; caudal margin of the praes-

[28] 1861. *anomala* Osten Sacken, Proc. Acad. Nat. Sci. Phila., p. 290.

[29] 1865. *trichopus* Philippi, Verh. k.-k. zool.-bot. Ges. Wein, xv, p. 610, (*Limnophila*).

cutum and the anterior two-thirds of the scutum light yellow pollinose; scutellum light gray pruinose, a dark brown basal spot on either side of the middle line; postnotum with the margins brown enclosing a gray pruinose triangle whose point is behind. Pleura light yellow pollinose with large brown patches on the mesepisternum and mesosternum. Halteres long and slender, the extreme base and the tip of the knob light yellow, the remainder brown. Legs with the coxae dull yellow with brown clouds over a large portion of the outer faces; trochanters dull yellow, a brown cloud at the tip behind; femora light yellowish brown, the apical third yellow and including a broad brown subapical band; tibiae and tarsi brown. Wings hyaline, the costal cell before the supernumerary cross-vein with two yellow blotches surrounded by a brown margin; remainder of the wing with numerous brown markings arranged as in the figure. Venation: (see plate I, fig. 11) a spur near the origin of *Rs* which is very long; R_{2+3} in a line with *Rs;* inner end of the elongate cell *1st* M_2 only a little longer than the cross-vein *r-m* and the basal deflection of R_{4+5}.

Abdominal tergites brown with a large rounded yellowish brown patch enclosing the impressed mark at near mid-length of the segments; caudal margins of the sclerites narrowly pale; sternites dark brown.

Habitat.—Colombia. Holotype, ♀, La Cumbre, Colombia, altitude 6600 feet, May 18, 1914 (Parish coll.).

This insect is closely related to *E. circinata* Osten Sacken, of Costa Rica, in the elongate antennae, but the two forms may be separated by the following key:

1. Antennae brown, the first flagellar segment yellow; wings broader, grayish, cell *1st* M_2 not so elongated, the petiole of cell R_2 long. (Costa Rica) *circinata* O. S.[30]

   Antennae brown, the first flagellar segment yellow with a brown ring, the two succeeding segments broadly tipped with yellow; wings narrower, hyaline, cell *1st* M_2 elongated, the petiole of cell R_2 short. (Colombia) *gracilicornis* sp. n.

Genus **LIMNOPHILA** Macquart

Limnophila lloydi Alexander

1913. *Limnophila lloydi* Alexander, Journ. N. Y. Ent. Soc., xxi, p. 205, pl. 5, fig. 9.

One male from Huigra, Ecuador, altitude 4500 feet, June 15, 1914, collected by Parish.

Subfamily TIPULINAE

Tribe *Tipulini*

Genus **TIPULA** Linnaeus

Tipula obliquefasciata Macquart

1846. *Tipula obliquefasciata* Macquart, Dipt. Exot. Suppl., i, p. 15, pl. 1, fig. 10.

[30] 1886. *circinata* Osten Sacken, Biol. Centr.-Amer., Dipt., i, p. 9, pl. I, fig. 1.

One female from Lima, Peru, altitude 500 feet, taken on August 21, 1914, by Parish.

The *Monilifera* Group.

In *Linnaea Entomologica* for 1851, Dr. Loew described a remarkable species of crane-fly as *Tipula monilifera* n. sp. This insect came from Rio de Janeiro, Brazil, and was indicated as being notable by the beautiful wing-pattern and the interesting structure of the antennae in the male sex. In 1886 von Roder[31] described from Ecuador, under the name of *moniliformis*, a second form distinguished from Loew's species by the much lighter (yellow) ground-color of the wings and other characters. In 1891, the third species, *ornaticornis*, was described by Van der Wulp,[32] his type coming from Colombia.

The group is very well represented in collections received from South and Middle America, especially from the Andean region, and in the present account the author has endeavored to give his opinions concerning the status of the group. From the great variation in the specimens it is easily understood that we are here not only dealing with numerous forms that are closely related to one another, but also with species which show a considerable degree of variability in color-pattern.

It appears that the group has been derived from forms such as *exilis* sp. n. and *jivaro* sp. n., and the following lines of specialization seem to have been followed: the antennae, from the short, normal Tipuline organ with the flagellar segments enlarged-oval at the base and slightly and gradually constricted about mid-length, have gradually evolved into the slender, graceful antenna which in the more specialized forms (*monilifera* Loew, *moniliformis* Roder, *armillatus* sp. n.) is nearly as long as the entire body; in these forms the ten apical flagellar segments are enlarged-rounded at the base, abruptly constricted into a long, slender, uniform pedicel beyond, producing the nodulose, bead-like effect that is so conspicuous in these insects. Evolution in the wing-venation is not so apparent, as might well be expected in this remarkably homogeneous genus of flies; however, the slight shortening of the radial sector and the tendency of R_2 to

[31] Stett. Ent. Zeit., xlvii, p. 259.

[32] Tijd. voor Entomol., xxxiv., p. 195, pl. 12, figs. 1, 2.

diverge from R_3 is apparent. The genitalia of the male sex shows several distinct lines of specialization. The generalized *jivaro* and *exilis* have the ninth tergite large, subquadrate, with a broad and deep median furrow; the ninth pleurite is extensive, the eighth sternite very small but with a conspicuous median tripartite organ. As evolution proceeds we find the broad furrow on the ninth tergite narrowed to a delicate impressed line, the ninth pleurite becoming small, oval or elongate-oval, situated on the caudal face of the ninth sternite and the eighth sternite with the median lobe single and finally becoming reduced to a mere tuft of hairs. The order of specialization in the forms known to me seems to be about as follows:

1. More generalized with shortened antennae and generalized hypopygium,—*jivaro*, *exilis* and possibly other species described by earlier workers, but from their insufficient descriptions not definitely recognized.

2. No representatives of the intermediate group are known to me.

3. With the antennae elongated but still much shorter than the body,—*mitua*, *ornaticornis* V. d. W., *carizona* Alex.

4. Highly specialized species with the antennae only a little shorter than the entire body,—*monilifera* Loew, *moniliformis* Rod., *armillatus*. Of uncertain position, known only from the female sex,—*quichua* sp. n.

The body color-pattern is curious and is indicated in all of the species. The insects show a more or less distinct, very narrow, dorso-median vitta running from the head over the entire length of the thorax; on the ground color between the usual thoracic stripes occur rather abundant hair-like setae and each of the setigerous punctures is surrounded by a brown circle, producing a spotted appearance.

Tipula exilis sp. n.

Monilifera group; antennae short in both sexes; head and thorax dark gray; a narrow dorso-median line running the length of the thorax; wings mottled white, brown and gray; abdomen of the female very long and slender.

Male.—Length, 12 to 15 mm.; wing, 12.1 to 14.1 mm.; abdomen, 11.6 mm.

Female.—Length, 24 to 26 mm.; wing, 15.2 to 15.5 mm.; abdomen, 19 to 21.5 mm.

Frontal prolongation of the head moderately long, brown, a little darker on the sides of the organ; palpi moderately long, dark brown. Antennae rather short (see plate IV, fig. 5), a little longer than in *T. jivaro* which is very

closely related; the three basal antennal segments light yellow; the following two with the enlarged basal quarter black, the remainder brownish yellow; remaining antennal segments almost uniformly dark brown with an abundant silvery pubescence. Frontal tubercle distinct; head dull gray with a narrow, indistinct brown median vitta; occiput tinged with reddish yellow.

Thoracic dorsum almost uniformly dull gray excepting the narrow dark brown median vitta which is distinct on the praescutum, broadened on the postnotum; scutellum paler on the sides. Pleura mostly dark gray, the integument more brown. Halteres long, slender, with the knob brown, the stem dull yellow. Legs with the coxae light yellowish brown; trochanters and femora light brown, the latter dark brown at the tip; tibiae light brown, the tip dark brown; tarsi light brown, the apical segments dark brown. Wings with the costal cell yellowish, remainder of the wings variegated with whitish, brown and gray; the white area beyond the stigma includes most of the wing-apex, the tips of cells R_2 and R_3 and smaller areas in cells R_5 and the outer medial cells being grayish; the stigmal area is brown; gray clouds at the origin of Rs, at mid-length of cell R, and in most of the basal cells. Venation: (see plate III, fig. 1) the tip of R_2 indistinct, very pale.

Abdominal tergites 1 to 5 dull yellow, 6 to 8 dark brown, the ninth medium brown; an indistinct brown lateral stripe; sternites dull yellow, the terminal segments dark gray. Hypopygium quite similar to that of *T. jivaro*, the eighth tergite broad, conspicuous, the caudal margin straight across or even slightly convex medially; ninth tergite (see plate V, fig. 2) broadly subquadrate, with a deep median furrow as in *jivaro*, the caudal margin produced into a median lobe whose outer angles are chitinized teeth. Ninth pleurite about as in *jivaro*, the caudal prolongation (a) reduced to a tiny lobe which is scarcely visible; the more chitinized lobe (b) which arises from the ventral portion of the sclerite is a little smaller; the pleural appendages are similar to those of *jivaro*. The tripartite appendage to the eighth sternite is as shown in the figure (see plate V, fig. 5), the lateral lobes being elongated, only a little shorter than the median lobe.

The female is similar to the male, the antennae a little shorter, with the dorso-median thoracic vitta running the whole length of the sclerite; abdomen greatly elongated, slender, tergal valves of the ovipositor short and high, the sternal valves still shorter, very high.

Habitat.—Peru. Holotype, ♂, San Cristobal Hill, Lima, Peru, altitude 1000 feet, September 26, 1912 (C. H. T. Townsend coll.). Allotype, ♀, topotypic. Paratypes, 2 ♂, 4 ♀, topotypic.

Tipula jivaro sp. n.

Monilifera group; antennae short, bicolorous; thorax gray with brown stripes and numerous brown spots on the interspaces of the praescutum; wings marbled with subhyaline, gray and brown.

Male.—Length, 18 mm.; wing, 18 mm.; antennae about 5.5 mm.

Female.—Length, 22 mm.; wing, 16.4 mm.; abdomen, 16.1 mm.

Frontal prolongation of the head yellowish brown, rather elongated, a narrow dark brown line along the side; palpi short, dark brownish black. Antennae with the first segment elongate cylindrical, a little narrowed toward the base; the second segment small, without a distinct tooth as in the other members of the *monilifera* group; the segments 4 to the end of the organ with a basal swelling which occupies about one-quarter of the segment; the segment beyond the basal swelling slightly constricted (see plate IV, fig. 6); antennae with the three basal segments light yellow, remaining segments dark brownish black on the basal enlargement, the remainder of the segment yellowish brown. Front with a distinct tubercle, scarcely if at all notched in front; vertex light brown passing into gray on the occiput; median portion of the vertex darker brown, paler, more yellowish adjoining the eyes.

Pronotum light grayish brown with a darker brown longitudinal line and a transverse row of dark brown dots. Mesonotal praescutum light brownish gray; a very narrow dark brown median line broadened behind; on either side of this line, a broader paler grayish brown line, darkest in front, behind becoming confluent with the narrow median vitta. Lateral stripes short and rather indistinct; the interspaces between the thoracic stripes are provided with rather numerous setae, the base of each of which is surrounded by a dark brown spot producing the spotted appearance characteristic of this group of species; scutum light gray with two small brownish spots, the smallest of which lies in the outer anterior angle of the sclerite, the larger one behind; a few brown setigerous markings on either side of the dark brown middle line; scutellum and postnotum light gray with a delicate brown middle line and a few sparse brown setigerous punctures. Pleura light brown, heavily gray pruinose. Halteres light brown, rather short. Legs with the coxae light yellowish gray, the outer face provided with numerous setiferous punctures; trochanters yellow; femora dull yellow, the tip broadly dark brown; tibiae light yellow, tipped with dark brown; tarsi dark brown. Wings with the costal cell rich yellow, remainder of the membrane light brownish gray, a broad white cross-band extending from beyond the stigma almost across the wing outside the cord, occupying the end of cell *2nd* R_1, base of R_2, basal portion of R_3 and R_5, basal half of *1st* M_2 and parts of M_3 and Cu_1; a hyaline dash in cell R along vein R, this including the proximal end of cell *1st* R_1; a whitish blotch at about three-fourths of the length of cell M; brown clouds as follows: stigmal blotch, this being continued down the cord to the cell *1st* M_2; narrow seams along Cu and *2nd* A, at the end of Sc, at the origin of Rs and on vein R midway between the arculus and the base of Rs. Venation as in plate 3, fig. 2.

Abdominal tergites dull yellow with a distinct interrupted dorsal brown line; lateral edges of the segments broadly brown, the terminal segments darker, more uniformly brown. Hypopygium (see plate V, fig. 1) with the eighth tergite rather broad, straight across the caudal margin. Ninth tergite (plate V, fig. 3) elongate, subquadrate, with a deep and broad median furrow extending the length of the sclerite; caudal margin with a sharp chitinized tooth on either side of the broad furrow described above. The ninth pleurite distinct, situated on the caudal face of the ninth sternite; a cylindrical fleshy lobe (*b*) with long hairs on the ventro-cephalic portion of the pleurite; a large

fleshy organ (*a*) directed caudad, enlarged at the base, pointed at the tip, their inner surface at the base with a great patch of chitinized bristles which are continguous with those of the opposite side in a position of rest. Pleural appendages consisting of an outer, very slender, subcylindrical, fleshy lobe, and an inner appendage consisting of a subchitinous arm ending in two chitinized lobes; the outer lobe is subrounded at the apex, the inner one produced cephalad into a short, cylindrical point. Ninth sternite deeply split medially. Eighth sternite small, widely separated from the 8th tergite; from the middle portion of this sternite arises a tripartite appendage (see plate V, fig. 6) consisting of a long median lobe which is curved upward in dried specimens but becomes straightened out when the specimen is boiled; on either side of this elongate median lobe is a small, pale lateral lobe.

The female is similar to the male with the antennae shorter; the ovipositor with the upper valves long, slender, subacute at their apices and slightly upcurved; sternal valves shorter and slightly higher.

Habitat.—Ecuador. Holotype, ♂, Alaousi, Ecuador, altitude 9450 feet, June 18, 1914 (Parish coll.). Allotype, ♀, topotypic.

The specific name is that of a native tribe of Ecuador; called also Xibaro and Gibaro.

I regard this species as being the second most generalized member of the *monilifera* group, *exilis* being a little more primitive in many respects.

The two known species of this group with the antennae short in both sexes may be separated by the following key:

1. Head and thorax dark gray with a narrow dorso-median line running the length of the thorax; male hypopygium without a distinct caudal prolongation to the ninth pleurite; eighth sternite with the lateral lobes of the tripartite appendage long; abdomen of the female long and slender (20 mm.). (Peru) *exilis* sp. n.

   Head light brown passing into gray on the occiput; thorax light brownish gray with brown stripes and numerous brown spots on the interspaces between these stripes; male hypopygium with a distinct fleshy lobe directed caudad and situated on the ninth pleurite; eighth sternite with the lateral lobes of the tripartite appendage short; abdomen of the female of moderate length (16 mm.). (Ecuador) *jivaro* sp. n.

Tipula quichua sp. n.

Monilifera group; antennae, bicolored; thorax light gray with a delicate dark brown dorso-median line running the entire length; wings largely gray and white; femora with the tips brown and a subterminal yellow ring.

Female.—Length, 21 mm.; wing, 15.2 mm.; abdomen, 14.5 mm.

Frontal prolongation of the head light brownish gray; palpi short, dark brown. Antennae with the three basal segments light yellow; fourth segment with the

basal portion blackish around the insertions of the bristles; remaining segments dark at the base, toward the tip of the organ the entire segment is darkened. Head gray, a median stripe and the region adjoining the eye dark brown.

Thoracic dorsum light gray with a narrow dark brown median stripe running from the pronotum to the end of the mesonotal postnotum; on either side of this vitta on the praescutum is a light brownish gray stripe, darkest in front; lateral stripes shortened but distinct; numerous dark brown spots, some being confluent, on the interspaces of the praescutum; scutum, scutellum and postnotum with the ground color light gray. Pleura very pale whitish gray. Halteres light yellow, the knob darkened. Legs with the coxae pale grayish white; trochanters dull yellow; femora dull yellow passing into brown beyond the middle, the tip dark brown, a broad yellow subapical ring; tibiae brownish yellow, tipped with brown; tarsal segments 1 and 2 yellowish brown, the tips brown, segments 3 to 5 dark brown. Wings with the costal cell yellowish; remainder of the wings whitish, gray and brown; the white markings are as follows: a large band beyond the stigma including the end of cell *2nd* R_1, basal half of R_2, portions of R_3 and R_5 near the base, most of *1st* M_2, tip of cell M and base of cell M_3; cell R_5 largely pale; cell R similar excepting isolated gray blotches; cell M and large portions of cells *Cu*, *1st A* and *2nd A* whitish; the stigmal area is dark brown; the tip of the wing, the cord, the base of *Rs* and most of the cells of the wing contain gray suffusions. Venation: (plate III, fig. 3) R_2 tends to be swung cephalad at its tip as in the *monilifera* group.

Abdominal tergites light brown, a distinct dark brown dorsal line and the lateral margins of the segments dark brown; sternites brownish; ovipositor with the tergal valves very slender and delicate, the tip scarsely expanded; sternal valves shorter and a little higher.

Habitat.—Peru. Holotype, ♀, Matucana, Peru, altitude 7788 feet, July 14, 1914 (Parish coll.).

The specific name is that of the native Indian nation of Peru.

This interesting species is readily separable by the gray thorax with the prominent dorso-median brown vitta and the gray and white diversified wings. The subterminal yellow annulus to the femora is a character not found in the near relatives of this insect.

Tipula carizona Alexander

1913. *Tipula carizona* Alexander, Journ. N. Y. Ent. Soc., xxi, p. 208, pl. 7, fig. 7 (wing), figs. 2 to 4 (genitalia).

A male from Matucana, Peru, altitude 7788 feet, July 14, 1914, collected by Parish; another male from Huancayo, Peru, altitude 10,636 feet on June 27, 1914, Parish, collector.

This species is quite widely distributed in the Andes; it differs from Van der Wulp's description of *ornaticornis* by the light gray color of the thorax instead of opaque rufous.

Tipula mitua sp. n.

Monilifera group; antennae slender, moderately long (♂, 8.5 mm.); thorax brown without apparent stripes; wings variegated brown and white; male genitalia with the caudal margin of the ninth tergite deeply rounded, eighth sternite with a prominent median lobe that is directed caudad.

Male.—Length, 15.5 mm.; wing, 19 mm.; antennae, 8.5. mm.

Frontal prolongation of the head rather long and slender, light brown; palpi black, paler at the joints. Antennae moderately long (see plate IV, fig. 7) but with the segments slender as in *monilifera;* the antennae are less than one-half the length of the wings; the two basal segments are dull yellow, the remaining segments with the basal enlargement black, the stem dark brown, on the terminal segments almost black. Head light brownish yellow with a narrow dark brown median vitta.

Thoracic praescutum brown without apparent darker stripes; on the interspaces between the usual stripes are numerous brown spots surrounding setigerous punctures; scutum and postnotum brown, narrowly edged around with dark brown; scutellum yellowish brown. Pleura dull yellow. Halteres moderately long, dull yellow, darkened toward the knob. Legs with the coxae and trochanters yellowish brown, broadly tipped with dark brown; tibiae and tarsi dark brown. Wings brown and white, the shade of the brown a little paler than that of *monilifera;* venation and pattern as in plate III, fig. 4.

Abdomen dull brownish yellow with the lateral margins broadly dark brown; terminal segments dark brown; sternites dull yellow. Hypopygium as in the *monilifera* group; ninth tergite (plate V, fig. 4) with the median furrow of the more generalized forms (*exilis*, et al.) reduced to a mere line; caudal margin of the segment broadly and evenly rounded. Ninth pleurite rather prominent, subrounded. Eighth sternite (plate V, fig. 7) prominent, with the caudal margin very convex, bearing an elongate fleshy median lobe, this lobe directed caudad.

Habitat.—Colombia. Holotype, ♂, Valle de las Papas, Colombia, altitude 10,000 feet, March 29, 1913, collected by Mr. John Thomas Lloyd.

The specific name is that of a native Indian tribe occupying the same region as the species.

This species is similar to *monilifera* Loew and *armillatus* n. sp. in the dark brown and whitish wing-pattern, but differs in the shortness of the antennae in the male sex (8.5 mm., with a wing of 19 mm.) as opposed to *monilifera* with an antennal length of 10 mm. and *armillatus* with the antennae over 12.5 mm. in length. From *T. carizona* Alex. it differs in the diversified brown and white wings; from *T. ornaticornis* V. d. Wulp, by the color-pattern of the thorax and abdomen. It agrees with these two last species in the slender median appendage to the eighth

sternite of the male hypopygium. This species is based on a member of the Lloyd collection and is described from one of the two specimens referred to *monilifera* in my previous paper.[33]

The other specimen is here described as *T. armillatus* n. sp. and so *monilifera* is not yet definitely known from Colombia.

Tipula armillatus sp. n.

Monilifera group; antennae of the male very long, nearly as long as the wing (antenna, 12.8 mm.; wing, 14 to 15 mm.).

Male.—Length, 13 to 14 mm.; wing, 14.2 to 15.2 mm.; antennae, 12.8 to 12.9 mm.

Similar to *T. monilifera* Loew and *T. mitua* sp. n., differing as follows: antennae very long and slender, the longest for any member of this group of species, being some four-fifths the length of the wing (see plate IV, fig. 8); segment one is quite normal, segment two with a dense brush of black hairs on the dorsal inner surface; remainder of the organ light yellow, the last ten flagellar segments with the brownish black basal swelling, the slender stem passing into dark brown at about mid-length of the organ.

Thoracic dorsum light brown, the lateral stripes quite lacking, the brown setigerous punctures on the interspaces scanty. Abdomen mostly dark brown except on the basal segments. Hypopygium with the ninth tergite having the median furrow reduced to a mere line as in the specialized members of this group, the latero-caudal angles prominent, slightly incurved; ninth pleurite very small, reduced to an elongate-oval lobe on the caudal face of the ninth sternite; eighth sternite (see plate V, fig. 8) prominent, the caudal margin gently concave, medially bearing a small lobe which is provided with a tiny tuft of silvery hairs.

The wing-pattern is shown in plate III, fig. 6; that of *Tipula monilifera* Loew in plate III, fig. 5.

Habitat.—Colombia. Holotype, ♂, La Cumbre, Colombia, altitude 6600 feet, May 16, 1914 (Parish coll.). Paratype, ♂, Popayan, Colombia, altitude 6590 feet, March 1, 1912 (Lloyd coll.).

The longer antennae and the different hypopygium in the male serves to distinguish *armillatus* from the related species with brown and white wings (*monilifera* Loew, *mitua* sp. n.); *moniliformis* Roder has the wings diversified yellow and hyaline.

The paratype was previously determined as *T. monilifera* in an earlier paper by the author, as mentioned under the description of *T. mitua*.

[33] Journal of the New York Ent. Soc., xxi, p. 209, 1913.

EXPLANATION OF THE PLATES

Plate I

Fig. 1.—Wing of *Dicranomyia mulsa* sp. n.; ♀.
Fig. 2.—Wing of *Dicranomyia mulsa* sp. n.; ♂.
Fig. 3.—Wing of *Dicranomyia*, species.
Fig. 4.—Wing of *Dicranomyia invalida* sp. n.
Fig. 5.—Wing of *Dicranomyia virilis* sp. n.
Fig. 6.—Wing of *Atarba brunneicornis* sp. n.
Fig. 7.—Wing of *Orimarga andina* sp. n.
Fig. 8.—Wing of *Gonomyia jejuna* sp. n.
Fig. 9.—Wing of *Molophilus capricornis* sp. n.
Fig. 10.—Wing of *Molophilus tenebricosus* sp. n.
Fig. 11.—Wing of *Epiphragma gracilicornis* sp. n.

Plate II

Fig. 1.—Wing of *Dicranomyia regifica* sp. n.
Fig. 2.—Wing of *Rhipidia* (*Arhipidia*) *vicina* sp. n.
Fig. 3.—Wing of *Geranomyia lachrymalis* sp. n.
Fig. 4.—Wing of *Geranomyia plumbeipleura* sp. n.
Fig. 5.—Wing of *Geranomyia scolopax* Alexander.
Fig. 6.—Wing of *Geranomyia townsendi* sp. n.
Fig. 7.—Wing of *Geranomyia glauca* sp. n.
Fig. 8.—Wing of *Trimicra andensis* sp. n.
Fig. 9.—Wing of *Gonomyia velutina* sp. n.
Fig. 10.—Wing of *Gonomyia velutina* sp. n.

Plate III

Fig. 1.—Wing of *Tipula exilis* sp. n.
Fig. 2.—Wing of *Tipula jivaro* sp. n.
Fig. 3.—Wing of *Tipula quichua* sp. n.
Fig. 4.—Wing of *Tipula mitua* sp. n.
Fig. 5.—Wing of *Tipula monilifera* Loew.
Fig. 6.—Wing of *Tipula armillatus* sp. n.

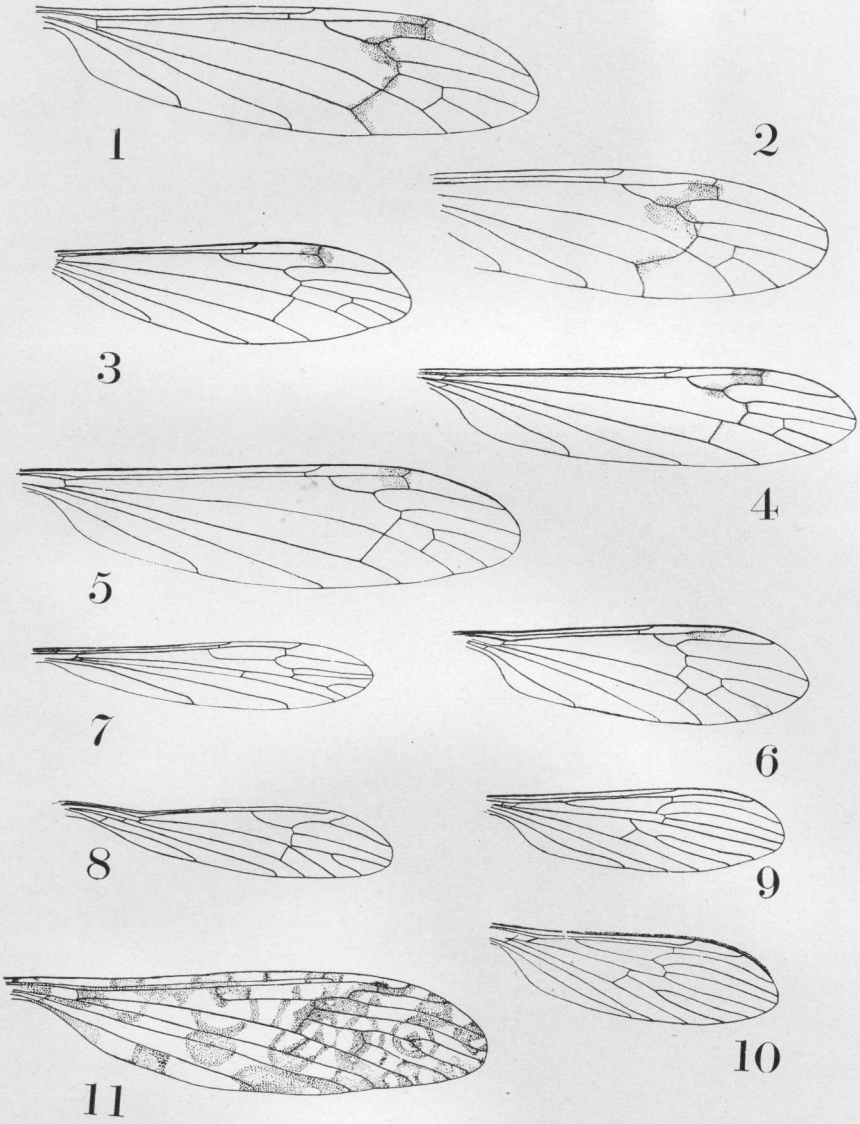
Plate IV

Fig. 1.—Hypopygium of *Gonomyia jejuna*; lateral aspect. a = pleura. b = inner pleural appendage. c = outer pleural appendage. d = penis-guard.
Fig. 2.—Hypopygium of *Atarba brunneicornis*; dorsal aspect, pleura and the apical appendages.
Fig. 3.—Hypopygium of *Molophilus capricorns*; ventral aspect of the ventral apical appendage.

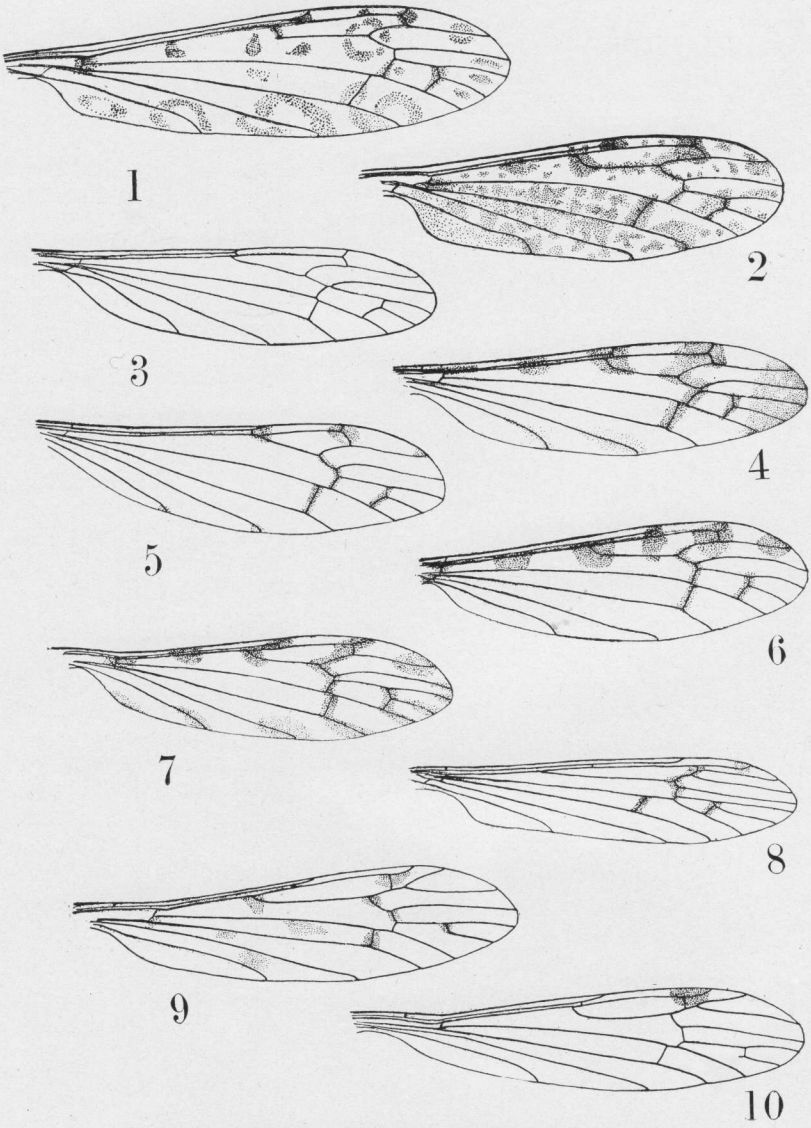
FIG. 4.—Hypopygium of *Molophilus tenebricosus*; ventral aspect of the ventral apical appendage.
FIG. 5.—Fifth antennal segment of *Tipula exilis*.
FIG. 6.—Fifth antennal segment of *Tipula jivaro*.
FIG. 7.—Fifth antennal segment of *Tipula mitua*.
FIG. 8.—Fifth antennal segment of *Tipula armillatus*.

PLATE V

FIG. 1.—Hypopygium of *Tipula jivaro*; lateral aspect. 7 t, 8 t, 9 t, = tergites; 8 s, 9 s, = sternites. a = outer lobe of the ninth pleurite. b = inner lobe of the ninth pleurite.
FIG. 2.—Hypopygium of *Tipula exilis*; dorsal aspect of the ninth tergite.
FIG. 3.—Hypopygium of *Tipula jivaro*; the same.
FIG. 4.—Hypopygium of *Tipula mitua*; the same.
FIG. 5.—Hypopygium of *Tipula exilis*; ventral aspect of the eighth sternite.
FIG. 6.—Hypopygium of *Tipula jivaro*; the same.
FIG. 7.—Hypopygium of *Tipula mitua*; the same.
FIG. 8.—Hypopygium of *Tipula armillatus*; the same.



ALEXANDER—SOUTH AMERICAN TIPULIDAE



ALEXANDER—SOUTH AMERICAN TIPULIDAE

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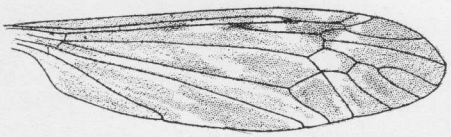

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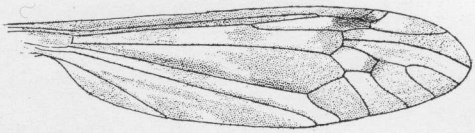

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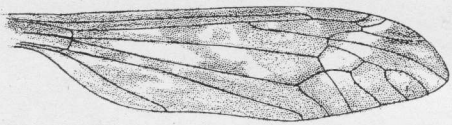

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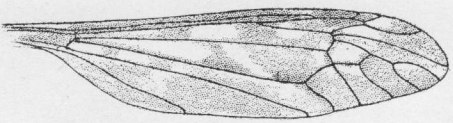

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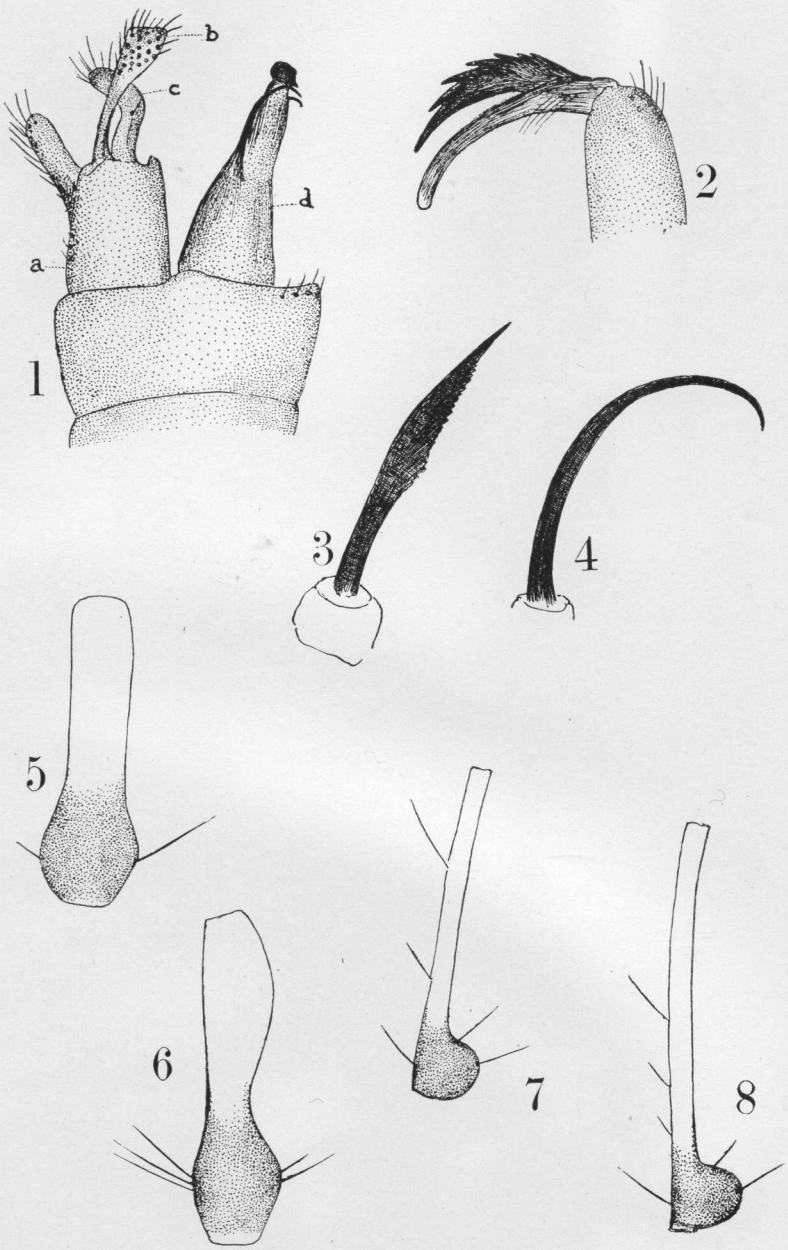

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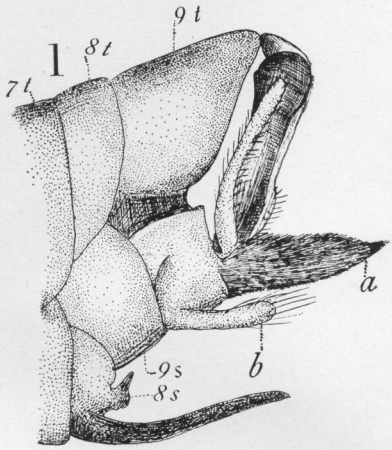

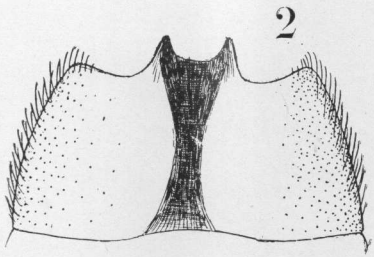

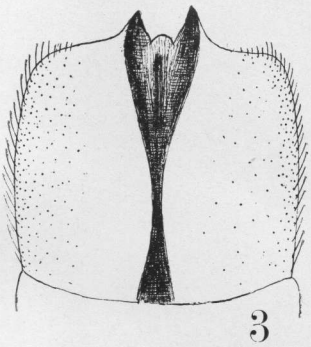

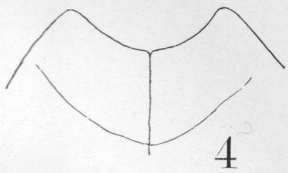

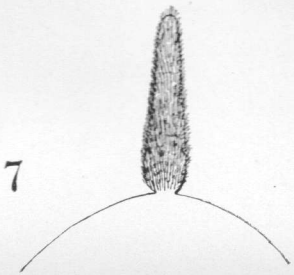

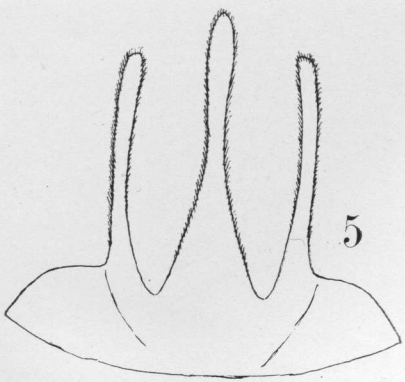

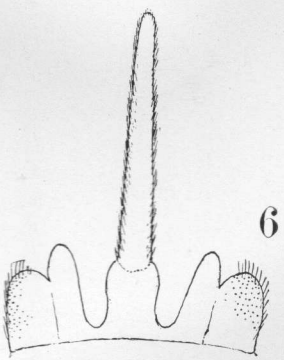

ALEXANDER—SOUTH AMERICAN TIPULIDAE