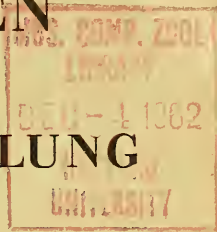


**VERÖFFENTLICHUNGEN**  
der  
**ZOOLOGISCHEN STAATSSAMMLUNG**  
**MÜNCHEN**



**Beiträge zur Kenntnis**  
**der Insektenfauna Boliviens XVII.**

**Diptera II.**

**The crane-flies (Tipulidae, Diptera)**

**With 140 figures**

**by Charles P. Alexander**



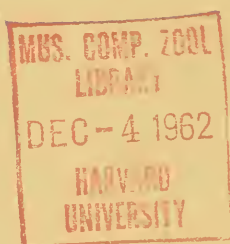
**BEITRÄGE ZUR KENNTNIS  
DER INSEKTENFAUNA BOLIVIENS XVII.**

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**Ausgabedatum: 1. August 1962**





## Introduction

The present paper is based primarily on extensive collections of Tipulidae that were made in Bolivia in 1950 by Dr. Walter Forster, while a member of the „Deutschen Andenkundfahrt“, and again in 1953—1954, at that time accompanied by the late Dr. Otto Schindler. A detailed account of these two expeditions, with the itineraries, has been provided by Forster (1955)<sup>1</sup>. The crane-flies taken on these two expeditions have added greatly to our knowledge of this little-known country. Types and determined specimens from the Forster collections are preserved in the Zoologischen Staatssammlung, together with named species from other sources considered herewith, resulting in what is the largest and most important series of Bolivian Tipulidae in Europe. The remaining specimens are preserved in my personal collection of World Tipulidae. In order to make the present report as nearly complete as possible some additional materials in my possession are considered, as discussed below.

Bolivia is a land of exceedingly diverse physical and climatic conditions, ranging from the hot lands, or Tierra Caliente, of the Chaco and elsewhere in the east to the great central plateau or Altiplano, having an average altitude of some 12,000 feet. This lies between two great Andean chains that traverse the country from north to south, with smaller ranges extending therefrom in all directions. Three of the highest peaks of the Western Hemisphere are in Bolivia, Sorata (Illampu), 21,489 feet; Sajama, 21,320 feet; and Illimani, 21,151 feet. In the northern and eastern parts of the country the land falls away toward the Yungas, as discussed below. Bolivia has a network of rivers, many navigable, all but one flowing toward the Atlantic Ocean, either via the Amazon or the Paraguay river systems. The great lake, Titicaca, lies at an altitude of 12,500 feet on the Peruvian border.

The country may be divided into altitudinal or life zones that are briefly summarized herewith, based on detailed accounts by Forster (1955), Niethammer (1953), and Peña (in litt.).

### A. Yungas Region

- I Lower Yungas; Tropical zone (Montaña); Llanos; The Chaco to south-east. 150—1000 meters (to 1700)
- II Middle Yungas; Subtropical zone. 1000—2500 meters (to 2800)
- III Upper Yungas; Cloud Forest (Nebelwald); Ceja de Montaña 2500 to 3400 meters (to 3500)

### B. Altiplano and Paramo

- Altiplano (West Cordillera) 3000—3500 meters
- Altacordillera (High Cordillera); Paramo 3400—4500 meters (and higher).

<sup>1</sup>) References in parenthesis are listed at the end of the Introduction.

Most collections of *Tipulidae* in Bolivia have been made in the Altiplano and the Middle and Upper Yungas; a small number in the Lower Yungas, Llanos and the Chaco, chiefly at and near Santa Cruz. Virtually all of our knowledge of the crane-flies of the High Cordillera and Paramo result from the Forster collections, as discussed later.

### Historical Development of our Knowledge of the Crane-flies of Bolivia

It appears that the first collections of *Tipulidae* to be made in Bolivia were by the brothers Fassel, in 1912 and 1913. The older brother, Anton Herman, Jr., was born in 1876, died in 1922, on the Amazon near Manaus, Brazil, of a tropical fever. Staudinger gives his name as Anton Heinrich Fassel-Teplitz. On his second expedition to tropical America, Anton was accompanied by a younger brother, Eduard. At this time a relatively small number of crane-flies were collected in Bolivia, chiefly at Coroico, San Antonio and Songo. Part of these materials were secured by the Hungarian National Museum and were sent to me for study by the Director, Dr. Koloman (Kalman) Kertész (1867—1922). These were discussed in a series of four papers (Alexander, 1913b, 1913c, 1914a, 1914b). Most tragically these specimens, together with the remainder of the Diptera of the Museum, were destroyed in the 1956 riots in Budapest. A very few duplicates, together with a few structures mounted on slides, as permitted by Dr. Kertész, are preserved in my collection. Fortunately, most of the species in this series were figured in the above cited papers and the identities of the Bolivian species are known. A few further specimens from the Fassel collections were purchased by me from Staudinger and Bang-Haas in 1912.

The Steinbachs. Josef (José) Steinbach was a collector of natural history specimens in Tropical America since 1898, later settling in Bolivia where he worked from 1913 through 1929 (died 1930), collecting mostly at and near Santa Cruz. Several *Tipulidae* were taken by the younger Steinbach (Franz, Francisco) between 1930 and 1941, chiefly in Santa Cruz and Cochabamba. Alexander Collection.

Dr. William M. Mann (1886—1960), while a member of the Mulford Biological Expedition 1921—1922, collected numerous insects in Beni in January-February 1922, including a small number of *Tipulidae*; United States National Museum. Mann was a distinguished student of the *Formicidae*; in 1925 he became Director of the National Zoological Park, Washington, D. C. His autobiography has been published (Ant Hill Odyssey, pp. 1—338, 5 maps, 6 pls.; 1948; Little, Brown and Company, Boston).

Dr. Erwin Lindner, distinguished Dipterologist, collected a few *Tipulidae* in the Bolivian Chaco while a member of the Deutschen Chaco-Expedition 1925—26; Württembergische Naturalien Sammlung, Stuttgart. Alexander (1933).

Father Felix Jaffuel (1874—1939). A small collection taken at and near La Paz in March-April 1930. Alexander Collection.

Dr. Walter Forster. The basic collection of these flies for Bolivia. The detailed account of the expeditions (1950, 1953, 1954) by Forster should be consulted (1955: 83—99). I am providing a summary of stations particularly as it concerns the *Tipulidae*.

1950 (March 2—November 23)

La Paz; March 2—29; May 22—June 2; June 10—19; July 2—6; August 13—16; October 1—5; November 6—9, 16—22.

Illimani, Westhang; base camp about 4800 meters, with a second camp at 5600 meters, March 30—May 9. At the latter camp, under rigorous conditions of existence, some *Tipulidae* were found (Forster, 1955: 86), these representing the highest altitude at which these flies have been taken (see *Limonia (Dicranomyia) perexcelsior* sp. n.).

Coroico, Yungas; May 13—21; June 3—4.

Cordillera Real; Hichucota Pass, 5150 m., and Lake Hichucota, ca. 4600 m.

Espiritu, Rio Yacuma; July 13—August 8.

Forestal; 2300 m., June 5—9.

Roboré; November 11—14.

San Carlos; Aug. 27—September 20.

Santa Rosa, Rio Yacuma; July 7—12, August 9—11.

Sorata; August 17—22, August 25—26, September 25—30, October 6—November 5.

Unduavi, Cumbre; March 26.

1953—1954 (August 3, 1953—May 20, 1954)

La Paz; August 3—25; August 31—September 10; November 18—29; December 6—7; December 31—January 4; January 18—27; February 5—11, 21—23; March 3—22; March 27—April 7.

Achocalla Tal; 3600 m., August 9.

Chacaltaya, Hütte; 5200 m., March 23—26.

Chaparé; October 15—November 10.

Chipiriri, Rio; October 25—November 6.

Cochabamba; September 11—17, 27—28; October 5—8, 11—14; November 11—16; February 25.

Corani, Yungas, upper forest zone; ca. 2800 m., September 29—October 4.

Espiritu, Rio Yacuma; April 13—20; May 1—3.

Palmar, Yungas; 780 m., October 15—24.

Songotal (Songo Valley); Cutiencho, Botijlaca, August 23; November 30 to December 5; January 28—February 4.

Sihuencas, Arepucho, Yungas; ca. 2200 m., September 18—26.

Titicaca; January 5—17.

Sucre; February 27—March 1.

West Cordillera; February 12—20.

Unduavi Pass; 4752 m., August 16.

Antonio Martinez, distinguished student of the *Coleoptera*. Large and important collections made in 1953 and 1959, the former sent to me by Señor



Albert Prosen. Cochabamba, Chaparé, Yungas del Palmar, 1953 — Locotal, 1200 m., October; El Limbo, 2000 m., March, October and November; 1959 — El Limbo and at km. 104, 3150 m. Only a part of this extensive series, consisting chiefly of small and medium-sized species, has been studied to this date. Alexander Collection.

Luis A. Peña, outstanding Chilean naturalist, 1948, 1949, 1950. 1948 — Cerro Tunari, 4600 m., December; 1949 — Buena Vista; Colonia Yapacani, 300 m., between Buena Vista and Puerto Greether; Puerto Greether, on the Rio Ichilo, north of Buena Vista, 250 m.; Quebrada del Oro, a torrential stream between Buena Vista and Puerto Grether; Vacas, Altiplano, ca. 3000 m., 90 km. south of Cochabamba; 1950 — Cristal Mayu (Minas Mayu), Chapare, 1200 m., August—December. Alexander Collection.

Guillermo Pinkert, Jr., of the Santa Cruz Natural History Society; a few specimens from Santa Cruz and vicinity; Santa Cruz, General Saavedra, 650 m., February—April 1958. Alexander Collection.

A few further specimens from Sihuenecas were received from Juan Foerster but nothing from the Zischka family who provided interesting Lepidoptera for Forster. The brothers Garlepp (Gustav, 1862—1907; Otto, 1864—1959) made extensive natural history collections in Bolivia between 1893 and 1897, specializing in birds, their nests and eggs, and in certain groups of insects. Otto Garlepp, during his first year of collecting in Bolivia (1894) secured more than 20,000 specimens of Lepidoptera, nearly 5000 Coleoptera, and more than 1000 insects of other orders, but to my knowledge these latter did not include *Tipulidae* (Niehammer, 1953: 205).

## References

- Alexander, Charles P.  
 1912 a New species of *Furcomyia* (*Tipulidae*).  
 Canad. Ent., 44: 361—364.  
 1912 b New Neotropical *Tipulinae* (*Tipulidae*, Dipt.)  
 Ann. Ent. Soc. Amer., 5: 343—365, 3 pls.  
 1913 a A synopsis of part of the Neotropical crane-flies of the subfamily  
*Limnobiinae*.  
 Proc. U.S. Nat. Mus., 44: 481—549, 4 pls.  
 1913 b The Neotropical *Tipulidae* in the Hungarian National Museum  
 (Diptera). — I  
 Ent. News, 24: 404—412, 1 pl.  
 1913 c The Neotropical *Tipulidae* in the Hungarian National Museum  
 (Diptera). — II  
 Ent. News, 24: 439—449, 1 pl.  
 1913 d New Neotropical *Antochini* (*Tipulidae* Diptera)  
 Psyche, 20: 40—54, 1 pl.  
 1914 a The Neotropical *Tipulidae* in the Hungarian National Museum  
 (Diptera). — III  
 Ent. News, 25: 205—215, 1 pl.

- 1914 b The Neotropical *Tipulidae* in the Hungarian National Museum (Diptera). — IV  
Ent. News, 25: 351—363, 1 pl.
- 1922 New or Little-known Exotic *Tipulidae* (Diptera)  
Trans. Ent. Soc. London, 1922: 34—64.
- 1930 New species of crane-flies from South America. Part IV.  
(Family *Tipulidae*, Order Diptera)  
Ann. Ent. Soc. Amer., 23: 721—740.
- 1933 Die Ausbeute der Deutschen Chaco-Expedition 1925/26  
Diptera. XXXVIII. *Tipulidae*  
Konowia, 12: 41—46, 2 figs.
- 1940 Records and descriptions of *Tipulidae* from tropical America (Diptera) Part III  
Rev. de Entomologia, 11: 894—908, 10 figs.
- 1941 New species of crane-flies from South America Part IX  
(*Tipulidae*, Diptera)  
Ann. Ent. Soc. Amer., 34: 231—254.
- 1944 Records and descriptions of Neotropical crane-flies.  
(*Tipulidae*, Diptera), XVIII.  
Jour. N. Y. Ent. Soc., 52: 369—383.
- 1945 a Records and descriptions of Neotropical crane-flies  
(*Tipulidae*, Diptera), XIX.  
Jour. N. Y. Ent. Soc., 53: 49—61.
- 1945 b New species of crane-flies from South America Part XII  
(*Tipulidae*, Diptera)  
Ann. Ent. Soc. Amer., 38: 256—280.
- 1945 c Notes on the Tropical American species of the genus *Tipula* Linnaeus  
(*Tipulidae*, Diptera). Part I  
Rev. de Entomologia, 16: 330—356, 9 figs.
- 1945 d Records and descriptions of *Tipulidae* from tropical America (Diptera). Part III  
Rev. de Entomologia, 16: 373—393, 22 figs.
- 1945 e Notes on the Tropical American species of the genus *Tipula* Linnaeus  
(*Tipulidae*, Diptera). Part II  
Rev. de Entomologia, 16: 415—440, 25 figs.
- 1946 a Records and descriptions of Neotropical crane-flies  
(*Tipulidae*, Diptera), XXI  
Jour. N. Y. Ent. Soc., 54: 293—307.
- 1946 b Notes on the Tropical American species of the genus *Tipula* Linnaeus  
(*Tipulidae*, Diptera). Part III  
Rev. de Entomologia, 17: 172—201, 7 figs.
- 1946 c Notes on the tropical American species of *Tipulidae* (Diptera).  
I. The genus *Teucholabis* Osten Sacken.  
Rev. de Entomologia, 17: 375—400, 14 figs.

- 1947 a Notes on the tropical American species of *Tipulidae* (Diptera).  
II. The primitive *Eriopterini*: *Sigmatomera*, *Trentepohlia*,  
*Gnophomyia*, *Neognophomyia*, *Gonomyia*, and allies.  
Rev. de Entomologia, 18: 65—100, 31 figs.
- 1947 b Notes on the tropical American species of *Tipulidae* (Diptera).  
III. The specialized *Eriopterini*: *Rhabdomastix*, *Cryptolabis*,  
*Erioptera*, *Molophilus*, *Styringomyia*, *Toxorhina*, and allies.  
Rev. de Entomologia, 18: 317—360, 32 figs.
- 1947 c Records and descriptions of Neotropical crane-flies  
(*Tipulidae*, Diptera), XXII  
Jour. N. Y. Ent. Soc., 55: 173—184.
- 1948 a Notes on the tropical American species of *Tipulidae* (Diptera).  
IV. The primitive *Hexatomini*: *Paradelphomyia*, *Austrolimnophila*,  
*Epiphragma*, *Lecteria*, *Polymera*, and allies.  
Rev. de Entomologia, 19: 149—190, 33 figs.
- 1948 b Notes on the tropical American species of *Tipulidae* (Diptera).  
V. The specialized *Hexatomini*: *Limnophila*, *Shannonomyia*,  
*Gynoplistia*, *Hexatoma*, *Atarba*, *Elephantomyia*, and allies.  
Rev. de Entomologia, 19: 509—556, 36 figs.
- 1950 Notes on the tropical American species of *Tipulidae* (Diptera).  
VI. The tribe *Limoniini*, genus *Limonia*: Subgenera *Limonia*,  
*Neolimnobia*, *Discobola*, and *Rhipidia*.  
Rev. de Entomologia, 21: 161—221, 42 figs.
- 1951 Notes on the Tropical American species of the genus *Tipula* Linnaeus  
(*Tipulidae*, Diptera). Part IV  
Rev. de Entomologia, 22: 265—314, 24 figs.
- 1952 a New species of crane-flies from South America Part XIV  
(*Tipulidae*, Diptera)  
Ann. Ent. Soc. Amer., 45: 119—135.
- 1952 b Records and descriptions of Neotropical crane-flies  
(*Tipulidae*, Diptera), XXVI  
Jour. N. Y. Ent. Soc., 60: 245—254.
- 1953 Notes on the *Tipulidae* of Ecuador (Order Diptera) Part IV  
Rev. Ecuat. Ent. Par., 1: 77—95, 9 figs.
- 1954 Records and descriptions of Neotropical crane-flies  
(*Tipulidae*, Diptera), XXVIII  
Jour. N. Y. Ent. Soc., 62: 139—152.
- 1957 New or little-known South American crane-flies (Diptera *Tipulidae*)  
Rev. Chilena de Entomologia, 5: 193—204, 10 figs.

Forster, Walter

- 1955 Beiträge zur Kenntnis der Insektenfauna Boliviens. Teil I.  
Lepidoptera I  
Veröffentlichungen Zool. Staatssammlung München, 3: 81—160, 9 pls.



Niethammer, Günther

1953 Zur Vogelwelt Boliviens

Bonner Zoologische Beiträge, 4: 195—303, 43 figs.

## Record of Species

### TIPULINAE

#### 1. *Megistocera longipennis* (Macquart)

*Tipula longipennis* Macquart; Dipt. exot., 1, 1: 57, pl. 5, fig. 11 (venation): 1838

*Tipula tenuis* van der Wulp; Notes Leyden Mus., 7: 7: 1835

*Megistocera longipennis* Alexander; Jour. N. Y. Ent. Soc., 22: 216—217, fig. 5 (venation): 1914

Widespread in tropical and subtropical America, from Florida southward to Brazil and Bolivia, including the Greater Antilles.

Bolivia: Espiritu: Rio Yacuma, 250 meters, April 14, 1954 (Forster).  
Santa Cruz, March 23—25, 1958 (Pinker t).

#### 2. *Brachypremna subevanescens* sp. n.

Size large (wing, female, 22 mm.); mesonotum chiefly dark brown, pleura conspicuously variegated with yellow and dark brown; frontal prolongation of head light yellow above, dark brown on sides; all legs differing in color, tibiae white with a subbasal ring, black and very wide on fore and middle legs, pale brown and subevanescent on hind tibiae; wings tinged with brown, narrowly patterned with pale and darker brown areas; center of stigma pale; no macrotrichia on vein  $Sc_2+R_1$ ; basal abdominal tergites brown, conspicuously variegated with pale yellow on sides; ovipositor with cerci slender.

Female. — Length about 19 mm.; wing 22 mm.

Frontal prolongation of head above light yellow, including the long slender nasus, sides broadly dark brown, narrowly yellowed at base beneath; palpi with proximal three segments light yellow, terminal segment black, the extreme tip slightly paler. Antennae with scape and pedicel light yellow, flagellum black. Head above medium brown, sides of the posterior vertex with slightly more darkened areas.

Pronotum dark brown. Mesonotal praescutum with disk virtually covered by four brown stripes that are narrowly and vaguely margined with slightly darker brown, most evident as capillary intermediate stripes and the internal borders of the broad lateral areas; a diffuse yellowed area on sides behind the humeral region; posterior sclerites of notum dark brown; pleurotergite darkened above, yellowed below. Pleura conspicuously variegated with yellow and dark brown, the latter areas most extensive on the anepisternum. Halteres dark brown, base of stem narrowly yellow. Legs with coxae yellow, patterned with brown; trochanters yellow; fore legs with basal half of femur obscure yellow, passing into black, tips broadly white; tibia white, with a

broad black ring beyond the base, this only a little less extensive than the white tip; middle femur blackened, base narrowly paler, tip white; tibia white with a narrower black subbasal ring, this slightly more than one-half the white tip; posterior femur brownish yellow, narrowly brownish black before the white tip; tibia white with a very narrow pale brown subbasal ring, this only slightly more extensive than the basal white annulus; all tarsi white. Wings (fig. 1) narrow; tinged with brown, weakly patterned; prearcular field and narrow costal border darker than the ground; stigma with center pale, ringed with brown; veins  $R_1 +_5$  and  $M_1$  at margin conspicuously seamed with darker brown, the centers of cells  $R_5$  and  $M_1$  with creamy marginal brightenings; veins brown. Macrotrichia of veins, excepting  $C$ , virtually lacking, as in the genus; sparse microscopic trichia on vein  $Sc_2 + R_1$ . Venation:  $r-m$  obliterated by the punctiform contact or short fusion of veins  $R_1 +_5$  and  $M_1 +_2$ ;  $m-cu$  shortly beyond fork of  $M$ .

Abdominal tergites chiefly dark brown, bases of segments narrowly obscure yellow; lateral borders of basal two segments with broad pale yellow areas, including three on tergite two; sternites pale yellow, with interrupted linear dark brown marks on sides and at the midline, the latter more elongate, narrowly reaching the posterior border. Ovipositor with valves slender, cerci straight, tips obtuse.

**Holotype**, ♀, Cochabamba, Chapare, Locotal, 1200 meters, October 26, 1953 (Martinez).

The most similar regional species include *Brachypremna abitaguae* Alexander, *B. basilica* Alexander, *B. diversipes* Alexander, and *B. karma* Alexander, all differing among themselves in size, details of body coloration, and the pattern of the legs and wings.

### 3. *Longurio* (*Tanypremnella*) *segnipes* Alexander

*Longurio* (*Tanypremnella*) *segnipes* Alexander; Jour. N. Y. Ent. Soc., 61: 148—149; 1953.  
Bolivia: Cristal Mayu, 1200 meters, August 24, 1949 (Peña).

### 4. *Ozodicera* (*Dihexaclonus*) *gracilirama* Alexander

*Ozodicera* (*Dihexaclonus*) *gracilirama* Alexander; Ann. Ent. Soc. Amer., 34: 231—232; 1941.  
Bolivia: Santa Cruz (José Steinbach).

## Holorusia Loew

*Holorusia* Loew; Berlin. Entomol. Zeitsch., 7: 277; 1863.

*Holorusia* is an extensive genus of medium to large crane-flies, with numerous species throughout Tropical America, including Bolivia. Males in the genus show strong specific characters in the hypopygial structure, correlated with antennal differences, coloration of the body and appendages, and venation and vein trichiation of the wings. Females are more difficult to separate yet present numerous characters for their definition. Additional to the more obvious features of coloration, the most important characters appear to be



found in the antennae (coloration, relative proportions of the segments, especially the outer two) and trichiation of the wing veins. While the majority of species have the veins beyond the cord glabrous or essentially so, some species have the macrotrichia more numerous and well distributed.

1. Wings with a darkened area at near midlength of cell M; (wing veins very glabrous). 2  
Wings without such a darkened area. 3
2. Vein  $R_1 + 5$  strongly sinuous at near midlength (fig. 3); bases of cells R and M darkened. *perstrangalia* sp. n.

Vein  $R_1 + 5$  only moderately arcuated; bases of cells R and M scarcely darkened.

*cristalta* Alexander

3. Veins beyond cord with abundant macrotrichia, involving veins  $M_1$  through  $Cu_1$  inclusive. 4  
Veins beyond cord glabrous or with sparse macrotrichia, these lacking on veins behind  $M_1$ . 5
4. Wings strongly tinged with brown, the darker pattern inconspicuous; antennae elongate, yellow, outer two segments darkened; black femoral ring subterminal. *trichoneura* sp. n.  
Wings more yellowed, conspicuously patterned with brown, including areas at arculus, origin of Rs, cord and outer end of cell 1st  $M_2$ ; antennae short, brownish black; black femoral ring terminal. *neurotrichia* sp. n.
5. Antennae with at least the proximal half yellow or brownish yellow. 6  
Antennae with flagellar segments brownish black or else bicolored, brown with yellowed tips. 10
6. Wings brownish yellow, with darkened clouds in bases of cells R and M, outer ends of Anal cells, and as a linear seam extending from outer end of cell M to wing apex along vein  $M_1$ ; (veins yellow; terminal antennal segment darkened). *fassliana* sp. n. 7  
Wings not patterned as above.
7. Antennae yellow, outer three segments black; terminal segment very short, about one-fourth the penultimate or less (fig. 11). *triatra* sp. n. 8  
Antennae not as above; terminal segment one-third the penultimate or more.
8. Wings brownish yellow, almost unpatterned, stigma pale; antennae yellow, outer two segments darkened, terminal segment short (fig. 6). *bisatra* sp. n. 9  
Wings patterned with dark and pale areas, including a dark marking at origin of Rs.
9. Wings with narrow darkened seams over Cu and 2nd A; antennae with outer five segments darkened, terminal segment about two-thirds the penultimate. *cristobtusa* Alexander  
Wings without a darkened seam over Cu or 2nd A; antennae greenish yellow, the terminal segment darkened, about one-half the penultimate (fig. 13). *yungasicola* sp. n.
10. Antennal flagellar segments bicolored, dark brown, tips obscure yellow. *songoensis* sp. n. 11  
Flagellar segments beyond the proximal two or three uniformly brown.
11. Veins of outer two-thirds of wing light yellow; posterior border of wing seamed with brown. *luteivena* Alexander

Veins yellowish brown to brown; no darkening along posterior border of wing.

*forsteriana* sp. n.

##### 5. *Holorusia* (*Holorusia*) *bisatra* sp. n.

Size medium (wing of female 23 mm.); mesonotal praescutum brownish yellow with four dull gray stripes that are narrowly bordered by medium brown; antennae yellow, outer two segments darkened, terminal segment short, less than one-half the penultimate; thoracic pleura yellow with a broad brown stripe; legs brownish yellow, tips narrowly infuscated; wings brownish yellow, stigma very slightly darker, disk very restrictedly patterned with

brown and white; Rs nearly three times  $R_2 +_3$ ; petiole of cell  $M_1$  about one-third m; abdominal tergites blackened, their bases obscure yellow.

**Female.** — Length about 19 mm.; wing 23 mm.; antenna about 3.5 mm.

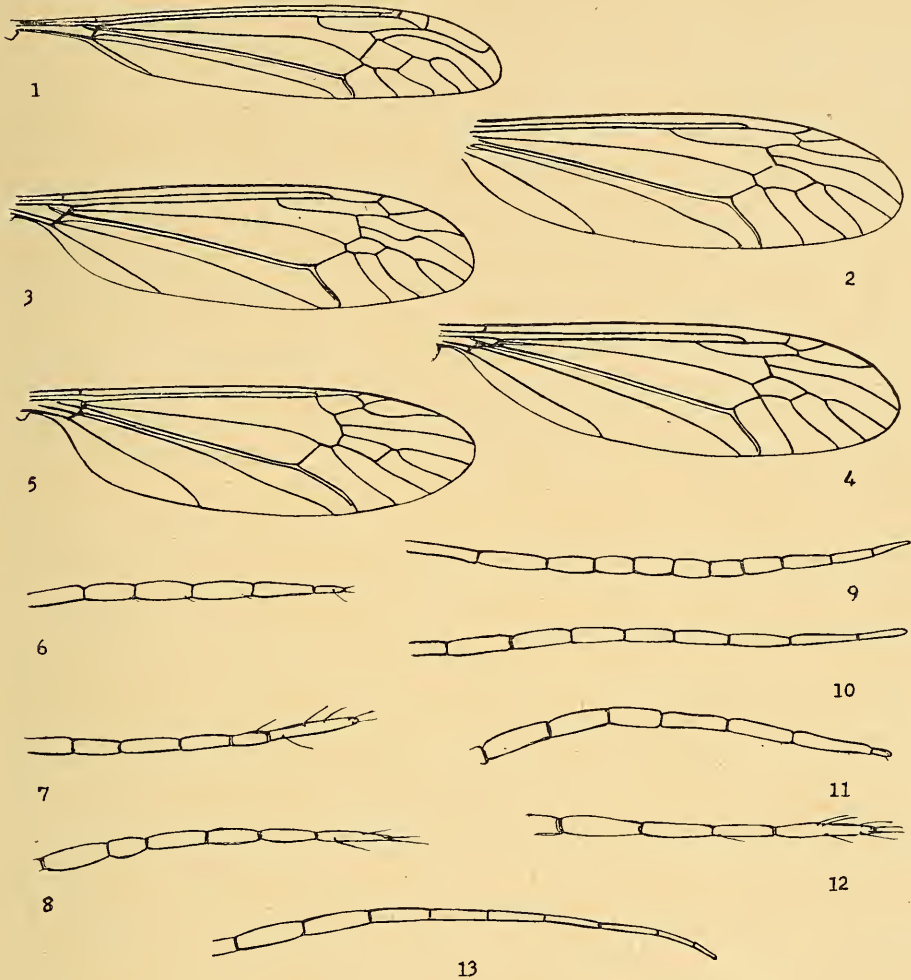
Frontal prolongation of head subequal to remainder, yellow, subnitidous, sides narrowly brown; nasus very long and slender, simple; palpi with basal three segments yellowish brown to light brown, terminal segment dark brown, longer than the preceding ones combined. Antennae (fig. 6) yellow, outer two segments darkened, the elongate penultimate slightly paler at tip, terminal segment less than one-half as long, black; verticils of all segments unusually short and inconspicuous. Head yellow; vertex extensively whitish silvery, anterior vertex with an inconspicuous brown central vitta.

Cervical region light yellow above, weakly darkened on sides. Pronotal scutum yellow, narrowly darkened medially, scutellum and dorsopleural region light yellow. Mesonotal praescutum brownish yellow with four dull gray stripes that are narrowly bordered by medium brown, this becoming obsolete on posterior third of intermediate stripes; scutum obscure yellow medially, lobes with two confluent gray areas that are narrowly and vaguely bordered by pale brown; scutellum gray, with a poorly indicated light brown central line; mediotergite light gray, with a narrow central and broader lateral pale brown areas; vestiture of notum pale but conspicuous, especially on the praescutal interspaces, scutellum and mediotergite. Pleura yellow, with a broad but inconspicuous brown stripe, beginning on the cervical region, crossing the propleura, anepisternum and dorsal pteropleurite. Halteres pale yellow, knob weakly darkened, its tip narrowly paler. Legs with coxae and trochanters yellow; femora obscure brownish yellow, tips narrowly infuscated; tibiae brownish yellow, tips weakly darker; tarsi light brown, darker outwardly. Wings (fig. 2) strongly tinged with brownish yellow, stigma very slightly darker; a small brown spot at origin of Rs and a more diffuse paler brown cloud over basal section of  $M_3$ ; whitened obliterative areas in cell C above the stigma, at anterior end of stigma and on first section of  $M_1 +_2$ ; veins yellow, weakly more darkened in the patterned areas. Macrotrichia on basal two-thirds of  $R_3$ , outer two-thirds of  $R_1 +_5$  and  $M_1$ ; one or two on  $M_2$ , lacking on  $M_3$  and  $M_4$ . Venation: Rs relatively long, nearly three times  $R_2 +_3$ ; vein  $R_3$  only slightly sinuous; petiole of cell  $M_1$  about one-third m; m—cu at two-thirds  $M_3 +_4$ ; cell 2nd A relatively narrow.

Abdomen discolored by enclosed eggs; tergites basally restrictedly obscure yellow, broadly blackened outwardly; sternites brownish yellow. Ovipositor with cerci yellow, straight, compressed, tips narrowly obtuse.

**Holotype**, ♀, Songotal, Cuticucho, ca. 3700 meters, January 29, 1954 (Forster).

In its general appearance *Holorusia* (*Holorusia*) *bisatra* is most similar to *H. (H.) fassliana* sp. n. and *H. (H.) uniata* Alexander, differing in the smaller size, coloration of the body, antennae, legs and wings, and in the antennal structure, notably the short terminal segment.



- Fig. 1 *Brachypremna subevanescens* sp. n.; venation.  
 Fig. 2 *Holorusia (Holorusia) bisatra* sp. n.; venation.  
 Fig. 3 *Holorusia (Holorusia) perstrangalia* sp. n.; venation.  
 Fig. 4 *Holorusia (Holorusia) songoensis* sp. n.; venation.  
 Fig. 5 *Nephrotoma melanoxantha* sp. n.; venation.  
 Fig. 6 *Holorusia (Holorusia) bisatra* sp. n.; female, outer antennal segments.  
 Fig. 7 *Holorusia (Holorusia) fassliana* sp. n.; female, the same.  
 Fig. 8 *Holorusia (Holorusia) forsteriana* sp. n.; female, the same.  
 Fig. 9 *Holorusia (Holorusia) neurotrichia* sp. n.; female, the same.  
 Fig. 10 *Holorusia (Holorusia) trichoneura* sp. n.; female, the same.  
 Fig. 11 *Holorusia (Holorusia) triatra* sp. n.; male, the same.  
 Fig. 12 *Holorusia (Holorusia) uniatra* Alexander; female, the same.  
 Fig. 13 *Holorusia (Holorusia) yungasicola* sp. n.; female, the same.



## 6. *Holorusia* (*Holorusia*) **cristalta** Alexander

*Holorusia* (*Holorusia*) *cristalta* Alexander; Jour. N. Y. Ent. Soc., 54: 296—297; 1946.

Bolivia: Santa Cruz, Buenavista (Francisco Steinbach).

Male hypopygium (fig. 14) with posterior border of tergite, t, with two narrow lobes that are separated by a broad U-shaped emargination, the base of which is slightly produced; margins of lobes with a dense fringe of relatively short stout black setae, all incurved; disk with sparse setae, narrowly lacking on the midline. Outer dististyle, d, unusually long and slender, tapering to a narrowly obtuse point. Inner dististyle with outer crest produced, apex truncated; beak narrowly cultrate; two separate groups of blackened spicules, the outer area larger on a weakly sclerotized plate, the spicules totalling about 75—80; those of the smaller more basal group are concentrated below into a dense band, more separated outwardly. Gonapophysis, g, appearing as a flattened pale blade, the tip obtuse. Penis exerted and exceedingly lengthened.

## 7. *Holorusia* (*Holorusia*) **cristobtusa** Alexander

*Holorusia* (*Holorusia*) *cristobtusa* Alexander; Jour. N. Y. Ent. Soc., 54: 295—296; 1946.

Bolivia: Santa Cruz, Buenavista; Cochabamba, Chaparc, November 1934 (Francisco Steinbach).

Male hypopygium (fig. 15) with the tergite, t, relatively small, posterior border with two triangular lobes separated by a V-shaped emargination; lobes with long black setae, more abundant and concentrated near apex. Outer dististyle, d, relatively small, broad, setae pale, of moderate length. Inner dististyle very large, its area about twice that of the outer style; outer part a thin flattened plate, apex broadly obtuse, surface with short very delicate setae; two separate groups of blackened spicules, the outer area elongate, inwardly tapering to a point, including about 80—85 points; basal group of spicules more scattered, totalling about 100 points. Gonapophysis, g, of either side including two parts, the longer lower blade produced into a point.

## 8. *Holorusia* (*Holorusia*) **fassliana** sp. n.

Allied to *uniatra*, agreeing closely in general coloration, differing evidently in hypopygial structure.

Male. — Length about 22 mm.; wing 26 mm.; antenna about 5.5 mm.

Female. — Length about 22 mm.; wing 28 mm.

Frontal prolongation of head obscure yellow, sides broadly brown; nasus long, simple, with elongate setae; palpi brown, outer half of the long terminal segment dark brown to brownish black. Antennae (fig. 7) yellow, the elongate terminal segment black, in male subequal in length to the penultimate, in the female as figured about two and one-half times as long as the penultimate. Head light brown; vertex thinly light gray pruinose; anterior vertex broad, about five times the diameter of the scape.

Cervical region, pronotum and the very broad dorsopleural region light yellow, contrasting with the brown notum and ventral mesopleura; pronotal scutum broadly infuscated medially. Mesonotal praescutum cinnamon brown with four more grayish stripes that are scarcely differentiated, best indicated by narrow brown margins; posterior interspaces with long yellow setae; scutal lobes yellow with pale brown centers and lateral margins; scutellum brownish yellow, darker basally on either side, parascutella strongly sunken; mediotergite yellowish gray with a very narrow brown central vitta. Pleura as described above, yellow, with a brown stripe from the sides of the cervical region across the propleura and anepisternum onto the pteropleurite, more intense along the dorsal margin. Halteres with stem and apex of knob obscure yellow, base of the latter more darkened. Legs with coxae light yellow, fore pair more darkened at base, all with long yellow setae; trochanters yellow; femora yellowish brown to light brown, tips not or scarcely darker; tibiae yellow, tips infuscated; tarsi brown, outer segments black; claws of male long, bidentate, one tooth basal, the second before midlength. Wings strongly tinged with yellow, vaguely patterned with darker, including pale brown clouds in anterior prearcular field, bases of cells R and M, most of cell 2nd A and adjoining part of 1st A; a longitudinal wash from outer end of cell M to the wing tip, over veins  $M_3$ , m and  $M_1$ , more extensive in bases of cells  $M_1$  and 2nd  $M_2$ ; small similar pale brown marginal dots on veins  $M_2$ ,  $M_3$  and  $M_4$ ; a small dark brown spot at origin of Rs; cells C and Sc slightly darker than remainder of ground; stigma barely differentiated; veins yellow. Numerous macrotrichia on vein  $R_3$ , very sparse and scattered on  $R_1 + \frac{1}{2}$ , lacking on Sc and outer medial veins. Venation: Vein  $R_3$  sinuous on outer third; cell 1st  $M_2$  pointed at outer end; petiole of cell  $M_1$  more than one-half m; m—cu shortly before outer end of  $M_3 + \frac{1}{2}$ .

Abdominal tergites cinnamon brown, darker laterally, sternites more yellowed. Ovipositor with cerci compressed-flattened, outer third more narrowed to the obtuse tips. Male hypopygium (fig. 16) with the tergal lobes, t, broad, their outer lateral angles produced, the entire surface with very abundant stout black setae, chiefly incurved. Outer dististyle, d, very broad, apex obtuse, the greatest width about one-half the length; outer margin broadly reflexed, with numerous setae of different lengths. Inner dististyle a broadly flattened plate, shaped as in figure; beak obtuse; outer margin straight, with long pale setae; outer half of disk with relatively sparse blackened spicules, about 30 in number; lower margin of style near base with a fingerlike lobe that bears two further points; basal half of disk with very long pale setae. Gonapophysis, g, at apex produced into a slender rodlike point.

Holotype, ♂, Songotal, Cuticucho, ca. 3700 meters, February 3, 1954 (Forster). Allotopotype, ♀, with the type.

This attractive fly is named in honor of the brothers Fassl, Anton Herman and Eduard, pioneer insect collectors in Bolivia. The general resemblance of the fly to *Holorusia* (*Holorusia*) *uniatra* Alexander, described from Ayacucho, Peru, is noteworthy. The hypopygial differences, involving espe-

cially the tergite, both dististyles and the gonapophyses, are well marked. I am describing and figuring the hypopygium of the holotype of *uniatra* for comparison. Male hypopygium (fig. 20) with the tergal lobes, t, obtusely rounded, separated by a V-shaped emargination, provided with abundant black setae, the discal ones retrorse, those of the inner apical margin incurved. Outer dististyle, d, relatively short and broad, the margin with a low lobe; setae pale and relatively sparse as compared with *fassliana*. Inner dististyle with apical part provided with about 75–80 blackened points, more abundant posteriorly; lower inner margin of style produced into a point. Gonapophysis, g, broad, its apical point only slightly produced; outer margin near base with a small projection.

### 9. *Holorusia* (*Holorusia*) **forsteriana** sp. n.

Size medium to large (wing of female over 20 mm.); mesonotal praescutum with four dark gray stripes that are narrowly bordered by dark brown; pleura yellowed behind; anteriorly with a blackened longitudinal stripe; outer antennal segments darkened, terminal two blackened, subequal in length; femora dark brown, tip black, preceded by a narrow light yellow ring; wings light brown, restrictedly patterned with dark brown; Rs long, nearly three times  $R_2 + 3$ , cell 1st  $M_2$  relatively small, hexagonal; outer abdominal tergites yellowish brown with three darker stripes, lateral borders silvery white.

*Male*. — Length about 19 mm.; wing 25.5 mm.; antenna about 4.5 mm.

*Female*. — Length about 18–26 mm.; wing 23–33 mm.; antenna about 3.6–4.2 mm.

Frontal prolongation of head brownish yellow, scarcely darker on sides; nasus elongate, simple; palpi with proximal two segments dark brown, outer ones more yellowish brown, outer half of terminal segment dark brown. Antennae (fig. 8) with scape light brown, pedicel and proximal two or three flagellar segments dull orange, outer segments dark brown, extreme tips vaguely paler; terminal two segments blackened, subequal or the outer one a little longer. Head dark cinnamon brown, variegated with gray areas on posterior vertex and very narrowly on orbits.

Cervical sclerites brownish black. Pronotal scutum chiefly yellow, narrowly darkened medially, scutellum and pretergites yellow. Mesonotal praescutum light brown with four dark gray stripes that are narrowly bordered by dark brown, the inner borders of intermediate stripes confluent to form a broader brown central vitta, posterior interspaces more buffy; scutum light gray, each lobe with two confluent dark gray areas; scutellum light brown, restrictedly light gray at base, central area narrowly darkened; mediotergite almost uniformly brownish gray, the anterolateral part yellowed; pleurotergite light brown above, more yellowed ventrally; vestiture of praescutum relatively short, of scutellum, mediotergite and anapleurotergite much longer. Pleura gray, yellowed behind, dorsally with a narrow brownish black stripe, most evident in front. Halteres brown, base of stem yellowed, knob brownish



yellow. Legs with coxae brown, trochanters more brownish yellow; femora dark brown, extreme base yellowed, tip black, preceded by a slightly narrower light yellow ring; tibiae light brown, base narrowly yellowed, tip narrowly brownish black; tarsi dark brown, outer segments black. Wings light brown, restrictedly patterned with dark brown, including the prearcular field, extreme bases of cells R and M, origin of Rs, cord and outer end of cell 1st  $M_2$ , the latter extended distad over fork of  $M_1 +_2$ ; stigma brown, its center paler brown; in some cases a slightly darker cloud in outer half of cell  $R_3$ ; costal border somewhat clearer yellow; narrow whitened obliterative areas from costa before cord into cell 1st  $M_2$ ; veins brown, more intense in the darker areas, whitened in the obliterative parts. Macrotrichia on  $R_3$ , sparse on distal ends of  $R_4 +_5$  and  $M_1$ . Venation: Rs long, nearly three times  $R_2 +_3$ ; cell 1st  $M_2$  hexagonal, relatively small; petiole of cell  $M_1$  subequal to m; m—cu at near midlength of the angular  $M_3 +_4$ .

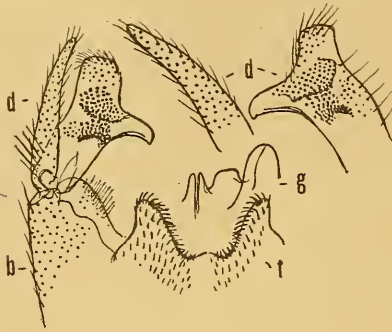
Basal abdominal tergite yellowed, second brown, succeeding segments more yellowish brown with three darker brown stripes, the sublateral pair broader, lateral tergal borders conspicuously yellowed, on outer segments becoming silvery white, narrower but conspicuous, especially on proximal half of segment; sternites more yellowed, posterior margins narrowly pale, subterminal segment blackened. Ovipositor with cerci slender, tips narrowly obtuse.

Male. Characters as in the female type, as described, differing in some respects, chiefly sexual. Coloration of antennae and proportions of outer flagellar segments the same. Vertex with a capillary brownish black central line. Darkened pleural stripe widened behind. Claws elongate, with a slender spine at extreme base and a low obtuse enlargement at near midlength. Wings less heavily patterned with brown, especially in outer medial field. Trichia of veins nearly as in female, somewhat more abundant on  $R_3$ , scattered on  $R_4 +_5$ , with a few on outer third of  $M_1$ .

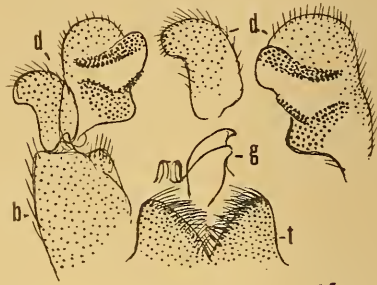
Male hypopygium (fig. 17) with tergite, t, broad, posterior end with a very shallow emargination, at midline deeply split by a narrow notch; margins of lobes with stout incurved setae, those near midline longer. Outer dististyle, d, very broad, tip unusually obtuse to subtruncate, length slightly less than twice the width; setae long but pale and very delicate. Inner style with numerous blackened spicules, arranged about as in figure; crest of style very low, beak narrowly obtuse at tip. Phallosome, p, complex, about as illustrated (one-half figured).

Holotype, ♀, Songotal, Cuticuecho, ca. 3700 meters, December 3, 1953 (Forster). Allotype, ♂, Illimani, Westhang, 4500—5000 meters, April 11, 1950 (Forster). Paratopotypes, 3 ♀♀, with the type, December 3, 1953—January 31, 1954 (Forster).

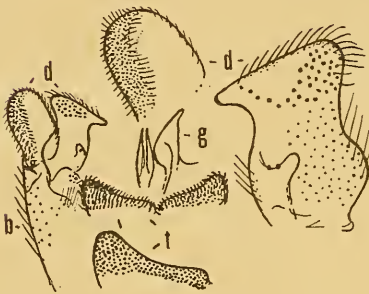
I take great pleasure in naming this conspicuous fly for Dr. Walter Forster, distinguished student of the Lepidoptera, collector of many of the *Tipulidae* considered in this report. The fly is distinguished from other regional allies by the coloration of the antennae, legs and wings, as indicated in the key to the females of the genus given earlier.



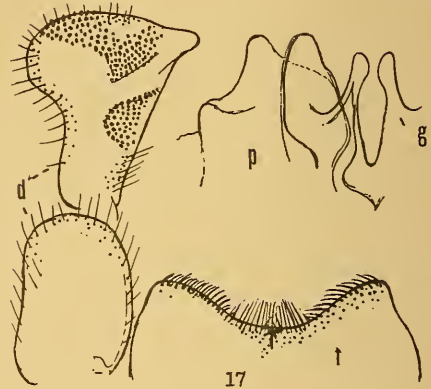
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Fig. 14 *Holorusia (Holorusia) cristalta* Alexander; male hypopygium.

Fig. 15 *Holorusia (Holorusia) cristobtus* Alexander; male hypopygium.

Fig. 16 *Holorusia (Holorusia) fassliana* sp. n.; male hypopygium.

Fig. 17 *Holorusia (Holorusia) forsteriana* sp. n.; male hypopygium.

(Symbols: b, basistyle; d, dististyle; g, gonapophysis; p, phallosome; t, tergite)

# 10. *Holorusia (Holorusia) luteivena* Alexander

*Holorusia (Holorusia) luteivena* Alexander; Jour. N. Y. Ent. Soc., 54: 293—294; 1946.

Bolivia: Cochabamba, Chapare, November 1934 (Francisco Steinbach).

Topotype, ♂, km. 104, 3150 meters, February 1959 (Martinez).

The topotype agrees closely with the type, especially in structure of the hypopygium. The wing pattern is heavier, including conspicuous darkenings in the anal cells and outer cubital and medial cells, while the darker brown area at origin of Rs is larger. Male hypopygium (fig. 18) with posterior border of tergite, t, four-lobed, each half having a slender outer lobe and a low broad mesal one, the two sides separated by a V-shaped notch; margins of all lobes with short black spinoid setae, those of the low inner lobes dense, slightly incurved. Outer dististyle, d, broad, outer margin with abundant long dark setae, outer half with a low rounded flange, the inner margin of the apical cap with a series of triangular teeth. Inner dististyle with beak stout; blackened spicules arranged about as shown, mostly concentrated on an irre-



gular or dendroidal arm on the disk. Gonapophysis, g, broad, conformation distinctive, as shown; apex unequally bilobed, the lower lobe broadly obtuse.

#### 11. *Holorusia* (*Holorusia*) ***neurotrichia*** sp. n.

Size large (wing of female about 24 mm.); mesonotal praescutum light brown, with four conspicuous stripes; antennal flagellum dark brown, apices of the more proximal segments obscure yellow, terminal segment elongate; femora brownish yellow, tips blackened; wings yellowish gray, conspicuously patterned with brown, including especially the cord and adjacent veins; veins beyond cord with conspicuous macrotrichia, including all veins from  $R_2 + 3$  to distal section of vein  $Cu_1$ ; abdomen with segments conspicuously bicolored, disk yellowed, the margins brown.

*Female*. — Length about 20 mm.; wing 24.5 mm.; antenna about 3 mm.

Frontal prolongation of head above light brown, more yellowed on sides; nasus long and slender; palpi brownish black (terminal segment broken). Antennae (fig. 9) with scape light brown, pedicel yellowed; flagellum dark brown, the apices of the more proximal segments vaguely yellowed, those of outer half of flagellum more uniformly darkened; first flagellar segment elongate, slightly longer than the combined second and third; terminal segment elongate, only a little shorter than the penultimate, narrowed gradually to the subacute tip. Head with vertex darkened, anterior vertex and orbits light brown.

Pronotal scutum brown, sides narrowly yellow; scutellum testaceous yellow. Mesonotal praescutum with ground light brown, conspicuously patterned, including two narrow intermediate brownish gray stripes that are bordered by darker brown, their internal borders producing a broad double central vitta; sublateral stripes more grayish, internal border darker but narrower than the lateral darkening, humeral and lateral margins dark brown; scutum brownish gray, each lobe with two darker gray areas that are bordered anteriorly by brown; scutellum and mediotergite gray, with a brown central line, posterior part of mediotergite more yellowed; pleurotergite brown, katapleurotergite with a dorsal elevation that is yellow pollinose; vestiture of mesonotum long and conspicuous, pale. Pleura brownish gray, propleura, anepisternum and dorsal pteropleurite darker to form a broad vague stripe; dorsopleural membrane yellow; ventral pleurites paler brown, sternopleurite yellowed. Halteres with stem dark brown, its base obscure orange, apex of knob obscure yellow. Legs with all coxae light brown, with long pale setae; trochanters brown; femora brownish yellow, tips broadly blackened; tibiae and basitarsi yellowish brown, tips narrowly and inconspicuously more darkened, remainder of tarsi black. Wings with ground yellowish gray, clearer yellow in cells C and  $Sc$ ; a conspicuous brown pattern, including areas in bases of cells R and M, origin of  $Rs$ , and as a broad seam over the entire extent of the cord and adjacent veins; stigma dark brown; paler brown washes at midlength of cell  $R_3$  and as narrow seams over the outer veins, around the wing margin, and as a conspicuous darkening along vein 2nd A in cell 1st A; Anal cells

suffused, with whitened marginal areas along vein 1st A and near the anal portion of cell 1st A, close to vein 2nd A; other whitenings in bases of cells  $M_1$ , 2nd  $M_2$  and  $M_3$ ; arculus whitened; oblitative area before stigma not connected with those at cell 1st  $M_2$ ; veins brown, more brownish yellow in costal field. Longitudinal veins with unusually developed macrotrichia, beyond cord including  $R_2+3$ ,  $R_3$ ,  $R_4+5$  and all but the bases of all outer Medial veins and distal section of  $Cu_1$ . Venation: Vein  $M_2$  strongly bent at origin;  $m-cu$  at or beyond midlength of  $M_3+4$ . In one wing of type the central part of outer section of vein  $M_3$  is atrophied, normal in the opposite wing.

Abdomen with tergites conspicuously bicolored, the disk extensively obscure yellow, the lateral and posterior borders broadly dark brown, with further indications of a central line, most evident on the first and second tergites and again on the subterminal ones; sternites yellowed, darkened medially, more extended on posterior part, extreme caudal border pale; eighth segment uniformly darkened.

Holotype, ♀, La Paz Umgebung, 3600—4000 meters, August 8, 1953 (Forster).

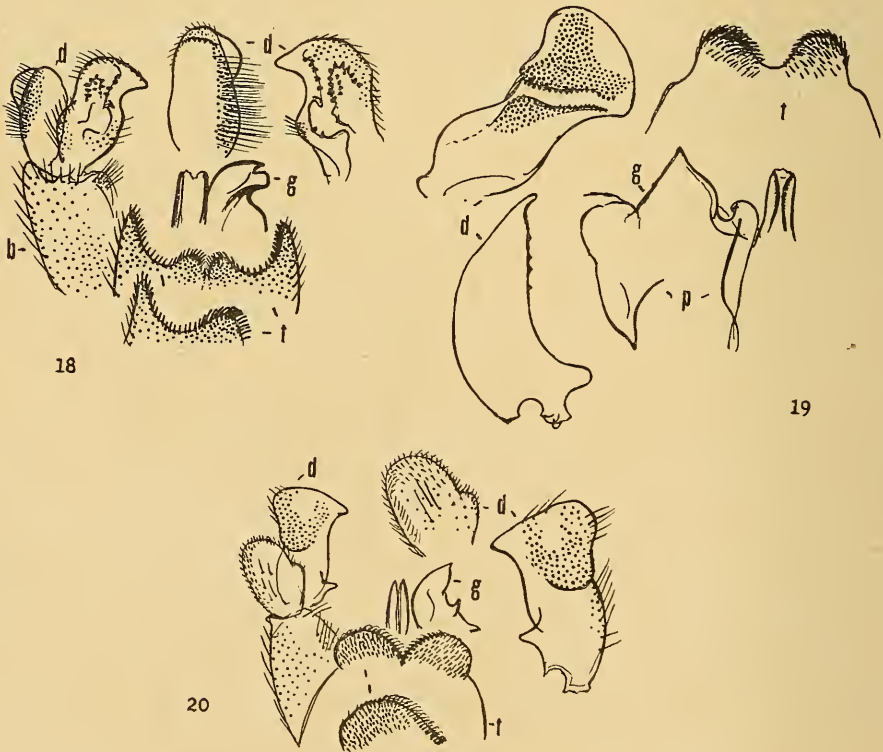


Fig. 18 *Holorusia (Holorusia) luteivena* Alexander; male hypopygium.

Fig. 19 *Holorusia (Holorusia) triatra* sp. n.; male hypopygium.

Fig. 20 *Holorusia (Holorusia) uniatra* Alexander; male hypopygium.

(Symbols: b, basistyle; d, dististyle; g, gonapophysis; p, phallosome; t, tergite)

*Holorusia (Holorusia) neurotrichia* evidently is allied to other large species, especially to *H. (H.) forsteriana* sp. n., being well distinguished by the wing pattern and especially the unusual degree of trichiation of the wing veins. This is somewhat comparable to the condition in the otherwise distinct *H. (H.) trichoneura* sp. n. It should be emphasized that most species of *Holorusia* have the vein trichia greatly reduced or lacking.

## 12. *Holorusia (Holorusia) perstrangalia* sp. n.

Allied to *strangalia*; general coloration of mesonotal praescutum pale brown with four obscure orange stripes, most evident on the posterior half, pleura clear yellow; antennal flagellum vaguely bicolored, outer two segments subequal in length; wings whitened on disk, very conspicuously patterned with pale brown and darker brown, outer end of cell R whitened; cell R<sub>3</sub> strongly constricted at midlength; abdomen reddish brown, tergites trivittate with pale brown; ovipositor with cerci broadly compressed-flattened.

Female. — Length about 18 mm.; wing 19 mm.; antenna about 3 mm.

Frontal prolongation of head light brown; nasus slightly darker, elongate, slender; palpi black, terminal segment obscure orange. Antennae with scape elongate, obscure yellow, pedicel light yellow; flagellar segments very vaguely bicolored, bases light brown, the outer third or less vaguely yellowed, the amount of the latter color decreasing on the outer segments, terminal four segments uniformly darkened; terminal segment nearly as long as the penultimate. Head brown, orbits narrowly grayish; a very faint brown central line and similar suborbital darkenings on the posterior vertex.

Pronotal scutum light brown, anterior border and a vague median line darker brown. Mesonotal praescutum with the ground interspaces pale brown, disk with four obscure orange stripes, most evident on the posterior half, the intermediate pair separated by a capillary brown line that barely reaches the suture, lateral praescutal borders pale brown; scutum light brown, lobes vaguely patterned with obscure orange, the posterolateral parts produced; scutellum and mediotergite pale yellowish brown, with microscopic yellow setae. Pleura and pleurotergite yellow; dorsopleural membrane slightly more darkened. Halteres with stem pale brown, base narrowly yellow, knob weakly infuscated. Legs elongate; coxae and trochanters pale yellow; femora obscure yellow, tips narrowly and vaguely darkened; tibiae slightly more brownish yellow, tips narrowly more darkened, tarsi passing into brown. Wings (fig. 3) with the restricted central area whitened, the remainder patterned with pale brown and darker brown; the paler brown areas include the posterior third of wing, involving most of the outer medial field and anal cells; prearcular and costal fields, with the stigma, uniformly brown; the darkest brown marks include the basal fourth or less of cell M<sub>1</sub>, with a comparable area at near midlength of cell; darkened clouds at origin of Rs, cord, m—cu and distal section of Cu<sub>1</sub>; outer radial field chiefly darkened; bases of cell Cu and the Anals whitened; restricted oblitative areas before stigma and across cell 1st M<sub>2</sub>, involving also the outer end of cell R; veins brown. Veins



unusually glabrous, including those beyond cord except in the costal and subcostal areas. Venation:  $R_s$  about one-half longer than  $m-cu$ ;  $R_3$  slightly arcuated;  $R_4+5$  very strongly and suddenly bent cephalad, abruptly narrowing cell  $R_3$  at near midlength; petiole of cell  $M_1$  about twice  $m$ ;  $m-cu$  at near midlength of  $M_3+4$ .

Abdomen reddish brown, beyond the second segment tergites trivittate with pale brown, the central stripe broadly interrupted at posterior borders of segments, lateral stripes more continuous. Ovipositor with cerci broadly compressed-flattened, tips obtuse; hypovalvae very reduced.

**Holotype**, ♀, Buenavista, Santa Cruz, 1930 (Francisco Steinbach).

*Holorusia (Holorusia) perstrangalia* is most similar to *H. (H.) strangalia* Alexander, of Venezuela, which has the wing pattern and venation generally the same but differing evidently in details. The antennal structure differs in the two species.

### 13. *Holorusia (Holorusia) songoensis* sp. n.

Size relatively small (wing of female to 19 mm.); general coloration gray, mesonotum patterned with brown, including four praescutal stripes and a central vitta on the posterior sclerites; pleura with a conspicuous dark brown stripe; femora light brown, tips brownish black; wings faintly tinged with brown, vaguely striped longitudinally with darker, appearing chiefly as narrow seams to the veins; basal abdominal tergites with three brown stripes, outer tergites with bases buffy yellow, apices broadly dark brown, lateral tergal borders light gray.

**Female**. — Length about 15–16 mm.; wing 17.5–19 mm.; antenna about 3–3.1 mm.

Frontal prolongation of head medium brown, slightly gray pruinose above at base; nasus very long, slender; palpi black, the incisures pale. Antennae with scape short, brownish yellow, pedicel light yellow; first flagellar segment light brown, segments two to four black, the apices narrowly obscure yellow, the amount of this decreasing on outer segments which pass into uniform brownish black; basal flagellar segments long-cylindrical, outer ones shorter, terminal segment abruptly shorter and narrower, about one-third the penultimate. Head brown, gray pruinose; a conspicuous brownish black central line on vertex.

Pronotal scutum brown, patterned with black medially and on posterior border; scutellum light brown. Mesonotal praescutum with the ground light brown, the posterior interspaces light gray; disk with four darker gray stripes that are narrowly margined with brown, the inner borders of the intermediate pair more brownish black, confluent or virtually so, the median vitta thus formed narrowed posteriorly into a capillary line, lateral praescutal borders broadly dark brown; scutal lobes restrictedly brown on sides, internally light gray, including a smaller isolated anterior area; scutellum and mediotergite gray, with a capillary dark brown central vitta, the latter further infuscated laterally, parascutella brown; katapleurotergite pale, conspicuously

silvery pruinose. Pleura with a broad dark brown longitudinal stripe extending from the cervical region across the propleura, anepisternum, dorsal pteropleurite and ventral pleurotergite, ventral sclerites less evidently patterned with brown; dorsopleural membrane pale yellow. Halteres light brown, knobs slightly darker with pale tips. Legs with anterior fascies of coxae very light brown, paler behind and at tips; trochanters obscure yellow, fore pair slightly darker anteriorly; femora light brown, tips brownish black, preceded by a very vague paler ring; tibiae dark brown, extreme bases paler; tarsi dark brown to black. Wings (fig. 4) faintly tinged with brown, restrictedly patterned with darker brown, chiefly as relatively narrow seams along the veins to produce a longitudinally streaked appearance; prearcular and costal fields more yellowed; small brown spots at tip of Sc and origin of Rs; a whitened marginal area in cell 1st A near vein 2nd A; veins brown, C and Sc more yellowed. Macrotrichia on vein  $R_3$  and outer half of  $R_1 +_5$  and  $M_1$ ; four circular pits on vein Sc beyond h. Venation:  $R_1 +_2$  strongly upcurved, cells  $R_3$  and  $R_5$  at margin subequal; petiole of cell  $M_1$  shorter than m, in the type less than one-half as long.

Abdominal tergites bicolored; proximal two segments with a broad brown median stripe, sublaterally more broadly brown, lateral borders light gray; third and following tergites buffy yellow basally, the apices broadly dark brown, including approximately the outer half, lateral borders conspicuously gray; sternites light yellowish brown, posterior borders narrowly darker. Ovipositor with dorsal shield light brown; cerci yellow, flattened.

**Holotype**, ♀, Songotal, Cuticucho, ca. 3700 meters, February 2, 1954 (Forster). **Paratopotypes**, 3 ♀♀, December 3, 1953; January 28, February 1, 1954 (Forster).

*Holorusia (Holorusia) songoensis* is very similar to *H. (H.) peruviana* Alexander, differing especially in details of coloration, venation and vein trichiation.

#### 14. *Holorusia (Holorusia) triatra* sp. n.

Size medium (wing of male 19 mm.); mesonotal praescutum light brown, with four scarcely differentiated stripes that are bordered by darker brown; pleura with a conspicuous dark brown longitudinal stripe, dorsopleural membrane yellow, its posterior end darkened; femora dark brown, tips blackened, in male preceded by a vague yellowed subterminal ring; tibiae brownish black, base narrowly whitened; claws of male bidentate; wings strongly tinged with yellowish brown, restrictedly patterned with darker brown and yellowed areas; abdomen with basal segments yellow, indistinctly patterned with brown, outer segments extensively dark brown with yellowed bases; male hypopygium with the tergite bilobed, provided with conspicuous black setae; outer dististyle relatively narrow, terminating in a slender point.

**Male**. — Length about 16 mm.; wing 19 mm.; antenna about 4.4 mm.

**Female**. — Length about 19 mm.; wing 22 mm.

Frontal prolongation of head medium brown; nasus elongate; palpi black, the incisures narrowly whitened, terminal segment elongate, subequal in length to the remainder. Antennae (fig. 11) with proximal four or five segments yellow, succeeding ones more brownish yellow with narrow yellow tips, outer three segments abruptly black; terminal segment very small, oval, its length scarcely one-fifth to one-sixth the penultimate. Head above restrictedly obscure yellow on central part, posterior vertex broadly chestnut brown, the sides of the very small yellow vertical tubercle similarly colored.

Pronotal scutum yellow, the central area broadly dark brown, the sides more narrowly so; scutellum pale yellow. Mesonotal praescutum light brown, with four scarcely differentiated stripes that are bordered by darker brown, the central dark line broader, lateral margins broadly dark brown; posterior ends of praescutal interspaces restrictedly yellow, isolating two small more yellowed spots at the suture; scutum light brown, each lobe with two very slightly more yellowish brown areas, the cephalic border, at the suture, brownish black; scutellum light brown, with long yellow setae; mediotergite with three brown areas, the lateral ones broad, median line narrow, more expanded at near midlength, the pale ground including most of the posterior half and conspicuous lateral spots; anapleurotergite pale brown, the anterior end more yellowed, katapleurotergite with posterior upper part brownish black, the more extensive dorsal portion light yellow pollinose, ventral part of sclerite obscure yellow. Pleura brownish yellow, with a broad dark brown longitudinal stripe extending from the cervical region across the ends of the pronotal scutum, back to the dorsal pteropleurite; dorsopleural membrane broadly light yellow, its posterior end dark brown, ventral pleurites more testaceous yellow. Halteres light brown, base of stem narrowly yellowed, in female apex of knob slightly brightened. Legs with coxae brownish yellow, fore pair slightly darker, posterior coxae clearer yellow, all with long yellow setae; trochanters obscure yellow; femora dark brown, tip broadly black, preceded by a narrower obscure yellow ring; tibiae brownish black, base narrowly whitened; tarsi brownish black; claws of male elongate, bidentate; in the female, femora paler, more brownish yellow, remainder of legs about as in male; claws simple. Wings strongly tinged with yellowish brown, restrictedly patterned with darker brown and yellowed areas; dark pattern including small spots at arculus, origin of Rs and above the outer end of Sc; stigma extensively darkened; inconspicuous cream-colored spots in outer end of cells  $R_5$  and  $M_1$ , and in bases of cells  $M_1$  and 2nd  $M_2$ ; whitened obliterative areas include an elongate costal line above the stigma and a small prestigmal mark; pale lines at cell 1st  $M_2$  almost restricted to the veins; veins brown. Sc and R more yellowed. Veins virtually glabrous, beyond the cord with a few scattered trichia on  $R_3$  and  $R_4+5$ . Venation: Petiole of cell  $M_1$  shorter than m.

Abdomen of male with basal segments yellow, indistinctly patterned with brown; fourth to eighth segments extensively dark brown, the bases narrowly yellowed, with traces of a darkened central spot; hypopygium yellowed. In female, abdomen beyond base more darkened, tergites with pale posterior



borders. Male hypopygium (fig. 19) with the tergite, t, relatively small, very slightly narrowed outwardly, terminating in two obtuse lobes that are separated by a broad U-shaped emargination; summit of lobes with abundant appressed black setae that are directed mesad. Outer dististyle, d, relatively narrow, terminating in a slender point; outer part of inner margin microscopically crenulate or toothed. Inner dististyle larger, beak obtuse, outer crest more broadly so; style with two areas of abundant blackened spicules, distributed about as in figure. Phallosome, p, with gonapophysis, g, yellow, appearing as a broad triangular plate, the posterior end pointed.

Holotype, ♂, Cochabamba, Chapare, km. 104, February 14, 1959 (Martinez). Allotopotype, ♀, with the holotype.

*Holorusia* (*Holorusia*) *triasatra* belongs to a group of species having the wings darkened, inconspicuously patterned, and with darkened veins, and with the antennae yellowed basally, with one or more outer segments blackened. The three darkened outer flagellar segments, wing pattern, and structure of the male hypopygium, separate the present fly from other similar species, including *H. (H.) bisatra* sp. n., *H. (H.) calypso* Alexander, *H. (H.) juturna* Alexander, and some others.

#### 15. *Holorusia* (*Holorusia*) *trichoneura* sp. n.

Size large (wing of female nearly 25 mm.); mesonotal praescutum light brown with four scarcely differentiated stripes that are conspicuously margined with darker; antennae yellow, outer two segments vaguely darkened, terminal segment a little shorter than the penultimate; femora obscure yellow, with a narrow brownish black subterminal ring; wings strongly darkened, restrictedly patterned with still darker brown and pale areas; veins beyond cord with macrotrichia, including veins  $R_1 +_2$  to  $Cu_1$  inclusive; abdominal tergites dark brown, lateral borders pale; ovipositor with cerci relatively slender.

Female. — Length about 22 mm.; wing 24.5 mm.; antenna about 4.3 mm.

Frontal prolongation of head obscure yellow, narrowly more darkened outwardly and on sides; nasus long and slender; first segment of palpus blackened except at tip, second and third segments light brown, terminal segment elongate, black. Antennae (fig. 10) yellow, scape and outer two segments weakly darkened; flagellar segments elongate, terminal segment a little shorter than the penultimate. Head chestnut brown, with a narrow yellow central stripe extending from between the antennal bases over the very low to scarcely evident vertical tubercle, more expanded on occiput; vestiture of vertex black, very small, on the genae long and conspicuous.

Pronotal scutum brownish yellow, darkened medially behind, scutellum light yellow. Mesonotal praescutum with the ground light brown, with four scarcely differentiated stripes that are well-delimited by broad darker brown margins, lateral and humeral regions broadly dark brown; scutum grayish brown, lobes with confluent brown areas that are narrowly bordered by darker brown; scutellum and postnotum yellowish brown, mediotergite with a

vague darker central line; vestiture of praescutal interspaces short and sparse, longer on scutum, scutellum, mediotergite and anapleurotergite, the last obscure yellow; katapleurotergite tumid, chiefly light yellow, silvery pollinose, posterior end infuscated. Pleura above broadly dark brown, including the sides of the cervical region, propleura, anepisternum and dorsal pteropleurite; dorsal sternopleurite less evidently lined with brown, ventral sclerites yellow; dorsopleural membrane obscure yellow, with a darkened spot at the anterior spiracle. Halteres elongate, pale brown, base of stem yellowed, knob obscure orange. Legs with fore coxae brownish castaneous, mid-coxa less evidently darkened, posterior pair more yellowed; trochanters brownish yellow; femora obscure yellow with a relatively narrow brownish black subterminal ring, the apex more narrowly yellowed; tibiae brown, base narrowly paler, apex vaguely darker; tarsi dark brown. Wings strongly darkened, restrictedly patterned with still darker brown and cream colored areas; small dark areas at arculus, origin of Rs and as a vague seam at posterior end of  $m-cu$ ; stigma darker brown; costal region somewhat clearer yellow; cream colored areas occur as spots in bases of cells  $M_1$ , 2nd  $M_2$  and  $M_3$  and as a marginal dash in cell 1st A near vein 2nd A; vein 1st A narrowly bordered by yellow; whitened obliterative streaks behind C and before stigma and on basal sections of  $M_{1+2}$  and  $M_3$ , the first very extensive; veins brown, Sc and R more yellowed. Longitudinal veins beyond cord with conspicuous trichia, on  $R_{1+2}$  and distal ends of all outer veins through the outer section of  $Cu_1$ , lacking on all veins comprising cell 1st  $M_2$ ; none on Rs or Anals excepting a long series at base of 2nd A, chiefly prearcular. Venation: Petiole of cell  $M_1$  shorter than  $m$ ;  $m-cu$  at or close to fork of  $M_3+4$ .

Basal abdominal tergites dark brown, outer ones paler brown, lateral borders broadly yellowish gray; sternites chiefly chestnut yellow, lateral parts darker; genital segment more uniformly castaneous. Ovipositor with cerci light yellow, long and relatively slender, straight.

Holotype, ♀, Songotal, Cuticuecho, ca. 3700 meters, January 28, 1954 (Forster).

In the wing coloration, *Holorusia* (*Holorusia*) *trichoneura* is most similar to *H. (H.) triatra* sp. n., which differs in all details of coloration of the body, antennae and legs, and in the trichiation of the wing veins. In the latter regard the fly is more like *H. (H.) neurotrichia* sp. n., an otherwise distinct species. Attention is called in the present fly to the more abundant trichia at the base of vein 2nd A, including some at the interanal crossvein.

## 16. *Holorusia* (*Holorusia*) ***yungasicola*** sp. n.

Size relatively large (wing of female 22 mm.); mesonotal praescutum brownish yellow with four similar stripes that are delimited by pale brown borders; pleura yellowed, with a relatively narrow dorsal longitudinal stripe; tip of last palpal segment pale; antennae greenish yellow, terminal segment slightly darker, more than one-half the penultimate; femora yellow, tips



conspicuously blackened, narrowest on hind femora; wings very light brown, restrictedly patterned with darker brown and yellow; veins unusually glabrous.

*Female*. — Length about 19 mm.; wing 22 mm.; antenna about 3.9 mm.

Frontal prolongation of head light brown, dark brown on lower half, yellowed below; nasus slender, narrowed outwardly, tufted with long black setae; palpi black, outer third of terminal segment brownish orange. Antennae (fig. 13) with scape and pedicel yellow, flagellum light greenish yellow, terminal segment a little darker, more than one-half the length of the penultimate. Head above buffy yellow, more brownish gray on sides of posterior vertex, with faint indications of a capillary darkened central vitta.

Pronotum light yellow, scutum broadly dark brown medially. Mesonotal praescutum with the ground brownish yellow, with four scarcely differentiated stripes that are delimited by pale brown borders, the median dark line indistinctly broken by paler; lateral praescutal margins weakly darkened; scutum yellow, each lobe with two brownish yellow areas that are bordered by pale brown, median area behind the suture similarly darkened; scutellum weakly infuscated, pale posteriorly; mediotergite whitened, with three vague pale brown areas; pleurotergite chiefly yellowed, darker posteriorly, especially on the katapleurotergite. Pleura chiefly yellow, including the broad dorsopleural region; a relatively narrow brown longitudinal stripe, most intense on the cervical region, continued backward over the propleura, dorsal anepisternum, fainter on the dorsal pteropleurite; ventral pleurites very vaguely darkened, becoming white pruinose on the sternopleurite. Halteres broken. Legs with coxae light yellow, fore pair a little darkened at base; trochanters yellow; femora yellow, tip conspicuously blackened, a little more extensive on fore legs, narrowest on the posterior pair; tibiae light brown, more yellowed basally; tarsi brownish black to black. Wings very light brown, restrictedly patterned with darker brown and yellowed areas, the former including small darkenings at arculus, origin of  $R_s$ , basal section of vein  $M_3$  and posterior end of  $m-cu$ ; cell C more yellowed, darkened at outer end, cell Sc uniformly pale brown; yellowed areas most evident before and beyond origin of  $R_s$ , near outer end of cell M, along outer end of vein 1st A, near vein 2nd A, and in the bases of cells Cu and 1st A; oblitative areas include a linear subcostal line above the stigma, with small unconnected marks before stigma and at base of cell 1st  $M_2$ ; veins pale brown, more yellowed in the brightened portions, including the prearcular and costal fields. Veins unusually glabrous, beyond the cord with a broken series on  $R_3$ , lacking on all veins behind this; a few trichia on prearcular part of 2nd A. Venation: Petiole of cell  $M_1$  a little shorter than  $m$ ;  $m-cu$  beyond midlength of  $M_3+4$ .

Abdominal tergites reddish brown, lateral borders yellowed, posterior margins slightly darker brown; sternites yellow, lateral parts more infuscated, posterior margins clearer yellow. Ovipositor with cerci yellow, narrowed outwardly.

*Holotype*, ♀, Coroico, Yungas, 1900 meters, June 4, 1950 (Forster).

*Holorusia (Holorusia) yungasicola* is distinguished from other generally similar species by the combination of yellow antennae, conspicuously blackened femoral tips, unusually glabrous wing veins, and the wing pattern. Its general position among such species is shown by the key provided earlier in this report.

### 17. *Nephrotoma boliviana* Alexander

*Nephrotoma boliviana* Alexander; Jour. N. Y. Ent. Soc., 55: 174—175; 1947.

Bolivia: Cochabamba, Chapare, November 1930 (Francisco Steinbach).

Two records of occurrence of members of this genus in Bolivia are not confirmed. *Nephrotoma consularis* (O. S., 1886) was reported from Coroico, taken by Fassel (Alexander, Ent. News, 25: 362; 1914). *Nephrotoma* sp., near *elegans* (Fabricius) was recorded from the Upper Pilcomayo River, taken May 1926, by Erwin Lindner (Alexander, Konowia, 12: 41; 1933).

### 18. *Nephrotoma melanoxantha* sp. n.

General coloration black and yellow; mesonotal praescutum chiefly covered by three blackish plumbeous stripes; frontal prolongation of head and the mediotergite yellow; femora yellow, tips blackened, broadest on fore legs; wings brownish yellow, prearcular and costal fields clearer yellow; stigma brown, conspicuous, with abundant macrotrichia, these lacking in outer wing cells; basal abdominal segments yellow, outer ones black.

Female. — Length about 15—16 mm.; wing 13—14 mm.; antenna about 3.4—3.6 mm.

Frontal prolongation of head yellow; nasus elongate; first segment of palpus brown, remainder black. Antennae relatively short; scape yellow, its outer third black, remainder of antenna black; flagellar segments weakly enlarged basally, slightly longer than the verticils. Head orange, more yellowed in front, with a small blackened spot adjoining eye at base of the low vertical tubercle; occipital brand large, obtuse, plumbeous, bordered anteriorly by black; vestiture of vertex black, short but abundant, long and conspicuous on genae.

Pronotum black, scutum broadly yellow medially. Mesonotal praescutum chiefly covered by three blackish plumbeous stripes, lateral pair recurved to near margin; interspaces velvety black, becoming narrowly orange near suture and on the posterior lateral angles; scutal lobes almost covered by a single blackish plumbeous area, suture intensely black, median area narrowly yellow, the anterior end forked; scutellum testaceous yellow; mediotergite orange yellow, pleurotergite blackened, the katapleurotergite conspicuously orange; vestiture of mesonotum very reduced, lacking or virtually so on praescutum and scutum, short and inconspicuous on scutellum, long but very sparse and scattered on mediotergite. Pleura chiefly obscure yellow, restrictedly patterned with darker; propleura and anepisternum brownish black, dorsopleural membrane black; small blackened spots behind mid-coxa, on

ventral meron, and surrounding the posterior spiracle. Halteres with stem brownish yellow, knob clear yellow. Legs with coxae orange, fore pair narrowly darkened at base; trochanters orange; femora yellow, tips broadly blackened, most extensive on fore pair, including the outer two-thirds, on middle femora about the outer fourth, posterior femora the outer fifth or less; tibiae and tarsi brownish black to black. Wings (fig. 5) strongly suffused with brownish yellow, prearcular and costal fields clearer yellow; stigma brown, conspicuous; veins brown, more yellowed in the brightened fields. No macrotrichia in outer wing cells; stigma with about 30—35 trichia; longitudinal veins beyond cord chiefly with trichia, lacking on  $R_1 +_2$ ; all veins comprising cell 1st  $M_2$  and the bases of veins  $M_3$  and  $M_4$  without trichia; veins before cord and behind R without trichia. Venation: Cell  $M_1$  barely sessile to very short-petiolate;  $m-cu$  before base of  $M_4$ .

Abdomen with first tergite orange, succeeding four tergites more yellowed, posterior borders more orange, basal sternites yellow; outer segments uniformly blackened; shield of ovipositor orange; cerci long and slender, straight, tips narrowly obtuse.

**Holotype**, ♀, Sihuenas, Yungas de Arepuchó, 2200—2500 meters, September 19, 1953 (Forster). **Paratopotypes**, 2 ♀♀, September 18—21, 1953.

*Nephrotoma melanoxantha* is most similar to species such as *N. alleni* (Alexander), of Colombia and Ecuador, and *N. usta* (Osten Sacken), of Central America, differing evidently in the details of coloration.

### Tipula Linnaeus

*Tipula* Linnaeus; Syst. Nat., Ed. 10: 585.

The vast genus *Tipula* includes a host of species in Tropical America, including the majority of the large and medium sized forms. Two subgenera, *Microtipula* Alexander and *Eumicrotipula* Alexander, are restricted to the region with the exception of a very few species of the latter that cross the Mexican border into Arizona. Of particular interest is the subgenus *Pectinotipula* Alexander, represented by a very few species, two of which occur in Bolivia and are discussed herewith. It had appeared that this group represented a valid genus rather than a subgenus but the general structure, particularly of the male hypopygium, shows an obvious relationship to *Eumicrotipula* and it appears to be placed better as a subgenus.

#### 19. *Tipula* (Bellardina) theobromina Edwards

*Tipula theobromina* Edwards; Mes. Arc merid. Equat., 10 (2): 159—160, fig. 21 (ovipositor); 1920.

*Tipula* (Bellardina) *theobromina* Alexander; Rev. de Entomologia, 22: 266; 1951.

The type was from various stations in Ecuador; now known from Venezuela to Bolivia.

Bolivia: Yungas de Arepuchó, Sihuenas, 2200—2500 meters; September 25, 1953 (Forster).



Yungas de Corani, 2500 meters, October 1, 1953 (Forster).

Cochabamba, Chapare, November 1934 (Francisco Steinbach); El Limbo, 2000 meters, November 5, 1953 (Martinez); km. 104, 3150 meters, February 1959 (Martinez).

Santa Cruz, Buenavista, February 25, 1934 (Francisco Steinbach).

## 20. *Tipula* (*Pectinotipula*) *boliviensis* Alexander

*Pectinotipula boliviensis* Alexander; Jour. N. Y. Ent. Soc., 54: 297—299; 1946.

Cochabamba, Chapare, November 1934 (Francisco Steinbach).

Santa Cruz, Buenavista, February 1929 (José Steinbach).

Male hypopygium (fig. 22).

## 21. *Tipula* (*Pectinotipula*) *titicacae* Alexander

*Pectinotipula titicacae* Alexander; Ann. Mag. Nat. Hist., (11) 11: 284—286; 1944.

The types were from Chucuito, Puno, Peru, near Lake Titicaca, 12,500 feet, taken February 21, 1939, by J. Adger Smyth.

Bolivia: Huatajata, Lake Titicaca, ca. 4000 meters, January 6—12, 1954.

La Paz Umgebung, 3600—4000 meters, March 22, 1950; February 4, 1954.

Songotal, Cuticucho, ca. 3700 meters, November 30, 1953; February 3, 1954 (all collected by Forster).

I am referring the Bolivian material to this species although there appears to be a slight difference in hypopygial structure, particularly the gonapophysis. These structures are mounted on microscope slides and supposed differences may be more apparent than real, depending on the position on the slide. For purposes of comparison I am figuring some genitalic structures for all four species of the subgenus currently recognized. — *Tipula* (*Pectinotipula*) *argentina* (van der Wulp), fig. 21; *T. (P.) boliviensis* (Alexander), fig. 22; *T. (P.) titicacae* (Alexander), fig. 24; and *T. (P.) tucumana* (Alexander), fig. 23.

Regarding the hypopygial structure, the ninth tergite and appendage of the eighth sternite is much the same throughout the subgenus (*tucumana*, tergite, t, fig. 23; *titicacae*, sternite, s, fig. 24). The nature of antennal branching in the male sex is shown for *titicacae* (fig. 24); antennae in the female are of normal *Tipulina* structure, without branches.

1. Wings with the pale pattern longitudinally striped, at least with the outer end of cell  $R_5$  whitened; no whitened crossband beyond the cord and stigma. 2  
Wings with the pattern variegated, not longitudinally striped; outer cells uniformly darkened, rarely with white in outer end of cell  $R_5$ ; a conspicuous whitened crossband beyond stigma, extending from costa into the base of cell  $M_3$ .  
(Bolivia) *boliviensis* (Alexander)
2. Antennal flagellum beyond the first segment uniformly blackened. *titicacae* (Alexander)  
(Southern Peru; Bolivia) Antennal flagellum bicolored. 3
3. Branches of flagellum relatively short, not exceeding the length of the segment; stem of each segment uniformly yellow, this color persisting throughout the organ.  
(Argentina: Buenos Aires, Cordoba) *argentina* (van der Wulp)

Branches of flagellum longer, slightly exceeding the segment; base of stem darkened, with about the apical half yellowed, outer three segments uniformly blackened.  
(Argentina: Tucumán)

tucumana (Alexander)

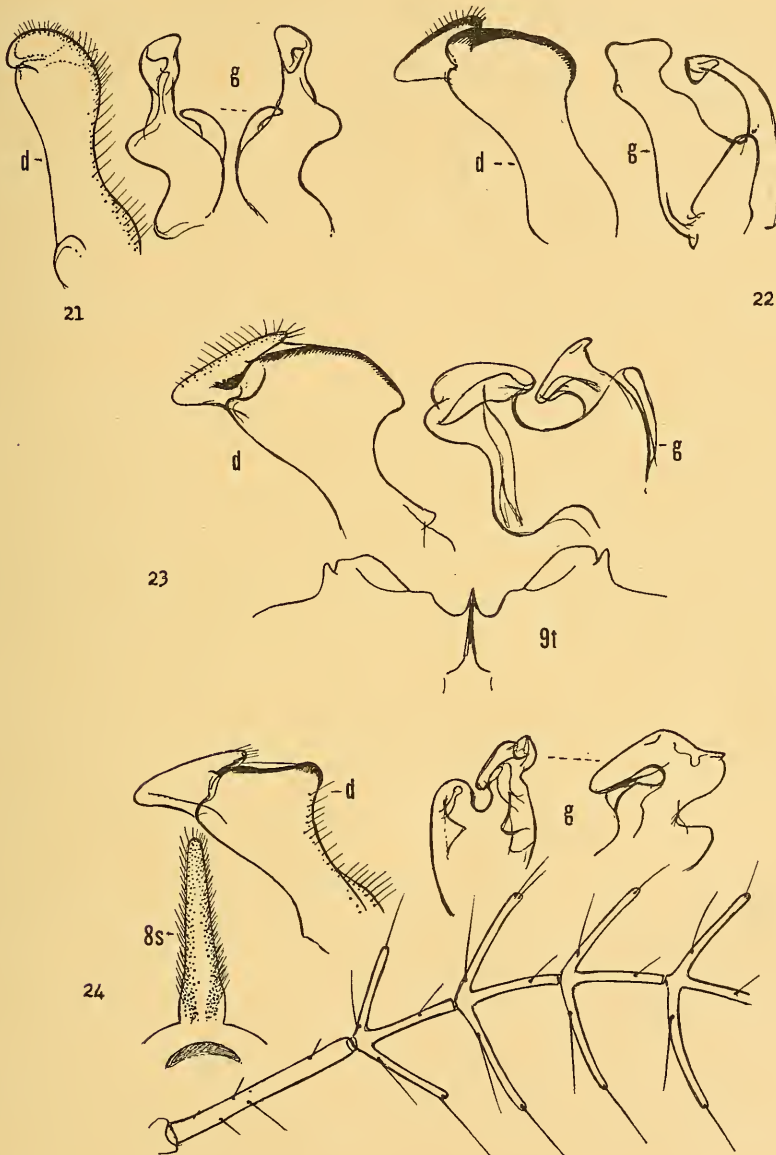


Fig. 21 *Tipula (Pectinotipula) argentina* (van der Wulp); male hypopygium.

Fig. 22 *Tipula (Pectinotipula) boliviensis* (Alexander); male hypopygium.

Fig. 23 *Tipula (Pectinotipula) tucumana* (Alexander); male hypopygium.

Fig. 24 *Tipula (Pectinotipula) titicacae* (Alexander); male hypopygium; antennae of male, segments two to seven.

(Symbols: d, dististyle; g, gonapophysis; s, sternite; t, tergite)

## 22. *Tipula* (*Eumicrotipula*) *aglossa* sp. n.

Belongs to the *macrotrichiata* group; size relatively large (wing of male 12.8 mm.); antennae of male elongate, about three-fourths the body, flagellar segments very long, with a small oval basal enlargement; mesonotal praescutum buffy with three dark brown stripes; pleura yellow, with a narrow brown transverse girdle over anterior border of the mesepisternum; halteres dark brown; legs black, femora with a scarcely evident subterminal yellow ring; wings yellow, with a very heavy light and darker brown pattern, the latter including five subcostal areas; no macrotrichia in wing cells, vein  $R_1 +_2$  atrophied; male hypopygium with the phallosome including large gonapophyses, their margins sclerotized, central strip hyaline; eighth sternite unarmed.

Male. — Length about 12 mm.; wing 12.8 mm.; antenna probably about 9 mm.

Frontal prolongation of head yellowish brown, dark brown on sides; nasus small; palpi black. Antennae of male elongate, broken beyond the eighth segment, evidently about three-fourths the length of body; scape, pedicel and basal half of first flagellar segment yellow, remainder black; flagellar segments very long, with a small oval basal enlargement, segments with a relatively short erect pubescence and verticils that are about one-third as long as the segment. Head buffy, more yellowed in front, darker on genae and sides of posterior vertex; a capillary brown central line from the low vertical tubercle to the occiput.

Pronotum buffy, with three brown spots. Mesonotal praescutum buffy, with three dark brown stripes, the central vitta on more than anterior half with paler brown borders, interspaces broad; scutal lobes uniformly dark brown, central area obscure yellow; scutellum brownish yellow, narrowly dark brown on central part, parascutella dark brown; mediotergite obscure yellow, with a central pale brown darkening. Pleura yellow, anterior border of mesepisternum, including the dorsopleural region, narrowly darkened to form a transverse girdle; ventral meron darkened; pteropleurite whitened. Halteres dark brown, base of stem narrowly yellowed. Legs with coxae obscure yellow; trochanters darker yellow; remainder of legs black, femora with a scarcely evident very narrow obscure brownish yellow subterminal ring; tibiae and tarsi black; claws small, simple. Wings (fig. 25) with the restricted ground yellow, heavily patterned with medium brown that is much more extensive than the ground; a series of about five darker brown subcostal areas, the first at arculus, reaching costa; second and third areas not including cell C, interconnected in cell R; fourth area stigmal; the darkened areas cross cells R and M as broad bands, isolating yellow ground areas; beyond cord a narrow yellow band from C across bases of all outer radial cells; submarginal yellow spots in all outer radial and medial cells; subcostal interspaces brighter yellow, narrower than the darkenings; veins brown, the radial interspaces yellow. No macrotrichia in wing cells. Venation: Vein



$R_1 +_2$  atrophied; petiole of cell  $M_2$  about one-half longer than  $m$ ;  $m$ —cu oblique, at fork of  $M_3 +_4$ .

Basal abdominal tergites obscure yellow, sides and remainder of tergites black, more intense laterally; basal sternites more extensively reddened. Male hypopygium (fig. 28) with the tergite,  $t$ , transverse, posterior border generally transverse, the central area more produced into two small rounded lobes that are separated by a subequal emargination. Outer dististyle,  $d$ , relatively small, cylindrical, setae relatively short. Inner dististyle large, lower margin of beak and the lower beak blackened, obtuse; setae of posterior border pale, relatively small and weak. Phallosome including the very small membranous aedeagus and very large gonapophyses,  $g$ , each of the latter appearing as two darkened sclerotized bars separated by hyaline membrane, the apex of inner bar produced, as figured. Eighth sternite with posterior border truncate, without lobes or modifications.

Holotype, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, February 18, 1959 (Martinez).

The only previously described member of the *macrotrichiata* group recorded from Bolivia is *Tipula* (*Eumicrotipula*) *votiva* Alexander, an entirely distinct fly falling in a subgroup having abundant macrotrichia in the outer wing cells. The structure of the male antennae differs from that of previously described members of the group, being more as in the *monilifera* group, with the basal enlargement of each flagellar segment small and symmetrically oval, about as in *T. (E.) olssoniana* Alexander, *T. (E.) procericornis* Edwards, and some others. The most recent discussion of the subgenus *Eumicrotipula* is by the writer (1946b).

### 23. *Tipula* (*Eumicrotipula*) *atacama* Alexander

*Tipula atacama* Alexander; Ann. Ent. Soc. Amer., 5; 357, pl. 24, fig. d (venation), pl. 26, fig. u (ovipositor); 1912.

Bolivia: San Antonio (Fassl); Alexander Collection.

### 24. *Tipula* (*Eumicrotipula*) *bathromeces* sp. n.

Belongs to the *glaphyroptera* group; mesonotal praescutum with disk chiefly gray, lateral borders brown, posterior sclerites yellowed, with a capillary brown central vitta; antennae with first flagellar segment very long, exceeding the following three combined; halteres yellow; femora yellow, tips black; wings yellowish white, heavily patterned with brown; a complete whitened crossband beyond cord; outer half of vein  $R_1 +_2$  atrophied; basal abdominal segments yellow, tergites broadly blackened sublaterally; subterminal segments brownish black.

Female. — Length about 15.5 mm.; wing 16 mm.; antenna about 2.8 mm.

Frontal prolongation of head light yellow above, more castaneous below, sides narrowly lined with dark brown; nasus lacking; first segment of palpus light brown, remainder black, incisures narrowly pale, terminal segment nearly twice the penultimate. Antennae (fig. 27) short; basal four segments yellow, fifth bicolored, base darkened, outer two-thirds yellowed, remaining

segments brownish black; first flagellar segment very long, exceeding segments two to four combined, all flagellar segments with the longest verticils unilaterally distributed. Head obscure yellow, vertex irregularly patterned with light brown; vertical tubercle very low.

Pronotum light brown. Mesonotal praescutum light gray, disk with four slightly differentiated stripes, the intermediate pair gray, sublateral stripes more blue-gray, humeral and lateral borders and a delicate capillary central line dark brown; scutum buffy medially, lobes blue-gray, bordered internally with slightly darker; scutellum and mediotergite buffy yellow, with a capillary dark brown line extending from the suture to base of abdomen; pleurotergite yellowed, the katapleurotergite conspicuously so. Pleura brownish yellow, dorsopleural membrane yellowed. Halteres pale yellow throughout. Legs with coxae brownish yellow; trochanters yellow; femora yellow, tips conspicuously black, the amount subequal on all legs, preceded by a slightly clearer yellow ring; tibiae and basitarsi light brown, tips narrowly darker, remainder of tarsi black. Wings with the restricted ground pale yellowish white, very heavily patterned with brown, prearcular field and cell Sc deeper yellow, cell C more brownish yellow; the major darkenings include three areas in cells Sc and R, the larger ones at origin and fork of Rs, the latter confluent with the stigma and an area over the anterior cord; extensive darkenings in cells M and the Anals, the last streaked and tessellated; beyond the cord, outer radial field chiefly brown, with a complete ground band crossing the wing from C to end of cell  $M_3$ , including most of cell 1st  $M_2$ ; outer medial cells yellowed, the veins and centers of the cells lined with brown; veins brown, Sc and radial interspaces yellow. Macrotrichia on most longitudinal veins beyond cord, lacking on those elements comprising cell 1st  $M_2$ ; basad of cord with sparse trichia on M and outer half of 2nd A, lacking on basal section of  $Cu_1$  and 1st A excepting two or three near tip; prearcular trichia on both Anal veins. Venation: Outer half of  $R_1 +_2$  atrophied; petiole of cell  $M_1$  subequal to or slightly longer than m.

Basal five abdominal tergites light yellow, with a broad sublateral black stripe, lateral margins more grayish; basal sternites obscure yellow; subterminal segments more uniformly brownish black; genital segment yellow; cerci straight.

Holotype, ♀, Songotal, Cuticucho, ca. 3700 meters, December 4, 1953 (Forster).

*Tipula* (*Eumicrotipula*) *bathromeces* is entirely distinct from other medium-sized members of the subgenus that have the first flagellar segment greatly lengthened, such regional allies including *T. (E.) songoana* sp. n. and *T. (E.) tanymetra* sp. n. The striking wing pattern is more as in *T. (E.) expleta* sp. n., but the two flies are quite distinct and not closely related.

## 25. *Tipula* (*Eumicrotipula*) *conspicillata* Alexander

*Tipula* (*Eumicrotipula*) *conspicillata* Alexander; Ann. Mag. Nat. Hist., (11) 12: 234—236; 1945.

The species was described from Peru.



Bolivia: Yungas, Forestal, 2500 meters, June 6, 1950 (Forster).

El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

26. *Tipula* (*Eumicrotipula*) ***dictyophora*** sp. n.

Belongs to the *monilifera* group; mesonotal praescutum brownish yellow with four darker brown stripes, pleura and pleurotergite clear light yellow; antennae of male very long, flagellar segments with very conspicuous basal enlargements, vestiture of their pedicels unusually short; legs brownish black to black, femora with an obscure yellow subterminal ring; wings whitish subhyaline with a heavy pale brown pattern, with still darker subcostal markings; outer abdominal segments dark brown, variegated with paler; male hypopygium with the outer dististyle clavate, with setae on outer half; inner dististyle with outer crest small, slightly inflated, surface conspicuously reticulated; gonapophysis with outer part dark yellow, apex weakly emarginate, inner blades pale yellow, tip broadly obtuse.

Male. — Length about 15 mm.; wing 16.5 mm.; antenna about 13 mm.

Frontal prolongation of head relatively long, subequal to the remainder, brownish yellow, including the slender nasus, slightly darker on sides; palpi light brown. Antennae of male very long, approximately three-fourths the wing; scape and pedicel light yellow, remainder black, the basal half of first flagellar segment brown; flagellar segments with very conspicuous basal enlargements, pubescence of pedicels unusually short and inconspicuous; longest verticils shorter than the segments. Head brownish yellow; vertex with a delicate central brown vitta, posterior vertex with a darkened spot on either side.

Pronotum brown medially, paling to light brown and yellow on sides. Mesonotal praescutum brownish yellow, with four darker brown stripes, the intermediate pair separated by a broad more yellowish brown stripe, interspaces with a few brown spots, lateral borders less evidently darkened; scutal lobes brown, central area brownish yellow on either side of a median darkening; scutellum brown; mediotergite brown with a narrow yellowed central vitta; praescutum and scutum virtually glabrous, scutellum and mediotergite with long yellow setae; pleurotergite and pleura light yellow; dorsopleural membrane weakly darkened. Halteres dark brown, base of stem narrowly light yellow. Legs with coxae and trochanters light yellow; femora dark brown, bases narrowly obscure yellow, tips broadly black, preceded by a vague subequal yellow area; tibiae and tarsi black; claws simple. Wings variegated with medium brown and whitish subhyaline, the latter areas more extensive in cells R, M, and as a post-stigmal band from costa into bases of cells  $M_3$  and  $M_4$ ; alternate brown and white areas on proximal two-thirds of cell Cu; stigma and a series of three major darker brown areas in cell C and adjacent part of R, these subequal to the yellow subcostal interspaces; weak brightenings in outer end of cell  $R_5$  and base of  $M_1$ ; Anal cells chiefly pale brown, paler basally, 1st A with a zigzag brightening at near midlength; veins dark brown, paler brown in the costal interspaces. Longitudinal veins

beyond general level of origin of Rs with macrotrichia, these lacking on most of  $R_1 +_2$ , all sections of  $M_1 +_2$  and basal section of  $M_3$ ; basad of this lacking on proximal two-thirds of M, basal third of 2nd A and all of 1st A. Venation:  $R_1 +_2$  entire; basal section of  $R_4 +_5$  short; petiole of cell  $M_1$  shorter than m.

Abdomen brownish yellow, clearer yellow basally, sides darkened; fifth and succeeding segments almost uniformly dark brown, sixth and seventh segments yellowed at base; hypopygium with the dististyles pale. Male hypopygium (fig. 29) with the tergite, t, narrowed outwardly, outer lobes broad, separated by a deep V-shaped notch, margins gently emarginate. Basistyle with mesal lobe, b, small, shorter than the long setae. Outer dististyle, d, pale, clavate, with setae on outer half, the longest about three-fourths the style. Inner dististyle with beak elongate, lower beak bilobed; outer crest small, slightly inflated, surface conspicuously ridged and lined to form a reticulate pattern; outer margin of style with relatively weak yellow setae. Gonapophysis, g, bilobed, the larger dark yellow outer part weakly emarginate at apex, the smaller pale blades very obtuse at tips. Eighth sternite, 8s, with its appendage short-oval, very densely provided with long yellow setae, the longest about two-thirds the length of the appendage.

Holotype, ♂, km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

*Tipula (Eumicrotipula) dictyophora* is most similar to species such as *T. (E.) callisto* Alexander, *T. (E.) callithrix* Alexander, *T. (E.) infinita* Alexander, *T. (E.) neivai* Alexander, and some others, differing from all in the diagnostic characters listed, particularly the antennae, in conjunction with hypopygial structure.

## 27. *Tipula (Eumicrotipula) expleta* sp. n.

Belongs to the *glaphyroptera* group; size small (wing of female to about 12 mm.); general coloration of thorax obscure yellow, pleura conspicuously patterned with dark brown; antenna of female 12-segmented, flagellum bi-colored; femora slightly darkened, tips black, preceded by a subequal yellow ring; wings with  $R_1 +_2$  atrophied, yellow, with a tessellated light brown pattern, including two larger and darker areas in cell Sc; abdomen chiefly light brown.

Female. — Length about 10.5–11 mm.; wing 11–12.5 mm.; antenna about 2.4 mm.

Frontal prolongation of head light brown; nasus very long and slender; palpi brown, terminal segment darker outwardly. Antennae of female 12-segmented; proximal three segments light yellow, segment four weakly darkened at base, remaining segments with bases brownish black, with more than outer half yellow; terminal segment elongate, blackened; flagellar segments subcylindrical, basal enlargements scarcely indicated; segments slightly exceeding the verticils. Head light brown; vertical tubercle low.

Pronotum light brown. Mesonotal praescutum chiefly obscure yellow, with a narrow darkened central line, lateral margins weakly darkened; scutal lobes

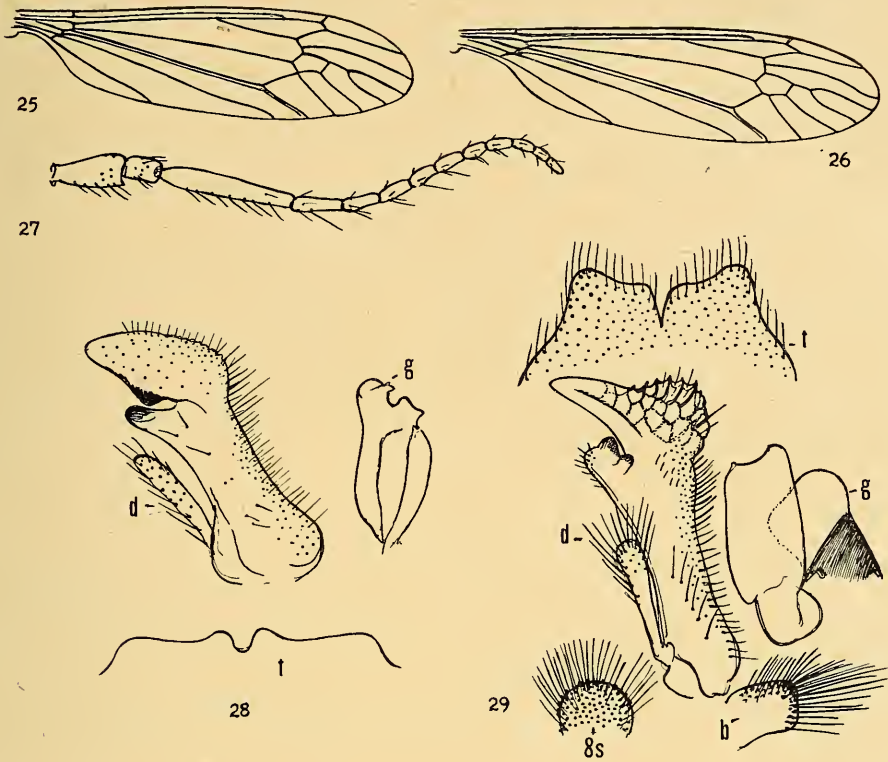


Fig. 25 *Tipula* (*Eumicrotipula*) *aglossa* sp. n.; venation.

Fig. 26 *Tipula* (*Eumicrotipula*) *expleta* sp. n.; venation.

Fig. 27 *Tipula* (*Eumicrotipula*) *bathromeces* sp. n.; female, antenna.

Fig. 28 *Tipula* (*Eumicrotipula*) *aglossa* sp. n.; male hypopygium.

Fig. 29 *Tipula* (*Eumicrotipula*) *dictyophora* sp. n.; male hypopygium.

(Symbols: b, basistyle; d, dististyle; g, gonapophysis; s, sternite; t, tergite)

dark brown, central area and scutellum obscure yellow; postnotum infuscated. Pleura yellow, propleura, anterior part of mesepisternum and the meron conspicuously dark brown. Halteres with stem brownish yellow, knob slightly darker. Legs with coxae and trochanters yellow; femora yellow basally, slightly darker outwardly, tips broadly blackened, preceded by a subequal clearer yellow ring; tibiae and tarsi light brown, the latter more blackened outwardly. Wings (fig. 26) with the ground light yellow, handsomely tessellated with light brown, the two colors about equal in area; cell Sc with two darker brown areas, the outer at origin of Rs, interconnected in cell R; stigmal area similarly darkened; further dark brown marks at h and across outer radial cells; the most conspicuous ground area appears as a curved band crossing the wing from C beyond origin of Rs to near the end of vein 1st A; beyond cord a short post-stigmal ground band, with further major areas in cell M<sub>1</sub>, outer half of cell R<sub>5</sub> and most of M<sub>3</sub>; central half or more of cell C



weakly darkened, both ends light yellow; veins in the ground areas yellow, brown in the patterned parts. Macrotrichia on longitudinal veins beyond general level of origin of  $R_s$ , lacking on basal section of  $Cu_1$  and Anal veins, present on about the outer half of  $Sc$ . Venation:  $R_1 +_2$  atrophied;  $R_s$  about twice  $m-cu$ , the latter at near two-thirds to three-fourths  $M_3 +_4$ ; petiole of cell  $M_1$  and  $m$  subequal.

Abdomen chiefly light brown. Ovipositor with cerci relatively short, nearly straight.

Holotype, ♀, El Limbo, Chapare, Cochabamba, 2000 meters, November 8, 1953 (Martinez). Paratopotype, ♀, November 4, 1953 (Martinez).

Other somewhat similar regional members of the *glaphyoptera* group that have vein  $R_1 +_2$  atrophied include *Tipula* (*Eumicrotipula*) *consonata* Alexander, *T. (E.) notoria* Alexander, *T. (E.) obirata* Alexander, and some others, all differing among themselves in details of coloration, especially of the legs, wings and antennae.

## 28. *Tipula* (*Eumicrotipula*) *flavidula* Alexander

*Tipula* (*Eumicrotipula*) *flavidula* Alexander; Ann. Mag. Nat. Hist., (11) 6: 205—207, fig. 3 (♂ hypopygium); 1940.

The types were from various stations in Ecuador, taken by MacIntyre; known also from Peru and Venezuela.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 6—7, 1953 (Martinez).

## 29. *Tipula* (*Eumicrotipula*) *forsteri* sp. n.

Belongs to the *glaphyoptera* group; size large (wing about 20 mm.); general coloration of thorax light gray, praescutum with four poorly-differentiated blue-gray stripes; antennal flagellum black; femora fulvous yellow, tips brownish black; wings brownish yellow, with a very weak and inconspicuous pale brown pattern, cells  $C$  and  $Sc$  unmarked;  $R_1 +_2$  entire; abdomen light brown, tergites striped with darker, hypopygium brownish yellow; male hypopygium with each gonapophysis trispinous; appendage of eighth sternite small, broad, subtended by lateral shoulders.

Male. — Length about 18—19 mm.; wing 19—20.5 mm.; antenna about 6.3—6.6 mm.

Female. — Length about 20—22 mm.; wing 19—20 mm.; antenna about 3.5—3.8 mm.

Frontal prolongation of head brown, light gray pruinose, narrowly blackened on sides; nasus slender; palpi black. Antennae of male relatively long; scape reddish brown beneath, darker above, pedicel brownish yellow, flagellum black; flagellar segments with small but conspicuous basal enlargements, feebly incised; verticils shorter than the segments; terminal segment short, thimble-shaped, much shorter than its verticils. In female, antennae much shorter but with terminal segment subequal to that of male. Head light gray;

vertical tubercle large and rounded, more buffy on sides; a conspicuous brown central stripe extending from summit of the tubercle, widened behind, narrowed to a point at the occiput; vestiture of head abundant but very small.

Pronotum light gray, slightly patterned with brown. Mesonotal praescutum light gray, with four very poorly differentiated blue-gray stripes, the intermediate pair separated by a capillary light brown central vitta; humeral and lateral regions darker brown; interspaces sparsely freckled with light brown; scutum light gray, each lobe with two separate blue-gray areas, median region with a capillary brown line, narrowed posteriorly; scutellum light gray, with a brown central line on anterior half, parascutella more testaceous; postnotum light gray, anterior half of mediotergite on either side vaguely blackened, with a further brown central line, pleurotergite darkened above; vestiture of praescutum sparse and very small, of the scutellum and mediotergite longer but pale and inconspicuous. Pleura light gray, vaguely patterned with darker, most evident on the ventral meron; dorsopleural membrane buffy. Halteres with stem yellow, knob weakly darkened. Legs with coxae light gray; trochanters fulvous yellow, with a narrow virtually terminal brownish black ring, preceded by a still narrower scarcely evident obscure yellow brightening; tibiae reddish brown, tips narrowly brownish black, tarsi passing into black; claws of male small, with a very small subbasal tooth that is weakly bifid. Wings (fig. 30) with the ground brownish yellow, very weakly and inconspicuously patterned with pale brown, the most evident such areas including the stigma, clouds at origin of  $R_s$ , anterior cord, central part of outer radial field and as a broad seam in outer half of cell M adjoining vein Cu; cells C and Sc about concolorous with the ground, unpatterned; veins light brown; obliterative area across cell 1st  $M_2$  relatively small, prestigmal area scarcely apparent. Longitudinal veins beyond cord with macrotrichia, including more than basal half of  $R_1 + 2$ , lacking on all veins comprising cell 1st  $M_2$  and bases of veins  $M_1 + 2$ ,  $M_3$  and  $M_4$ ; basal of cord trichia lacking on veins M, Cu and 1st A, with a strong series on more than outer half of 2nd A. Venation:  $R_1 + 2$  entire;  $R_s$  long, more than twice  $m-cu$ ; petiole of cell  $M_1$  varying from equal to about one-half longer than  $m$ .

Basal abdominal tergite gray pruinose, succeeding segments light brown, with three darker stripes, outer segments more uniformly darkened; posterior borders narrowly, lateral margins more broadly, light gray pruinose, more conspicuous in female; sternites more uniformly reddish brown; hypopygium brownish yellow. Genital shield of female chestnut brown; cerci long and slender, straight. Male hypopygium (fig. 31) with the tergite, t, transverse, posterior border subtruncate, with a very small U-shaped median notch, the broad lateral lobes with margin weakly sinuous; extreme posterior border microscopically tessellated with low tubercles; setae back from margin relatively weak and inconspicuous. Outer dististyle, d, dilated on outer half, with long setae. Inner dististyle with beak broad, lower beak irregularly lobed, blackened; dorsal surface back from beak microscopically reticulate; posterior margin near base with a glabrous basal lobe; at near three-fourths the



length of style with a concentration of strong setae; a subbasal triangular expansion provided with strong setae. Gonapophysis, g, distinctive, as figured, each with two blades, the larger inner blade bispinous, the small outer part narrowed into a flattened point. Eighth sternite, 8s, relatively small, narrowed outwardly, posterior border with a broad median lobe that is subtended by low shoulders, the lobe only about one-third longer than its basal width, with few long yellow setae, each shoulder with two similar bristles.

Holotype, ♂, Songotal, Cuticucho, ca. 3700 meters, February 2, 1954 (Forster). Allotopotype, ♀, with the type. Paratopotypes, 1 ♂, 1 ♀, November 30, 1953, 1 ♂, February 3, 1954 (Forster).

This fine species is named for Dr. Walter Forster who has added so materially to our knowledge of the insect fauna of Bolivia. The fly is quite distinct from other members of the *glaphyoptera* group in the weakly patterned wings and especially in the structure of the male hypopygium, particularly the gonapophyses and the appendage of the eighth sternite.

### 30. *Tipula* (*Eumicrotipula*) *fortior fortior* Alexander

*Tipula* (*Eumicrotipula*) *fortior* Alexander; Rev. de Entomologia, 22: 310—312, fig. 23 (♂ hypopygium); 1951.

Bolivia: Along road to Chapare, Cochabamba, 3800—4000 meters, October 23, 1949 (Peña). Chapare, km. 104, 3150 meters, February 1959 (Martinez).

#### 30 a *Tipula* (*Eumicrotipula*) *fortior arepuchoensis* subsp. n.

Differs from the typical race in the smaller size, thoracic coloration, including the black coloration contrasting with the orange of the praescutum, scutum, postnotum and pleura; male hypopygium with the submedian tergal lobes obtuse, the intermediate pair acute; inner gonapophysis distinctive; appendage of eighth sternite longer than broad.

Male. — Length about 13 mm.; wing 14 mm.; antenna about 6 mm.

Antennae with proximal three segments obscure yellow, remainder of flagellum black, appearing gray from an abundant short white pubescence; basal enlargements of segments small, verticils exceeding the segments; first flagellar segment about one-third longer than the second; terminal segment subequal to the penultimate.

Pronotum medially obscure orange, sides darkened. Mesonotal praescutum with more than the anterior third orange, golden pollinose on sides, remainder of praescutum blackened, the central part with the orange pattern extended slightly backward into an acute point; scutum blackened; scutellum orange-yellow, parascutella darker; mediotergite orange, anapleurotergite weakly infuscated, katapleurotergite chiefly orange-yellow. Pleura orange-yellow. Halteres with stem yellow, knob orange. Legs with coxae and trochanters orange; femora black, bases narrowly yellow, posterior pair with bases more extensively yellowed and with an obscure yellow subterminal ring



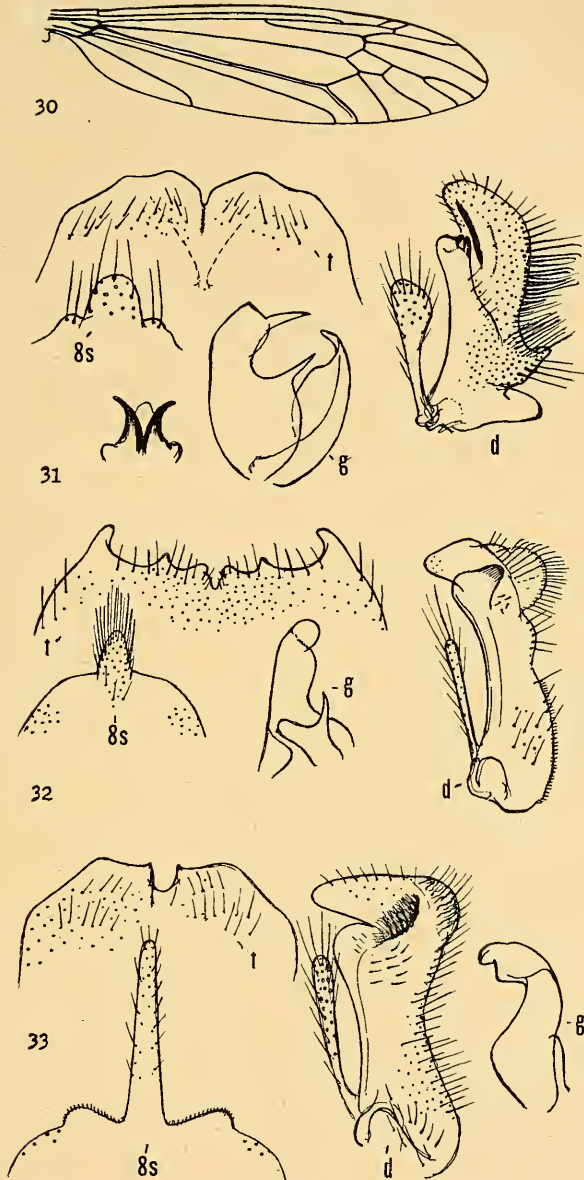


Fig. 30 *Tipula* (*Eumicrotipula*) *forsteri* sp. n.; venation.

Fig. 31 *Tipula* (*Eumicrotipula*) *forsteri* sp. n.; male hypopygium.

Fig. 32 *Tipula* (*Eumicrotipula*) *fortior arepachoensis* subsp. n.; male hypopygium.

Fig. 33 *Tipula* (*Eumicrotipula*) *glossophora* sp. n.; male hypopygium.

(Symbols: a, aedeagus; d, dististyle; g, gonapophysis; s, sternite; t, tergite)

that is narrower than the black apex; tibiae brownish black to black; tarsi black; claws toothed. Wings with the restricted ground yellow, with a more extensive brown pattern, including cells C and Sc, stigma, and slightly paler

brown clouds in all cells; cell R with four such areas, these more extensive than the ground interspaces, confluent behind, in cell M forming three large areas, the last at cord; beyond cord, wing tip darkened; extensive ground areas beyond stigma and in cells 1st  $M_2$  and  $M_3$ ; Anal cells extensively washed with pale brown; arcular area yellowed; veins brown. Longitudinal veins beyond general level of origin of Rs with macrotrichia. Venation:  $R_1 +_2$  entire;  $R_3$  approximately twice  $m-cu$ ; petiole of cell  $M_1$  slightly longer than  $m$ .

Abdomen with basal four segments orange yellow, outer segments black, crowded into a massive hypopygium. Male hypopygium (fig. 32) with the tergite,  $t$ , transverse, posterior border truncate, conspicuously toothed into flattened lateral blades, a smaller acute intermediate point, and low obtuse submedian lobes separated by a shallow emargination. Basistyle with mesal lobe oval, with dense short setulae. Outer dististyle,  $d$ , a long slender club, the apical setae very long, about one-half the style, surface with further dense erect setulae. Inner dististyle with outer crest very high, fringed with delicate setae; base of style with relatively sparse setae and very dense darkened setulae. Phallosome with gonapophysis,  $g$ , consisting of two blades, the larger one produced caudad, apex obtuse, the small inner apophysis unequally bifid, the axial lobe obtuse, the lateral arm an acute spine. Eighth sternite,  $8s$ , with median appendage darkened, slightly longer than its width across base, the longest setae subequal to the appendage.

**H o l o t y p e**, ♂, Yungas de Arepucho, Sihuenas, 2200—2500 meters, September 20, 1953 (Forster). **P a r a t o p o t y p e**, 1 ♂.

With the accession of more material it seems possible that the present fly may be found to represent a valid species.

### 30 b *Tipula* (*Eumicrotipula*) **fortior klausma** subsp. n.

**M a l e**. — Length about 12 mm.; wing 13 mm.; antenna about 5.6 mm.

**F e m a l e**. — Length about 16 mm.; wing 15 mm.

Generally similar to typical *fortior*, differing in the small size, coloration of body, and in slight hypopygial details. Antennae of male proportionately longer, nearly one-half the wing; in female, basal flagellar segments distinctly bicolored, obscure yellow, the basal enlargements brownish black. Head orange, somewhat darker posteriorly and on outer end of the frontal prolongation. Thorax chiefly dull black in male, including the praescutum and scutellum; in female, mesonotum with more orange, including the pronotal scutum, anterior part of praescutum on either side of the central darkening, and the scutellum, in cases these tints more restricted in amount. Pleura black, variegated with orange yellow, in some individuals more restricted. Legs with coxae orange. Wings with cells C and Sc darker brown; cell R with four darkened areas, in the male these smaller than the interspaces, in females larger, subequal to or exceeding the pale ground. Male hypopygium generally as in typical *fortior*, differing in the conformation of the gonapophyses, the major lobes being more parallel-sided, the rounded apex separated by a

weak constriction. In typical *fortior* these blades are conspicuously expanded outwardly, the apex broadly obtuse.

**Holotype**, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, November 4, 1953 (Martinez). **Allotopotype**, ♀, November 11, 1953. **Paratopotypes**, 2 ♀♀, November 10—11, 1953 (Martinez).

### 31. *Tipula* (*Eumicrotipula*) ***glossophora*** sp. n.

Belongs to the *glaphyroptera* group; general coloration of thorax light gray, notum patterned with brown, including a common central vitta extending from suture almost to abdomen; antennae of male long, bicolored; femora yellow, tips narrowly brownish black; wings yellow, restrictedly patterned with pale and darker brown, the latter including three relatively small subcostal areas; vein  $R_1+2$  preserved; abdomen yellow, tergites with three narrow brown stripes, hypopygium obscure yellow; male hypopygium with tergal lobes broad, truncate; appendage of eighth sternite long and narrow, its length about eight times the width at base.

**Male**. — Length about 15 mm.; wing 15—16 mm.; antenna about 6.5 mm.

**Female**. — Length about 20—23 mm.; wing 18—19 mm.

Frontal prolongation of head obscure yellow above, faintly pruinose, slightly darker on ventral half; nasus long and slender; palpi with proximal three segments obscure yellow to brown, terminal segment blackened. Antennae of male relatively long, exceeding one-third the wing; proximal three segments yellow, succeeding segments bicolored, the basal enlargement black, pedicel yellow, about twice as extensive, outer segments more uniformly darkened; flagellar segments moderately incised, longer than their verticils. Head whitened in front, vertex light gray with a delicate dark brown central vitta extending from the low vertical tubercle nearly to occiput.

Pronotum obscure yellow, with a narrow central darkening. Mesonotal praescutum light gray, patterned with darker, including a capillary dark brown line that is narrowest in front; separate brownish gray intermediate stripes that are faintly bordered laterally with pale brown; sublateral stripes best indicated by brown outer margins, in cases more solidly darkened; humeral triangle and lateral praescutal border paler brown; posterior sclerites of notum light gray with a continuous brown central line extending from suture almost to abdomen, ending in a point on mediotergite; each scutal lobe with two separate pale brown areas. Pleura yellowish gray, ventral sternopleurite slightly darker; dorsopleural membrane yellow. Halteres with stem yellow, knob dark brown. Legs with coxae whitish yellow, trochanters clearer yellow; femora yellow, tips narrowly brownish black; tibiae yellow, tips more narrowly darkened; tarsi brownish yellow, outer segments black; claws small. Wings yellow, restrictedly patterned with pale and darker brown, the latter including the stigma and three subcostal areas that are much smaller than the interspaces; arculus not or scarcely darkened; paler brown washes over cord, outer end of cell 1st  $M_2$  and in cell M adjoining vein Cu beyond mid-length and at tip; still paler brown washes in cells beyond cord and in Anal



field; cell  $R_5$  chiefly yellow; veins yellow, pale brown in the ground areas. Longitudinal veins beyond general level of cord with macrotrichia, lacking on  $R_1 +_2$ , present but scattered over virtually the entire length of M and the Anals. Venation:  $R_1 +_2$  present; cell  $M_1$  subequal to its petiole.

Abdomen yellow, tergites with three narrow brown stripes, the median broadly interrupted at the incisures, lateral margins gray; sternites yellow with a broader but more diffuse central stripe; hypopygium chiefly obscure yellow. Ovipositor with cerci slender, long and straight. Male hypopygium (fig. 33) with the tergite, t, narrowed outwardly, posterior border with two broad truncated lobes that are separated by a U-shaped emargination, inner apical angles of lobes slightly produced, outer angles low and obtuse; tergal vestiture very pale and delicate. Basistyle with mesal lobe small. Outer dististyle, d, weakly clavate; inner dististyle with both beak and lower beak obtuse; setae of outer margin long but pale and delicate; outer crest low, irregularly reticulate; near base of beak with a more blackened closely striated area. Gonapophysis, g, constricted and twisted at near midlength, outer part terminating in a short subcultrate beak. Eighth sternite, 8s, with the appendage unusually long and narrow, its length about seven to eight times the width at base; vestiture small, pale and inconspicuous; sides of appendage at base with low setuliferous shoulders.

Holotype, ♂, Yungas de Arepucho, Sihuenas, 2200—2500 meters, September 20, 1953 (Forster). Allotopotype, ♀, pinned with type. Paratopotypes, numerous ♂♀, with the types, September 19—25, 1953; paratypes, 2 ♂♂, 1 ♀, La Paz Umgebung, 3600—4000 meters, March 22 to 24, 1950 (Forster). Two ♀♀ from Illimani, Westhang, 4500—5000 meters, April 19, 1950 (Forster) likewise appear to belong here but in the absence of the male sex this cannot be affirmed.

### 32. *Tipula* (*Eumicrotipula*) ***inaequiarmata*** sp. n.

Belongs to the *glaphyroptera* group; general coloration of thorax yellow, mesonotum with a conspicuous black central stripe extending from the praescutum to the abdomen; pleura yellow, patterned with brown, more conspicuously on the dorsal sclerites; antennae of male relatively long, flagellum black, segments moderately incised, much longer than the verticils; legs light brown, femora with a vague obscure yellow subterminal ring; wings medium brown, vaguely patterned with yellow and darker brown; abdomen obscure yellow, tergites conspicuously blackened laterally, outer segments extensively infuscated; male hypopygium with posterior border of tergite with four lobes including two broad intermediate blades and slender sublateral lobes; ventral lobe of basistyle with very long setae; outer dististyle gradually dilated outwardly, inner style with outer crest conspicuously fringed with abundant erect yellow setae; gonapophysis with outer lobe produced into an acute point; appendage of eighth sternite a long-oval ligula.

Male. — Length about 16 mm.; wing 17 mm.;

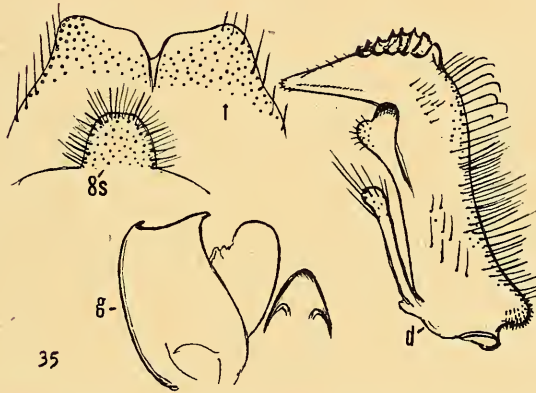
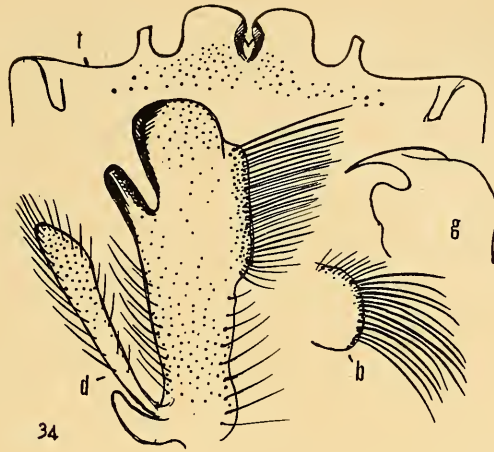


Fig. 34 *Tipula* (*Eumicrotipula*) *inaequiarmata* sp. n.; male hypopygium.

Fig. 35 *Tipula* (*Eumicrotipula*) *kuehlhorni* sp. n.; male hypopygium.

(Symbols: b, basistyle; d, dististyle; g, gonapophysis; s, sternite; t, tergite)

Frontal prolongation of head brownish yellow above, including the long nasus, lower half dark brown; palpi brown, outer segments passing into black. Antennae elongate; scape dull yellow, pedicel testaceous yellow, flagellum black; basal enlargements of flagellar segments inconspicuous, long and narrow, verticils much shorter than the segments. Head buffy, sides of posterior vertex broadly light brown; vertical tubercle large, obtuse.

Pronotum obscure yellow, scutum weakly darkened medially. Mesonotal praescutum with the ground yellow pollinose, with a broad central dark brown stripe, its anterior end and the lateral stripes much paler; scutal lobes yellow, patterned with light brown; posterior sclerites of notum obscure yellow with a conspicuous dark brown central stripe extending from the suture virtually to base of abdomen, on the scutum the stripe more intensely blackened on sides. Pleura yellow, patterned with brown, including a broad dorsal area extending from the propleura across the dorsal anepisternum and pteropleurite, the dorsal sternopleurite less evidently darkened; thoracic vestiture yellow, short and inconspicuous on the praescutum, much longer on

the posterior sclerites. Halteres with stem light brown, brighter at base, knob more infuscated. Legs with coxae and trochanters yellow; femora light brown, outer ends more blackened, with a very narrow to scarcely evident obscure yellow subterminal ring, the extreme tips vaguely pale; tibiae brown, tips blackened; tarsi black; claws simple. Wings with the ground medium brown, vaguely patterned with yellowed areas, most extensive in the basal cells, outer half of cell Cu and outer end of cell R<sub>5</sub>; obliterative area across cell 1st M<sub>2</sub> and base of cell M<sub>3</sub> more whitened; a restricted darker brown pattern including three small areas in cell Sc, stigma, and a broad seam in cell M adjoining vein Cu; veins brown. Longitudinal veins beyond cord with macrotrichia, including also vein Sc and outer ends of M, basal section of Cu<sub>1</sub> and 2nd A, lacking on Rs; vein 1st A with a few scattered trichia on central part, lacking on outer fifth. Venation: R<sub>1+2</sub> preserved; Rs elongate, nearly twice m—cu; petiole of cell M<sub>1</sub> and m subequal; m—cu on M<sub>1</sub> beyond the perpendicular base.

Abdominal tergites obscure yellow, narrowly but conspicuously blackened laterally; sternites yellow, outer segments extensively infuscated. Male hypopygium (fig. 34) with the tergite, t, transverse, posterior border narrowly glabrous, produced into two broad intermediate lobes that are separated by a linear split, and narrow sublateral lobes that are separated from the intermediate pair by a broad U-shaped emargination. Basistyle, b, with ventral lobe oval, with very long setae. Dorsal dististyle, d, gradually dilated outwardly into a narrow subtriangular blade. Inner dististyle with both the beak and lower beak obtuse, margins blackened, smooth; outer crest slightly elevated, with a fringe of long erect yellow setae, numerous and crowded on outer part, becoming shorter and more curved near proximal end of the row. Gonapophysis, g, a flattened blade, outer lobe produced into an acute point. Aedeagus long and stout. Posterior border of eighth sternite strongly convex, the appendage a flattened long-oval ligula, its length more than twice the basal width, apex obtuse.

Holotype, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, November 8, 1953 (Martinez).

*Tipula (Eumicrotipula) inaequiarmata* is entirely distinct from other regional members of the *glaphyoptera* group in the structure of the male hypopygium, especially the tergite and gonapophyses. The conformation of the tergite somewhat suggests that of the otherwise quite different *T. (E.) trimarginata* Alexander, of Chile, but with the details distinct.

### 33. *Tipula (Eumicrotipula) incondita* Alexander

*Tipula (Eumicrotipula) incondita* Alexander; Rev. de Entomologia, 22: 307—309; 1951.

Bolivia: Along road to Chapare, Cochabamba, 3800 meters, October 23, 1949 (Peña).

Songotal, Cuticucho, 3700 meters, November 30, 1953—February 2, 1954 (Forster); Yungas de Corani, 2500 meters, October 1—3, 1953 (Forster).

Female. — Length about 22 mm.; wing 21 mm.; antenna about 4 mm.



Characters generally as in the male, differing as follows: Antennae shorter; scape obscure yellow, pedicel clear light yellow, first flagellar segment light brown, more yellowed outwardly, succeeding segments black, the tips yellowed, the amount of the latter color decreasing on outer segments. Praescutal stripes more grayish, mediotergite more darkened medially, especially in front; dorsopleural membrane obscure brownish yellow. Ovipositor with cerci very long and slender, straight.

Allotype, ♀, Cuticucho, Songotal, 3700 meters, February 1, 1954 (Forster).

The nearest allies of the present fly are *Tipula* (*Eumicrotipula*) *conspicillata* Alexander and *T. (E.) steinbachi* Alexander.

#### 34. *Tipula* (*Eumicrotipula*) **kuehlhorni** sp. n.

Belongs to the *monilifera* group; mesonotal praescutum buffy yellow, with four pale brown stripes, pleura yellow; antennae of male very long, only a little shorter than the body, flagellar segments strongly nodose, normal pubescence long, about one-half the verticils; femora dark brown, tips narrowly blackened, preceded by a vaguely indicated more yellowed ring; wings whitened, variegated by pale and darker brown, the latter chiefly as heavy subcostal areas; male hypopygium with outer crest of inner dististyle small, conspicuously ridged, setae of posterior face of style long and delicate; outer pair of gonapophyses horn-yellow, terminating in two small widely separated points; eighth sternite with median appendage short and broad, with conspicuous yellow setae.

Male. — Length about 15 mm.; wing 15.5 mm.; antenna about 14 mm.

Frontal prolongation of head brownish yellow, nasus concolorous, of moderate length; basal segment of palpus brown, remainder black. Antennae of male unusually long, only a little shorter than the body; scape and pedicel yellow, flagellum black, base of first segment slightly paler; flagellar segments very long, basal enlargements abrupt, pale vestiture long, about one-half the longest verticils. Head with front yellowed, vertex light brown, with a capillary dark brown central line and vague dusky areas on sides of posterior vertex adjoining the eyes.

Pronotum obscure yellow, with three pale brown areas. Mesonotal praescutum buffy yellow with four pale brown stripes, the intermediate pair ending some distance before the suture, sides of praescutum vaguely darkened; scutum obscure orange, each lobe with two diffuse brown areas, midline darkened; scutellum brown, posterior border obscure yellow laterally; mediotergite brownish yellow, slightly patterned with brown behind and on sides, pleurotergite more yellowed. Pleura yellow. Halteres with stem brown, knob brownish black. Legs with coxae and trochanters yellow; femora dark brown, bases slightly more brightened, tips narrowly blackened, preceded by a vaguely indicated more yellowed ring; tibiae and tarsi dark brown, the latter passing into black; claws small, with an obtuse basal knob. Wings with the ground whitened, patterned with pale and darker brown, the latter appearing

as four very extensive subcostal areas, their interspaces small; stigma dark brown; basad of cord the white ground more extensive than the pale brown clouds, beyond cord color chiefly brown with a post-stigmal white band from costa into the bases of cells  $M_3$  and  $M_4$ ; tip of cell  $R_5$  and base of  $M_1$  with whitened areas; Anal cells pale brown on outer two-thirds; veins brown, darker in the more heavily patterned areas. Longitudinal veins beyond cord with macrotrichia, lacking on  $R_1+2$ , first two sections of  $M_1+2$ ,  $M_3+4$ , basal section of  $M_3$  and the broad base of  $M_4$ ; basad of cord trichia lacking on Rs, Cu<sub>1</sub> and 1st A, present on outer end of M and distal two-thirds of 2nd A. Venation:  $R_1+2$  present but pale; Rs long, more than one-half longer than m—cu, virtually in direct alignment with  $R_4+5$ , with r—m at or close to fork of the latter; petiole of cell  $M_1$  subequal to m.

Abdomen yellowed basally, tergites with a broken lateral stripe, clearly indicated on basal rings of segments, outer segments more brownish black; apices of tergites seven to nine patterned with yellow on either side of midline. Male hypopygium (fig. 35) with the tergite, t, narrowed outwardly, the posterior border forming two broad lobes that are separated by a small U-shaped emargination, produced more cephalad into a dorsal furrow; margins of lobes obliquely truncated, gently sinuous, smooth except at outer angles. Basistyle with mesal lobe small, with conspicuous setae, those at apex beneath very long, exceeding the lobes. Outer dististyle, d, slender, apex dilated into a weak club. Inner dististyle narrow, beak elongate, lower beak unequally bilobulate, outer lobule pale, with sparse setae, inner lobule blackened, glabrous; outer crest of style small, elevated, with six or more parallel ridges, with further small elevations outwardly; vestiture of posterior face of style abundant but long and delicate, yellow, the distal ends of outer setae curved; a low setuliferous lobe at base of style. Phallosome including broad lateral gonapophyses, g, horn-yellow, of distinctive shape; broad, terminating in two small widely separated points, inner apophysis pale, outer margins membranous, apex obtusely rounded; aedeagus small, darkened. Eighth sternite, 8s, with the median appendage short and broad, the length only a little more than the basal width, margin and surface of outer half with long yellow setae, about seven on either side stouter.

Holotype, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, November 3, 1953 (Martinez).

I take pleasure in dedicating this distinct fly to Dr. Fr. Kuhlhorn of the München Zoologischen Staatssammlung. In the unusually long antennae of the male the fly resembles species such as *Tipula* (*Eumicrotipula*) *armillata* Alexander, *T. (E.) chanca* Alexander, and some others, differing evidently in the structure of the male hypopygium, especially the inner dististyle and gonapophysis.

### 35. *Tipula* (*Eumicrotipula*) *longurioides* Alexander

*Tipula* (*Eumicrotipula*) *longurioides* Alexander; Jour. N. Y. Ent. Soc., 62: 140—141; 1954.

Bolivia: Cochabamba, Chapare, El Limbo, 2000 meters, March 1953 (Martinez).



**36. Tipula (Eumicrotipula) pediformis sp. n.**

Belongs to the *monilifera* group; size medium (wing of male 16.5 mm.); mesonotal praescutum buffy yellow, with four brown stripes; basal flagellar segments bicolored; femora obscure yellow, tips black; wings with the whitened ground restricted, heavily patterned with dark and paler brown; male hypopygium with outer angles of tergite produced; outer dististyle long and slender, inner style with outer crest compact, coarsely ridged; gonapophysis with upper plate produced into a foot-shaped structure; eighth sternite with two small separate lobes on posterior border.

Male. — Length about 15 mm.; wing 16.5 mm.; antenna about 9 mm.

Frontal prolongation of head obscure brownish yellow, slightly darker on sides; nasus yellow, long and slender; palpi black. Antennae moderately elongate, nearly two-thirds the wing; scape and pedicel light yellow, first flagellar segment brownish yellow, succeeding four or five segments bicolored, the basal enlargements black, pedicels brownish yellow, this becoming darker on outer segments, the outer five or six uniformly black; verticils a little shorter than the segments; pale pubescence or setae unusually long, some exceeding one-half the verticils, all such setae on lower face of segment. Head buffy, with a capillary black median line on vertex.

Mesonotal praescutum with interspaces buffy yellow, with brown setigerous punctures; four discal stripes, intermediate pair paler and narrower, becoming obsolete far before the suture, lateral stripes solidly darkened; scutal lobes extensively darkened, median region slightly paler brownish yellow; scutellum and mediotergite more yellowish brown, faintly patterned. Pleura yellow. Halteres with stem light brown, yellow at base, knob darker brown. Legs with coxae and trochanters yellow; femora obscure yellow, tips passing into black; tibiae darker brown, tarsi black. Wings with the restricted ground whitened, heavily patterned with dark and paler brown; the darkest pattern includes cell C and four large subcostal areas that extend backward across cell R; stigma darker brown; further extensive darker areas in outer half of cell M, with three smaller marks in basal half of cell Cu; beyond cord a broad white post-stigmal band extending into base of cell M<sub>3</sub>; tip of cell R<sub>5</sub> and base of M<sub>1</sub> whitened; basad of cord the white color includes a major area across outer half of cells R and M, with a more irregular pattern in bases of cells Cu and 1st A; veins dark brown, slightly paler in the whitened ground. Macrotrichia of longitudinal veins in outer medial field relatively sparse, including the outer three-fourths of M and outer ends of M<sub>2</sub> and M<sub>3</sub>, lacking on all veins comprising cell 1st M<sub>2</sub>, petiole of cell M<sub>1</sub> and M<sub>4</sub>; no trichia on 1st A. Venation: R<sub>1</sub>+<sub>2</sub> entire, with trichia on basal half; petiole of cell M<sub>1</sub> subequal to m.

Abdominal tergites light brown, patterned with yellow and sublaterally with darker brown; basal sternites more uniformly yellow; outer segments becoming progressively darker, including the central parts; hypopygium darkened. Male hypopygium (fig. 36) with the tergite, t, narrowed outwardly, posterior border with a narrow emargination and dorsal furrow; lateral lobes



with outer angles very strongly produced. Outer dististyle, d, long and slender; inner style narrow, beak relatively slender, outer crest compact, coarsely ridged and reticulated; setae of outer margin long and delicate. Gonapophysis, g, distinctive, as shown; the upper more sclerotized plate deeply emarginate, the inner arm a foot-shaped structure, the heel portion produced into a small point; ventral plate extensive, very pale to submembranous. Ninth sternite, 9s, with lobe subglabrous, with abundant setae, the apical ones very long, more than twice the lobe itself. Eighth sternite, 8s, transverse, posterior border gently rounded, mid-area with two small distinctly separated rounded lobes or appendages, each with about a dozen long setae.

**Holotype**, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, November 11, 1953 (Martinez).

In its general appearance, especially the pattern of the wings, *Tipula* (*Eumicrotipula*) *pediformis* is much as in *T. (E.) monilifera* Loew, *T. (E.) moniliferoides* Alexander and several other species, the chief differences being in the distinct male hypopygium, involving the tergite, inner dististyle, gonapophyses, and eighth sternite.

### 37. *Tipula* (*Eumicrotipula*) ***platytergata*** sp. n.

Belongs to the *monilifera* group; size medium (wing of male 16 mm.); general coloration of head and thorax gray; nasus lacking; antennae of male elongate; halteres yellow; femora light brown, tips broadly blackened, preceded by a narrow obscure yellow ring; wings pale brown, poorly variegated by darker brown and very restricted pale areas; abdomen dark brown; male hypopygium with the tergite very broad and narrow, posterior border gently emarginate, with a microscopic U-shaped notch; mesal lobe of basistyle subglobular, densely covered with short yellow setulae; outer dististyle short and broad, inner style with its outer crest high; outer blade of gonapophysis obtusely rounded at apex; eighth sternite apparently without a median appendage.

**Male**. — Length about 14.5 mm.; wing 16 mm.; antenna about 10.5 mm.

Frontal prolongation of head light gray above, brown on sides, especially near apex; nasus lacking; vestiture of prolongation long but sparse, concentrated on outer half; palpi brownish black, terminal segment black. Antennae of male very long, about two-thirds the wing; scape yellow, brown beneath, pedicel brownish yellow with a dense area of black setae, flagellum black; basal enlargements of segments hemispherical; verticils shorter than the segments; normal vestiture relatively short, about one-fourth the verticils, placed on all aspects of the segments. Head gray, vaguely patterned with brown; vertical tubercle very low and inconspicuous.

Pronotum brownish gray, with three small darker markings. Mesonotal praescutum with disk light gray, with four poorly differentiated darker gray stripes, the intermediate pair more widely separated behind; humeral and lateral borders, with a capillary median dash at extreme cephalic border black; posterior sclerites of notum gray, parascutella light brown; mediotergite with a capillary darker central line, pleurotergite brown, light gray

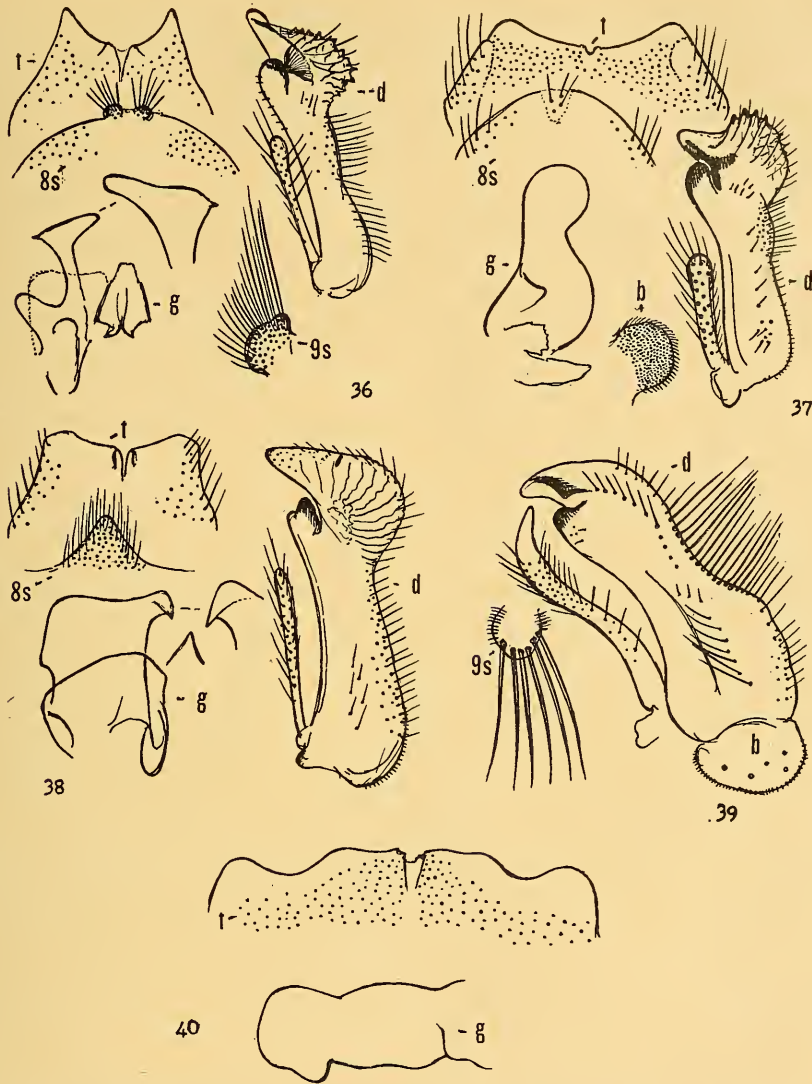
Fig. 36 *Tipula (Eumicrotipula) pediformis* sp. n.; male hypopygium.Fig. 37 *Tipula (Eumicrotipula) platytergata* sp. n.; male hypopygium.Fig. 38 *Tipula (Eumicrotipula) psittacina* sp. n.; male hypopygium.Fig. 39 *Tipula (Eumicrotipula) tanymetra* sp. n.; male hypopygium.

Fig. 40 The same, details of hypopygium.

(Symbols: b, basistyle; d, dististyle; g, gonapophysis; s, sternite; t, tergite)

pruinose; vestiture of notum very reduced, virtually lacking on praescutum, short and inconspicuous on scutellum and mediotergite. Pleura gray, slightly darker gray on the ventral sternopleurite and meron; a conspicuous brownish black dorsal stripe from the cervical region across the dorsal anepisternum and pteropleurite. Halteres pale yellow, including the knobs. Legs with coxae brown; trochanters brownish yellow; femora light brown, tips broadly

blackened, preceded by a narrow scarcely evident obscure yellow ring; tibiae and basitarsi brown, remainder of tarsi brownish black; claws simple. Wings pale brown, slightly variegated by darker brown and very restricted pale areas; three darker brown areas in cell Sc, subequal to or smaller than the interspaces; stigma paler brown; two paler brown areas in cell M adjoining outer half of vein Cu, with two similar darkenings in base of cell Cu; the pale areas include small prestigmal and poststigmal brightenings and a larger mark across cell 1st M<sub>2</sub> into the base of cell M<sub>3</sub>; veins brown, yellow in the prearcular field and the interspaces of veins R and Sc. Macrotrichia lacking on Rs, M, basal section of Cu<sub>1</sub> and 1st A; beyond cord lacking on most of R<sub>1</sub>+<sub>2</sub>, all veins comprising cell 1st M<sub>2</sub>, petiole of cell M<sub>1</sub>, and extensively on bases of veins M<sub>1</sub>, M<sub>2</sub> and M<sub>3</sub>, M<sub>4</sub> with very sparse trichia on outer half. Venation: R<sub>1</sub>+<sub>2</sub> pale almost throughout; petiole of cell M<sub>1</sub> about one-half longer than m.

Abdomen with basal tergite brownish gray, succeeding segments dark brown, the extreme posterior borders of segments pale; hypopygium chiefly darkened. Male hypopygium (fig. 37) with the tergite, t, transverse, very broad, posterior border gently emarginate, with a microscopic U-shaped median notch; lateral lobes broad, with gently concave borders; tergal vestiture short and pale. Basistyle, b, with mesal lobe subglobular, densely covered with short yellow setulae. Outer dististyle, d, unusually short and broad, its length about one-half that of the inner style, the latter with its lower beak obtusely rounded; outer crest high, corrugated and indistinctly reticulated, with pale setae; setae of posterior border of style slender, pale yellow. Gonapophysis, g, with apex of blade obtusely rounded. Eighth sternite, 8s, relatively small, posterior border convexly rounded; median area pale, with five or six setigerous punctures, but apparently without a lobe or appendage as common in the group; vestiture of sternite unusually sparse and inconspicuous.

**Holotype**, ♂, Songotal, Caticucho, ca. 3700 meters, February 1, 1954 (Forster).

*Tipula* (*Eumicrotipula*) *platyterga* is entirely distinct from other members of the *monilifera* group in the gray coloration of the thorax, loss of the nasus, and details of structure of the male hypopygium, especially the tergite, dististyles and eighth sternite.

### 38. *Tipula* (*Eumicrotipula*) ***psittacina*** sp. n.

Belongs to the *monilifera* group; general coloration of thorax yellow, praescutum with four obscure orange stripes, interspaces freckled with brown; antennae of male elongate, flagellar segments strongly nodose; femora yellow, pale brown before tip forming a vague ring; wings whitened, patterned with brown; abdomen yellow, basal segments vaguely patterned with pale brown, segments seven and eight brownish black to form a conspicuous ring; male hypopygium with the tergite emarginate medially; inner dististyle with outer crest moderately developed; gonapophysis consisting of two flattened blades,



the inner apical angle of the outer plate produced into a small decurved point; appendage of eighth sternite small, triangular, its length and basal width subequal.

**Male.** — Length about 13—13.5 mm.; wing 15 mm.; antenna about 10 to 12 mm.

**Female.** — Length about 19 mm.; wing 17.5 mm.; antenna about 3.2 mm.

Frontal prolongation of head light yellow, including the elongate nasus; palpi brownish black, incisures narrowly whitened; terminal segment dark brown, its outer half light yellow. Antennae of male elongate, about two-thirds the wing, yellow, the basal enlargements of the flagellar segments abruptly black, outer segments more uniformly darkened; basal enlargements of segments very conspicuous; longest verticils shorter than the segments; normal pale vestiture relatively long, about two-fifths the verticils. Antennae of female short, the bicolorous nature of the flagellum less evident. Head buffy yellow, vertex faintly pruinose, with a very delicate capillary brown vitta. Pronotum brownish yellow, with a capillary pale brown line. Mesonotal praescutum yellow, with four obscure orange stripes, the intermediate pair separated by a pale brown vitta, interspaces with brown setigerous punctures; posterior sclerites of notum more yellowed, with a scarcely evident capillary darker central line; praescutal vestiture very delicate, of the scutellum and mediotergite longer, pale. Pleura light yellow. Halteres with stem yellow, knob infuscated. Legs with coxae and trochanters light yellow; femora yellow, before tip narrowly pale brown, the actual apex vaguely paler; tibiae brownish yellow, tips narrowly darkened, tarsi passing into black; claws small, simple; in female, tips of femora and tibiae scarcely darkened. Wings with the restricted ground whitened, patterned with pale and darker brown; cells C and Sc uniform brown; stigma slightly darker; basal of cord with three darkened clouds in cell R adjoining the vein; cell M with a single dark area, Cu on proximal half with three brown clouds on proximal half; beyond cord with a broad ground band from C into the bases of cells  $M_3$  and  $M_4$ ; restricted ground areas in outer end of cell  $R_5$  and base of  $M_1$ ; veins brown. Macrotrichia on longitudinal veins beyond cord, lacking on most of  $R_1 +_2$ ,  $M_1 +_2$ , and all veins comprising cell 1st  $M_2$ ; vein 2nd A with trichia on more than outer half, 1st A glabrous. Venation:  $R_1 +_2$  entire; m and petiole of cell  $M_1$  subequal.

Abdomen yellow, basal tergites vaguely to scarcely striped with pale brown; segments seven and eight brownish black, forming a narrow ring; hypopygium yellow. In female, basal segments yellow, those beyond the third darker; genital segment brownish yellow; ovipositor with cerci elongate, slender, straight to very insensibly decurved. Male hypopygium (fig. 38) with posterior border of tergite, t, narrowly emarginate, the broad lateral lobes obliquely truncate, outer lateral angles more squarely so; inner angle of lobe not produced, with a narrow-shaped margin or flange. Basistyle with mesal lobe low, with long setae. Outer dististyle, d, very slender, about two-thirds the inner style, the latter with its outer crest moderately developed, with

parallel ridges. Gonapophysis, g, distinctive, consisting of pale flattened outer plates, the inner apical angle stout, produced into a small decurved point; lower blades more intensely yellow, their cephalic inner part produced into a pendulous lobe. Eighth sternite, 8s, with the appendage small, triangular in outline, the length subequal to the basal width, apex narrowly obtuse.

Holotype, ♂, Yungas de Forestal, 2500 meters, June 8, 1950 (Forster). Allotopotype, ♀, June 6, 1950. Paratopotype, ♂, June 10, 1950; paratypes, 1 ♂, Parque Aconquija, Tucuman, Argentina, 800 meters, January 11, 1953 (Petr Wygodzinsky), Alexander Collection; 1 ♂, Quebrada Cainzo, Fafi, Tucuman, Argentina, April 30, 1953 (R. Golbach), Instituto Lillo, Tucuman; 1 ♂, V. Padre Monti, Burruyacu, Tucuman, January 17—February 7, 1948 (R. Golbach); Instituto Lillo.

Other allied and generally similar species of the *monilifera* group include *Tipula* (*Eumicrotipula*) *accipitrina* Alexander, *T. (E.) armillata* Alexander, *T. (E.) immorsa* Alexander, *T. (E.) monilifera* Loew, *T. (E.) moniliferoides* Alexander, and some others, all differing among themselves in body coloration, the antennae, legs and wings, and especially in the structure of the male hypopygium, especially the inner dististyle, gonapophysis, and eighth sternite. The material from Tucuman, Argentina, has the male antennae a little longer than the type from Bolivia, but from the structure of the hypopygium and other characters seems certainly to be conspecific.

### 39. *Tipula* (*Eumicrotipula*) **songoana** sp. n.

Belongs to the *glaphyroptera* group; size relatively small (wing of female to 17 mm.); general coloration of mesonotum gray, praescutum with four vague brown stripes, the intermediate pair widely separated behind, posterior sclerites more yellowed; antennae with first flagellar segment elongate, succeeding segments bicolored; femora brownish yellow, tips conspicuously blackened; wings brownish yellow, very vaguely patterned with slightly darker brown and whitened oblitative areas;  $R_1 +_2$  preserved; abdominal tergites yellow, with conspicuous brownish black sublateral stripes.

Female. — Length about 15—17 mm.; wing 15.5—17 mm.; antenna about 2.7—2.8 mm.

Frontal prolongation of head brown to brownish black, slightly pruinose at base, sides narrowly darker; nasus lacking; palpi black, terminal segment relatively short, about twice the penultimate. Antennae with scape and pedicel yellow; first flagellar segment brownish yellow, succeeding three or four segments bicolored, black basally, with about the outer half obscure yellow, this color becoming darker and more obscured on outer segments; about the seven outer segments uniformly brownish black; segments a little longer than the verticils; first flagellar segment elongate, subequal to the combined second through fourth segments. Head brownish gray anteriorly, vaguely patterned with brown, including a central vitta from the very low vertical tubercle to the occiput, orbits clearer gray.



Pronotal scutum brownish gray, bordered anteriorly with brown, scutellum testaceous yellow. Mesonotal praescutum gray with four vague brown stripes, the intermediate pair subobsolete on anterior fourth, narrowed behind, much less than the interspaces; sublateral stripes indicated on anterior half, paling to gray behind, humeral and lateral margins brown; interspaces with short yellow setae from dark brown setigerous punctures; scutum light gray, each lobe with two darker gray areas; scutellum light gray; mediotergite darker gray, yellowed laterally and on posterior fourth; a capillary darkened central line on scutellum and mediotergite, most evident behind; pleurotergite with the anepisternum light brown, katapleurotergite light yellow. Pleura brown, more grayish above; dorsopleural membrane buffy yellow. Halteres with stem yellowed, base of knob weakly darkened, apex obscure yellow. Legs with coxae brownish gray; trochanters obscure yellow; femora brownish yellow to light brown, tips conspicuously blackened, preceded by a narrower obscure yellow ring; tibiae and basitarsi light brown, tips blackened, remainder of tarsi black. Wings relatively broad, brownish yellow, very vaguely patterned with slightly darker brown and more evident whitened oblitative areas; the dark color includes large vague clouds at origin of  $R_s$  and at the anterior cord, stigma scarcely darker; the whitened areas are prestigmal, poststigmal, and a larger marking from outer end of cell  $R$  across base of cell 1st  $M_2$  into cells  $M_3$  and  $M_4$ , almost reaching the posterior margin; veins light brown, more yellowed in the prearcular and costal fields. Longitudinal veins beyond cord chiefly with macrotrichia, lacking on  $R_1+2$ , the veins comprising cell 1st  $M_2$ , petiole of cell  $M_1$  and bases of  $M_3$  and  $M_4$ ; no trichia on  $R_s$ ,  $M$ , basal section of  $Cu_1$  and 1st  $A$ ; 2nd  $A$  with a few long scattered trichia including some on the prearcular section. Venation:  $R_1+2$  preserved;  $R_s$  slightly less than twice  $m-cu$ ; petiole of cell  $M_1$  subequal to or longer than  $m$ .

Abdominal tergites two to seven yellow, sublaterally broadly brownish black, extreme margins light gray, the amount of dark color increasing on outer segments, median region not or scarcely patterned; outer segments blackened subterminally, posterior borders pale; basal sternites brownish yellow, outer segments darker posteriorly. Ovipositor with cerci straight, very slender, tips narrowly obtuse.

Holotype, ♀, Songotal, Cuticucho, ca. 3700 meters, February 2, 1954 (Forster). Paratopotypes, 4 ♀♀, January 30–February 3, 1954 (Forster).

The most similar regional species include *Tipula* (*Eumicrotipula*) *longurionides* Alexander, readily told by the virtually unpatterned wings, with  $R_1+2$  atrophied, and *T. (E.) tanymetra* sp. n., differing evidently in the coloration of the body, legs and wings.

#### 40. *Tipula* (*Eumicrotipula*) *steinbachi* Alexander

*Tipula* (*Eumicrotipula*) *steinbachi* Alexander; Rev. de Entomologia, 17: 191–193, fig. 3 (♂ hypopygium); 1946.

Bolivia: Santa Cruz, February 1929 (Francisco Steinbach).



Cochabamba, Chapare, November 1934 (Francisco Steinbach); El Limbo, 2000 meters, November 6, 1953 (Martinez); km. 104, 3150 meters, February 1959 (Martinez).

#### 41. *Tipula* (*Eumicrotipula*) ***tanymetra*** sp. n.

Belongs to the *glaphyoptera* group; general coloration of thorax obscure yellow; praescutum with three brown stripes; a continuous central darkening extending from suture to abdomen; basal flagellar segment of antenna elongate; halteres yellow; femora yellow with a very inconspicuous pale brown subterminal ring; wings yellow, extensively patterned with darker, chiefly as pale brown washes; dark pattern restricted, not including cells C or Sc; abdomen obscure yellow, tergites with a relatively broad and conspicuous black lateral stripe; male hypopygium with outer dististyle very slender.

Male. — Length about 16 mm.; wing 16 mm.; antenna about 6 mm.

Female. — Length about 14–15 mm.; wing 14–15 mm.; antenna about 2.3–2.4 mm.

Frontal prolongation of head buffy yellow; nasus very small; palpi brownish black. Antennae of male relatively long, more than one-third the wing; basal three segments yellow, remainder brownish black to black; flagellar segments feebly incised, basal enlargements small, verticils about one-half the segment; basal flagellar segment unusually long in both sexes, subequal to the succeeding two segments combined, terminal segment very reduced; in female, antennae short, brownish yellow, bases of flagellar segments narrowly and vaguely more darkened. Head buffy yellow; vertical tubercle very low; vertex with a scarcely indicated darker line.

Pronotum obscure yellow, scutum with three brown areas. Mesonotal praescutum obscure yellow, with three brown stripes; median stripe narrow, darker at anterior end, widened behind, lateral stripes paler, best indicated by darker inner borders; posterior sclerites of notum obscure yellow, with a continuous brown central vitta extending from the suture to abdomen, scutal lobes with narrow brown lines. Pleura buffy yellow, vaguely more darkened on dorsopleural region. Halteres yellow. Legs with coxae and trochanters yellow; femora yellow, with a narrow and very inconspicuous subterminal pale brown ring; tibiae and basitarsi yellow, tips narrowly and vaguely darkened, outer tarsal segments passing into black; claws simple. Wings relatively broad, yellow, extensively patterned with darker; cells C and Sc unpatterned; small brown spots at basal third of vein R, origin of Rs, seams over cord and outer end of cell 1st M<sub>2</sub>, and as a linear wash in cell M at near midlength of vein Cu<sub>1</sub>; paler brown suffusions in outer radial field, fork of M<sub>1</sub>+<sub>2</sub>, distal section of Cu<sub>1</sub> and along vein 2nd A; very small darkenings in bases of both Anal cells; still paler suffusions in centers of cells of posterior half of wing; whitened obliterative marks before stigma and in basal half of cell 1st M<sub>2</sub>; veins yellow, darker in the patterned areas. Most longitudinal veins beyond cord with macrotrichia, lacking on R<sub>2</sub> and distal half of R<sub>1</sub>+<sub>2</sub>; basad of cord lacking on Rs, M and 1st A, extensively present on Cu<sub>1</sub> and 2nd A.

Venation:  $R_1 +_2$  preserved; petiole of cell  $M_1$  subequal to or shorter than  $m$ .

Abdomen obscure yellow, tergites with a relatively broad, very conspicuous black stripe on either side; outer sternites in male weakly darkened. Male hypopygium (figs. 39, 40) with the tergite,  $t$ , yellow, transverse, relatively narrow; posterior border with a broad shallow sublateral emargination, central area produced, with a tiny median emargination and a broad dorsal furrow; setae of posterior fourth of tergite small and delicate, posteriorly with larger bristles on either side. Ninth sternite,  $9s$ , with a small setuliferous lobe, tipped with several long broad setae, their tips long-extended. Basistyle with a large rounded lobe, with delicate setulae and a few long setae. Outer dististyle,  $d$ , very narrow, outer third curved, tip glabrous, acute, before apex with numerous strong setae. Inner dististyle with beak flattened, slightly decurved, lower beak obtuse; posterior region of style with a row of strong erect setae. Gonapophysis,  $g$ , flattened, tip obtuse.

Holotype, ♂, km. 104, Chapare, Cochabamba, 3150 meters, February 15, 1959 (Martinez). Allotopotype, ♀. Paratopotype, ♀.

In its general appearance, *Tipula* (*Eumicrotipula*) *tanymetra* suggests other regional species, including *T. (E.) coronata* Alexander, *T. (E.) hedymopa* Alexander, *T. (E.) rucana* Alexander, *T. (E.) suavissima* Alexander, and some others, differing evidently in the coloration of the body and wings and in the structure of the male hypopygium. The elongate first flagellar segment of both sexes is noteworthy, suggesting the even more accentuated condition found in members of the *virgulata* group of the subgenus, occurring chiefly in Mexico.

#### 42. *Tipula* (*Eumicrotipula*) *votiva* Alexander

*Tipula* (*Eumicrotipula*) *votiva* Alexander: Jour. N. Y. Ent. Soc., 52: 374—376; 1944.

Bolivia: Santa Cruz, Buenavista (Steinbach).

#### 43. *Tipula* (*Eumicrotipula*) *yungasensis* sp. n.

Size very large (wing of female 25 mm.); mesonotal praescutum with four dark gray stripes, variegated with dark brown, interspaces with brown setigerous punctures; femora yellow, tips narrowly dark brown, preceded by a vague obscure yellow ring; wings whitened, with a relatively restricted brown pattern; abdominal tergites obscure yellow basally, darker posteriorly and on sides, lateral borders broadly light gray.

Female. — Length about 26 mm.; wing 25 mm.; antenna about 3.5 mm.

Frontal prolongation of head brownish gray above, more yellowed apically, including the nasus, narrowly infuscated along sides, light brown beneath; palpi with first segment light brown, remainder black, intermediate two segments stout, terminal segment short, about one-half longer than the penultimate. Antennae short; scape obscure yellow, pedicel very small, light yellow, flagellum black, first segment narrowly yellowed at base; segments subequal in length to the verticils, basal enlargements small. Head brownish gray, with



a narrow dark brown central vitta extending from summit of the conspicuously rounded vertical tubercle backward; a small circular brown spot on either side of posterior vertex.

Pronotum yellowish gray, with a brown central mark, sides less evidently patterned. Mesonotal praescutum with four dark gray stripes, interspaces light gray with brown setigerous punctures; intermediate stripes narrow, passing into dark brown on posterior half, separated by a capillary dark brown line; a brown mark on sides before suture, humeral region strongly depressed; scutum light gray medially, lobes darker, with two slightly separated plumbeous gray areas; scutellum and mediotergite whitish gray, each with a central brown line, posterior half of mediotergite pale brown. Pleura and pleurotergite chiefly light gray, ventral meron darkened; dorsopleural membrane yellowed. Halteres with stem yellow, knob infuscated. Legs with coxae brownish gray; trochanters obscure yellow, brownish black apically beneath; femora yellow, tips narrowly dark brown, preceded by a narrower very vague clearer yellow ring; tibiae and basitarsi obscure yellow, tips vaguely darker, outer tarsal segments dark brown. Wings with the ground whitened, with a relatively sparse but conspicuous brown pattern, the ground areas more extensive than the dark markings; cell R with four relatively small brown marks, involving cell Sc, the first including also cell M, the last involving the anterior cord and stigma; outer half of cell  $R_3$  darkened, with a pale center; cell M with two large paler brown areas, the more basal one elongate, separated from vein Cu by a pale yellow line; veins beyond cord very narrowly seamed with brown; centers of cells 2nd  $M_2$  and  $M_4$  paler brown, the latter more extensive; irregular pale brown clouds in outer half of cells Cu and 1st A, cell 2nd A more uniformly clouded; cell C virtually uniform pale yellow; veins brown, C, Sc, R and  $R_s$  more yellowed. Venation:  $R_1 +_2$  preserved, base with macrotrichia; cell  $R_3$  narrowest at near midlength, expanded outwardly, at margin subequal in extent to cell  $R_2$ ; petiole of cell  $M_1$  longer than m.

Abdomen with first tergite brownish gray, basal ring of second segment extensively yellow, posterior border dark brown; tergites three to seven, inclusive, more restrictedly yellow at base, remainder darker toward sides, lateral tergal borders broadly light gray on more than outer half, basal area dark brown; basal sternites fulvous, posterior borders narrowly pale, outer sternites light ashy gray, with three brown lines, the central one paler. Ovipositor with cerci long and straight, tips narrowly obtuse; hypovalvae broadly flattened, tips obtuse.

Holotype, ♀, Yungas, Songo Valley, 3500 meters, August 16, 1953 (Forster).

*Tipula* (*Eumicrotipula*) *yungasensis* is one of the largest species of the subgenus so far discovered. In its general appearance, especially in the relatively restricted darkened wing pattern, the fly suggests various other regional species, differing in details of body and wing coloration, such species including *T. (E.) huanca* Alexander, *T. (E.) incondita* Alexander, *T. (E.)*



*mocoa* Alexander, *T. (E.) resplendens* Alexander, and *T. (E.) ursula* Alexander.

**44. *Tipula (Microtipula) apollyon* Alexander**

*Tipula (Microtipula) apollyon* Alexander; Rev. de Entomologia, 22: 292—294; 1951.

Bolivia: Paractito, Cochabamba, September 22, 1949 (P e ñ a).

El Limbo, Chapare, Cochabamba, 2000 meters, March, November 5, 1953 (M a r t i n e z).

**45. *Tipula (Microtipula) austrovolens* Alexander**

*Tipula (Microtipula) austrovolens* Alexander; Rev. de Entomologia, 22: 270—273, fig. 1 (♂ hypopygium); 1951.

Bolivia: Cristal Mayu, Yungas, Chapare, 1200 meters, October 8, 1949 (P e ñ a).

**46. *Tipula (Microtipula) aymara* Alexander**

*Tipula aymara* Alexander; Ann. Ent. Soc. Amer., 5: 353—355, pl. 24, fig. b (venation), pl. 25, fig. m (♂ hypopygium); pl. 26, fig. s (ovipositor); 1912.

Bolivia: San Antonio (F a s s l); A l e x a n d e r Collection.

The male hypopygium is illustrated (fig. 41).

**47. *Tipula (Microtipula) epione* Alexander**

*Tipula (Microtipula) epione* Alexander; Jour. N. Y. Ent. Soc., 52: 376—377; 1944.

Bolivia: Santa Cruz, Buenavista (Francisco S t e i n b a c h).

**48. *Tipula (Microtipula) horribilis* Alexander**

*Tipula (Microtipula) horribilis* Alexander; Rev. de Entomologia, 16: 352—354, fig. 8 (♂ hypopygium); 1945.

Bolivia: Santa Cruz, Buenavista (Francisco S t e i n b a c h).

**49. *Tipula (Microtipula) manniana* Alexander**

*Tipula (Microtipula) manniana* Alexander; Rev. de Entomologia, 16: 419—421, fig. 4 (♂ hypopygium); 1945.

Bolivia: Ivon, Beni, 1922 (M a n n); Mulford Biological Expedition 1921 to 1922.

**50. *Tipula (Microtipula) mulfordi* Alexander**

*Tipula (Microtipula) mulfordi* Alexander; Ann. Ent. Soc. Amer., 38: 259—260; 1945.

Bolivia: Cavinass, Beni, January 1922 (M a n n); Mulford Biological Expedition 1921—1922.

**51. *Tipula (Microtipula) opipara* Alexander**

*Tipula (Microtipula) opipara* Alexander; Rev. de Entomologia, 22: 294—295, fig. 14 (♂ hypopygium); 1951.

Bolivia: Cristal Mayu, Yungas, Chapare, 1200 meters, October 10, 1949 (P e ñ a).

**52. *Tipula (Microtipula) ortoni* Alexander**

*Tipula (Microtipula) ortoni* Alexander; Ann. Ent. Soc. Amer., 33: 261—262; 1945.

*Tipula (Microtipula) ortoni* Alexander; Rev. de Entomologia, 16: 425, fig. 11 (♂ hypopygium); 1945.

Bolivia: Cavinás, Beni, February 1922 (Mann); Mulford Biological Expedition 1921—1922.

**53. *Tipula (Microtipula) peñana* Alexander**

*Tipula (Microtipula) peñana* Alexander; Rev. de Entomologia, 22: 273—274, fig. 2 (♂ hypopygium).

Bolivia: Cristal Mayn, Yungas, Chapare, 1200 meters, October 8, 1949 (Peña).

**54. *Tipula (Microtipula) quadricollis* Alexander**

*Tipula (Microtipula) quadricollis* Alexander; Rev. de Entomologia, 16: 354—356, fig. 9 (♂ hypopygium); 1945.

Bolivia: Santa Cruz, Buenavista (Francisco Steinbach).

**55. *Tipula (Microtipula) retrorsa* sp. n.**

General coloration of thorax yellow, praesentum and scutum more fulvous orange; antennae of male elongate; wings brown, stigma and costal border darker brown, outer wing cells with sparse macrotrichia; male hypopygium with posterior border of tergite gently emarginate, with two low broad lobes; basistyle with cephalic end produced; both dististyles complex, the inner bearing a single powerful black spine that is directed backward; eighth sternite narrowed posteriorly, the caudal margin with two lobes that are densely provided with short yellow setae to form cushions.

Male. — Length about 12 mm.; wing 14 mm.; antenna about 7 mm.

Frontal prolongation of head pale brownish yellow; nasus very small; palpi with proximal three segments obscure yellow, terminal segment black. Antennae of male elongate, about one-half the wing; scape and pedicel yellow, first flagellar segment yellowed at both ends, central half pale brown; second flagellar segment black, extreme tip pale, remainder of organ black; flagellar segments very gently incised, basal enlargements small, verticils shorter than the segments, these with a further short dense white pubescence. Head with front yellow, vertex light brown with indications of a slightly darker central line.

Pronotum and mesonotum fulvous brown, sides light yellow, scutal lobes fulvous orange; posterior sclerites of notum yellowed. Pleura uniformly light yellow. Halteres with stem obscure yellow, knob dark brown. Legs with coxae and trochanters yellow; femora light brown, bases yellowed; tibiae and basitarsi light brown, outer tarsal segments darker; claws toothed. Wings brown, stigma and narrow costal border darker brown; prestigmal obliterative area moderately large, the area in cell 1st  $M_2$  more restricted; veins brown. Sparse macrotrichia in cells  $R_3$  to 2nd  $M_2$ , very few in the latter cell;

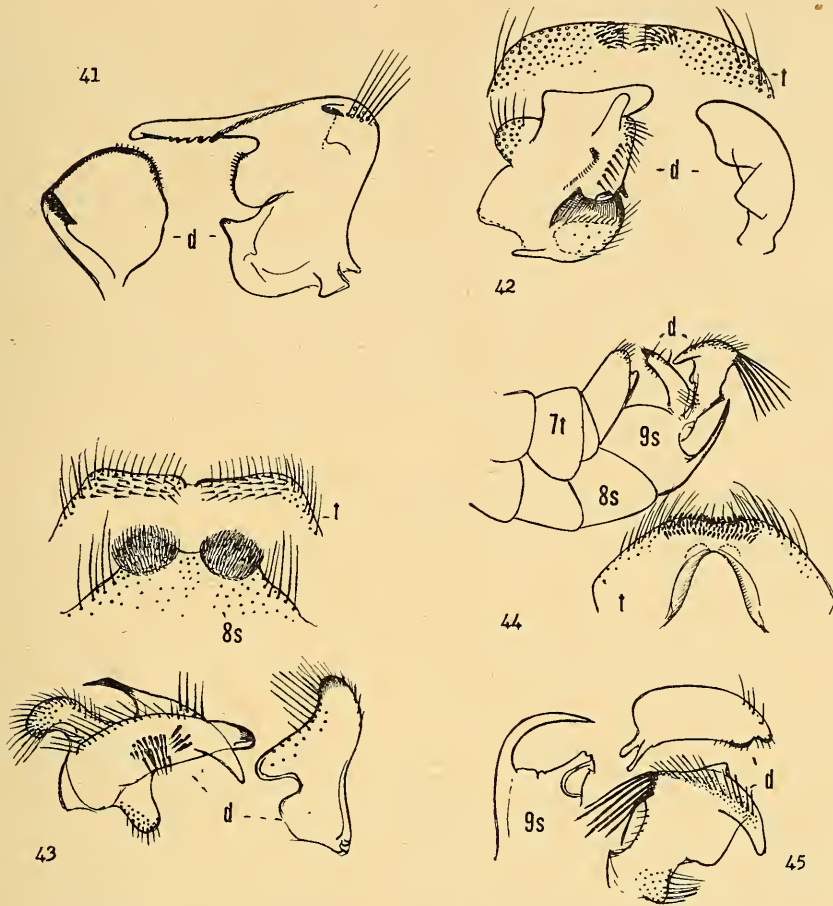


Fig. 41 *Tipula (Microtipula) aymara* Alexander; male hypopygium.

Fig. 42 *Tipula (Microtipula) myriatricha* Alexander; male hypopygium.

Fig. 43 *Tipula (Microtipula) retrorsa* sp. n.; male hypopygium.

Fig. 44 *Tipula (Microtipula) septemhastata* sp. n.; male hypopygium.

Fig. 45 The same, details of hypopygium.

(Symbols: d, dististyle; s, sternite; t, tergite)

macrotrichia on most outer longitudinal veins, lacking on proximal two-thirds of M, proximal half of 2nd A, and virtually all of 1st A. Venation:  $R_1 +_2$  entire.

Abdomen orange, tergites six to eight and sternites seven and eight, with apex of segment six black, forming a conspicuous subterminal ring; hypopygium yellow. Male hypopygium (fig. 43) with the tergite, t, broad, slightly narrowed behind, posterior border gently emarginate, forming low broad lobes that are separated by a scarcely evident median notch. Basistyle with cephalic end produced backward into a long flattened lobe, the apex rounded, weakly darkened. Dististyles, d, complex in structure, as figured; outer style produced apically into two lobes, the outer blackened at tip; inner style very complicated, beak slender, pale yellow, prolonged behind into a powerful



black spine; main disk of body of style with two separate groups of blackened spinoid setae, posterior lobe conspicuous, yellow, with long pale setae. Eighth sternite broad, narrowed behind, posterior border with two slightly separated lobes that are very densely provided with short yellow setae to form low cushions.

**Holotype**, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, November 4, 1953 (Martinez).

Other regional species of the subgenus that have macrotrichia in the outer wing cells include *Tipula* (*Microtipula*) *languidula* Alexander, *T. (M.) myriatricha* Alexander, and *T. (M.) sparsipila* sp. n. The present fly is entirely distinct from the others in the structure of the hypopygium, especially the tergite, dististyles, and eighth sternite. The male hypopygium of *myriatricha* is shown for comparison (fig. 42).

#### 56. *Tipula* (*Microtipula*) *scelestia* Alexander

*Tipula* (*Microtipula*) *scelestia* Alexander; Rev. de Entomologia, 16: 415–416, fig. 1 (♂ hypopygium); 1945.

Bolivia: Santa Cruz, Buenavista (Francisco Steinbach).

#### 57. *Tipula* (*Microtipula*) *septemhastata* sp. n.

Size above medium (wing of male 15 mm.); mesonotum orange, pleura clearer yellow; antennal flagellum and legs black; claws of male toothed; wings tinged with brown, stigma and costal region dark brown; basal abdominal tergites yellow, with broad black lateral borders; sternites and a broad subterminal ring including segments six to eight black, hypopygium fulvous; male hypopygium with the ninth sternite produced into two powerful horns; inner dististyle with a group of seven long black spearlike setae.

**Male.** — Length about 15 mm.; wing 15 mm.; antenna about 6.6 mm.

Frontal prolongation of head brown, nasus elongate; palpi brownish black, terminal segment paling to obscure yellow. Antennae with scape, pedicel and base of first flagellar segment yellow, remainder black; flagellar segments elongate, basal enlargements small, verticils about one-third the segment. Front light gray, vertex light brown; setae small, lacking on the broad central portion.

Pronotum and mesonotum orange, humeral region of praescutum, scutellum and postnotum paler yellow, scutum weakly more infuscated. Pleura clear yellow. Halteres with stem brown, knob brownish black. Legs with coxae and trochanters yellow; remainder of legs black, femoral bases narrowly yellowed; claws hairy, toothed. Wings tinged with brown, cells C and Sc, with the stigma, dark brown; m—cu and veins beyond cell 1st  $M_2$  narrowly seamed with pale brown; prestigmal area whitened, obliterative streak across cell 1st  $M_2$  narrow; veins brown. Longitudinal veins beyond general level of origin of Rs with macrotrichia, lacking on M, basal section of  $Cu_1$  and 1st A, present on more than outer half of 2nd A. Venation:  $R_1 +_2$  present; m and

petiole of cell  $M_1$  subequal;  $m-cu$  at fork of  $M_3+4$ ; cell 2nd A relatively broad.

Basal abdominal tergites yellow, lateral borders broadly blackened, sternites and all of segments six to eight intensely black, ninth segment abruptly fulvous. Male hypopygium (figs. 44, 45) with the tergite,  $t$ , transverse, slightly narrowed outwardly, posterior border nearly truncate to very feebly emarginate, with numerous blackened pegs, on sides of the lobes replaced by long black setae; proctigeral armature  $\Omega$ -shaped structure. Ninth sternite,  $9s$ , produced into two powerful horns that are directed dorsad, at base with dense delicate setulae, more distally on the horns passing into flattened scales. Dististyles,  $d$ , distinctive; outer style smaller, apex weakly bidentate, blackened, with a few setae; inner style subquadrate, beak slender, at posterior angle with a compact group of seven long black spearlike setae forming a loose crest.

**Holotype**, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, February 1959 (Martinez).

*Tipula* (*Microtipula*) *septemhastata* is quite distinct from all previously described species of the subgenus, especially in the armature of the ninth sternite and inner dististyle. In the latter regard it suggests *T. (M.) trihastata* Alexander, which has three comparable spearlike spinoid setae in the same general area.

#### 58. *Tipula* (*Microtipula*) ***sparsipila* sp. n.**

Allied to *myriatrichia*; general coloration of mesonotal praescutum and scutum orange, posterior sclerites of notum and the pleura yellow; antennae of male elongate, about one-half the wing, flagellum black; legs with femora brown, outer segments passing into black; wings strongly suffused with brown, costal field and stigma darker brown; cells  $R_3$  to 2nd  $M_2$  with macrotrichia; vein  $R_1+2$  partly atrophied; abdomen black, basal segments obscure yellow, hypopygium fulvous; male hypopygium with the setiferous lobes of tergite separated; basistyle with mesal tuberculiferous area pale; dististyles complex in structure.

**Male**. — Length about 12–13 mm.; wing 14–14.5 mm.; antenna about 7–7.3 mm.

Frontal prolongation of head brownish yellow; nasus conspicuous; palpi brownish yellow, terminal segment very long. Antennae of male elongate, about one-half the wing; basal three segments yellow, remainder black, apex of second flagellar segment narrowly pale; flagellar segments elongate, exceeding the longest verticils, basal enlargements very small, segments clothed with an abundant short white pubescence. Head brown.

Pronotum brownish yellow. Mesonotal praescutum obscure yellow, with three scarcely differentiated obscure fulvous orange stripes, scutal lobes brownish orange, clearer behind; scutellum and postnotum yellow; vestiture of praescutum very small, slightly longer on posterior sclerites. Pleura yellow. Halteres brown, knobs slightly darker. Legs with coxae and trochan-

ters light yellow; femora yellowish brown, tibiae and tarsi darker brown to black; claws with a conspicuous tooth. Wings strongly suffused with brown, prearcular and costal fields darker brown; stigma oval, slightly darker brown; veins brown. Relatively sparse macrotrichia in outer ends of cells  $R_3$  to  $2nd\ M_2$ , becoming more sparse behind; veins beyond general level of cord with trichia, occurring also on  $R_s$  and outer end of  $M$ , lacking or virtually so on  $1st\ A$  and basal section of  $Cu_1$ , relatively numerous on more than the outer half of  $2nd\ A$ . Venation:  $R_1+2$  partly atrophied, in the paratype represented by a spur; petiole of cell  $M_1$  about twice  $m$ .

Abdomen with basal two segments obscure yellow, remainder of abdomen black, hypopygium abruptly fulvous yellow. Male hypopygium (fig. 46) with the tergite,  $t$ , transverse, posterior border shallowly emarginate, behind the border on either side of midline with an oval elevated area densely provided with black setae; outer lateral tergal angles with very long yellow setae, the longest fully equal to the narrowest longitudinal diameter of the tergite. Basistyle with the mesal tuberculiferous area pale, not blackened as in many species, densely covered with low tubercles. Dististyles,  $d$ , complex, as figured; outer style small, curved, tip blackened, outer margin with a low blackened lobule; inner style large and complex, the posterior part blackened, terminating in a beaklike point, surface with scattered tubercles, those near outer angle with long setae; anterior blade of style larger, expanded outwardly, apex truncate, upper angle produced into a blackened point and a decussate pale yellow blade; disk of blade with an elevated ridge that is densely covered with short black setulae; on lower margin of blade with a small oval lobe or appendage, with relatively short setae. Eighth sternite with posterior border moderately produced, strongly convex.

Holotype, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, November 7, 1953 (Martinez). Paratopotype, 2 ♂♂, November 4—7, 1953; Paratype, 1 ♂, Locotal, Chapare, 1200 meters, October 28, 1953 (Martinez).

The only other members of the subgenus that have macrotrichia in the outer wing cells are *Tipula* (*Microtipula*) *languidula* Alexander, *T. (M.) myriatricha* Alexander, and *T. (M.) retrorsa* sp. n., all differing conspicuously in the hypopygial structure. The male hypopygium of *myriatricha* is shown for comparison with the present fly (fig. 42).

#### 59. *Tipula* (*Microtipula*) **subaymara** sp. n.

Size relatively large (wing of male 17 mm.); mesonotal praescutum yellowed in front, patterned with brown behind, scutellum, postnotum and pleura yellowed; wings tinged with brown, costal border dark brown; male hypopygium with the tergal lobe parallel-sided, relatively long; outer dististyle produced at apex into a slender beak; inner style with beak slender, untoothed, the outer posterior angle without a blackened spine.

Male. — Length about 16—17 mm.; wing 16.8—17 mm.; antenna about 6.5—6.8 mm.



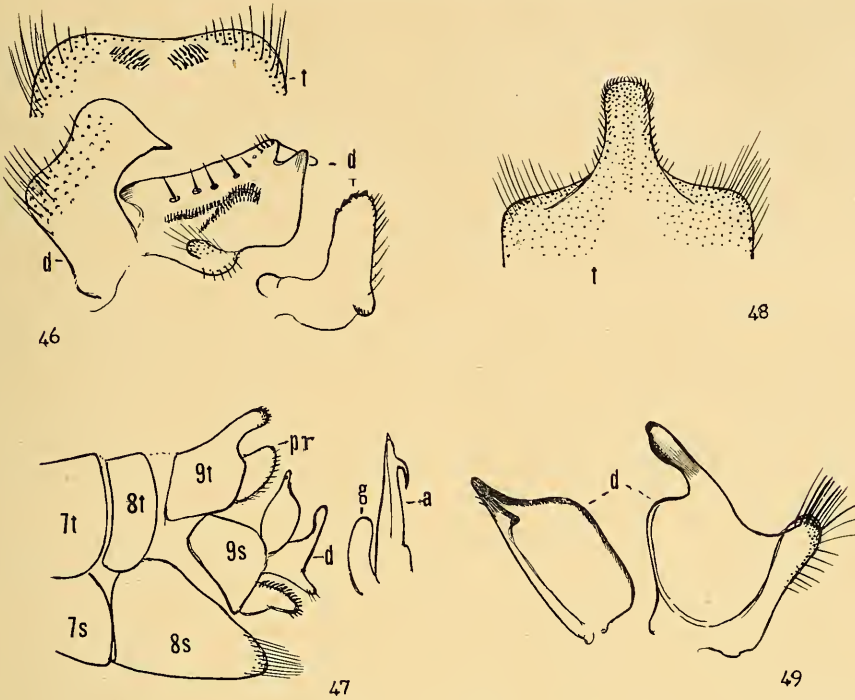


Fig. 46 *Tipula (Microtipula) sparsipila* sp. n.; male hypopygium.

Fig. 47—49 *Tipula (Microtipula) subaymara* sp. n.; male hypopygium.

(Symbols: a, aedeagus; d, dististyle; g, gonapophysis, pr, proctiger; s, sternite; t, tergite)

**Female.** — Length about 18 mm.; wing 18 mm.

Frontal prolongation of head relatively short, brown; nasus short; palpi with basal two segments dark brown, outer two pale brown. Antennae with three proximal segments obscure yellow, succeeding segments brownish black, exceeding their verticils, slightly incised beyond the small basal enlargements. Head brown, paler anteriorly, vertical tubercle very small.

Pronotum obscure yellow. Mesonotal praescutum yellow in front, posterior half or more obscured by four brown stripes, more evident in the male; scutum brown, scutellum yellow, parascutella light brown; mediotergite light yellow, pleurotergite brownish yellow above, the katapleurotergite clearer yellow. Pleura obscure yellow, dorsopleural membrane more orange. Halteres brownish black. Legs with coxae and trochanters obscure yellow; femora black, bases narrowly yellowed; tibiae and tarsi black; claws toothed. Wings tinged with brown, prearcular field, cells C and Sc, and the stigma dark brown; small obliterative areas before stigma and across cell 1st  $M_2$ ; veins brown, those of anterior half of wing darker. Macrotrichia on most longitudinal veins beyond level of origin of Rs, including a few on 2nd A, lacking on  $R_1+2$ , all veins comprising cell 1st  $M_2$ ,  $M_3$ ,  $M_4$ ,  $Cu_1$  and 1st A. Venation:  $R_1+2$  preserved; petiole of cell  $M_4$ , slightly longer than m; m—cu on  $M_4$  shortly beyond origin.

Abdominal tergites dark brown to black, sternites more brownish yellow; hypopygium blackened, appendages paler. Ovipositor with sternites and hypovalvae orange. Male hypopygium (figs. 47, 48, 49) generally as in *aymara*, especially as regards the general configuration of the tergite and eighth sternite, differing conspicuously in the shape of the dististyles. Ninth tergite produced posteriorly into a median lobe that is almost parallel-sided, apex subtruncate, with abundant short curved setae, their tips curved mesad; outer lateral angles of tergal plate with very long yellow setae. Outer dististyle, d, flattened-suboval, apex produced into a slender black beak, ventral margin back from the beak with a smaller erect black knob. Inner dististyle larger, the beak portion produced into a slender blackened lobe, outer posterior angles produced, bearing several long black bristles and additional more slender yellow setae; disk with rows of microscopic setulae directed toward the beak. Gonapophysis, g, appearing as a flattened blade, tip obtusely rounded. Aedeagus, a, before tip with a strong recurved spine.

Holotype, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, November 10, 1953 (Martinez). Allotopotype, ♀, pinned with type. Paratopotypes, 2 ♂♂, November 2—7, 1953 (Martinez).

The most similar species is *Tipula (Microtipula) aymara* Alexander (No. 46 of present report), which differs evidently in the structure of the male hypopygium, specifically both dististyles. When originally defined, *aymara* was described and figured but the dististyles were not sufficiently detailed. A more accurate figure is provided (fig. 41). Ninth tergite with the median lobe shorter and broader, tip slightly expanded. Outer dististyle, d, subcircular in outline, beak not produced, the submarginal blackened denticle present. Inner dististyle with beak very long and slender, its lower margin with a few coarse teeth; outer posterior angle with a strong blackened peglike spine, additional to a few strong setae.

## LIMONIINAE

### LIMONIINI

#### 60. *Limonia (Limonia) alfaroi* Alexander

*Dicranomyia alfaroi* Alexander; Proc. U. S. Nat. Mus., 60, art. 25: 2—3; 1922.

*Limonia (Limonia) alfaroi* Alexander; Rev. de Entomologia, 21: 173; 1950.

The type was from San José, Costa Rica, collected by A l f a r o.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 8, 1953 (Martinez); km. 104, Chapare, 3150 meters, February 1959 (Martinez).

In its long vein Sc the present fly appears to be correctly referred to *alfaroi* rather than to the allied *L. (L.) perflaveola* Alexander, of Mexico and Central America. The reference of these flies to the subgenus *Limonia* is based strictly on the venation, the hypopygial characters being more as in the subgenus *Dicranomyia* where the present species originally was assigned. The increasing difficulty of assigning many species to a proper subgenus in *Li-*

*monia* has been discussed by the writer in other papers (especially Alexander, 1950: 169—170).

**61. *Limonia (Limonia) bimucronata* Alexander**

*Limonia (Limonia) bimucronata* Alexander; Ann. Mag. Nat. Hist., (11) 2: 419—421; 1938.

The type was from Ecuador.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

**62. *Limonia (Limonia) brachyacantha* Alexander**

*Limonia (Limonia) brachyacantha* Alexander; Ann. Ent. Soc. Amer., 38: 264—265; 1945.

The type was from Peru.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

**63. *Limonia (Limonia) dicax* Alexander**

*Limonia (Limonia) dicax* Alexander; Ann. Mag. Nat. Hist., (11) 8: 313—314; 1941.

Types from Huacapistana, Junin, Peru, collected by Woytkowski.

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

**64. *Limonia (Limonia) splendidula* Alexander**

*Limonia (Limonia) splendidula* Alexander; Ann. Ent. Soc. Amer., 23: 721—722; 1930.

The type was from Santa Cruz, collected by Steinbach, February 1929; received through Schade (Carl Franz Schade, collected in Paraguay on and after 1921).

Bolivia: Cuticucho, Songotal, ca. 3700 meters, November 30—December 3, 1953 (Forster). El Limbo, Chapare, 2000 meters, February 18, 1959 (Martinez); km. 104, Chapare, 3150 meters, February 1959 (Martinez).

**65. *Limonia (Limonia) venustior* Alexander**

*Limonia (Limonia) venustior* Alexander; Rev. de Entomologia, 21: 192—193; 1950.

The type was from Sariapampa, Huanuco, Peru, collected by Woytkowski.

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

**66. *Limonia (Limonia) xanthomela* sp. n.**

Belongs to the *repanda* group; size medium (wing of female 6.8 mm.); general coloration yellow, praescutum with a narrow dark brown central vitta; halteres yellow; legs black, femoral tips broadly light yellow; wings tinged



with pale yellow, costal border more saturated yellow, restrictedly patterned with brown; Rs strongly recurved at origin, cell 1st  $M_2$  longer than distal section of  $M_1 + 2$ ,  $m-cu$  about one-half longer than distal section of  $Cu_1$ ; abdominal tergites yellow, posterior borders narrowly blackened.

*Female*. — Length about 7 mm.; wing 6.8 mm.

Rostrum and palpi black. Antennae with scape and pedicel black, flagellum brownish yellow; basal flagellar segments transverse, passing into globular and finally to oval, longer than the verticils. Head light gray in front, posterior vertex buffy, restrictedly more cinnamon brown in front; anterior vertex narrow, slightly more than one-half the diameter of the scape.

Cervical region black. Pronotal scutum broadly black medially, yellow on sides; pretergites light yellow. Mesonotal praescutum fulvous, paler on sides, with a very narrow dark brown median line, narrowed and paler behind, not reaching the suture; scutal lobes fulvous, narrowly infuscated along the mesal part, central region and base of scutellum more whitened, remainder yellow; mediotergite yellow, with a central dark brown vitta, pleurotergite yellow. Pleura clear light yellow. Halteres yellow. Legs with coxae and trochanters yellow; femora black, tips broadly and abruptly light yellow, including about the outer fifth or sixth; remainder of legs black. Wings (fig. 50) tinged with pale yellow, prearcular and broad costal border saturated butter-yellow; a restricted brown pattern, appearing as narrow seams to certain veins, including a common line from tip of  $Sc_1$  to the bend of Rs;  $R_2$  and free tip of  $Sc_2$ ; posterior cord and outer end of cell 1st  $M_2$  and outer third of vein 2nd A; scarcely evident marginal spots on remaining longitudinal veins from  $R_3$  to 1st A, smallest to scarcely apparent on  $R_4 + 5$ ; veins yellow, dark brown in the patterned areas. Macrotrichia on longitudinal veins beyond general level of origin of Rs, including also Sc and outer half of 2nd A;  $R_2$  and  $m$  with trichia. Venation:  $Sc_1$  ending shortly beyond origin of Rs,  $Sc_2$  somewhat removed; Rs strongly recurved at origin; cell 1st  $M_2$  longer than distal section of  $M_1 + 2$ ;  $m-cu$  just before fork of M, about one-half longer than distal section of  $Cu_1$ ; cell 2nd A broad.

Abdomen yellow, posterior borders of tergites narrowly blackened, of the sternites more diffusely infuscated.

*Holotype*, ♀, Locotal, Chapare, Cochabamba, 1200 meters, October 26, 1953 (Martinez).

In having the wings with Rs strongly recurved at origin, the present fly is most as in *Limonia* (*Limonia*) *repanda* (Alexander), differing from this and all other members of the group in the distinctive color pattern of the femora. The species may more properly be referred to the subgenus *Dicranomyia*, as discussed under species No. 96, *Limonia* (*Dicranomyia*) *meconeura* sp. n.

#### 67. *Limonia* (*Neolimnobia*) *anthracopoda* Alexander

*Limonia* (*Neolimnobia*) *anthracopoda* Alexander; Rev. de Entomologia, 8: 324—325; 1938.

Known previously from eastern Brazil.

Bolivia: Cristal Mayu, Chapare, 1200 meters, October 11, 1949 (Peña).

# 68. *Limonia* (*Neolimnobia*) *diva* Schiner

*Limnobia diva* Schiner; Reise Novara, Zool., Dipt., p. 46; 1868.

*Limonia* (*Neolimnobia*) *diva* Alexander; Rev. de Entomologia, 21: 194; 1950.

Schiner's type was from Brazil, without exact locality data. The species is widely distributed in Tropical America, from Cuba and Puerto Rico, southward to Brazil and Bolivia.

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

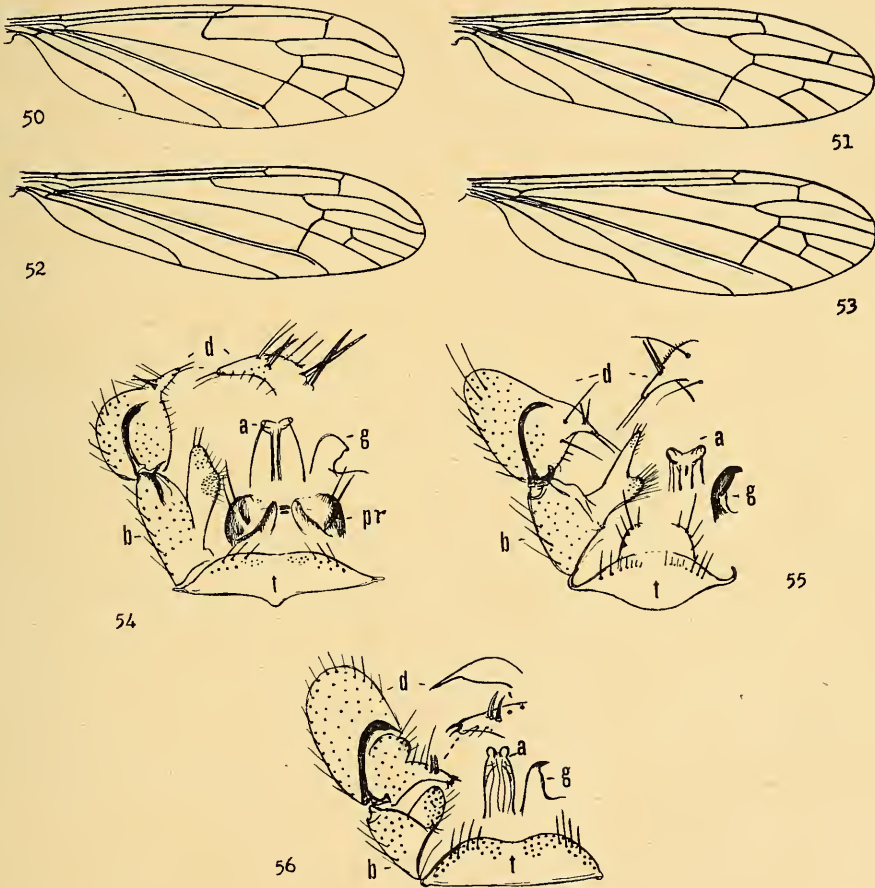


Fig. 50 *Limonia* (*Limonia*) *xanthomela* sp. n.; venation.

Fig. 51 *Limonia* (*Neolimnobia*) *stygicornis* sp. n.; venation.

Fig. 52 *Limonia* (*Rhipidia*) *lichnophora* sp. n.; venation.

Fig. 53 *Limonia* (*Rhipidia*) *monnula* sp. n.; venation.

Fig. 54 *Limonia* (*Rhipidia*) *lichnophora* sp. n.; male hypopygium.

Fig. 55 *Limonia* (*Rhipidia*) *subvafra* sp. n.; male hypopygium.

Fig. 56 *Limonia* (*Rhipidia*) *uxor* Alexander; male hypopygium.

(Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; pr, proctiger; t, tergite)

### 69. *Limonia* (*Neolimnobia*) *stygicornis* sp. n.

Size medium (wing of female 8.8 mm.); general coloration of thorax dark brown; antennae black; femora yellow, each with two clearly defined dark brown rings, the outer one broader; claws with seven teeth, the outer two larger; wings pale yellow, with a relatively restricted and diffuse pale brown pattern; abdomen dark brown, genital shield buffy yellow.

*Female*. — Length about 8 mm.; wing 8.8 mm.

Rostrum and palpi black. Antennae uniformly black; flagellar segments oval, outer ones more elongate; basal segments shorter than their verticils. Front and anterior vertex light gray, posterior vertex dark brown, sending a central line forward onto the anterior vertex, the latter relatively broad, nearly twice the diameter of the scape.

Cervical region and pronotum dark brown to brownish black. Mesonotum dark brown, central region of scutum and scutellum narrowly light gray; postnotum paler brown, especially the intersutural area. Pleura chiefly dark brown, the pteropleurite and posterior sclerites paler. Halteres pale yellow. Legs with coxae dark brown, the fore pair more suffused with green; trochanters greenish brown; femora yellow, each with two clearly defined dark brown rings, the narrower inner one beyond midlength, the broad outer annulus more than twice as wide as the yellow tip; posterior femora with the ground color somewhat more obscured; tibiae obscure yellow, tips narrowly dark brown; proximal two tarsal segments brownish yellow, outer segments more darkened; claws conspicuously toothed, with seven denticles, the outer pair larger, the remainder progressively smaller toward the base, inner pair microscopic. Wings (fig. 51) with the ground pale yellow, with a relatively restricted and diffuse pale brown pattern; largest darkened area at near midlength of cell M; remaining markings relatively small and sparse, with about five in cell R, four in M, three in 2nd A; beyond the cord with three to five in outer radial cells excepting  $R_5$  which is almost unpatterned; veins yellow, very slightly darkened in the patterned areas. Macrotrichia on longitudinal veins beyond cord, including also  $R_s$  and outer fourth of 2nd A. Venation:  $Sc_1$  ending opposite origin of  $R_s$ ,  $Sc_2$  not clearly apparent;  $R_2$  lying shortly beyond level of free tip of  $Sc_2$ ; cell 1st  $M_2$  long, subequal to or longer than distal section of  $M_1 + 2$ ;  $m-cu$  at fork of M.

Abdomen dark brown; genital shield buffy yellow; cerci slender, straight.

*Holotype*, ♀, km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

*Limonia* (*Neolimnobia*) *stygicornis* is allied to species such as *L. (N.) pugilis* Alexander, differing in the coloration of the body and antennae, and in the pattern of the wings.

### 70. *Limonia* (*Neolimnobia*) *tricincta* Alexander

*Dicranomyia tricincta* Alexander; Ent. News, 24: 405; 1913.

*Limonia* (*Neolimnobia*) *tricincta* Alexander; Rev. de Entomologia, 21: 194; 1950.

The type was from Callanga, Peru, collected by the brothers F a s s l.



Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 10, 1953 (Martinez); km. 104, Chapare, 3150 meters, February 1959 (Martinez).

**71. *Limonia (Rhipidia) domestica* Osten Sacken**

*Rhipidia domestica* Osten Sacken; Proc. Acad. Nat. Sci. Philadelphia 1859; 208; 1859.

*Rhipidia domestica* Alexander; Crane-flies of New York, 1: 893, pl. 32, fig. 40 (wing); 1919.

*Limonia (Rhipidia) domestica* Alexander; Dipt. Connecticut, 1: 328, fig. 37 C (♂ hypopygium); 1942.

Widespread in the New World, from the northeastern United States south to Brazil and Bolivia.

Bolivia: Santa Cruz, General Saavedra, 650 meters, March 15—April 26, 1958; Santa Cruz, February 25, 1958 (Pinkert).

**72. *Limonia (Rhipidia) flabelliformis* Alexander**

*Limonia (Rhipidia) flabelliformis* Alexander; Ann. Ent. Soc. Amer., 27: 59—60; 1934.

The types were from Chiriqui, Panama, the species ranging southward to southern Peru and Bolivia.

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

**73. *Limonia (Rhipidia) lichnophora* sp. n.**

Size medium (wing of male under 8 mm.); mesonotal praescutum cinnamon brown, pleura with a brownish black dorsal stripe; antennae of male with eight bipectinate segments, the first segment simply produced, the tenth with a single branch, terminal segment elongate; legs brownish black; wings strongly darkened, costal third with five large darker areas; male hypopygium with the proctiger conspicuously blackened, complex in structure; gonapophysis with the mesal-apical lobe a broad flattened blade.

Male. — Length about 8 mm.; wing 7.8 mm.; antenna about 2.8 mm.

Rostrum black, relatively long; palpi black. Antennae black throughout; flagellar segments two to nine, inclusive, each with two branches, the longest about one-half longer than the segment; first flagellar segment produced into a stout lobe, segment ten with a single branch that is about one-third longer than the segment; segment eleven simple, about two-thirds as long as the elongate terminal segment; all flagellar segments except the last with long glabrous black apical pedicels, that of the first abrupt. Front black, posterior vertex dark brownish gray, with abundant black setae; eyes virtually contiguous, the anterior vertex narrower than a single row of ommatidia.

Cervical region and pronotum brownish black, the scutellum more yellowed. Mesonotal praescutum and scutal lobes almost uniform cinnamon brown, central area of scutum and the scutellum more brownish testaceous; postnotum brown, more cinnamon brown laterally. Pleura dorsally with a conspicuous brownish black longitudinal stripe extending from the cervical region to the base of abdomen; ventral pleurites paler, passing into yellow beneath. Halteres brownish black, stem fringed with long evenly spaced setae.

Legs with fore coxae weakly darkened, remaining coxae and all trochanters yellow; remainder of legs brownish black, femoral bases restrictedly yellow; claws small, only the outer spine well-developed. Wings (fig. 52) with the ground strongly darkened, costal third with five large darker areas, the interspaces more restricted, cream yellow; veins brown, yellow in the interspaces. Macrotrichia of veins relatively long, lacking on about the basal third of M and 1st A. Venation: Sc long, Sc<sub>1</sub> ending about opposite two-thirds Rs, Sc<sub>2</sub> near its tip; Rs long, angulated at origin, the branches decurved at outer ends, R<sub>4</sub>+<sub>5</sub> ending near wing tip; m—cu at fork of M.

Abdomen weakly bicolored, incisures of segments more darkened, intermediate parts brownish yellow. Male hypopygium (fig. 54) with the tergite, t, transverse; posterior border gently convex, vaguely emarginate medially, central area of cephalic border produced into a lobe. Proctiger, pr, a complex blackened structure, on either side with two strong modified setae. Basistyle, b, with ventromesal lobe elongate, narrowed at tip which bears two strong setae; under surface of lobe with a low enlargement provided with abundant long delicate setae. Dorsal dististyle, d, a slender curved sickle, apex suddenly narrowed into a straight spine. Ventral dististyle short-suboval, its area about equal to that of the basistyle; rostrum pale, slender, with two strong setae at and near tip; rostral spines near base of prolongation, placed close together, decussate. Gonapophysis, g, with mesal-apical lobe a broad flattened blade, apex rounded, on side produced into a small point. Aedeagus, a, broad, narrowed outwardly, terminating in two small lobes.

**Holotype**, ♂, km. 104, Chapare, Cochabamba, 3150 meters, February 15, 1959 (Martinez).

Among the now very numerous Neotropical species of the subgenus, the present fly falls in a restricted group in which the apparent proctiger of the male hypopygium is large, heavily sclerotized or blackened, and very conspicuous. Such species include *Limonia* (*Rhipidia*) *complexa* Alexander, *L. (R.) perarmata* Alexander, *L. (R.) proctigerica* Alexander, *L. (R.) superarmata* Alexander, and *L. (R.) tridigitata* Alexander, all differing from the present fly in the hypopygial structure, including especially the basistyle, ventral dististyle and proctiger. The most similar of such species is *proctigerica*, of Rio de Janeiro, Brazil, which has the wings uniformly darkened and with the hypopygial details quite distinct.

#### 74. *Limonia* (*Rhipidia*) **monnula** sp. n.

Size large (wing of female over 10 mm.); flagellar segments unipectinate, black, flagellar pedicels yellow; mesonotal praescutum with three nearly confluent chestnut brown stripes, lateral borders broadly yellow, pleura with a very broad black longitudinal stripe; knobs of halteres extensively light yellow; legs obscure yellow, outer tarsal segments dark brown; wings broad, obscure yellow, with a restricted brown pattern of dark brown spots and paler brown washes, wing tip narrowly yellow, stigmal area with about a dozen macrotrichia, vein Sc long; abdominal tergites brownish yellow, posterior



borders narrowly dark brown, sternites more uniformly yellow; ovipositor with cerci very slender.

**Female.** — Length about 10 mm.; wing 10.5 mm.; antenna about 2 mm.

Rostrum black, nearly as long as remainder of head; palpi elongate, black. Antennae with scape and pedicel black; flagellum black, the apical pedicels of all but the last segment yellow; flagellar branches single, markedly flattened, the longest a little shorter than the segment, first flagellar segment merely produced; branch of penultimate segment less than one-third the segment; terminal segment elongate, about twice the penultimate. Head posteriorly dark gray; holoptic or virtually so, the anterior vertex if preserved much narrower than a single ommatidium.

Pronotum fulvous yellow, blackened on sides, scutum with a few erect black setae. Mesonotal praescutum with disk almost covered by three chestnut brown stripes, the broader central vitta paler behind, stripes fused anteriorly, isolating linear interspaces, humeral and lateral borders broadly light yellow; scutal lobes chestnut brown, posterior parts and central area yellow; scutellum light brown, base yellowed, posterior border vaguely paler; mediotergite yellow, vaguely suffused with pale brown. Pleura with a very broad and conspicuous black longitudinal stripe, ventral sternopleurite pale brown, dorsal sternopleurite obscure yellow, forming a short broad stripe; posterior pleural sclerites yellowed. Halteres with stem black, its base and more than outer half of knob light yellow. Legs with fore and middle coxae weakly darkened, posterior pair more yellowed; trochanters yellow; remainder of legs obscure yellow, the outer tarsal segments passing into dark brown, this including the posterior legs. Wings (fig. 53) broad, the ground obscure yellow, brighter on anterior third; a restricted dark brown pattern on anterior third, including small areas at arculus and at one-third the length of Sc, with a smaller spot at tip of Sc; a major darkening including stigma, continued basad over fork of Rs; darkened area at base of Rs small, not involving cell Sc, continued outwardly along the vein; narrow dark brown seams over cord and outer end of cell 1st M<sub>2</sub>; paler brown washes in cell C and in all basal cells from R to 2nd A, the last uniformly pale brown; beyond cord a pale brown subterminal band from cell R<sub>2</sub> to M<sub>1</sub>, leaving the apex in apices of cells R<sub>3</sub>, R<sub>5</sub> and 2nd M<sub>2</sub> light yellow; veins light brown, yellow in the prearcular and costal interspaces. Stigma with about a dozen macrotrichia, virtually all basad of R<sub>2</sub>; trichia on longitudinal veins beyond general level of origin of Rs, basad of this on outer ends of M, Cu and both Anal veins. Venation: Sc long, Sc<sub>1</sub> ending about opposite five-sixths the length of Rs, Sc<sub>2</sub> near its tip; m—cu at fork of M.

Abdominal tergites brownish yellow, posterior borders narrowly dark brown, this pattern becoming obsolete to lacking on outer segments; sternites light yellow, incisures narrowly pale brown. Ovipositor with cerci very slender, tips upcurved.

**Holotype**, ♀, km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).



This very distinct fly is quite different from other regional large members of the subgenus, being most nearly related to *Limonia* (*Rhipidia*) *stonei* Alexander, of Colombia, which likewise has stigmal macrotrichia. The two flies are readily separated by the pattern of the legs and wings, including the very heavy and conspicuous brown costal pattern in *stonei*. The character of presence or absence of stigmal trichia evidently is of importance in this subgenus, these being absent in other very large regional species, such as *L. (R.) nobilissima* Alexander, of Peru, and some other species.

#### 75. *Limonia* (*Rhipidia*) *proseni* Alexander

*Limonia* (*Rhipidia*) *proseni* Alexander; Jour. N. Y. Ent. Soc., 62: 141—142; 1954.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martin ez).

#### 76. *Limonia* (*Rhipidia*) *subvafra* sp. n.

Size medium (wing 6.5 mm.); mesonotal praescutum obscure yellow, obscurely patterned with darker, pleura with a narrow dark brown longitudinal stripe; antennae of male with eight long-bipectinate segments; wings strongly blackened, with five darker costal areas, the pale interspaces reduced; abdominal sternites yellow, posterior borders narrowly dark brown; male hypopygium with rostral prolongation of ventral dististyle relatively short.

Male. — Length about 7 mm.; wing 6.5 mm.; antenna about 2.3 mm.

Rostrum relatively long; palpi black. Antennae with scape and pedicel black, bases and branches of flagellar segments black, pedicels brownish yellow; first flagellar segment strongly produced, abruptly narrowed into the pedicel; segments two through nine bipectinate, the branches less than twice the segments; tenth flagellar segment with a single branch that slightly exceeds the segment; eleventh segment simple, with a pedicel; terminal segment narrowed on outer third. Front and cephalic part of anterior vertex light gray, remainder of head dark brown medially, gray pruinose on sides; anterior vertex narrow, about equal to two rows of ommatidia; sides of posterior vertex and genae with long black setae.

Pronotum light yellow above, dark brown on sides. Mesonotal praescutum obscure yellow, with poorly defined slightly more brownish yellow stripes, scutal lobes yellowish brown, scutellum and mediotergite slightly more pruinose; vestiture of praescutal interspaces and scutum elongate. Pleura brownish yellow, with a narrow dark brown longitudinal stripe extending from cervical region to base of abdomen, the ventral sternopleurite and meron clear light yellow. Halteres with stem brown, base light yellow, knob brownish black, stem fringed with long setae. Legs with coxae yellow, fore pair slightly darker basally; trochanters yellow; remainder of legs brown, femora more yellowed basally. Wings strongly blackened, with five still darker costal areas, all much larger than the pale interspaces, prestigmal and poststigmal pale areas more conspicuous; veins brown, trichia long, black. Trichia lacking on less than basal half of M and 1st A. Venation: Sc long, Sc<sub>1</sub> ending about

opposite two-thirds  $Rs$ ;  $Sc_2$  at its tip; branches of  $Rs$  parallel to one another, cell  $R_3$  slightly narrowed at margin;  $m-cu$  at fork of  $M$ .

Abdominal tergites dark brown, posterior borders slightly darker; sternites chiefly light yellow, posterior margins narrowly dark brown. Male hypopygium (fig. 55) with the tergite,  $t$ , transverse, posterior border gently convex, lateral angles prolonged into slender curved points; setae arranged in a single submarginal row, with about eight on either side, the outer ones larger and more separated. Basistyle,  $b$ , with ventromesal lobe produced into a long lobule, with small setae near its tip, on the lower margin a strong low protuberance with much longer setae. Dorsal dististyle,  $d$ , very slender and gently curved, apex a straight spine. Ventral dististyle somewhat larger than the area of the basistyle; rostral prolongation relatively short but slender, the two spines placed close together, subequal in length to the prolongation beyond their insertion; two longer setae at and near tip of prolongation; two long black setae on face of style at and below base of prolongation. Gonapophysis,  $g$ , with mesal-apical lobe blackened, relatively narrow, apex small.

Holotype, ♂, km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

*Limonia (Rhipidia) subvafra* is most similar to *L. (R.) vafra* Alexander, differing in the hypopygial structure, including the tergite, basistyle, gonapophysis and ventral dististyle, as the short rostral prolongation of the last.

## 77. *Limonia (Rhipidia) uxor* Alexander

*Limonia (Rhipidia) uxor* Alexander; Ann. Mag. Nat. Hist., (11) 9: 773—780; 1942.

The female types were from La Mar, Ayacucho, Peru, taken by Woytkowski. The male specimen recorded herewith is described as allotype.

Male. — Length about 7 mm.; wing 7.6 mm.; antenna about 1.9 mm.

Rostrum and palpi black. Antennae with scape, pedicel and first flagellar segment brownish black, remaining segments with branches black, stem yellow, penultimate segment uniformly yellow, including branches; first flagellar segment simply produced, segments two to eleven, inclusive, each with two long branches, those at midlength about one-third longer than the segment; tenth segment with branches subequal to the segment, segment eleven about two-thirds this length; terminal segment elongate, slightly exceeding the penultimate.

Male hypopygium (fig. 56) with the tergite,  $t$ , transverse, posterior border generally convexly rounded, with a very shallow emargination. Basistyle,  $b$ , with lower face of ventromesal lobe with long setae. Dorsal dististyle,  $d$ , straight on more than basal half, outwardly curved and slightly dilated, tip a slender black spine. Ventral dististyle relatively large, its area more than three times that of the basistyle, with a depression where the outer end of the dorsal style rests, the surface here whitened and nearly glabrous; rostral prolongation beyond the spines short, apex obliquely truncated; spines two, very short, placed close together. Gonapophysis,  $g$ , with mesal-apical lobe blackened, erect, apex curved laterad. Aedeagus with small apical lobes.



Allotype, ♂, km. 104, Chapare, Cochabamba, altitude 3150 meters, February 11, 1959 (Martinez).

78. *Limonia* (*Dicranomyia*) ***acuproducta*** sp. n.

Size relatively large (wing of male 11 mm.); general coloration of thorax yellow, pronotum and anterior half of praescutum with a broad black stripe; antennal scape yellowish brown, remainder of organ black; legs pale yellow; wings brownish yellow, unpatterned except for the slightly darker stigma; male hypopygium with tergite long, posterior border with two broad lobes that are separated by a deep narrow incision; basistyle with a small cylindrical lobe on mesal face before apex; dorsal dististyle a curved sickle, tip acute; rostral prolongation of ventral dististyle obtuse, rostral spines near tip; gonapophysis appearing as a broad darkened plate, the outer lateral angle produced into a long spine, surface of outer lobe and body of apophysis with abundant tubercles.

Male. — Length about 9 mm.; wing 11 mm.

Rostrum and palpi black. Antennae with scape yellowish brown, remainder of organ black; flagellar segments oval to long-oval, somewhat exceeding the verticils. Head with anterior vertex light gray, about one-third wider than diameter of scape; posterior vertex slightly darker gray, with a pair of brown spots.

Pronotum dark brown medially, sides yellow, the dark color continued backward onto more than anterior half of praescutum as a broad stripe, remainder of praescutum brownish yellow; scutal lobes brownish yellow, median area and scutellum more testaceous yellow; mediotergite yellow, with a narrow pale brown central line. Pleura and pleurotergite yellow, ventrally with strong greenish tints. Halteres infuscated, base of stem pale. Legs with coxae and trochanters light green; remainder of legs pale brown, outer tarsal segments dark brown. Wings brownish yellow, unpatterned except for the slightly darker brown stigma; veins brown. Macrotrichia on longitudinal veins beyond general level of Rs, lacking on Sc and 1st A, present on outer half of 2nd A. Venation: Sc<sub>1</sub> ending opposite origin of Rs, Sc<sub>2</sub> retracted, Sc<sub>1</sub> nearly one-half Rs; cell 1st M<sub>2</sub> subequal to distal section of vein M<sub>3</sub>; m—cu at fork of M.

Abdominal tergites brownish black, basal sternites pale. Male hypopygium (fig. 59) with the tergite, t, long, narrowed very gradually outwardly, the two rounded apical lobes separated by deep and narrow incision; setae of lobes small, apical. Basistyle, b, black, its area less than one-half that of the ventral dististyle; ventromesal lobe large, pale, on mesal face near apex with a cylindrical lobe tipped with black setae. Dorsal dististyle, d, a strongly curved sickle, narrowed gradually to an acute point. Ventral dististyle chiefly pale, large and fleshy; rostral prolongation short, apex truncated, with one or more fasciculate setae; outer margin with the two spines closely approximated near tip, inner spine slightly longer and less curved. Gonapophysis, g, appearing as a broad darkened plate, the outer lateral angle produced into a long spine;



surface, including much of body of plate, with abundant small tubercles. Aedeagus with apex simple.

Holotype, ♂, km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martínez).

*Limonia (Dicranomyia) acuproducta* is most readily told from other generally similar Andean species by the structure of the male hypopygium, particularly the gonapophyses. Other large species with unpatterned wings and with the gonapophyses tuberculate, include *L. (D.) patruelis* Alexander, *L. (D.) pennifera* Alexander, *L. (D.) quadrituberculata* Alexander, *L. (D.) sparsituber* sp. n., and *L. (D.) pertruncata* sp. n., the last with smooth apophyses, yet obviously allied.

#### 79. *Limonia (Dicranomyia) altandina* Alexander

*Limonia (Dicranomyia) altandina* Alexander; Jour. N. Y. Ent. Soc., 63: 111–112; 1955.

Type from La Raya, Cuzco, Peru, 4300 meters, February 21, 1950, collected by Peña.

Bolivia: La Paz, Umgebung, 3600–4000 meters, March 10–24, 1950 (Forster); Illimani, West, 4500–5000 meters, March 31, 1950 (Forster).

The wing venation is shown (fig. 57). Male hypopygium (fig. 60) with the tergite, t, transverse, narrowed outwardly, terminating in two very low lobes that are separated by a small V-shaped notch; cephalic border of tergite not thickened. Basistyle, b, small, the ventromesal lobe very large, nearly twice the main body of style, provided with abundant long setae, the apical ones more delicate; on face of lobe a small darkened flange that bears long gently curved setae; apex of body of style with a group of three or four long setae. Dorsal dististyle, d, long and slender, curved, narrowed gradually to the acute tip. Ventral dististyle with its total area subequal to that of basistyle; main body small, setae of inner margin longer; rostral prolongation of unusual conformation, as shown; two widely separated spines, the outer from a long stout tubercle, inner spine from a much smaller one; in axil between main body of style and the prolongation a conspicuous darkened lobe provided with numerous setae, the outer ones shorter. Gonapophysis, g, with mesal-apical lobe slender. Aedeagus terminating in two long lobes.

#### 80. *Limonia (Dicranomyia) andicola* Alexander

*Furcomyia andicola* Alexander; Canad. Ent., 44: 362–363, pl. 11, fig. h (wing); 1912.

*Dicranomyia andicola* Alexander; Jour. N. Y. Ent. Soc., 21: 197; 1913.

Bolivia: San Antonio, Potosi, collected by Fassl; holotype.

Unduavi, Yungas, 2900 meters, March 26, 1950 (Forster).

Songotal, Cuticucho, ca. 3700 meters, January 30, 1954 (Forster).

Illimani, Westhang, 4500–5000 meters, April 11–23, 1950 (Forster).

Male hypopygium (fig. 61) with the lobes of tergite, t, low, separated by a shallow V-shaped emargination, each lobe with about 25 relatively short delicate setae. Basistyle, b, small, the ventromesal lobe obtuse, tipped with long pale setae, on face with shorter black bristles; body of style with very long

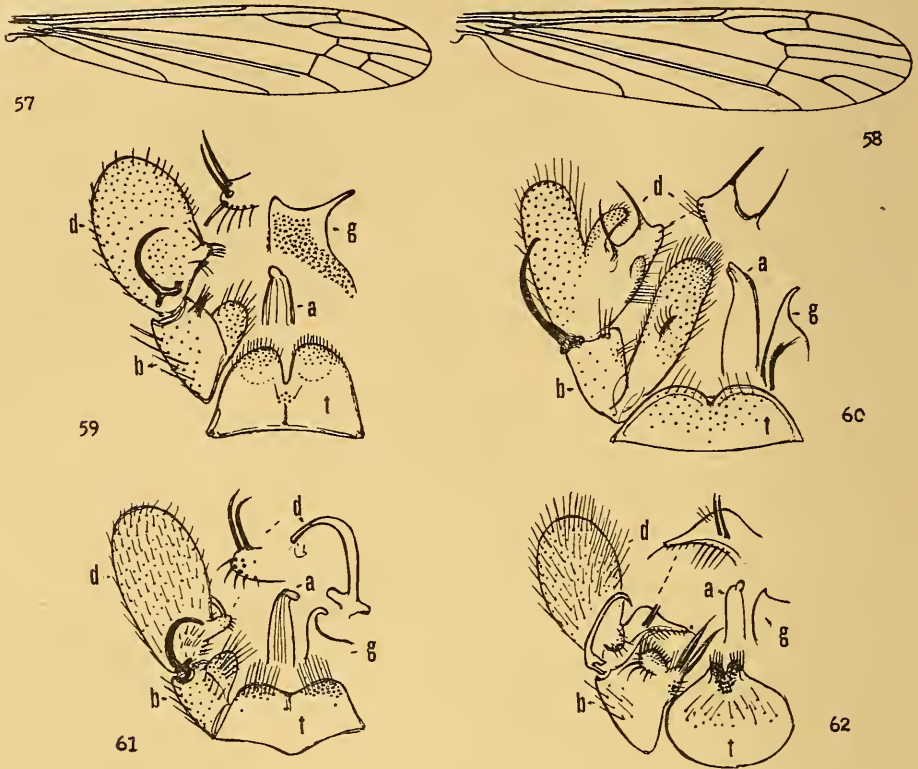


Fig. 57 *Limonia (Dicranomyia) altandina* Alexander; venation.

Fig. 58 *Limonia (Dicranomyia) empelia* sp. n.; venation.

Fig. 59 *Limonia (Dicranomyia) acuproducta* sp. n.; male hypopygium.

Fig. 60 *Limonia (Dicranomyia) altandina* Alexander; male hypopygium.

Fig. 61 *Limonia (Dicranomyia) andicola* (Alexander); male hypopygium.

Fig. 62 *Limonia (Dicranomyia) brevigladia* sp. n.; male hypopygium.

(Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; t, tergite)

stout black setae, others shorter, pale, some very small. Dorsal dististyle, d, relatively slender, outer third curved to the obtuse tip, the latter with a microscopic recurved tooth. Ventral dististyle very large, its area exceeding three times that of the basistyle, pale, setae delicate; rostral prolongation short and stout, tip obtusely rounded, with three or four fasciculate setae; rostral spines longer than the prolongation, slightly separated, without basal tubercles; spines gently curved to the acute tips, the outer a little longer. Gonapophysis, g, with mesal-apical lobe slender, gently curved to the acute tip. Aedeagus long and slender, terminating in an elongate-oval lobe.

### 81. *Limonia (Dicranomyia) apposita* Alexander

*Limonia (Dicranomyia) apposita* Alexander; Ann. Mag. Nat. Hist., (11) 9: 230—232, fig. 6 (♂ hypopygium); 1942.

The type was from Peru.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

**82. *Limonia (Dicranomyia) boliviana* Alexander**

*Limonia (Dicranomyia) boliviana* Alexander; Ann. Ent. Soc. Amer., 23: 723—724; 1930.

Bolivia: Santa Cruz, February 1929 (Francisco Steinbach), through Schade.

**83. *Limonia (Dicranomyia) brevicubitalis* Alexander**

*Limonia (Dicranomyia) brevicubitalis* Alexander; Bol. Entomol. Venezolana, 6: 87—90, fig. 7 (venation), fig. 8 (♂ hypopygium); 1947.

The type was from the Rio Chacaito, Miranda, Venezuela, 980 meters, collected September 18, 1938, by Vivas-Berthier. I have seen no further materials except the following.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, February 1959 (Martinez).

**84. *Limonia (Dicranomyia) brevigladia* sp. n.**

General coloration of mesonotal praescutum yellowish gray, with three light brown stripes, pleura yellowed; rostrum and base of antenna light yellow; anterior vertex broad, light silvery; halteres long and slender; wings brownish yellow, stigma very pale brown,  $Sc_1$  long, about four-fifths  $Rs$ ; male hypopygium with tergite large, posterior border narrowed into two submedian lobes; mesal face of basistyle with two short flattened fasciculate setae; rostral prolongation of ventral dististyle very high at midlength; gonapophysis with mesal-apical lobe a tiny triangular point.

Male. — Length about 8 mm.; wing 9 mm.; halteres 2 mm.

Rostrum light yellow; palpi black. Antennae with scape and pedicel yellow, flagellum black; proximal flagellar segments oval, outer ones elongate, including the terminal segment which is subequal to the penultimate; verticils shorter than the segments. Head with the broad anterior vertex light silvery, nearly three times the diameter of scape; posterior vertex darker gray.

Pronotum yellow, pruinose, dark brown medially. Mesonotal praescutum yellowish gray, with three poorly differentiated light brown stripes; scutal lobes brown, median and posterior parts more yellowed; scutellum and mediotergite brown, the central part gray pruinose. Pleura and pleurotergite yellow, sparsely white pruinose. Halteres very long, as shown by the measurements, brown, knobs brownish black. Legs with coxae yellow, fore pair weakly darkened; trochanters yellow; remainder of legs elongate, brown, outer tarsal segments darker; claws relatively small, with a major outer spine and about four smaller more basal ones. Wings brownish yellow, cell  $Sc$  clearer yellow; stigma very pale brown; veins light brown. Longitudinal veins beyond general level of origin of  $Rs$  with macrotrichia; no trichia on  $Sc$  or Anal veins. Venation:  $Sc_1$  ending nearly opposite origin of  $Rs$ ,  $Sc_2$  far removed,  $Sc_1$  alone about four-fifths  $Rs$ ;  $M_3 + 4$  subequal to  $M_1$ ;  $m-cu$  just beyond fork of  $M$ , subequal to distal section of  $Cu_1$ .

Abdominal tergites dark brown, sternites more yellowed. Male hypopygium (fig. 62) with the tergite,  $t$ , large, transversely oval, cephalic border convex,



posterior margin narrowed, terminating in two small lobes separated by a small V-shaped emargination, with a concentration of strong yellow setae. Basistyle, b, slightly smaller than the ventral dististyle; mesal face with a tubercle bearing two relatively short and broad fasciculate setae; near apex of mesal face with a setiferous cushion, outer setae short, the apical and lower ones much longer. Dististyle, d, with outer style slender, its tip acute; ventral style with outer lobe constricted at base, setae of mesal face much longer than the others; rostral prolongation a flattened yellow blade, unusually high at midlength, apex slender; two rostral spines placed close together low on the blade at near midlength; near base of prolongation with a small oval setiferous lobe. Gonapophysis, g, a broad flattened blade, the mesal-apical lobe a small triangular point. Aedeagus small and weak, apex simple.

**Holotype**, ♂, Songotal, Cuticnecho, ca. 3700 meters, February 1, 1954 (Forster).

The nearest relatives of the present fly are *Limonia* (*Dicranomyia*) *biglardia* Alexander, *L. (D.) quadriglardia* Alexander, and more distantly, *L. (D.) praecellens* Alexander, all differing conspicuously among themselves in details of the male hypopygium. The present fly has the fasciculate setae of the basistyle much shorter than in *quadriglardia*.

#### 85. *Limonia* (*Dicranomyia*) *brevivena* Osten Sacken, variety

*Dicranomyia brevivena* Osten Sacken; Mon. Diptera N. Amer., 4: 66—67; 1869.

*Limonia* (*Dicranomyia*) *brevivena* Alexander; Diptera Conn., 1: 314, fig. 35, A (♂ hypopygium); 1942.

Described from the eastern United States, this fly now is known to be one of the most widely distributed crane-flies, occurring over much of North America and southwards, in what appear to be relatively weak races or clines. What appears to be a further race occurs in northern Europe (*aperta* Wahlgren, 1904).

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

#### 86. *Limonia* (*Dicranomyia*) *croceiapicalis* sp. n.

General coloration of mesonotal praescutum brownish black, without stripes; rostrum, palpi and antennae black; legs black, tips of femora narrowly yellow; wings strongly infuscated, cell Sc and the stigma darker; abdomen brownish black, basal sternites yellowed; male hypopygium with the ventral dististyle very large, its area about four times that of the basistyle, the latter entirely blackened; gonapophysis with mesal-apical lobe small, slender.

**Male**. — Length about 8—9.5 mm.; wing 9—10.5 mm.

**Female**. — Length about 10 mm.; wing 10.5 mm.

Rostrum, palpi and antennae black; flagellar segments elongate. Head brownish black.

Pronotum black, sparsely pruinose; posterior angles of scutellum narrowly yellowed. Mesonotal praescutum brownish black, without indications of stri-

pes or interspaces, humeral region unbrightened; scutal lobes blackened, posterior ends obscure yellow, central area pale; scutellum and mediotergite pale brown, sparsely pruinose. Pleura dark brown, more intense dorsally; dorsopleural region dusky. Halteres dark brown, base of stem restrictedly yellow. Legs with coxae testaceous yellow, fore pair darker; trochanters brownish yellow; remainder of legs black, femora with a narrow abruptly yellow ring that is apical or virtually so. Wings strongly infuscated, cell Sc and the stigma still darker; very pale brown clouds over cord; veins brown. Longitudinal veins beyond general level of origin of Rs with macrotrichia, lacking on Sc and 1st A, on 2nd A present at base and more extensively at apex; a series of trichia on Cu in arcular area. Venation: Sc<sub>1</sub> ending opposite origin of Rs, Sc<sub>2</sub> removed, Sc<sub>1</sub> alone about two-thirds Rs; cell 1st M<sub>2</sub> subequal to distal section of M<sub>3</sub>; m—cu at or near fork of M.

Abdominal tergites brownish black, basal sternite yellow, the second more obscured, outer segments, including genitalia, brownish black. Ovipositor with cerci small, slender, hypovalvae short and stout. Male hypopygium (fig. 65) with tergal lobes, t, broadly obtuse, setae not reaching margin. Basistyle, b, entirely blackened, very small as compared with the ventral dististyle, its area scarcely one-fourth that of the latter; ventromesal lobe with long setae. Dorsal dististyle, d, very small, as compared with the ventral style, curved, apex obtuse. Ventral dististyle with vestiture relatively short and sparse; rostral prolongation short and stout, terminating in three very broad fasciculate setae; rostral spines stout, placed close together. Gonapophysis, g, with mesal-apical lobe small, slender lateral end of apophysis blackened, outline as shown. Aedeagus, a, straight, gently widened to near four-fifths the length, apical lobe small.

**Holotype**, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, February 1959 (Martinez). **Allotype**, ♀, La Paz Umgebung, 3600—4000 meters, January 26, 1954 (Forster). **Paratypes**, 1 ♂, with the allotype, August 13, 1953 (Forster); 1 ♂, km. 104, Chapare, 3150 meters, February 1959 (Martinez).

Although it is generally similar to *Limonia* (*Dicranomyia*) *luteiapicalis* sp. n., the present fly obviously is distinct in the hypopygial characters, including especially both dististyles, the gonapophysis and aedeagus.

### 87. *Limonia* (*Dicranomyia*) *diversigladia* Alexander

*Limonia* (*Dicranomyia*) *diversigladia* Alexander; Ann. Mag. Nat. Hist., (11) 9: 769—771, fig. 6 (♂ hypopygium); 1942.

The types were from Yanamonte, Ayacucho, Peru, in fog forests, 3000 to 4100 meters, taken October 1941 by Woytkowski.

Bolivia: Songotal, Cuticuecho, ca. 3700 meters, November 30, 1953, January 29, 1954 (Forster).

### 88. *Limonia* (*Dicranomyia*) *empelia* sp. n.

Size large (wing of female 11 mm.); general coloration of thorax plumbeous gray, praescutal stripes poorly indicated; antennae and legs black, fe-

moral bases restrictedly yellowed; wings whitish subhyaline, restrictedly patterned with brown; cell  $M_2$  open by atrophy of  $m$ ; abdomen black.

**Female.** — Length about 8.5 mm.; wing 11 mm.

Rostrum black, sparsely pruinose, the projecting mouthparts exceeding one-half the remainder of head; palpi black. Antennae black; flagellar segments oval, subequal to the verticils; terminal segment slightly longer than the penultimate. Head dull brownish gray, front and orbits clearer gray, with a capillary darkened vitta on anterior vertex, the latter more than twice the diameter of the scape; vestiture black, conspicuous.

Pronotum plumbeous. Mesonotal praescutum gray, with four poorly delimited more blackened stripes, the intermediate pair narrowly separated, broadly so at the suture; scutellum with central area and the scutellum gray, scutal lobes conspicuously blackened, surface subnitidous; postnotum blackened, sparsely pruinose to appear plumbeous; vestiture of notum very small and sparse. Pleura blackened, gray pruinose, to produce a diffuse stripe across the dorsal sternopleurite and posterior pleurites; dorsopleural membrane obscure gray. Halteres with stem greenish white, knob brownish black. Legs with coxae brownish black, sparsely pruinose; trochanters yellowish brown; remainder of legs blackened, femoral bases brownish yellow, narrowest on fore legs; claws elongate, with a major outer spine and microscopic crowded basal denticles. Wings (fig. 58) whitish subhyaline, restrictedly patterned, including the dark brown long-oval stigma and paler brown seams over the cord, broadest at the fork of  $R_s$ ; cell  $Sc$  and a seam along vein  $Cu$  darkened; veins brown. Macrotrichia on longitudinal veins beyond cord, basad of the latter on  $R_s$  and outer ends of  $M$ , basal section of  $Cu_1$ , and 2nd  $A$ ;  $Sc$  and 1st  $A$  glabrous except for one or two trichia near tip of the latter. Venation:  $Sc_1$  ending just beyond origin of  $R_s$ ,  $Sc_1$  more than one-third the latter; cell  $M_2$  open by atrophy of  $m$ ;  $m-cu$  at fork of  $\bar{M}$ ; cell 2nd  $A$  broad.

Abdomen black. Ovipositor with cerci slender, gently upcurved, bases blackened, outer two-thirds pale; hypovalvae horn-yellow, bases heavily blackened.

**Holotype**, ♀, Songotal, Cuticucho, ca. 3700 meters, January 30, 1954 (Forster).

*Limonia (Dicranomyia) empelia* is quite distinct from other regional species in the open cell  $M_2$  of the wings, in conjunction with the size and coloration of the body and appendages. *Limonia (Dicranomyia) brevivena* (Osten Sacken) has a somewhat similar venation but is an entirely different fly in all other regards.

### 89. *Limonia (Dicranomyia) falcicula* sp. n.

Size large (wing of male 13 mm.); mesonotal praescutum light brown, darkened medially in front, pleura with a darkened anterior stripe; wings subhyaline, very weakly patterned with darker; abdomen brown, posterior borders of segments pale, especially evident in female; male hypopygium with tergite transverse, lobes very low; basistyle with a concentration of black



setae on mesal face near apex; dorsal dististyle a small strongly curved sickle; rostral spines widely separated; gonapophysis with mesal-apical lobe broad, tuberculate; apex of aedeagus bifid.

**Male.** — Length about 11.5 mm.; wing 13 mm.; antenna about 1.4 mm.

**Female.** — Length about 12 mm.; wing 14 mm.

Rostrum very small, dark brown; palpi black. Antennae with scape brownish yellow, remainder of organ black; flagellar segments long-oval, exceeding the verticils; terminal segment about one-third longer than the penultimate. Anterior vertex light silvery, posterior vertex brownish gray, with abundant black setae, long and conspicuous laterally and on genae; anterior vertex relatively broad, about three times the diameter of scape.

Cervical region dark brown. Pronotal scutum dark brown medially, yellowed on sides, scutellum and pretergites light yellow. Mesonotal praescutum light brown, central part broadly dark brown, at near one-third the length dividing into paler brown stripes that are scarcely differentiated from the ground; scutum brown, scutellum greenish yellow, postnotum obscure yellow. Pleura chiefly infuscated, especially dorsally, to form a short stripe; posterior sclerites and dorsopleural membrane more yellowed. Halteres with stem slender, pale brown, base yellowed, knob dark brown. Legs with fore coxae infuscated, remaining coxae and trochanters yellow; femora brownish yellow, clearer at base, darkened outwardly, the extreme tips narrowly and vaguely more yellowed; tibiae and tarsi light brown; claws relatively long, slightly curved, with a very long spine and two or three small more basal denticles. Wings subhyaline, stigma pale brown; very vague paler brown clouds over cord, outer end of cell 1st  $M_2$  and along vein Cu in cell M; veins light brown. Longitudinal veins of about the outer half of wing with strong macrotrichia, lacking on Sc, basal two-thirds of M and  $Cu_1$ , and basal half of 2nd A; a few trichia near extreme tip of 1st A; a series of very long delicate trichia on prearcular section of 2nd A. Venation:  $Sc_1$  ending shortly before origin of Rs, about one-half as long as this vein which is one-half longer than the basal section of  $R_4+5$ ;  $m-cu$  variable in position, before to beyond fork of M.

Abdomen of male brownish black, basal sternites yellowed, posterior borders of segments narrowly silvery; in female, posterior borders broader and more yellowed. Ovipositor with cerci very slender, acicular, straight; hypovalvae narrowed on outer half. Male hypopygium (fig. 66) with the tergite, t, transverse, unusually short, posterior border with a shallow U-shaped emargination, lateral lobes very low; vestiture abundant, relatively long, especially near midline, where they tend to become decussate. Basistyle, b, with ventromesal lobe obtuse, with long setae; a concentration of black setae on outer mesal part of style. Dorsal dististyle, d, a small strongly curved sickle, outer end more curved, tip oblique. Ventral dististyle large and fleshy, its area about one-third greater than that of the basistyle, vestiture abundant, on mesal face above the prolongation becoming long and conspicuous; rostral prolongation short, tip obtuse, the two spines subequal, widely separated, the upper spine from a small basal tubercle, the second sessile, on face of pron-

gation; apical fasciculate setae relatively slender. Gonapophysis, g, with mesal-apical lobe broad, tuberculate on margin and as a carina on face. Aedeagus bifid at apex.

Holotype, ♂, Songotal, Cuticucho, ca. 3700 meters, December 4, 1953 (Forster). Allotopotype, ♀ with the type.

*Limonia (Dicranomyia) falcicula* is similar to other regional species, including *L. (D.) acuproducta* sp. n. and *L. (D.) patruelis* (Alexander), all with tuberculate gonapophyses, differing in coloration, the large size, and details of structure of the hypopygium. The latter somewhat suggests that of *L. (D.) sparsituber* sp. n., which is readily told by the unpatterned wings and the hypopygial details, especially the tergite, basistyle and aedeagus.

## 90. *Limonia (Dicranomyia) hirsutissima* sp. n.

Size medium (wing of female 10.5 mm.); general coloration of body black; head and thorax with long conspicuous black setae; halteres short, knobs dull yellow; femora black, conspicuously hairy, tibiae and basitarsi brownish yellow, tips narrowly darkened, claws of female nearly straight, simple; wings broad, whitish subhyaline, with a restricted but conspicuous brown pattern, including series of spots in cell C and in cell M adjoining vein Cu; m—cu before fork of M, cell 2nd A broad; veins unusually glabrous; abdomen brownish black, vestiture short; ovipositor with valves small, cerci slender, nearly straight.

Female. — Length about 8.5 mm.; wing 10.5 mm.; antenna about 1.5 mm.

Rostrum and palpi black, the former short, about one-fourth the remainder of head, with very long black setae, longer on ventral surface. Antennae black throughout; flagellar segments oval, the outer ones slightly longer; dorsal verticils longer than the segments. Head black; vertex with abundant very long porrect black setae, setae of lower surface of head still longer; anterior vertex broad.

Thorax black; pronotum, lateral praescutal interspaces and scutal lobes with long setae, pleura with similar bristles before the wing root; anterior margin of pleurotergite and sternopleurite with chiefly more delicate setae. Halteres short, stem dusky, the large knob dull yellow. Legs with coxae black, with very long black bristles beneath, trochanters with shorter setae; femora brownish black, with conspicuous setae, longer and more conspicuous basally; tibiae and basitarsi brownish yellow, tips narrowly darkened, outer tarsal segments more brownish black; claws long, nearly straight, untoothed, bases with abundant delicate setae. Wings (fig. 63) broad, whitish subhyaline, with a restricted but conspicuous brown pattern, arranged as follows: A series of seven or eight brown spots in cell C; stigma and a connecting band over the cord; much paler and poorly delimited clouds in cell R at near one-fourth the length, at outer end of vein 1st A, outer end of cell 1st M<sub>2</sub>, and vague apical darkenings in cells R<sub>3</sub> to M<sub>3</sub>, restricted to the vicinity of the veins; a series of about eight small pale brown spots in cell M adjoining vein Cu; prearcular and costal fields a trifle more yellowed than remainder of ground; veins very

pale brown. Longitudinal veins, excepting C and R, unusually glabrous, with three or four trichia on distal section of  $R_4+5$  and one or two near outer end of 2nd A. Venation: Sc short,  $Sc_1$  ending opposite origin of Rs; cell C broad; free tip of  $Sc_2$  short; basal section of  $R_4+5$  arcuated; cell 1st  $M_2$  large, slightly longer than vein  $M_1+2$  beyond it;  $m-cu$  just before fork of M; cell 2nd A broad.

Abdomen brownish black; vestiture short and inconspicuous. Ovipositor with valves small; cerci slender, nearly straight, hypovalvae shorter and stouter.

Holotype, ♀, Cordillera Real, Chacaltaya, 5000 meters, March 24, 1954 (Forster).

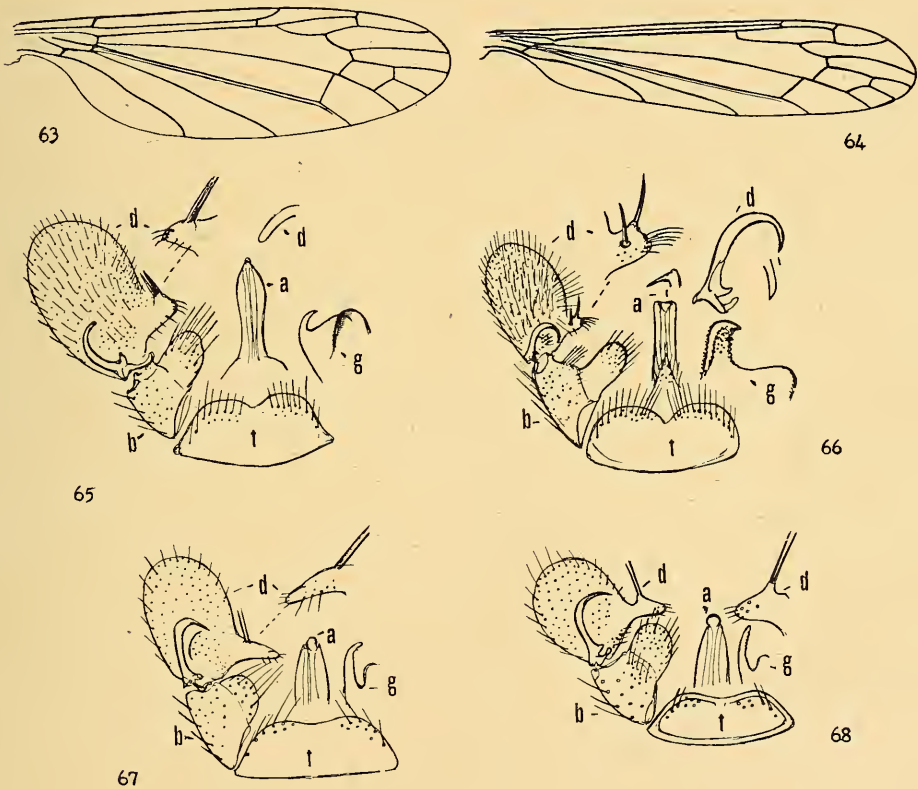


Fig. 63 *Limonia (Dicranomyia) hirsutissima* sp. n.; venation.

Fig. 64 *Limonia (Dicranomyia) jujuyensis obtusirostris* subsp. n.; venation.

Fig. 65 *Limonia (Dicranomyia) croceiapicalis* sp. n.; male hypopygium.

Fig. 66 *Limonia (Dicranomyia) falcicula* sp. n.; male hypopygium.

Fig. 67 *Limonia (Dicranomyia) jujuyensis jujuyensis* Alexander; male hypopygium.

Fig. 68 *Limonia (Dicranomyia) jujuyensis obtusirostris* subsp. n.; male hypopygium.

(Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; t, tergite)



*Limonia (Dicranomyia) hirsutissima* is very different from all other members of the subgenus, especially in the unusually hairy head and thorax, together with the legs. In the venation it suggests species allied to *L. (D.) mulsa* Alexander, but is entirely distinct.

91. *Limonia (Dicranomyia) imitabilis* Alexander

*Limonia (Dicranomyia) imitabilis* Alexander; Ann. Mag. Nat. Hist., (11) 9: 766—768; 1942.

The type was from Yanamonte, La Mar, Ayacucho, Peru, collected by Woytkowski.

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

92. *Limonia (Dicranomyia) jujuyensis obtusirostris* subsp. n.

Male. — Length about 6 mm.; wing 6.8 mm.

Female. — Length about 6.5—7 mm.; wing 7—7.8 mm.

General coloration of body, legs and wings virtually as in typical *jujuyensis*, including the intricate reticulated wing pattern. Wing venation fig. 64. Male hypopygium (fig. 68) showing significant differences from *jujuyensis* that presumably will be recognized as being of specific value when more material becomes available. Ninth tergite, t, with the entire border thickly sclerotized and margined, posterior border feebly emarginate. Ventral dististyle with the rostral prolongation darkened, sclerotized, tip obtuse; rostral spines slightly longer than the apex of prolongation beyond them, placed close together on a common tubercle. Gonapophysis, g, with lower margin of mesal-apical lobe with several delicate serrulations on about the outer half.

The hypopygium of typical *jujuyensis* Alexander (Tilcara, Jujuy, Argentina) is shown for comparison (fig. 67). Ninth tergite, t, with posterior border only feebly sclerotized, the lateral and cephalic margins without this thickening. Ventral dististyle, d, with the rostral prolongation pale, especially the outer margin which is submembranous; the relatively long tip more narrowly obtuse; rostral spines without a basal tubercle, near base of prolongation, a little shorter than the prolongation beyond their insertion. Gonapophysis, g, with a very few denticles close to tip.

Holotype, ♂, km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez). Allotopotype, ♀. Paratopotype, ♀

Despite the elongate Sc the present group of crane-flies appears to be better placed in *Dicranomyia*.

93. *Limonia (Dicranomyia) labecula* Alexander

*Limonia (Dicranomyia) labecula* Alexander; Ann. Mag. Nat. Hist., (11) 9: 234—235; 1942.

The type was from Peru.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, February 18, 1959 (Martinez).

#### 94. *Limonia* (*Dicranomyia*) ***lapazensis*** sp. n.

General coloration of thorax brownish yellow to ochreous, praescutum with three faintly indicated brown stripes; rostrum and antennal scape light yellow; anterior vertex narrower than diameter of scape; wings tinged with yellow, stigma scarcely indicated; abdominal tergites dark brown, sternites yellow; hypopygium with apical tergal lobes darkened, with long marginal setae; rostral prolongation stout, with numerous setae.

**Male.** — Length about 8.5—9 mm.; wing 11—11.5 mm.

**Female.** — Length about 10—11 mm.; wing 11.5—12 mm.

Rostrum light yellow, mouthparts and palpi black. Antennae with scape yellow, pedicel and flagellum black; flagellar segments oval to long-oval, subequal to or exceeding their verticils; outer segments more elongate. Head light gray in front, light brown behind; anterior vertex narrow, less than the diameter of scape.

Pronotum scutum light brown medially, obscure yellow on sides; scutellum and pretergites yellow. Mesonotal praescutum brownish yellow to ochraceous, vaguely more darkened medially in front and sublaterally; scutal lobes brown, central area yellow; scutellum more yellowed; central part of mediotergite light brown, the lateral parts, with the pleurotergite, yellow. Pleura reddish yellow, meron and metapleura pale yellow, with greenish tints. Halteres brown, base of stem yellow. Legs with fore coxae fulvous, remaining coxae and all trochanters more greenish yellow; remainder of legs light brown, femoral bases more yellowed, outer tarsal segments brownish black; claws toothed, outer tooth largest but relatively inconspicuous. Wings (fig. 69) tinged with yellow, prearcular field and cell Sc clearer yellow, stigma scarcely darker than the ground; veins light brown. Longitudinal veins beyond general level of origin of Rs with macrotrichia, including also the outer two-fifths of M and 2nd A and the extreme tip of 1st A, Sc glabrous. Venation: Sc<sub>1</sub> ending nearly opposite origin of Rs, Sc<sub>1</sub> alone about one-half Rs or less; cell 1st M<sub>2</sub> subequal to vein M<sub>4</sub>; m—cu close to fork of M.

Abdominal tergites dark brown, sternites yellow; hypopygium brown, the ventral dististyles brownish yellow. Ovipositor with cerci slender but relatively short, nearly straight; hypovalvae nearly twice as long. Male hypopygium (fig. 71) with the tergite, t, slightly broader than long, nearly parallel-sided, posterior border very shallowly emarginate. Margins of lobes conspicuously darkened, fringed with long setae. Basistyle, b, with the ventromesal lobe large, with abundant setae, the more cephalic ones very long; outer mesal angle of style with a concentration of several strong setae. Dorsal dististyle, d, flattened at midlength, outer third strongly curved, tip slightly obtuse. Ventral dististyle large, its area about twice that of the basistyle, vestiture relatively short; rostral prolongation short and stout, apex obtuse, tip and lower surface with several strong setae; rostral spines two, slightly separated, outer spine large. Gonapophysis, g, with mesal-apical lobe small and slender. Aedeagus narrow, apex simple.

Holotype, ♂, La Paz Umgebung, 3600—4000 meters, March 10, 1950 (Forster). Allotopotype, ♀, March 15, 1950. Paratopotypes, 1 ♂, 1 ♀, March 15—16, 1950.

*Limonia (Dicranomyia) lapazensis* is generally similar to *L. (D.) pertruncata* sp. n. and some other species, being most readily told by the hypopygial structure, particularly the tergite, basistyle and dististyles.

#### 95. *Limonia (Dicranomyia) luteiapicalis* sp. n.

General coloration of mesonotum brownish black, humeral region of praescutum paler; rostrum, palpi and antennae black; legs black, tips of femora narrowly obscure yellow; wings with a brownish tinge, stigma darker; male hypopygium with the tergal lobes separated by a narrow U-shaped emargination; gonapophysis entirely pale, mesal-apical lobe large.

Male. — Length about 8.5 mm.; wing 9.5 mm.

Female. — Length about 8 mm.; wing 9 mm.

Rostrum and palpi black. Antennae black; flagellar segments elongate. Vertex light gray, anterior vertex a little broader than the diameter of the scape.

Pronotal scutum dark brown above, paler on sides, scutellum testaceous yellow. Mesonotal praescutum with disk brownish black, the usual stripes confluent, humeral region brownish yellow; scutal lobes dark brown, median region broadly yellow, posterior callosities obscure yellow; scutellum and mediotergite dark brown to brownish black, parascutella yellow, pleurotergite brownish yellow. Pleura dark brown, dorsopleural membrane and posterior sclerites yellowed. Halteres with stem yellow, knob dark brown. Legs with fore coxae darkened, mid-coxae less evidently so, posterior pair yellow; trochanters yellow; remainder of legs brownish black to black, tips of femora narrowly obscure yellow; claws with a major outer spine and four or five microscopic denticles. Wings with a brownish tinge, costal region, especially cell Sc, more yellowed; stigma pale brown; veins darker brown. Macrotrichia on longitudinal veins beyond general level of tip of Sc; no trichia on Sc, present on outer ends of M, Cu<sub>1</sub> and the Anals. Venation: Cell 1st M<sub>2</sub> long, subequal to distal section of M<sub>3</sub>; m—cu at fork of M.

Abdominal tergites dark brown, sternites yellowed, the outer ones slightly darker; hypopygium with ventral dististyle and lobe of basistyle paler. Ovipositor with cerci slender, gently upcurved. Male hypopygium (fig. 72) with the tergite, t, large, lobes obtuse, separated by a narrow U-shaped emargination; setae long but pale and inconspicuous, not involving the margins of the lobes. Basistyle, b, relatively small, its total area one-half that of the ventral dististyle; ventromesal lobe long, obtuse; mesal margin of style with conspicuous black setae, more numerous outwardly. Dorsal dististyle, d, a slender curved sickle, tip acute. Ventral dististyle fleshy, setae abundant, of moderate length; rostral prolongation short, the two spines subequal, nearly apical in position, placed close together, the inner spine closer to dorsal margin; apex of prolongation with three long yellow subfasciculate setae, with normal



darkened bristles elsewhere. Gonapophysis, g, entirely pale, mesal-apical lobe relatively large, conformation of apophysis as shown. Aedeagus with apical lobe relatively large.

Holotype, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, February 18, 1959 (Martinez). Allotopotype, ♀, March 1953 (Martinez). Paratopotype, 1 ♀, with the allotype.

*Limonia (Dicranomyia) luteiapicalis* most resembles species such as *L. (D.) croceiapicalis* sp. n., differing evidently in the structure of the hypopygium, especially the dististyles, gonapophyses and aedeagus.

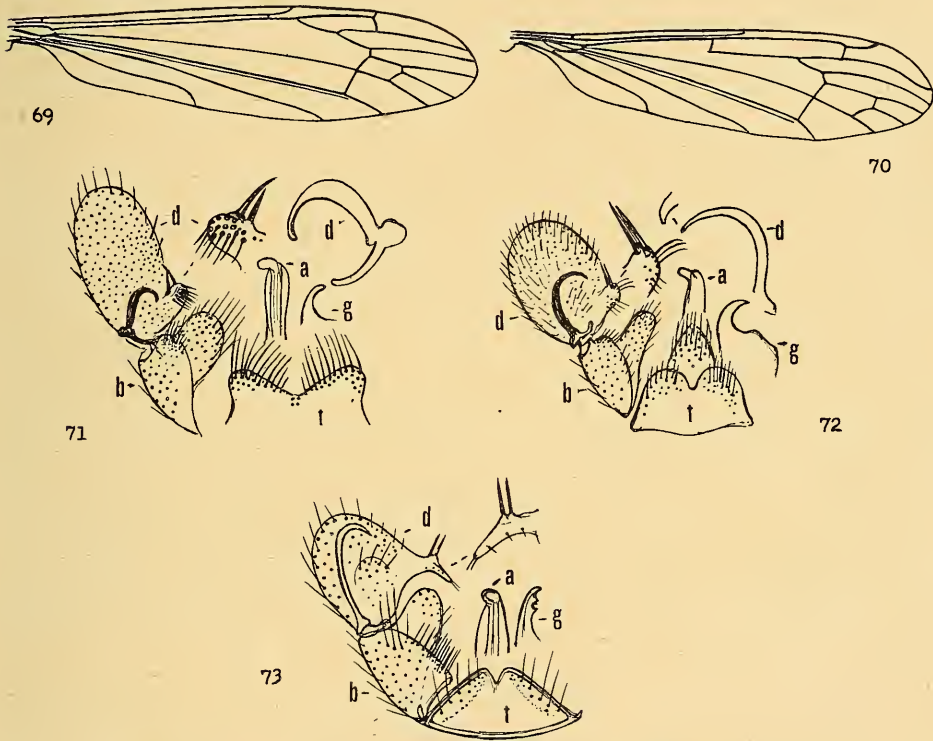


Fig. 69 *Limonia (Dicranomyia) lapazensis* sp. n.; venation.

Fig. 70 *Limonia (Dicranomyia) meconeura* sp. n.; venation.

Fig. 71 *Limonia (Dicranomyia) lapazensis* sp. n.; male hypopygium.

Fig. 72 *Limonia (Dicranomyia) luteiapicalis* sp. n.; male hypopygium.

Fig. 73 *Limonia (Dicranomyia) meconeura* sp. n.; male hypopygium.

(Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; t, tergite)

## 96. *Limonia (Dicranomyia) meconeura* sp. n.

Belongs to the *repanda* group; general coloration of thorax greenish yellow with a conspicuous brownish black pattern that includes a central praescutal stripe and divided areas on scutum, these converging behind on mediotergite; femora black, tip and a broader subterminal ring yellow; wings yellow, patterned with brown; Sc and  $R_1 + 2$  long, the latter much longer than  $R_2$ ; male hypopygium with rostral spines shorter than apex of prolongation.

Male. — Length about 6.5 mm.; wing 7 mm.; antenna about 1.1 mm.

Female. — Length about 7 mm.; wing 7.3 mm.

Rostrum and palpi black. Antennae black, with greenish tints; flagellar segments short-oval, outer ones more elongate, exceeding the verticils, terminal segment slightly longer than the penultimate. Front and anterior vertex silvery, the latter slightly broader than the diameter of scape; posterior vertex light buffy brown.

Cervical sclerites and pronotum brownish black, the latter broadly greenish yellow on sides. Mesonotal praescutum greenish yellow, with a conspicuous brownish black or dark brown central stripe that virtually reaches the suture; posterior sclerites of notum with brownish black areas, beginning on scutal lobes, converging behind, confluent at posterior border of scutellum to form a broad central area on mediotergite; pleura and pleurotergite uniformly brownish yellow. Halteres greenish yellow, knobs weakly darkened. Legs with coxae and trochanters greenish yellow; femora black, bases very narrowly obscure yellow, the narrow apex and a broader subterminal ring yellow, the latter about one-half as extensive as the black subterminal ring; remainder of fore and middle legs black; posterior tibiae paler, tips narrowly blackened; tarsi black; claws long and slender, with a single long subbasal spine and one or two very reduced denticles near base. Wings (fig. 70) pale yellow, prearcular field and costal interspaces more saturated yellow; a conspicuous brown pattern, distributed as follows: Arculus, origin of Rs, tip of Sc, stigma, cord, outer end of cell 1st  $M_2$ , and a broad seam along veins  $M_3 + 4$  and  $M_1$ ; very restricted marginal darkenings at ends of veins  $R_3$  to 1st A, much larger on 2nd A; vague narrowed darkened seams on vein Cu and at apical ends of outer radial veins; veins brownish yellow, darker in the patterned areas. Macrotrichia on longitudinal veins beyond general level of origin of Rs, including also the outer third of 2nd A. Venation: Sc relatively long, in the type ending about opposite one-third Rs, the latter long, bent slightly basad at origin, as in the group, with a spur at the angle; vein  $R_1 + 2$  unusually long, about twice  $R_2$  in the type, a little shorter in the allotype but still longer than  $R_2$ ; cell 1st  $M_2$  longer than any of the veins beyond it; m—cu at or close to fork of M.

Abdominal tergites bicolored, yellow, the posterior borders broadly brown, the amount of the latter decreasing on outer segments, eight and nine being virtually clear yellow; sternites yellow. Ovipositor with cerci very slender, strongly upcurved. Male hypopygium (fig. 73) with the tergite, t, subtriangular in outline, narrowed outwardly to an obtuse point, with a small V-shaped apical notch, the entire tergite with a narrow sclerotized margin; elongate setae on lateral third. Basistyle, b, with ventromesal lobe large, apical setae long; mesal face of style with a concentration of moderately long black setae. Dorsal dististyle, d, very long and slender, straight on basal two-thirds, outwardly strongly bent to an acute point. Ventral dististyle fleshy, its area about one-third larger than that of the basistyle; rostral prolongation slender, the two spines separate but closely approximated, shorter than the rostrum

beyond their insertion. Gonapophysis, g, with mesal-apical lobe elongate, margin weakly erose or toothed. Aedeagus terminating in two rounded lobes.

**Holotype**, ♂, km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez). **Allotype**, ♀, El Limbo, Chapare, 2000 meters, February 18, 1959 (Martinez).

*Limonia* (*Dicranomyia*) *meconeura* belongs to a small group of Tropical American species that includes *L. (D.) amaryllis* Alexander, *L. (D.) brachycantha* Alexander, *L. (D.) contradistincta* Alexander, *L. (D.) melaxantha* Alexander, *L. (D.) meridensis* Alexander, *L. (D.) repanda* (Alexander) and *L. (D.) xanthomela* sp. n., all generally similar in color, differing especially in the leg coloration and in details of structure of the male hypopygium. The present fly has  $R_s$  and  $R_{1+2}$  unusually long, the other species above listed having  $R_{1+2}$  and  $R_2$  subequal or with  $R_{1+2}$  shorter. In earlier papers I had placed the *repanda* group in the subgenus *Limonia* where it appeared to fit best on venational characters but from the structure of the hypopygium it seems better to place these species in *Dicranomyia*. Inadvertently, species No. 66, *Limonia xanthomela*, had been referred to the subgenus *Limonia* but is better placed here. The whole matter of subgeneric position of certain Tropical American species of the present and other groups still remains in question, as has been discussed in greater detail in another paper (Alexander, 1950: 169—170).

Bolivia: Songotal, Cuticucho, ca. 3700 meters, January 30—February 1, 1954 (Forster); El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

#### 97. *Limonia* (*Dicranomyia*) *mulsa* Alexander

*Dicranomyia mulsa* Alexander; Trans. Amer. Ent. Soc., 42: 5, figs. 1—2 (venation); 1916.

The types were from Matucana, Peru, 7788 feet, taken in July 1914 by Parish.

#### 98. *Limonia* (*Dicranomyia*) *pelates* sp. n.

Size medium (wing of male 6.5 mm.); general coloration gray, praescutum with four brown stripes; antennal scape and pedicel black, flagellum paler; knobs of halteres black; femora uniformly light yellow; wings whitish, with a conspicuous brown spotted pattern, including about seven costal areas and marginal darkenings on other veins; m—cu nearly its own length before fork of M.

**Male**. — Length about 6.5 mm.; wing 6.5 mm.

Rostrum and palpi black. Antennal scape and pedicel black, flagellum medium brown; flagellar segments slightly longer than their verticils. Head gray, orbits paler gray; anterior vertex about one-half the diameter of scape.

Pronotum brown, slightly pruinose. Mesonotal praescutum light gray, patterned with brown, including the anterior margin, four discal stripes and the lateral borders; intermediate stripes only narrowly separated; scutal lobes dark brown, central area restrictedly gray; scutellum broad, gray; medio-



tergite brown, pruinose. Pleura dark gray, vaguely patterned with darker; dorsopleural membrane dusky. Halteres with stem light yellow, knob abruptly black. Legs with coxae brownish black, pruinose; trochanters brownish yellow; femora uniformly light yellow; tibiae and proximal two tarsal segments yellow, tips very narrowly darker, outer tarsal segments blackened; claws curved, with a major subbasal spine. Wings (fig. 74) whitish, with a conspicuous brown spotted pattern, including about seven costal areas, the largest stigmal; other brown areas at fork of Rs, cord and outer end of cell 1st  $M_2$ ; a broken series of dark areas along anterior branch of Rs; paler brown marginal clouds at ends of veins from  $R_4 + 5$  to 2nd A, largest on Cu and the Anals; small washes in cell  $R_5$ ; vague pale washes along veins M, Cu and 1st Anal; veins yellow in the ground areas, brown in the patterned parts. Macrotrichia on longitudinal veins beyond general level of origin of Rs, lacking on 1st A, one or few on 2nd A. Venation: Sc long,  $Sc_1$  ending about opposite midlength of Rs,  $Sc_2$  not evident; cell 1st  $M_2$  about as long as distal section of  $M_3$ ;  $m-cu$  nearly its own length before fork of M. One wing of type shows a faint crossvein in cell  $R_3$  about its own length from end.

Abdomen dark brown, sparsely pruinose. Male hypopygium (fig. 78) with posterior border of tergite, t, deeply emarginate, lobes broadly obtuse. Basistyle, b, with ventromesal lobe oval. Dorsal dististyle, d, a strongly curved sickle, tip obtuse. Ventral dististyle relatively small, its area slightly more than one-half that of the basistyle, weakly bilobed, the smaller outer lobe darkened; rostral prolongation very short and stout, terminating in a small triangular point; rostral spines two, longer than the prolongation. Gonapophysis, g, with mesal-apical lobe slender, separated from the body of style by a narrow notch. Apex of aedeagus a simple rounded lobe.

Holotype, ♂, Locotal, Chapare, Cochabamba, 1200 meters, October 28, 1953 (Martinez).

The nearest ally is *Limonia* (*Dicranomyia*) *lydia* Alexander, of São Paulo, Brazil, which has the hypopygium very similar except for details. The present fly is readily told by the uniformly yellow femora and the position of  $m-cu$  far before the fork of M. In the type of the present fly, on one side of the hypopygium, there are three rostral spines instead of the normal two, evidently an abnormality. Like other species of *Limonia* discussed in the present report, the venation of the subcostal and radial fields is more as in the typical subgenus *Limonia* but the basic plan of the hypopygium is that of *Dicranomyia*, to which I am referring it. The statements made under *Limonia aljaroi* (Species 60) and *Limonia meconeura* (Species 96) likewise refer to the uncertain subgeneric assignments of various species in the vast complex *Limonia*.

#### 99. *Limonia* (*Dicranomyia*) **perexcelsior** sp. n.

Size large (wing of male to 13 mm., of female to 17 mm.); general coloration dark gray, praescutum with three dark brown stripes; legs light brown, tips of femora darker; wings whitish subhyaline, abundantly patterned with diffuse pale brown spots in all cells;  $m-cu$  shortly before fork of M; male

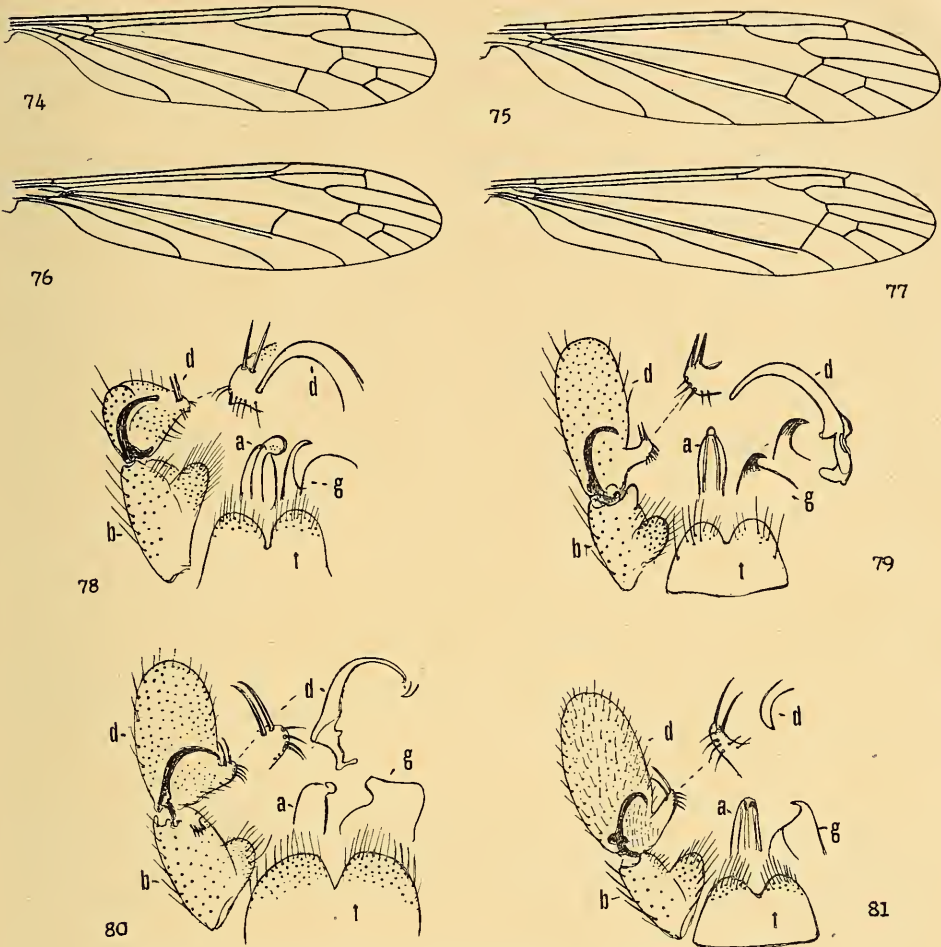


Fig. 74 *Limonia (Dicranomyia) pelates* sp. n.; venation.

Fig. 75 *Limonia (Dicranomyia) perexcelsior* sp. n.; venation.

Fig. 76 *Limonia (Dicranomyia) perretracta* Alexander; venation.

Fig. 77 *Limonia (Dicranomyia) pertruncata* sp. n.; venation.

Fig. 78 *Limonia (Dicranomyia) pelates* sp. n.; male hypopygium.

Fig. 79 *Limonia (Dicranomyia) perexcelsior* sp. n.; male hypopygium.

Fig. 80 *Limonia (Dicranomyia) pertruncata* sp. n.; male hypopygium.

Fig. 81 *Limonia (Dicranomyia) punoensis* Alexander; male hypopygium.

(Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; t, tergite)

hypopygium with rostral spines short, the outermost at extreme apex of prolongation; gonapophysis with mesal-apical lobe a blackened point.

Male. — Length about 10–11 mm.; wing 10.5–13 mm.; antenna about 1.2–1.3 mm.

Female. — Length about 11–13 mm.; wing 14–17 mm.

Rostrum black, about one-third the remainder of head; palpi black. Antennae black; flagellar segments subcylindrical, outer ones longer; terminal segment exceeding the penultimate; longest verticils subequal to the segments; in female, flagellar segments more oval. Head black, more or less

pruinose; anterior vertex of male about one-half broader than the diameter of scape.

Pronotum dark brown, paler laterally; anterior pretergites restrictedly yellow. Mesonotal praescutum dark gray, with three poorly indicated dark brown stripes, the median one vaguely divided by a capillary line; scutal lobes dark brown, median area and base of scutellum obscure brownish yellow, remainder of scutellum broadly dark brown; postnotum dark gray. Pleura blackened, gray pruinose. Halteres with stem dusky, knob more yellowed. Legs with coxae brownish yellow, trochanters clearer yellow; femora light brown, darker outwardly, in cases the extreme tips paler; tibiae and tarsi light brown; claws virtually straight, with a few long setae but without teeth. Wings (fig. 75) with the ground whitish subhyaline, with very abundant diffuse pale brown spots in all cells, these areas subequal in extent to the interspaces, tending to become confluent with one another; veins pale brown. Macrotrichia on veins beyond cord long but relatively sparse, on distal section of  $R_4+5$ ,  $M_1+2$ ,  $M_3$ ,  $M_4$  and distal section of  $Cu_1$ , lacking on anterior branch of  $Rs$ ; basad of cord lacking on  $Sc$ ,  $Rs$ ,  $M$  and 1st  $A$ , a very few near outer ends of basal section of  $Cu_1$  and 2nd  $A$ ; costal fringe relatively long, delicate. Venation:  $Sc_1$  ending about opposite origin of  $Rs$ ,  $Sc_2$  somewhat removed,  $Sc_1$  subequal to  $R_2$ ; cell 1st  $M_2$  nearly as long as distal section of vein  $M_1+2$ ;  $m-cu$  usually at from one-fourth to three-fourths its length before fork of  $M$ , in cases virtually at the fork.

Abdominal tergites dark cinnamon brown, basal sternites more yellowed. Ovipositor with both cerci and hypovalvae long and slender, nearly straight, the latter blackened at bases. Male hypopygium (fig. 79) with the tergite,  $t$ , terminating in two obtuse lobes, separated by a narrow U-shaped notch, lobes with several setae, the more mesal ones small and weak. Basistyle,  $b$ , darkened; ventromesal lobe basal in position, the outer mesal angle produced into a glabrous sclerotized blade. Dorsal dististyle,  $d$ , a gently curved blackened blade, the outer third slender, tip subacute. Ventral dististyle pale, large and fleshy, with scattered larger setae of moderate length; remaining surface with abundant more delicate setae, those of mesal face very long and abundant; rostral prolongation moderately long, apex obliquely truncated, the two small spines slightly separated, the outermost at extreme tip. Gonapophysis,  $g$ , broadly flattened, blackened, mesal-apical angle produced into a gently curved blackened point, its tip acute. Aedeagus terminating in a small obtuse lobe.

Holotype, ♂, Illimani, Westhang, 5600 meters, May 4, 1950 (Forster). Allotopotype, ♀, 4500—5000 meters, April 25, 1950. Paratopotypes, 1 ♂, 3 ♀♀, 4500—5200 meters, April 14—30, 1950 (Forster); paratypes, 2 ♀♀, Cuticucho, Songotal, ca. 3700 meters, January 29—30, 1954; 1 ♀, November 30, 1953 (Forster).

Compared with other regional species, *Limonia* (*Dicranomyia*) *perexcelsior* most resembles *L. (D.) perretracta* Alexander, which similarly has the wings abundantly dotted with brown, differing conspicuously in the coloration and distribution of these markings and in the greatly retracted  $m-cu$  (fig. 76).



The present fly is of unusual interest as representing the highest altitude at which any crane-fly has ever been taken, the type having been collected at approximately 5600 meters (18,200 feet). Dr. Forster noted their occurrence in the following words „dem 5600 m hoch gelegenen Lager 2, in dem außer vom Wind hier heraufgewehten, auf dem Schnee liegenden Schmetterlingen auch einige Tipuliden an den aus dem Schnee ragenden Felsen gefangen wurden“. (Forster, 1955: 86). The previous high record in the Andes was for *Tipula (Eumicrotipula) phalangioides* Alexander, which Professor F. Martin Brown collected at high altitudes on Mount Tungurahua, Ecuador, in April 1939, the extreme height being 4650 meters (15,125 feet) which also was the highest point where mosses were observed. In Asia, the highest known altitudes so far recorded are 17,000 feet in Sikkim, eastern Himalayas, where *Tipula (Bellardina) hypsistos* Alexander was taken by Dr. Fernand Schmidt, and also at 17,000 feet on the China-Tibet border, where *Tipula (Bellardina) exquisita* Alexander, was captured by Dr. David Graham.

#### 100. *Limonia (Dicranomyia) perretracta* Alexander

*Limonia (Dicranomyia) perretracta* Alexander; Ann. Mag. Nat. Hist., (11) 9: 221—222; 1942.

The type was from Tarma, Junin, Peru, 2800 meters, taken April 13, 1940 by Felix Woytkowski. I am figuring the venation (fig. 76).

Bolivia: Illimani, Westhang, 4500—5000 meters, April 4—23, 1950 (Forster).

#### 101. *Limonia (Dicranomyia) pertruncata* sp. n.

Size relatively large (wing of male to 13 mm.); thorax yellow, central region of pronotum and anterior end of praescutum dark brown; rostrum black; antennae black, scape yellow; halteres long and slender; legs light brown, outer tarsal segments darker, claws toothed; wings yellowed, stigma only slightly darker,  $Sc_1$  ending before origin of Rs; male hypopygium with median notch of tergite narrow; basistyle with a small accessory lobule on mesal face before apex; dorsal dististyle strongly curved, apex acute, slightly recurved; rostral prolongation of ventral dististyle short, its apex with four large pale fasciculate setae; gonapophysis very large, its mesal-apical lobe very low, the inner part truncate.

Male. — Length about 9—11 mm.; wing 10.8—13 mm.

Female. — Length about 10—11 mm.; wing 12—14 mm.

Rostrum black, mouthparts and palpi dull black. Antennae with scape conspicuously yellow, remainder black; flagellar segments subcylindrical, the outer ones more elongate, exceeding their verticils; terminal segment about one-third longer than the penultimate. Front brownish yellow, vertex brownish gray; anterior vertex about one-half broader than the diameter of the scape.

Pronotum dark brown medially, sides broadly yellow. Mesonotum fulvous yellow, the praescutum with a conspicuous dark brown median stripe, very

distinct on anterior half, obliterated behind; scutellum light yellow. Pleura light fulvous, metapleura pale yellow. Halteres long and slender, base of stem greenish, remainder dark brown. Legs with coxae and trochanters greenish yellow; femora light brown, fore pair darker; tibiae light brown, tarsi passing into darker brown; claws relatively small, with a strong basal spine. Wings (fig. 77) yellowed, stigma only slightly darker, prearcular field somewhat brighter yellow; veins light brown. Macrotrichia on longitudinal veins beyond general level of origin of Rs, including outer ends of M and Cu, lacking or virtually so on Sc and 1st A, on 2nd A on nearly the outer half. Venation: Sc relatively short, Sc<sub>1</sub> ending before origin of Rs; cell 1st M<sub>2</sub> shorter than any vein beyond it; m—cu close to fork of M.

Abdominal tergites dark brown, posterior borders narrowly pale, hypopygium darker, sternites yellow. Male hypopygium (fig. 80) with the tergite, t, large, narrowed very gradually outwardly, posterior border with two broad truncated lobes, setae of moderate length, mostly concentrated on mesal-apical part of each lobe. Basistyle, b, with ventromesal lobe basal in position, with abundant short setae interspersed with a few long ones; more distally on mesal face of style with a small lobe that terminates in several strong setae. Dorsal dististyle, d, strongly curved on outer half, distal third narrowed, tip acute, slightly recurved. Ventral dististyle large, its area more than one-half greater than that of the basistyle; rostral prolongation short and stout, spines placed close together, apex of lobe with four large pale fasciculate setae. Gonapophysis, g, very large, smooth, apical lobe very low, its inner apical part truncate. Aedeagus with apex simple.

**Holotype**, ♂, Unduavi, Yungas, 2900 meters, March 26, 1950 (Forster). **Allotype**, ♀, Cuticuecho, Songotal, ca. 3700 meters, January 31, 1954 (Forster). **Paratypes**, 5 ♂♀, with the allotype, November 30 to December 1, 1953.

*Limonia (Dicranomyia) pertruncata* is most nearly allied to species such as *L. (D.) acuproducta* sp. n., *L. (D.) meridicola* Alexander, and *L. (D.) pennifera* Alexander, differing most evidently in the structure of the male hypopygium, particularly the tergite, basistyle, both dististyles, and the gonapophyses.

## 102. *Limonia (Dicranomyia) punoensis* Alexander

*Limonia (Dicranomyia) punoensis* Alexander; Ann. Mag. Nat. Hist., (11) 12: 588—590; 1945.

The type male was from Puno, Peru, 12,500 feet, May 6, 1938, collected by J. Adger Smyth.

Bolivia: La Paz, 3600—4000 meters, March 15, 1950 (Forster); Illimani, Westhang, 4500—5000 meters, March 15, 1950 (Forster).

The male hypopygium had not been figured and the type is shown herewith (fig. 81). Ninth tergite, t, unusually long, margins not thickened, the rounded lobes separated by a V-shaped emargination, provided by long delicate setae. Basistyle, b, with ventromesal lobe obtuse, with abundant setae, some larger and stouter. Dorsal dististyle, d, small, curved to the subacute

tip. Ventral dististyle very large and fleshy, outer part more darkened than the mesal face, vestiture short but abundant; rostral prolongation short, cylindrical, the outer spine at extreme tip, the slightly smaller inner spine slightly removed; apical margin of prolongation with four long pale fasciculate setae. Gonapophysis, g, with mesal-apical lobe small and inconspicuous. Apex of aedeagus simple.

Allotype female. Length about 9.5 mm.; wing 12 mm.

Agreeing with the type, differing in minor details of coloration. Thoracic pleura somewhat paler, sternopleurite tinged with green. Femoral tips conspicuously whitened. Apices of abdominal segments conspicuously pale yellow, bases darkened. Ovipositor with cerci very slender, only gently upcurved.

Allotype, ♀, Illimani, Westhang, 4500—5000 meters, March 15, 1950 (Forster).

### 103. *Limonia (Dicranomyia) regifica* Alexander

*Dicranomyia regifica* Alexander; Trans. Amer. Ent. Soc., 42: 5—6, pl. 2, fig. 1 (wing); 1916.

The type was from Matucana, Peru, 7788 feet, taken July 14, 1914, by Parish.

Bolivia: Illimani, Westhang, 4500—5000 meters, April 5—22, 1950 (Forster).

Male hypopygium (fig. 84) with the tergite, t, semioval, narrowed gradually to the rounded apex which is very shallowly emarginate, the low lobes with few but long setae; lateral tergal margins narrowly thickened, cephalic border more broadly so. Basistyle, b, with two ventromesal lobes, one obtusely rounded, the second a long slender lobule provided with a few delicate setae. Dorsal dististyle, d, unusually short and stout, curved to the obtuse tip, broadest at near midlength. Ventral dististyle darkened at base, pale distally, its area about twice that of the basistyle; rostral prolongation very small, its lower margin with about six long setae; rostral spines long, stout, the outer from a small basal tubercle, the shorter inner spine placed at its base. Gonapophysis, g, with mesal-apical lobe slender, gently curved. Aedeagus, a, relatively narrow, apex with two small lobules.

### 104. *Limonia (Dicranomyia) schindleri* sp. n.

Size medium (wing of male about 9 mm.); mesonotum brownish gray, praescutum with a broad brownish black central stripe; rostrum brownish yellow, palpi and antennae black; legs brown, claws with a strong basal tooth; wings whitish subhyaline, in male patterned with pale brown, darker and more distinct in female, stigma dark brown; male hypopygium with apex of dorsal dististyle obtuse; ventral dististyle with rostral prolongation long and slender with two long rostral spines.

Male. — Length about 8—8.5 mm.; wing 9—9.5 mm.

Female. — Length about 8—9 mm.; wing 10—11.5 mm.



Rostrum brownish yellow, mouthparts slightly infuscated, palpi black. Antennae short, black; flagellar segments oval, slightly exceeding the verticils; terminal segment long-oval, about one-third longer than the penultimate. Head gray; anterior vertex of male broad, about two and one-half times the diameter of scape.

Cervical region dark brown. Pronotum brownish yellow, slightly more darkened medially. Mesonotal praescutum brownish gray, with three brownish black stripes, the broad central one shallowly divided behind, lateral pair much less distinct, more pruinose, humeral region brownish yellow, pseudosutural foveae scarcely apparent; scutal lobes dark brown, central area and the scutellum more yellowish brown; postnotum light brown, pruinose. Pleura dark brown, gray pruinose; dorsopleural region obscure yellow. Halteres with stem yellow, clearer at base, knob weakly darkened. Legs with fore coxae dark brown, remaining coxae and all trochanters yellowed; femora brown, in cases (including the type) with extreme tips vaguely yellowed; tibiae and tarsi brown, outer tarsal segments darker; claws small, with a very strong basal tooth, present in both sexes. Wings (fig. 82) with the ground whitish subhyaline, clouded and patterned with darker brown, very pale and diffuse in the male, more conspicuous in the female; stigma dark brown in both sexes; in male, the entire wing surface is weakly darkened, the chief infuscations being at near midlength of cell M adjoining vein Cu, followed by a pale spot; axillary region weakly darkened; in female, the ground whitish subhyaline, with conspicuous brown clouds, including major areas over cord and outer end of cell 1st  $M_2$ , with others in outer end of cell M, wing apex, and at ends of cells Cu, 1st A and 2nd A; a smaller but darker cloud before midlength of vein  $Cu_1$  in cell M, corresponding to the darkening in male, as described; veins light brown, prearcular veins and Sc more yellowed. Macrotrichia on longitudinal veins beyond general level of origin of Rs, with a few at outer end of 2nd A, lacking on Sc, M and 1st A. Venation:  $Sc_1$  ending about opposite or slightly before origin of Rs,  $Sc_1$  elongate, subequal to the arcuated Rs; cell 1st  $M_2$  subequal in length to vein  $M_3$  beyond it; m—cu variable in position from slightly before to beyond the fork of M.

Abdomen dark brown, ventral dististyle of male more yellowed. Ovipositor with cerci slender, gently upcurved. Male hypopygium (fig. 85) with tergite, t, transverse, lobes very low and obtuse, separated by a shallow U-shaped emargination; setae long and delicate. Basistyle, b, with ventromesal lobe obtuse, with numerous setae, some of the apical ones very long. Dorsal dististyle, d, strongly curved, apex obtuse. Ventral dististyle pale, its area slightly less than twice that of the basistyle; rostral prolongation small, the apex beyond the spines very slender; rostral spines elongate, slightly exceeding the prolongation, the more basal one longer. Gonapophysis, g, with mesal-apical lobe slender, gently curved, outer margin of apophysis conspicuously infuscated. Apex of aedeagus a simple lobe.

Holotype, ♂, Illimani, Westhang, 4500—5000 meters, April 9, 1950 (Forster). Allotopotype, ♀, April 11, 1950. Paratopotypes, 1 ♂,

several ♀♀, April 7—24, 1950 (Forster); paratypes, several ♂♂♀♀, Cuticucho, Songotal, ca. 3700 meters, December 1, 1953—February 1, 1954 (Forster).

I take pleasure in naming this attractive fly for the late Dr. Otto Schindler, who has accompanied Dr. Forster in 1953—1954. The most similar species is *Limonia (Dicranomyia) weiseriana* Alexander, of Catamarca, Argentina, which differs evidently in the wing pattern and in structure of the male hypopygium, including the tergite, both dististyles, and the gonapophysis. The difference in intensity of the wing pattern in the two sexes of the present fly is noteworthy.

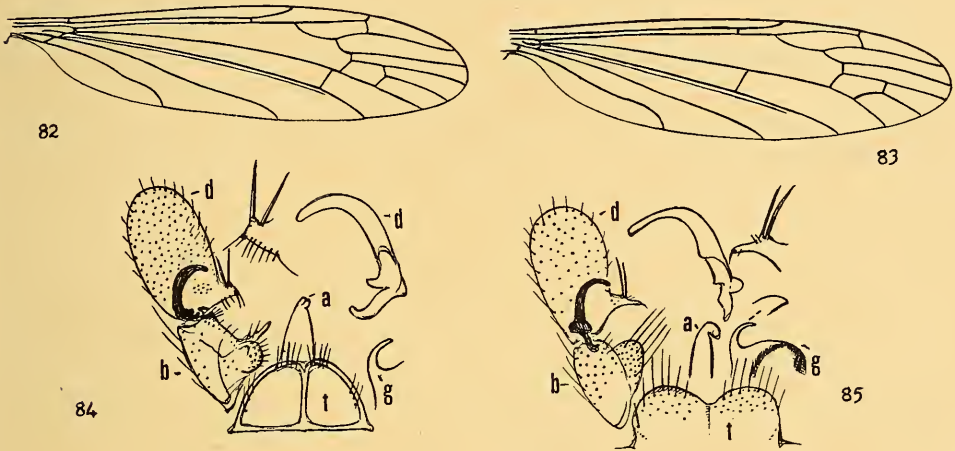


Fig. 82 *Limonia (Dicranomyia) schindleri* sp. n.; venation.

Fig. 83 *Limonia (Dicranomyia) smythiana curtispina* subsp. n.; venation.

Fig. 84 *Limonia (Dicranomyia) regifica* (Alexander); male hypopygium.

Fig. 85 *Limonia (Dicranomyia) schindleri* sp. n.; male hypopygium.

(Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; t, tergite)

#### 105. *Limonia (Dicranomyia) smythiana curtispina* subsp. n.

Male. — Length about 10 mm.; wing 15 mm.

Female. — Length about 10—13 mm.; wing 13.5—17 mm.

Generally similar to typical *smythiana* Alexander (Chucuito, Lake Titicaca, Puno, Peru, 12,000 feet, August 28, 1939, J. Adger Smyth), differing especially in details of structure of the male hypopygium, particularly the rostral prolongation of the ventral dististyle.

Wing venation (fig. 83). Male hypopygium (fig. 88) with the tergite, t, transverse, lobes low, with numerous (about 30) strong setae. Proctiger conspicuous, appearing as extensive hyaline membrane on either side of midline, provided with very abundant long retrorse setae. Dorsal dististyle, d, small, conspicuously dilated at near midlength, curved to the nearly acute tip. Ventral dististyle large, its area about two and one-half times that of the basistyle; rostral prolongation produced, sclerotized, its length about four times the diameter at midlength, apex obtuse; two short rostral spines, their length less than the diameter of the prolongation opposite their insertion.



**Holotype**, ♂, Illimani, Westhang, 4500—5000 meters, April 6, 1950 (Forster). **Allotopotype**, ♀, April 19, 1950. **Paratopotypes**, several ♀♀, April 5—24, 1950 (Forster).

I am figuring certain structures of the male hypopygium of the type of *smythiana* (fig. 89). Attention is called to the narrower dorsal dististyle, d, with its apex obtusely rounded, and the rostral prolongation of the ventral style, with two very long spines, the outer one placed at the extreme distal end, apex of the prolongation truncated. Gonapophysis, g, with mesal-apical lobe longer.

**106. Limonia (Dicranomyia) sparsituber sp. n.**

Size relatively large (wing of male to about 10 mm.); general coloration yellow, pronotum and anterior half of praescutum with a blackened central stripe; wings tinged with brownish yellow, stigma very pale brown; male hypopygium with posterior border of tergite with two broadly rounded lobes, setae short and weak; basistyle without a tubercle at outer end; gonapophysis with mesal-apical lobe pale, flattened, with relatively sparse tubercles.

**Male.** — Length about 8.5—9 mm.; wing 9.5—10 mm.; antenna about 1.3—1.4 mm.

Rostrum and palpi black. Antennae with scape yellow, slightly obscured outwardly, remainder of organ black; flagellar segments elongate-oval, subequal to their longest verticils; terminal segment larger and about one-third longer than the penultimate. Front obscure yellow; vertex silvery gray, posterior vertex with a large blackened area on either side; anterior vertex about twice the diameter of the scape.

Pronotum narrowly blackened medially, sides broadly yellow. Mesonotal praescutum with a conspicuous black central stripe on anterior half, posterior end and lateral stripes very pale brownish yellow; scutal lobes light brown, inner anterior part restrictedly darkened, central area broadly yellow, this continued onto base of scutellum, remainder of latter very pale brown, posterior declivity yellowed; mediotergite yellow, with a narrow pale brown central darkening. Pleura and pleurotergite fulvous yellow; dorsopleural region yellowed. Halteres with stem conspicuously hairy, brownish yellow, clearer yellow at base, knob brownish black. Legs with fore coxae infuscated, remaining coxae and the trochanters greenish yellow; remainder of legs light brown, outer tarsal segments darker; claws with a single well-developed black spine, the more basal ones greatly reduced. Wings tinged with brownish yellow, prearcular field and cell Sc clearer yellow; stigma very pale brown, only slightly indicated; veins pale brown, Sc and the basal veins more yellowed. Longitudinal veins beyond general level of origin of Rs with macrotrichia, lacking on Sc, basal three-fifths of M and 2nd A and all but tip of 1st A. Venation: Sc<sub>1</sub> ending opposite origin of Rs, Sc<sub>1</sub> from about one-third to one-half Rs; cell 1st M<sub>2</sub> subequal to distal section of M<sub>3</sub>; m—cu close to fork of M.

Abdomen brownish black, basal sternites obscure yellow. Male hypopygium (fig. 90) with the tergite, t, relatively long, posterior border with two broadly



rounded lobes that are separated by a U-shaped emargination; setae relatively short and weak. Basistyle, b, small, its total area about one-third that of the ventral dististyle; ventromesal lobe large, a few setae concentrated on outer mesal end of style but without a developed lobe. Dorsal dististyle, d, a strongly curved sickle, tip obtuse. Ventral dististyle large and fleshy; rostral prolongation short, with two separated, slightly divergent spines; apex of prolongation obtuse to precipitous. Gonapophysis, g, with mesal-apical lobe pale, flattened, margins and surface with sparse tubercles, lacking on body of apophysis, on outer margin more or less recurved. Aedeagus with apex simple, outer margin dilated before tip.

**Holotype**, ♂, km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez). **Paratopotype**, ♂.

*Limonia (Dicranomyia) sparsituber* is readily told from other generally similar Andean species of medium size and with unpatterned wings by the structure of the hypopygium, particularly the tergite and gonapophyses, such allied species including *L. (D.) acuproducta* sp. n., *L. (D.) patruelis* (Alexander), *L. (D.) pennifera* Alexander, and *L. (D.) quadrituber* Alexander.

#### 107. *Limonia (Dicranomyia) subandicola* Alexander

*Limonia (Dicranomyia) subandicola* Alexander; Bol. Entomol. Venezolana, 6: 60—62, fig. 6 (♂ hypopygium); 1947.

The type was from Venezuela.

Bolivia: Songotal, Cuticucho, ca. 3700 meters, January 30, 1954 (Forster).

El Limbo, Chapare, Cochabamba, 2000 meters, February 18, 1959 (Martinez).

#### 108. *Limonia (Dicranomyia) titicacana* Alexander

*Limonia (Dicranomyia) titicacana* Alexander; Ann. Ent. Soc. Amer., 38: 268—270; 1945.

The type was from Chucuito, near Lake Titicaca, Puno, Peru, 12,500 feet, taken April 7, 1939 by J. Adger Smyth.

Bolivia: Illimani, Westhang, 4500—5000 meters, April 1—29, 1950 (Forster).

I am illustrating the venation (fig. 86) and male hypopygium (fig. 87).

Wings with axillary angle darkened; veins beyond general level of origin of Rs with macrotrichia; Rs with about two to five trichia at near midlength; 1st A glabrous or with a few trichia at outer end; Sc glabrous; Vein 2nd A has about ten trichia at outer end and with nearly the same number at base, the more proximal of the latter becoming very long and delicate.

Male hypopygium (fig. 87) with the tergite, t, unusually long, gradually narrowed outwardly, terminating mesally in two darkened rounded lobes that are separated by a narrow V-shaped emargination, provided with numerous short and delicate setae, cephalic border broadly thickened. Basistyle, b, darkened, ventromesal lobe large, apex obtuse, with long coarse setae. Dorsal dististyle, d, short, widened at midlength, tip obtuse. Ventral dististyle pale, large and fleshy, its area nearly three times that of the basistyle; setae re-

lately short, more abundant on mesal face; rostral prolongation short and stout, apex truncated or rounded, tip and lower margin with very abundant setae; spines relatively short, straight, placed close together at near midlength of prolongation. Gonapophysis, g, pale, mesal-apical lobe stout, relatively short. Aedeagus narrow, apex simple.

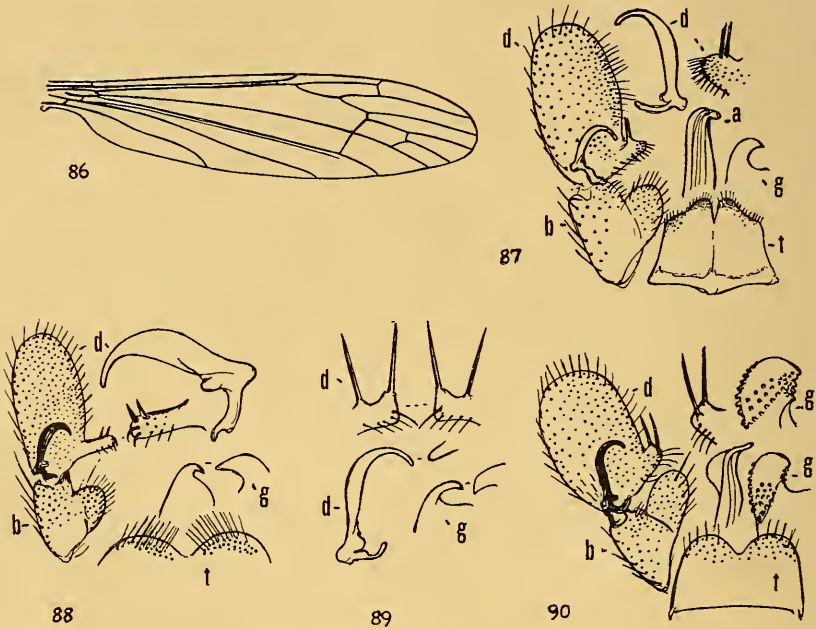


Fig. 86 *Limonia (Dicranomyia) titicacana* Alexander; venation.

Fig. 87 *Limonia (Dicranomyia) titicacana* Alexander; male hypopygium.

Fig. 88 *Limonia (Dicranomyia) smythiana curtispina* subsp. n.; male hypopygium.

Fig. 89 *Limonia (Dicranomyia) smythiana smythiana* Alexander; male hypopygium.

Fig. 90 *Limonia (Dicranomyia) sparsituber* sp. n.; male hypopygium.

(Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; t, tergite)

### 109. *Limonia (Peripheroptera) cochabambae* Alexander

*Limonia (Peripheroptera) cochabambae* Alexander; Jour. N. Y. Ent. Soc., 53: 53—54; 1945.

Bolivia: Chapare, Cochabamba, November 1934 (Francisco Steinbach); type.

El Limbo, Chapare, 2000 meters, November 6—11, 1953 (Martinez).

### 110. *Limonia (Peripheroptera) incommoda* Osten Sacken

*Peripheroptera incommoda* Osten Sacken; Berlin. Entomol. Zeitschr., 31: 176—177; 1887.

*Peripheroptera incommoda* Alexander; Ent. News, 24: 410, pl. 14, fig. 5; 1913.

The type, in the Vienna Museum, was from Brazil.

Bolivia: Coroico (Fassl).

**111. *Limonia* (*Peripheroptera*) *ordinaria* Alexander**

*Limonia* (*Peripheroptera*) *ordinaria* Alexander; Rev. de Entomologia, 16: 380—381; 1945.

Bolivia: Chapare, Cochabamba, November 1934 (Francisco Steinbach); type.

**112. *Limonia* (*Peripheroptera*) *subamoena* Alexander**

*Limonia* (*Peripheroptera*) *subamoena* Alexander; Ann. Mag. Nat. Hist., (11) 9: 239—240; 1942.

Described from Piedras Grandes, Huanuco, Peru, 3000 meters, taken November 26—30, 1937, by W o y t k o w s k i.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

**113. *Limonia* (*Geranomyia*) *aequabilis deplexa* Alexander**

*Limonia* (*Geranomyia*) *aequabilis deplexa* Alexander; Ann. Mag. Nat. Hist., (11) 8: 331—332; 1941.

Type from Tarma, Peru, 3600—5400 feet, February 1940, by W o y t k o w s k i.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez); km. 104, Chapare, 3150 meters, February 1959 (Martinez).

**114. *Limonia* (*Geranomyia*) *carunculata manabiana* Alexander**

*Limonia* (*Geranomyia*) *carunculata manabiana* Alexander; Rev. Ecuat. Ent. Par., 1: 89; 1953.

Type from Palmar, Manabi, Ecuador, 200 meters, taken May 20, 1941, by David L a d d e y.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March, November 3, 1953; February 18, 1959 (Martinez).

**115. *Limonia* (*Geranomyia*) *cinereinota* Alexander**

*Geranomyia cinereinota* Alexander; Ent. News, 24: 407—408, pl. 14, fig. 4 (venation); 1913.

*Limonia* (*Geranomyia*) *cinereinota* Alexander; Rev. Ecuat. Ent. Par., 1: 89—90, fig. 4 (♂ hypopygium); 1953.

Bolivia: Coroico (F a s s l); type.

**116. *Limonia* (*Geranomyia*) *forsteriana* sp. n.**

Size large (wing of female 12.5 mm. or more); general coloration gray, praescutum with three dark stripes; femora brown with a broad black subterminal ring preceded and followed by narrower yellow annuli; wings whitened, with a heavy brown pattern, including costal areas that reach the border; cell 1st  $M_2$  elongate, m short.

Female. — Length, excluding rostrum, about 10.5—12 mm.; wing 12.5 to 15.5 mm.; rostrum, about 4.8—5.2 mm.

Rostrum moderately long, about one-half the remainder of body, black, outer end slightly paler; maxillary palpi black. Antennae black; scape elongate, pruinose; flagellar segments suboval, the outer ones slightly more elongate.



gate, verticils very small. Head brownish black behind, with a central light gray line on vertex, narrowed at the occiput.

Pronotal scutum dark brown medially and on sides, light gray sublaterally, scutellum yellowed. Mesonotal praescutum with ground light gray, humeral areas more whitened, disk with three brown stripes, the central line broader, with diffuse margins, lateral praescutal borders blackish gray; scutum broadly whitish gray medially, lobes patterned with light gray, bordered internally by dark brown, externally passing into darker gray; scutellum pale yellowish gray; mediotergite reddish brown, pleurotergite gray. Pleura brown, pruinose, dorsal sternopleurite paler, forming a weak stripe. Halteres with stem light yellow, knob brownish black. Legs with coxae brown, trochanters paler yellowish brown; femora light brown with a broad black subterminal ring, preceded by a narrow clearer yellow annulus, tip still more narrowly yellow; tibiae and tarsi light brown, outer segments darker brown; claws long, only slightly curved, with a strong basal spine and a concentration of three or four smaller denticles. Wings (fig. 91) whitened, with a heavy brown pattern, arranged as follows: Arculus; Sc crossvein, extending from C to M; origin of Rs; fork of Sc; cord and outer end of cell 1st  $M_2$ ; other similar areas include the stigmal region, extending from C to  $R_4 + s$ ; tip of  $R_3$  and  $R_4 + s$ , with a subterminal marking at midlength of cell  $R_5$ ; further seams on outer ends of veins Cu and 2nd A, less evident as marginal clouds in cells 1st A and 2nd A; still fainter brown washes in outer ends of cells  $M_4$  and Cu; subcostal interspaces pale yellow; veins brown, slightly darker in the patterned areas, clear light yellow in the interspaces of Sc and R. Macrotrichia on longitudinal veins beyond general level of cord, lacking on Sc, M, basal section of  $Cu_1$ , and 1st A, a few trichia at outer end of 2nd A. Venation: Sc long,  $Sc_1$  ending about opposite three-fourths Rs,  $Sc_2$  near its tip; cell 1st  $M_2$  long, exceeding any of the veins beyond it; m about one-fourth as long as basal section of  $M_3$ ; m—cu at or just before fork of M.

Abdominal tergites brownish yellow, sides more obscured; sternites more extensively darkened on sides, restricting the pale ground to a central stripe. Ovipositor with cerci slender, nearly straight.

Holotype, ♀, Illimani, Westhang, 4500—5000 meters, April 10, 1950 (Forster). Paratopotypes, 5 ♀♀, April 5—22, 1950 (Forster).

This fine species, largest known member of the subgenus, is named in honor of Dr. Walter Forster as a further appreciation of his field investigations of the insect fauna of Bolivia. The most similar species include *Limonia* (*Geranomyia*) *neogaudens* Alexander and *L. (G.) subgaudens* Alexander, both from Peru, distinguished by the smaller size and in details of coloration, particularly of the wings.

#### 117. *Limonia* (*Geranomyia*) *inaequispinosa* Alexander

*Limonia* (*Geranomyia*) *inaequispinosa* Alexander; Ann. Mag. Nat. Hist., (11) 5: 285—287; 1940.

*Limonia* (*Geranomyia*) *inaequispinosa* Alexander; Rev. Ecuat. Ent. Par., 1: 92, fig. 9 (♂ hypopygium); 1953.

*Limonia (Geranomyia) callinota* Alexander; Ann. Mag. Nat. Hist., (11) 8: 318—320; 1941.

The types of *inaequispinosa* were from Baños, Tungurahua, Ecuador, 2000 meters, taken May 25, 1937, by Macintyre; type of *callinota* from Carpapata, Tarma, Peru, 2600 meters, collected May 15, 1940, by Woytkowski.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, February 18, 1959 (Martinez).

Male hypopygium (fig. 92) with the tergite, t, emarginate posteriorly, lobes obtuse with long setae. Basistyle, b, with ventromesal lobe large, obtuse, with very long pale setae. Dorsal dististyle, d, curved, the apex a long straight spine. Ventral dististyle large, its area exceeding twice that of the basistyle; rostral prolongation slender, with two very unequal spines, both from basal tubercles; outer spine subequal in length to the inner but narrowed on outer half into a hairlike seta. Gonapophysis, g, entirely pale, mesal-apical lobe gently curved. Aedeagus with apical lobes large, pale, tips obtusely rounded.

#### 118. *Limonia (Geranomyia) inquisita* Alexander

*Limonia (Geranomyia) inquisita* Alexander; Ann. Mag. Nat. Hist., (11) 9: 785—787; 1942.

*Limonia (Geranomyia) inquisita* Alexander; Rev. Ecuat. Ent. Par., 2: 51—52, fig. 10 (♂ hypopygium); 1954.

The type was from La Mar, Ayacucho, Peru, taken by Woytkowski.

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

#### 119. *Limonia (Geranomyia) marthae* Alexander

*Limonia (Geranomyia) marthae* Alexander; Ann. Ent. Soc. Amer., 23: 726—728; 1930.

Types from Mount Santa Marta, Colombia, 5000 feet, taken August 6, 1925, by F. W. Walker.

Bolivia: Cristal Mayu, Chapare, 1200 meters, November 30, 1949 (Peña).

#### 120. *Limonia (Geranomyia) neanthina* Alexander

*Limonia (Geranomyia) neanthina* Alexander; Jour. N. Y. Ent. Soc., 62: 142—144; 1954.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez); type.

#### 121. *Limonia (Geranomyia) neoparilis* sp. n.

Allied to *subparilis*; size large (wing over 10 mm.); mesonotum yellowish gray, praescutum with three conspicuous brownish black stripes, lateral borders less evidently darkened; femora brown, extreme tips and a narrow subterminal ring yellowed; wings whitened, conspicuously patterned with brown, including four darker subcostal areas, Sc long; male hypopygium with rostral spines arising from summit of a conspicuous tubercle; apex of prolongation with a group of short spinoid setae; gonapophysis with mesal-apical lobe elongate, apex obtuse.

Male. — Length, excluding rostrum, about 8.5 mm.; wing 10.3 mm.; rostrum about 3.3 mm.



**Female.** — Length, excluding rostrum, about 8—9 mm.; wing 9.8—11.5 mm.; rostrum about 3.5—4.2 mm.

Rostrum about one-third the wing, black. Antennae black; flagellar segments suboval, longer than the verticils. Head above dark brown, sparsely pruinose, with a pale median stripe from behind the antennae to the occiput, posterior orbits more pruinose.

Pronotum buffy brown, darker sublaterally. Mesonotal praescutum yellowish gray with three conspicuous brownish black stripes, the central one broader and more pruinose at anterior end, narrowed behind; ground interspaces broad, lateral praescutal borders broadly paler brown, appearing darker when viewed from above, humeral region and a lateral area before suture more yellowed; median area of scutum and the scutellum brownish testaceous, scutal lobes darker; mediotergite brown anteriorly, posterior half more yellowish brown. Pleura and pleurotergite gray, patterned with brown on anepisternum and ventral sternopleurite. Halteres with stem pale, knob brownish black. Legs with fore coxae brown, the remaining coxae more yellowish brown; trochanters testaceous yellow; femora pale basally, passing into dark brown, extreme tips and a somewhat broader subterminal ring yellowed; tibiae light brown, tips slightly darker; tarsi light brown, outer segments brownish black. Wings whitish, conspicuously patterned with brown, including four darker subcostal areas, subequal to the yellowed interspaces; darkened areas at origin of Rs and fork of Sc separate; remaining brown pattern paler, including the stigma, beyond the cord much more extensive than the pale ground, before cord the ground more extensive in cell R, becoming more limited and obscured posteriorly; veins yellow in the ground areas, pale brown in the patterned parts. Venation: Sc long, Sc<sub>1</sub> ending about opposite midlength of Rs; cell 1st M<sub>2</sub> large, longer than the distal section of M<sub>1</sub>+<sub>2</sub>; m—cu close to fork of M.

Abdomen dark brown, genital segment in female paler brown. Ovipositor with cerci very slender. Male hypopygium (fig. 93) with tergite, t, narrowed outwardly, posterior border with two rounded lobes that are provided with long setae, the lobes separated by a narrow U-shaped emargination. Basistyle, b, relatively small, its area about one-half that of the ventral dististyle. Dorsal dististyle, d, a relatively slender gently curved sickle, the tip acute. Ventral dististyle with vestiture short; rostral prolongation dilated outwardly, apex obtuse, on lower margin with a group of small spinoid setae; rostral spines two, from the summit of a strong basal tubercle, placed close together, the outer one slightly shorter. Gonapophysis, g, with mesal-apical lobe long and slender, tip obtuse. Aedeagus with apical lobes extended into acute spines.

**Holotype**, ♂, Cuticuecho, Songotal, ca. 3700 meters, January 29, 1954 (Forster). **Allotopotype**, ♀, January 30, 1954. **Paratopotypes**, 1 ♂, 1 ♀, December 3, 1953, January 30, 1954 (Forster).

*Limonia (Geranomyia) neoparilis* is generally similar to *L. (G.) subparilis* sp. n., best distinguished by the hypopygial structure, including especially the



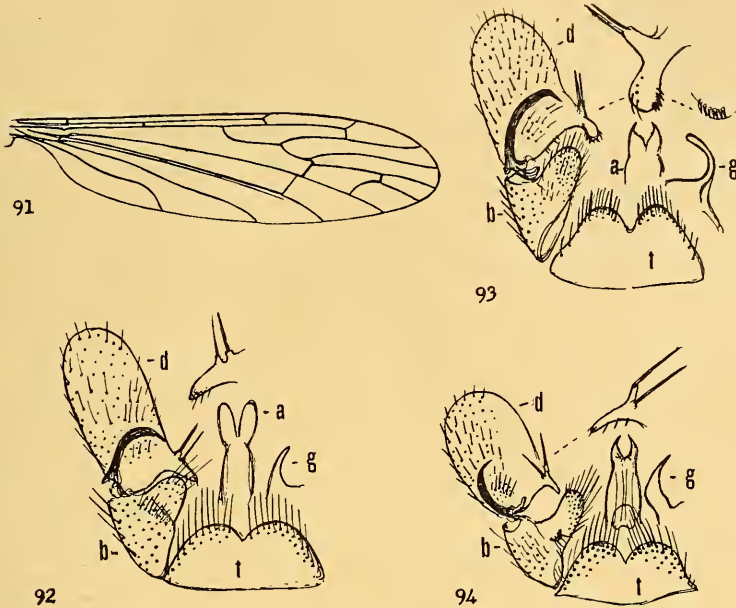


Fig. 91 *Limonia (Geranomyia) forsteriana* sp. n.; venation.  
 Fig. 92 *Limonia (Geranomyia) inaequispinosa* Alexander; male hypopygium.  
 Fig. 93 *Limonia (Geranomyia) neoparilis* sp. n.; male hypopygium.  
 Fig. 94 *Limonia (Geranomyia) subparilis* sp. n.; male hypopygium.  
 (Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; t, tergite)

rostral prolongation of the ventral dististyle, and its armature, and the gonapophyses.

## 122. *Limonia (Geranomyia) separata* Alexander

*Geranomyia separata* Alexander; Proc. Acad. Nat. Sci. Philadelphia 1921: 45—46; 1921.

*Limonia (Geranomyia) separata* Alexander; Rev. Ecuat. Ent. Par., 2: 59, fig. 24 (♂ hypopygium); 1954.

Described from Amazonian Peru; known also from Ecuador.

Bolivia: Espiritu, Rio Yacuma, April 11, 1954 (Forster).

## 123. *Limonia (Geranomyia) stoica* Alexander

*Limonia (Geranomyia) stoica* Alexander; Ann. Mag. Nat. Hist., (11) 8: 325—327, fig. 5 (♂ hypopygium); 1941.

The type was from Carpapata, Junin, Peru, 2600 meters, collected May 8, 1940, by Woytkowski.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, February 18, 1959 (Martinez).

## 124. *Limonia (Geranomyia) subparilis* sp. n.

Generally similar to *parilis* in pattern of wings and legs, differing in coloration of mesonotal praescutum and in structure of the hypopygium, particularly the tergite, both dististyles, and the gonapophyses.

Male. — Length, excluding rostrum, about 8 mm.; wing 9.5 mm.; rostrum about 4.5 mm.

Rostrum about one-half the wing, brownish black, tips of labial palpi paling to brown. Antennae with scape and pedicel black, first flagellar segment light brown, succeeding segments black; flagellar segments suboval; terminal segment smaller than the penultimate but subequal in length. Anterior vertex narrow, light gray; posterior vertex dark brownish gray.

Mesonotal praescutum with the disk gray, with three narrow dark brown stripes, the central one broader than the laterals, the latter continued cephalad to the anterior border, humeral and sublateral portions of praescutum yellow, lateral margins broadly dark brown; scutal lobes externally dark brown, central area obscure yellow; scutellum testaceous yellow, vaguely patterned transversely with pale brown leaving the base and apex of the ground color; postnotum almost uniformly dark brown. Pleura dark brown, pteropleurite and ventral sclerites more brownish yellow. Halteres with stem yellow, knob brownish black. Legs with coxae yellow, fore and middle pairs a trifle darker; trochanters yellow; femora yellow at bases, with a subterminal brown ring, together with a broader but paler brown annulus shortly beyond mid-length; tibiae light brown, tips narrowly darker; tarsi light brown. Wings whitish subhyaline, with a conspicuous brown pattern that is much as in *parilis*, including four larger and darker costal areas before the paler stigma, the marks at origin of Rs and fork of Sc narrowly separated by a pale spot; remainder of disk with extensive paler brown clouds arranged virtually as in *parilis*; cells M, Cu and 1st A more evenly washed with pale brown. Venation: Sc<sub>1</sub> ending about opposite two-fifths Rs, Sc<sub>2</sub> near its tip.

Abdomen chiefly brown, including the hypopygium. Male hypopygium (fig. 94) differing from *parilis* in details. Ninth tergite, t, transverse, lobes conspicuous, separated by a V-shaped emargination, provided with several very long setae. Basistyle, b, with ventromesal lobe elongate, setae of apex and lower surface very long; at base of lobe with a small accessory lobule. Dorsal dististyle, d, a gently curved sickle, narrowed into an elongate spine. Ventral dististyle large, its area exceeding twice that of the basistyle; rostral prolongation slender, the two spines near its base, one from the summit of a slender basal tubercle, second spine placed on base of the tubercle. Gonapophysis, g, with mesal-apical lobe erect, narrowed into a blackened spine. Aedeagus with lobes extended into a pale spine.

**Holotype**, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, November 6, 1953 (Martinez).

The male hypopygium of *Limonia (Geranomyia) parilis* Alexander has been described and figured elsewhere (Rev. Ecuat. Ent. Par., 2: 55, fig. 17; 1954).

## 125. *Limonia (Geranomyia) tibialis* Loew

*Aporosa tibialis* Loew; Linnaea Entom., 5: 397—398; 1851.

*Limonia (Geranomyia) tibialis* Alexander; Rev. Ecuat. Ent. Par., 2: 60—61, fig. 27 (♂ hypopygium); 1954.

Widespread in Tropical America, including the outlying Pacific islands of Juan Fernandez and the Galapagos.

Bolivia: Santa Cruz, General Saavedra, 650 meters, April 26, 1958 (Pinckert).

**126. *Limonia (Geranomyia) tumidibasis* Alexander**

*Limonia (Geranomyia) tumidibasis* Alexander; Ann. Mag. Nat. Hist., (11) 2: 426—427; 1938.

*Limonia (Geranomyia) tumidibasis* Alexander; Rev. Ecuat. Ent. Par., 2: 61, fig. 28 (♂ hypopygium); 1954.

The type was from Abitagua, Oriente, Ecuador, collected by Macintyre.

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

**127. *Helius (Helius) angustalbus* Alexander**

*Helius (Helius) angustalbus* Alexander; Jour. N. Y. Ent. Soc., 61: 154—155; 1953.

The type was from Huanuco, Peru, 2500 meters, collected by Woytkowski.

The venation is shown (fig. 95).

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 5, 1953 (Martinez).

**128. *Helius (Helius) rubicundus* Alexander**

*Rhamphidia rubicunda* Alexander; Trans. Ent. Soc. London 1922: 37—38; 1922.

The type was from San Bernardino, Paraguay, taken by Schade.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 4, 1953 (Martinez); Locotal, Chapare, 1200 meters, October 24, 1953 (Martinez).

**129. *Orimarga (Orimarga) excessiva chaparensis* subsp. n.**

Male. — Length about 6 mm.; wing 5.3 mm.

General coloration, venation and pattern of legs much as in typical *excessiva*, differing especially in the structure of the male hypopygium. Femora and tibiae darkened, base of latter narrowly whitened, tarsi white. Wings with  $R_1+2$  elongate, exceeding  $R_2+3+4$ ;  $m-cu$  about its own length before fork of M. No macrotrichia on Rs or Anal veins; a few at outer ends of Sc, M and basal section of  $Cu_1$ . In typical *excessiva*, without trichia on Sc, Rs, M or 2nd A; a series of strong trichia on outer fifth of 1st A. Male hypopygium (fig. 98) with outer dististyle, d, long and slender, narrowed very gradually to the acute tip. Gonapophysis, g, as figured; inner apophysis with stem slender, outer apophysis with base expanded. In typical *excessiva* (fig. 97) with proximal two-fifths of outer dististyle, d, thickened, thence suddenly more narrowed. Gonapophysis, g, as figured; inner apophysis dilated, outer apophysis with base moderately expanded.

Holotype, ♂, Cristal Mayu, Chapare, Cochabamba, 1200 meters, April 23, 1949 (Peña).

The holotype of *excessiva* was from Tachira, Venezuela, collected in April 1920 by Williamson and Ditzler.



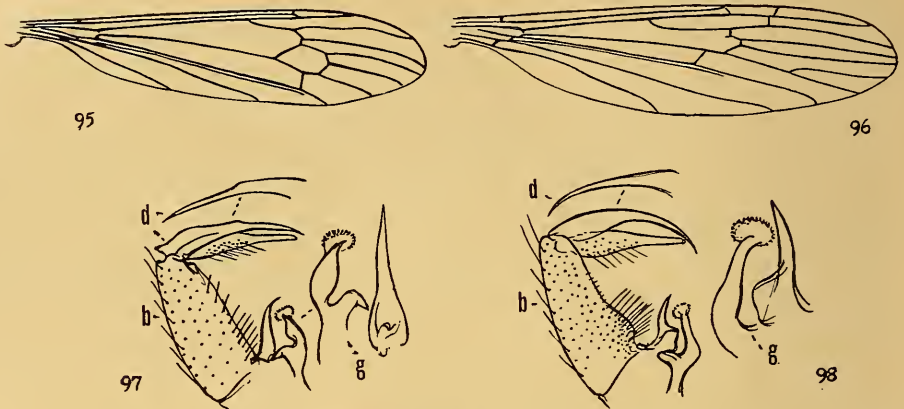


Fig. 95 *Helius (Helius) angustalbus* Alexander; venation.

Fig. 96 *Orimarga (Orimarga) subspeciosa* sp. n.; venation.

Fig. 97 *Orimarga (Orimarga) excessiva excessiva* Alexander; male hypopygium.

Fig. 98 *Orimarga (Orimarga) excessiva chaparensis* subsp. n.; male hypopygium.  
(Symbols: b, basistyle; d, dististyle; g, gonapophysis)

### 130. *Orimarga (Orimarga) subcostata* Alexander

*Orimarga (Orimarga) subcostata* Alexander; Jour. N. Y. Ent. Soc., 62: 144—145; 1954.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez); type.

### 131. *Orimarga (Orimarga) subspeciosa* sp. n.

Size large (wing of female 7 mm.); mesonotum brownish yellow, pleura dark brown, posterior sclerites with a broad yellowed area; femora and tibiae brown, tarsi white; wings whitish, patterned with brown, darkened costal areas at Sc and stigma only narrowly separated; vein Sc long, Sc<sub>2</sub> opposite fork of Rs, basal section of R<sub>4</sub>+<sub>5</sub> angulated and spurred; m—cu oblique and gently sinuous.

**Female.** — Length about 7 mm.; wing 7 mm.

Rostrum brownish gray; palpi black. Antennae with scape black, remainder of organ medium brown; basal flagellar segments suboval, outer segments longer, exceeding their verticils. Head gray, clear light gray in front, weakly infuscated on posterior vertex.

Pronotum light brown. Mesonotum brownish yellow, praescutum with faint indications of four pale brown stripes, the intermediate pair narrower, widely separated; scutal lobes darkened. Pleura chiefly dark brown, more intense dorsally, with a broad yellow area on sternopleurite and the posterior pleurites. Halteres pale yellow. Legs with coxae and trochanters yellow; femora very light brown, bases more yellowed; tibiae light brown, tips very narrowly darkened; tarsi white (terminal segments broken). Wings (fig. 96) whitish, conspicuously patterned with brown, the more anterior areas darker, the markings distributed as follows: Cell Sc above areculus; origin of Rs; tip of Sc<sub>1</sub>, stigma, fork of Rs, m—cu, outer medial fork and marginal areas at R<sub>1</sub>+<sub>2</sub>

and  $R_3$ ; much smaller marginal clouds on  $M_3$ ,  $M_4$ ,  $Cu_1$  and the Anals; a very weak infuscation in bases of cells  $Cu$  and 1st A; darkened costal areas at Sc and stigma large, exceeding the intervening ground interspace; veins yellow, darker in the clouded parts. Macrotrichia on longitudinal veins beyond general level of cord, lacking on  $R_2+3+4$ ,  $M_3+4$  and central portion of distal section of  $Cu_1$ ; basad of cord, trichia lacking on Sc, Rs, M and Anals. Venation: Sc long,  $Sc_2$  at its extreme tip; free tip of  $Sc_2$  oblique, just beyond  $R_2$ ;  $R_1+2$  very long, nearly equal to  $R_1$ ; basal section of  $R_4+5$  angulated and spurred at near midlength;  $M_3+4$  subequal to  $M_4$ ;  $m-cu$  oblique, subequal to distal section of M; cell 2nd A broad.

Abdomen dark brown, incisures, including especially the bases of the segments, obscure yellow, broader on the intermediate segments, outer segments uniformly light yellow. Ovipositor with cerci relatively short, sclerotized, tips acute.

Holotype, ♀, Locotal, Chapare, Cochabamba, 1200 meters, October 28, 1953 (Martinez).

*Orimarga (Orimarga) subspeciosa* is most nearly related to *O. (O.) multipunctata* Alexander and *O. (O.) speciosa* Alexander, differing in the wing pattern and venation, as indicated in the diagnosis.

### 132. *Orimarga (Diotrepha) elongata* Alexander

*Orimarga (Diotrepha) fumicosta elongata* Alexander; Bol. Ent. Venezolana, 2: 23; 1943.

The types were from Borburata, Venezuela, 500 meters, collected March 15, 1946, by Anduze.

Bolivia: Locotal, Chapare, Cochabamba, 1200 meters, November 15, 1953 (Martinez).

### 133. *Orimarga (Diotrepha) omissinervis* Alexander

*Diotrepha omissinervis* Alexander; Ent. News, 24: 447—448, p. 14, fig. 9 (wing); 1913.

Bolivia: Songo (Fassl); type.

## HEXATOMINI

### 134. *Epiphragma (Epiphragma) annulicornis* Alexander

*Epiphragma annulicornis* Alexander; Ent. News, 32: 176—177; 1921.

*Epiphragma (Epiphragma) annulicornis* Alexander; Rev. de Entomologia, 19: 170; 1948.

The types were from Tucumán, Argentina, 1600 meters, collected October 16, 1920, by Vladimir Weiser.

Bolivia: Sihuenas, Yungas de Arepacho, 2200—2500 meters, September 21, 1953 (Forster).

El Limbo, Chapare, Cochabamba, 2000 meters, March 1953; November 9, 1953 (Martinez).

**135. *Epiphragma (Epiphragma) binigrocincta* sp. n.**

Size large (wing of male 13 mm.); antennal flagellum beyond the fusion-segment uniformly black; mesonotal praescutum gray, behind with two brown intermediate stripes, sides broadly dark brown; knobs of halteres dark brown; femora yellow with two broad black rings, the outer one terminal in position; wings yellow, with a brown chiefly ocelliform pattern; male hypopygium with the outer dististyle terminating in a simple spine.

Male. — Length about 12 mm.; wing 13 mm.; antenna about 3 mm.

Rostrum castaneous, sparsely pruinose, with long black setae; palpi brown, the long terminal segment black. Antennae moderately long, as shown by the measurements; scape and pedicel dark brown, sparsely pruinose; flagellar fusion-segment yellow, comprised of two virtually fused segments; free outer segments elongate, a little shorter than the conspicuous verticils. Front light brown, sparsely pruinose; posterior vertex brownish gray, with abundant porrect black setae.

Pronotum light brown, scutum above weakly more darkened. Mesonotal praescutum light gray sublaterally, with two brown intermediate stripes, distinct on posterior half, in front narrowed into a capillary darkened line; humeral triangles and lateral borders conspicuously dark brown; scutal lobes light gray, each with an inconspicuous brown central spot, median area light brown; scutellum and postnotum gray, pleurotergite narrowly darkened ventrally. Pleura brownish gray; dorsopleural membrane buffy brown. Halteres with stem yellow, knob dark brown. Legs with coxae brownish yellow; trochanters reddish brown; femora yellow on about the basal third, the remainder black, forming two broad rings separated by a narrow yellow subterminal annulus, the black apex more than twice the yellow ring and shorter than the broad central black annulus; tibiae and tarsi dark brown. Wings (fig. 99) with the ground yellow, with a brown pattern that is ocelliform on more than the anterior half, including rings at arculus, origin of  $R_s$ , cord, tip of  $R_1$ , outer end of cell 1st  $M_2$  and fork of  $M_1 + 2$ , anterior rings darker brown in the costal field; besides the ocelli with solid marginal areas at tips of all veins, smallest near wing-tip, largest at 2nd A; further marginal lines in Anal cells, including two in 1st A and about four in 2nd A; further brown washes along veins M and Cu, in cell Cu with three or four diffuse brown clouds; veins brown, slightly darker in the heavily patterned areas, yellowed in the costal and subcostal interspaces. Macrotrichia on longitudinal veins beyond cord, basad of this on Sc and outer ends of M, Cu and 2nd A, lacking on 1st A. Venation as figured.

Abdomen yellowish brown, outer segments darker brown. Male hypopygium (fig. 102) with the interbase, i, terminating in a gently sinuous arm, slightly widened outwardly, apex truncate, with a strongly recurved spine. Outer dististyle smaller than the inner style, d, narrowed outwardly, decurved into a slender spine; setae weak; inner style flattened, parallel-sided, tip obtuse, on face at near midlength with a group of about fifteen setae; apex



with four strong setae, remaining vestiture small. Phallosome massive, aedeagus small and simple.

**Holotype**, ♂, Sihuenas, Yungas de Arepuchó, 2200—2500 meters, September 21, 1953 (Forster).

This very distinct and attractive fly is readily told from *Epiphragma* (*Epiphragma*) *atroterminalis* Alexander, the only other known regional member of the genus that has the outer darkened ring of femora terminal in position. This latter fly is smaller, femora with three narrower black rings, darkened wing pattern heavier with the pale ground interspaces correspondingly narrow, and with the hypopygial structure distinct, especially the interbase and outer dististyle. All other species in the faunal area have the actual apex of the femur yellow, or else (in *hirtistylata* Alexander, *varia* Wiedemann) have the femora uniformly black.

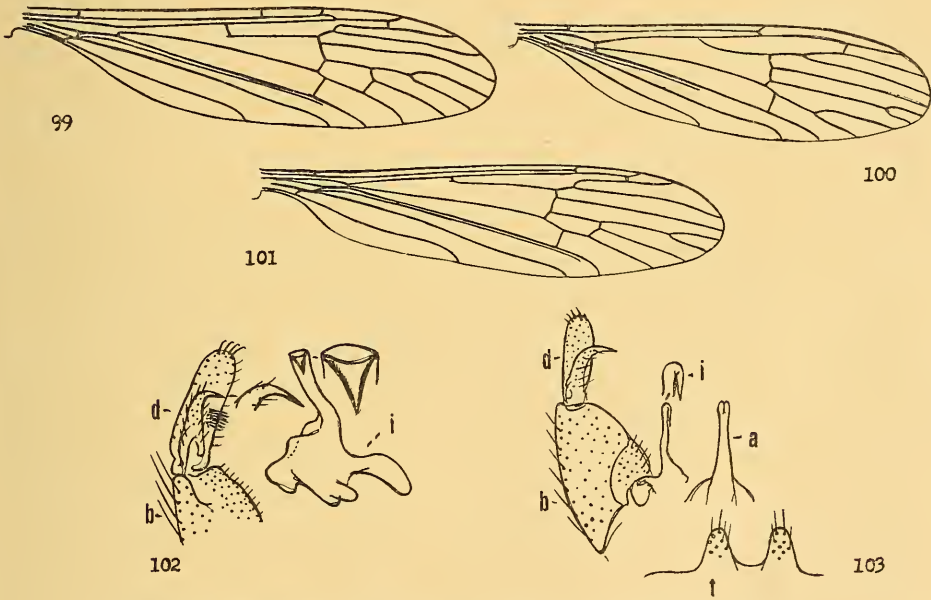


Fig. 99 *Epiphragma* (*Epiphragma*) *binigrocincta* sp. n.; venation.

Fig. 100 *Polymera* (*Polymera*) *brachyneura* sp. n.; venation.

Fig. 101 *Limnophila* *cancellata* sp. n.; venation.

Fig. 102 *Epiphragma* (*Epiphragma*) *binigrocincta* sp. n.; male hypopygium.

Fig. 103 *Epiphragma* (*Epiphragma*) *septuosa* sp. n.; male hypopygium.

(Symbols: a, aedeagus; b, basistyle; d, dististyle; i, interbase; t, tergite)

### 136. *Epiphragma* (*Epiphragma*) *cordillerensis* Alexander

*Epiphragma cordillerensis* Alexander; Ent. News, 25: 213; 1914.

Bolivia: San Antonio (Fassl); Hungarian National Museum.

The type was from Popayan, Colombia, collected by J. T. Lloyd.

### 137. *Epiphragma* (*Epiphragma*) *enixoides* sp. n.

Mesonotal praescutum with disk virtually covered by four reddish brown stripes, lateral borders broadly dark brown, mediotergite gray, patterned with

brown; pleura obscure yellow, heavily patterned with dark brown; halteres with knobs pale brown, extreme tips obscure yellow; legs yellow, coxal bases dark brown, femora with a broad brown subterminal ring; wings brownish yellow, costal region clearer yellow, with seven conspicuous dark brown areas, remainder of disk with a pale brown pattern that is partly ocelliform; abdominal tergites medium brown, lateral borders narrowly brownish black, sternites yellow.

*Female*. — Length about 13 mm.; wing 13 mm.; antenna about 4 mm.

Rostrum dark brown, tufted with long coarse reddish setae; palpi black, terminal segment narrowed outwardly. Antennae with scape dark brown, slightly paler at base, pedicel darkened; proximal two segments of flagellum yellow, remainder brown, long-cylindrical, exceeding the verticils; terminal segment elongate. Head above reddish brown, with a blackened central line, the occiput more pruinose.

Pronotum brownish yellow, scutum patterned with dark brown, sides of scutellum obscure yellow. Mesonotal praescutum with disk virtually covered by four reddish brown stripes, interspaces barely indicated, humeral region light brown, lateral borders broadly dark brown; scutal lobes dark reddish brown, central area and base of scutellum darker, remainder of latter light grayish brown; mediotergite light brown, gray pruinose, patterned with brown on anterior half, including a central line and darker transverse lateral areas, the latter continued over the ventral pleurotergite, the anapleurotergite brownish yellow. Pleura obscure yellow, heavily patterned with dark brown, including a broad dorsal longitudinal stripe from the cervical region across the propleura, anepisternum and subdorsal part of pteropleurite, the dorsal end of the latter abruptly light yellow; a second more ventral stripe includes the ventral sternopleurite, meron and metapleura, together with the coxal bases. Halteres with stem yellow, knob pale brown, its apex obscure yellow. Legs with coxae pale yellow, fore pair darkened on basal half, bases of remaining coxae more narrowly brownish black; trochanters yellow; femora yellow, with a broad brown subterminal ring that is more extensive than the yellow tip; tibiae and tarsi light yellow. Wings brownish yellow, clearer yellow in the costal interspaces, patterned with about seven dark brown costal areas and abundant pale brown spots, ocelliform at arculus, origin of Rs and cord, less evidently so elsewhere; a series of submarginal brown spots in cells  $R_5$  to  $M_3$ ; cell Cu with about eight large brown clouds, subequal in area to the yellowed interspaces; margin of cell 1st A with three brown marks, 2nd A with about eight; veins yellow, darker in the costal pattern. Macrotrichia lacking on basal half of M and 2nd A, basal two-thirds of 1st A. Venation: Rs long, angulated and spurred at origin, more than twice  $R_2 +_3 +_4$ ; petiole of cell  $M_1$  about twice  $m$ ;  $m-cu$  before midlength of  $M_3 +_4$ .

Abdominal tergites medium brown, lateral border narrowly brownish black; sternites yellow, subterminal segments more castaneous; outer lateral angles of eighth sternite strongly produced. Ovipositor with cerci slender, upcurved to the acute tips; hypovalvae strongly compressed-flattened.

**Holotype**, ♀, Yungas, Forestal, 2500 meters, June 6, 1950 (Forster).

*Epiphragma (Epiphragma) enixoides* most resembles species such as *E. (E.) enixa* Alexander, of Ecuador, differing in the details of body coloration, distinctive leg pattern, and elongate antennae. There are further differences in the venation, including Rs,  $R_2 +_3 +_4$ , petiole of cell  $M_1$ , and position of m—cu.

**138. *Epiphragma (Epiphragma) imitans* Alexander**

*Epiphragma imitans* Alexander; Proc. U. S. Nat. Mus., 44: 536—537, fig. 35 (venation); 1913.

Bolivia: San Antonio (Fassl); Alexander Collection.

**139. *Epiphragma (Epiphragma) interspersa* Alexander**

*Epiphragma (Epiphragma) interspersa* Alexander; Rev. Ecuat. Ent. Par., 1: 34—35, fig. 1 (venation), fig. 5 (♂ hypopygium); 1953.

The type was from Abitagua, Napo-Pastaza, Ecuador, collected by McIntyre.

Bolivia: Cristal Mayu, Chapare, Cochabamba, 1200 meters, September 24, 1949 (Peña).

**140. *Epiphragma (Epiphragma) septuosa* sp. n.**

Size medium (wing of male 12 mm.); mesonotal praescutum gray, with four brown stripes that are obsolete in front, lateral borders dark brown; pleura gray, patterned with dark brown; knobs of halteres dark brown; femora brownish yellow, darker at outer end, tibiae and tarsi brownish yellow; wings brownish yellow, with a diffuse ocelliform brown pattern, darkest along costal border; abdominal tergites pale brown, the proximal ones patterned with yellow; male hypopygium with tergal lobes conspicuous, with long setae; interbase with the elongate tip recurved.

**Male.** — Length about 13 mm.; wing 12 mm.; antenna about 3 mm.

Rostrum dark brown, the outer end with long coarse setae; base of palpi light brown, remainder brownish black. Antennae relatively short; scape and pedicel dark brown; fusion-segment yellow, comprised of two segments, remainder of flagellum black; outer segments elongate, slender, subequal to or slightly exceeding their verticils. Head with anterior vertex light brown, yellow pollinose; posterior vertex darker brownish gray, orbits and genae more buffy brown.

Pronotum yellowed, light brown above. Mesonotal praescutum sublaterally gray, with four brown stripes concentrated on center of disk, confluent behind, narrowed anteriorly, becoming obsolete at near one-third the length, humeral region light brown, the broad lateral borders darker brown; posterior sclerites of notum gray, each scutal lobe with a narrow brown area, median region broadly paler brown; central part of scutellum narrowly darkened; mediotergite darkened posteriorly, on anterior half with a narrow central darkened line and a brown spot on either side; pleurotergite dark brown posteriorly, gray in front. Pleura gray, patterned with brown, including a



narrow broken darker stripe extending from cervical region across the propleura and anepisternum to before the wing root; paler brown areas on dorsal sternopleurite and metapleura, ventral sternopleurite and meron darker brown. Halteres with stem yellowish brown, knob dark brown. Legs with coxae pale yellow, bases brown, narrower and darker on middle and hind pairs; trochanters yellowed; femora obscure brownish yellow, somewhat darker near outer end, extreme tip vaguely yellowed; tibiae and tarsi brownish yellow, outer segments a little darker. Wings with the ground brownish yellow, patterned with darker, the markings not clearly defined, as in most species; pattern extensively ocelliform, including eyes at areculus, origin and fork of Rs, and tip of  $R_1 + 2$ , the markings solidly darkened in the costal field; elsewhere on disk with pale brown clouds at ends of veins, including series of more or less confluent spots in cells Cu and 2nd A; the clearest yellow ground areas are in the costal and radial interspaces and at outer end of cell 1st A; veins brownish yellow, darker in the patterned areas, clear yellow in the costal interspaces. Longitudinal veins beyond cord with macrotrichia, lacking on Rs, present on outer ends of M and 1st A, scattered but well-distributed on 2nd A. Venation: Rs square and long-spurred at origin; m—cu shortly before midlength of  $M_3 + 4$ .

Basal abdominal tergites yellow, patterned with pale brown, outer tergites more uniformly brown, the transverse impressions yellowed, lateral margins conspicuously black; basal sternites light yellow, weakly darkened laterally; hypopygium brownish yellow. Male hypopygium (fig. 103) with the tergal lobes, t, conspicuous, each with several large setae, median emargination broad. Interbase, i, with the outer rod slender, the elongate tip recurved. Outer dististyle, d, a broad flattened lobe, apex obtuse; face near base with several strong setae, with others at apex, the intermediate punctures small.

**Holotype**, ♂, Yungas de Arepucho, Sihuencas, 2200—2500 meters, September 21, 1953 (Forster).

In the scarcely variegated legs, *Epiphragma* (*Epiphragma*) *septuosa* suggests species such as *E. (E.) felix* Alexander, which has the ground color of the wings clear yellow, the darkened pattern more distinct, with the areas in cell 2nd A narrow. The structure of the tergite in the two species is quite distinct.

#### 141. *Austrolimnophila* (*Austrolimnophila*) *martinezi* Alexander

*Austrolimnophila* (*Austrolimnophila*) *martinezi* Alexander; Rev. Chilena Ent., 5: 197—198, fig. 1 (venation), fig. 6 (♂ hypopygium); 1957.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 5, 1953 (Martinez).

#### 142. *Austrolimnophila* (*Austrolimnophila*) *sternolobata* Alexander

*Austrolimnophila* (*Austrolimnophila*) *sternolobata* Alexander; Rev. Chilena Ent., 5: 201 to 202, fig. 2 (venation), fig. 8 (♂ hypopygium); 1957.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 7, 1953 (Martinez).

**143. *Polymera (Polymera) brachyneura* sp. n.**

Size small (wing of male 5 mm.); antennae of male longer than wing, flagellar segments binodose, verticils very long; mesonotum light brown, pleura yellow; legs brownish black, tarsi paling to brownish yellow; wings subhyaline, unpatterned; Sc short, Sc<sub>1</sub> ending opposite fork of Rs, R<sub>2</sub>+<sub>3</sub>+<sub>4</sub> and R<sub>1</sub>+<sub>2</sub> long.

Male. — Length about 4 mm.; wing 5 mm.; antenna about 6.3 mm.

Rostrum pale brown, palpi darker. Antennae of male longer than wing; scape and pedicel yellow, flagellum black; flagellar segments very long, each binodose, the enlargements of the individual segments elongate, subequal in size and conformation; verticils very long, the extreme about one-half longer than the segments. Head light brown.

Mesonotum light brown, pseudosutural foveae darker; posterior sclerites of notum and the pleura yellow, dorsopleural region weakly darker. Halteres with stem dirty white, knob dark brown. Legs with coxae and trochanters testaceous yellow; remainder of legs brownish black, terminal tarsal segments brownish yellow. Wings (fig. 100) subhyaline, unpatterned, stigma lacking; veins pale brown, trichia darker. Costal fringe and trichia of veins long, the latter on all longitudinal veins, including the prearcular field. Venation: Sc short, Sc<sub>1</sub> ending opposite fork of Rs, Sc<sub>2</sub> near its tip; R<sub>2</sub>+<sub>3</sub>+<sub>4</sub> long, about twice the basal section of R<sub>5</sub> and three-fourths R<sub>2</sub>+<sub>3</sub>; R<sub>1</sub>+<sub>2</sub> long, about one-half longer than R<sub>2</sub>+<sub>3</sub>; medial forks relatively deep; m—cu about two-thirds its length beyond fork of M.

Abdominal tergites yellowish brown, margins narrowly darker; sternites and hypopygium more brownish yellow.

Holotype, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, November 5, 1953 (Martinez).

*Polymera (Polymera) brachyneura* falls in a group of small-sized species having the wings and thoracic pleura unpatterned, and the male antennae very long, with binodose flagellar segments. In its venation, with Sc short and R<sub>2</sub>+<sub>3</sub>+<sub>4</sub> and R<sub>1</sub>+<sub>2</sub> long, it agrees with *P. (P.) albitarsis* Williston, *P. (P.) minutior* Alexander, and a few others, differing from all in the size, excessively long flagellar verticils, and in the details of venation.

**144. *Polymera (Polymera) obscura* Macquart**

*Polymera obscura* Macquart; Dipteres exot., 1, pt. 1: 65, pl. 8; 1838.

*Polymera (Polymera) obscura* Alexander; Konowia, 12: 42; 1933.

Bolivia: Buenavista, Santa Cruz, August 1926 (Lindner); 1930 (Francisco Steinbach).

**145. *Polymera (Polymera) scelerosa* Alexander**

*Polymera (Polymera) scelerosa* Alexander; Rev. de Entomologia, 19: 188—189; 1949.

Bolivia: Buenavista, Santa Cruz, 1930 (Francisco Steinbach); type.

**146. *Polymera (Polymera) subsuperba* Alexander**

*Polymera (Polymera) subsuperba* Alexander; Ann. Ent. Soc. Amer., 19: 382; 1926.

Types from Villarica, Paraguay, taken by Schade.

Bolivia: Buenavista, Santa Cruz, 1930 (Francisco Steinbach).

Espiritu, Rio Yacuma, 250 meters, July 31, 1950 (Forster).

**147. *Limmophila cancellata* sp. n.**

Belongs to the *undulata* group, allied to *procella*; general coloration of head and thorax gray, praescutum with four darker stripes, the interspaces and scutal lobes patterned with light brown; fore and middle femora chiefly black, bases very narrowly yellowed; wings whitened, with a moderately heavy dark brown pattern, the areas in the Anal cells transverse.

Male. — Length about 11 mm.; wing 10 mm.; antenna about 2 mm.

Rostrum and palpi black. Antennae black; proximal five segments with ventral faces produced, verticils dorsal; remaining segments elongate, verticils generally distributed, exceeding the segments. Head light gray; anterior vertex broad, exceeding four times the diameter of the scape.

Pronotum gray. Mesonotal praescutum gray, with four poorly indicated darker stripes, the interspaces with light brown spots, including two larger ones before suture and small paired more anterior dots; centers of scutal lobes light brown; posterior half of mediotergite more blackened, pleurotergite brownish black; vestiture of notum virtually lacking except on scutellum where it is long and pale. Pleura gray, vaguely patterned with brownish black, including the propleura and areas on the anepisternum and dorsal sternopleurite. Halteres obscure yellow. Legs with coxae gray, fore pair darker; trochanters dark brown; femora blackened, bases yellowed, narrowly so on the fore legs, extensively on posterior legs where about the outer fifth is blackened; tibiae and tarsi dark brown, outer segments black. Wings (fig. 101) with the ground whitened, prearcular and costal fields slightly more yellowed; a moderately heavy dark brown pattern that includes a major area from stigma over the anterior cord; markings in cells C,  $M_1$  and the Anals transverse, subequal in extent to the ground, in cells R and Cu circular and less numerous; beyond cord with a concentration of darkened areas before wing tip, including two in outer radial field that converge posteriorly; outer ends of cells C, Sc,  $R_1$ , R and M, with a broad band beyond cord more nearly free from dark pattern; veins brownish yellow, darker in the patterned parts, clearer yellow in the interspaces. Longitudinal veins beyond cord chiefly with macrotrichia, including the second section of  $M_1 +_2$ , lacking on  $M_3 +_4$ ; before cord with no trichia on M,  $Cu_1$  or Anals excepting two or three scattered trichia near base of M. Venation:  $Sc_1$  ending opposite fork of  $R_2 +_3 +_4$ ,  $Sc_2$  at its tip;  $R_2 +_3 +_4$  about twice the basal section of  $R_3$ ; cell  $M_1$  nearly twice its petiole; cell 1st  $M_2$  elongate, with m—cu just before midlength of  $M_3 +_4$ .

Abdominal tergites dark brown, basal sternites paler. Genital segment virtually destroyed by insect pests, mounted on a microscope slide. The only part of hypopygium remaining is the phallosome, showing the spiraloid aede-



gus characteristic of the group, this relatively long, with seven distinct loops or convolutions.

Holotype, ♂, Yungas de Corani, 2500 meters, October 1, 1953 (Forster).

The *undulata* group includes many species in Tropical America, from Mexico to Argentina, several of these with the brown wing pattern very abundantly spotted and dotted, others with the darkened pattern much more reduced. Among the described forms the present fly most resembles *Limnophila procella* Alexander, from which it differs in the body coloration and in the pattern of the legs and wings.

#### 148. *Limnophila procella* Alexander

*Limnophila procella* Alexander; Ann. Mag. Nat. Hist., (11) 11: 169—171; 1944.

The types were from Yanamonte, Ayacucho, Peru, taken in July-August 1941 by Woytkowski.

Bolivia: Unduavi, Yungas, 4752 meters, March 26, 1950 (Forster).

El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

#### 149. *Lecteria (Psaronius) abnormis* Alexander

*Lecteria abnormis* Alexander; Ent. News, 25: 211—212, pl. 9, fig. 9 (venation); 1914.

The type was from Paraguay, collected by Carl Fiebrig.

Bolivia: Province Sara, 450 meters, November 1909 (José Steinbach).

Espiritu, Rio Yacuma, 250 meters, July 22, 1950 (Forster).

#### 150. *Ctenolimnophila (Campbellomyia) severa* Alexander

*Ctenolimnophila (Campbellomyia) severa* Alexander; Jour. N. Y. Ent. Soc., 51: 209—210; 1943.

*Ctenolimnophila (Campbellomyia) severa* Alexander; Rev. de Entomologia, 19: 511, fig. 2 (venation); 1948.

The type was from Zamora, Santiago-Zamora, Ecuador, collected by Laddey.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, February 17, 1959 (Martinez).

#### 151. *Shannonomyia austrolathraea* Alexander

*Shannonomyia austrolathraea* Alexander; Ann. Ent. Soc. Amer., 23: 733—734; 1930.

Bolivia: Santa Cruz, February 1929 (Francisco Steinbach, ex Schade).

El Limbo, Chapare, Cochabamba, 2000 meters, November 8, 1953 (Martinez).

#### 152. *Shannonomyia sopora* Alexander

*Shannonomyia sopora* Alexander; Ann. Mag. Nat. Hist., (11) 11: 171—172; 1944.

The type was from Tarma, Junin, Peru, 3600—5400 feet, February 4, 1940, collected by Woytkowski.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

153. *Hexatoma* (*Eriocera*) **cornigera** Alexander

*Eriocera cornigera* Alexander; Psyche, 20: 40—41, fig. 3 (venation); 1914.

Bolivia: Songo (Fassl); type.

154. *Hexatoma* (*Eriocera*) **coroicoensis** sp. n.

Size large (wing of female 17.5 mm.); mesonotal praescutum grayish yellow, with four medium brown stripes; antennae of female 11-segmented, base yellow, black beyond the third segment; legs yellow, tips of femora and tibiae not darkened; wings brownish yellow, restrictedly patterned with pale brown; veins of outer radial field with macrotrichia, lacking on outer medial veins;  $Sc_1$  lacking,  $Rs$  very long; abdomen yellowed, tergites five and six black.

Female. — Length about 22 mm.; wing 17.5 mm.; antenna about 5.2 mm.

Rostrum short, obscure yellow, apex darkened, palpi brownish black. Antennae of female 11-segmented; scape, pedicel and base of first flagellar segment yellowed, remainder black; first flagellar segment subequal to the combined second and third, succeeding segments progressively shorter, terminal segment nearly equal to the penultimate. Head orange, vertical tubercle more testaceous yellow, weakly impressed medially; anterior vertex narrowly glabrous on central part, with a concentration of long black setae on either side of this line.

Pronotum light brown, lateral scutal angles conspicuous. Mesonotal praescutum grayish yellow, with four medium brown stripes, the interspace more obscured, especially the central vitta; scutum yellowed, each lobe with a major oval brown area and a second very small mark at cephalic margin, this confluent with the lateral praescutal stripe; scutellum brownish gray; mediotergite brown, gray pruinose, the anterolateral part depressed, as in the group. Pleura gray pruinose, restrictedly patterned with darker, most evident as a brownish black area before and beneath the wing-root. Halteres brown, base yellowed, knob brownish black. Legs with coxae and trochanters yellowed; femora and tibiae obscure yellow, tips not or scarcely darkened; tarsi light brown, darker outwardly. Wings (fig. 104) brownish yellow, costal border, especially cell  $Sc$ , clearer yellow; stigma small, pale brown; broad but inconspicuous pale brown seams on veins, most evident over  $R_5$  and  $Cu$  in cell  $M$ ; veins light brown, more yellowed in the brightened parts, especially vein  $Sc$ . Macrotrichia on veins of outer radial field, lacking on outer half of  $R_1+2$ , more sparse or lacking on bases of  $R_2+3+4$  and  $R_{5+6}$ , no trichia on outer medial veins. Venation:  $Sc_1$  lacking;  $R_1+2$  about twice  $R_2$ ;  $Rs$  very long, about two and one-half times  $R$ ; cell 1st  $M_2$  subequal to distal section of  $M_3$ .

Basal abdominal tergites orange yellow, beyond the first segment infuscated laterally, tergites five and six black, seven obscure orange, outer segments brown, gray pruinose; sternites uniformly brownish yellow. Ovipositor with cerci straight, slender on outer part.

**Holotype**, ♀, Coroico, Yungas, 1900 meters, May 16, 1950 (Forster).

The most similar species include *Hexatoma (Eriocera) bifurcata* Alexander, *H. (E.) interlineata* Alexander, *H. (E.) ohausiana* (Enderlein) and *H. (E.) perrenensis* Alexander, all differing in details of coloration, venation and vein trichiation.

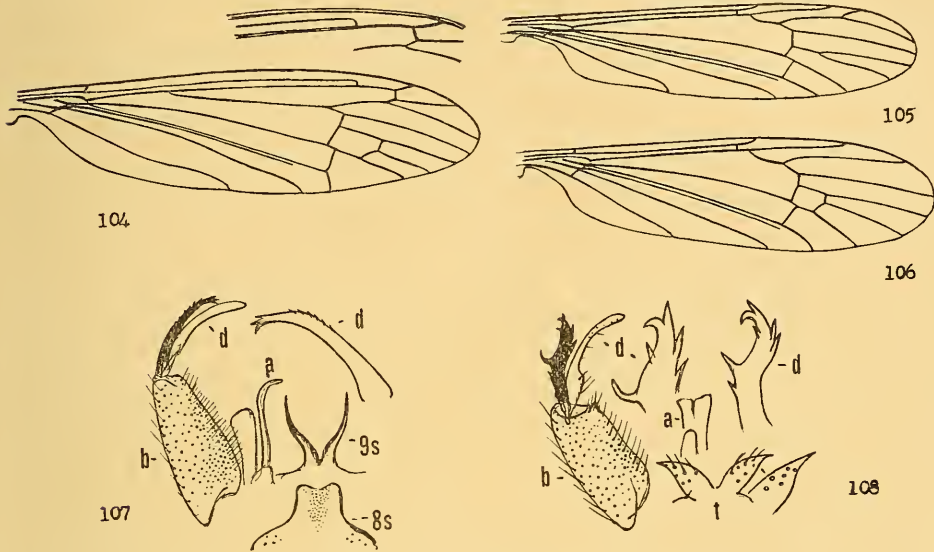


Fig. 104 *Hexatoma (Eriocera) coroicoensis* sp. n.; venation.

Fig. 105 *Atarba (Ischnothrix) aprica* sp. n.; venation.

Fig. 106 *Atarba (Atarba) laterospina* sp. n.; venation.

Fig. 107 *Atarba (Ischnothrix) aprica* sp. n.; male hypopygium.

Fig. 108 *Atarba (Atarba) laterospina* sp. n.; male hypopygium.

(Symbols: a, aedeagus; b, basistyle; d, dististyle; s, sternite; t, tergite)

### 155. *Hexatoma (Eriocera) ohausiana* Enderlein

*Eriocera ohausiana* Enderlein; Zool. Jahrb., Syst., 32: 45—46, fig. A<sub>1</sub> (wing); 1912.

*Eriocera ohausiana* Alexander; Ent. News, 25: 215; 1914.

The type was from Sabanilla, Ecuador, taken September 24, 1905, by Ohaus.

Bolivia: Coroico (Fassl); recorded by Alexander, as above.

### 156. *Hexatoma (Eriocera) pulchripes* Alexander

*Eriocera chrysoptera* Walker; Ent. News, 25: 214, pl. 9, fig. 13 (wing); 1914.

*Eriocera pulchripes* Alexander; Trans. Ent. Soc. London, 1922: 59; 1922.

Bolivia: Coroico (Fassl); type, Hungarian National Museum (destroyed).

The species was erroneously determined as being *Hexatoma (Eriocera) chrysoptera* (Walker), by Alexander, in the above reference.

### 157. *Atarba (Ischnothrix) aprica* sp. n.

Size medium (male with length, wing and antenna all subequal); general coloration of thorax dark brown; knobs of halteres brownish black; legs medium brown; wings fulvous brown, veins with long conspicuous macrotrichia;



cell  $M_2$  open by atrophy of basal section of  $M_3$ ; male hypopygium with appendage of eighth sternite very broad, apex gently emarginate, disk with a dense setiferous area; outer dististyle slender, apex and outer margin with denticles; aedeagus small.

Male. — Length about 6 mm.; wing 6 mm.; antenna about 6 mm.

Rostrum light brown, palpi darker. Antennae of male elongate, subequal to the body or wing; dark brown; flagellar segments elongate cylindrical, with very long outspreading setae, these approximately two-thirds as long as the segment. Head dark grayish brown, orbits clearer gray.

Pronotum brown. Mesonotum chiefly dark brown, paler laterally, without distinct pattern, pleurotergite more brownish yellow. Pleura light brown or yellowish brown. Halteres with stem brownish yellow, knob brownish black. Legs with coxae light brown, fore pair darker; trochanters testaceous yellow; remainder of legs medium brown, outer tarsal segments darker. Wings (fig. 105) light fulvous brown, stigma very pale brown, inconspicuous; veins brown, trichia darker. Macrotrichia on longitudinal veins of about the outer two-thirds of wing, including  $Sc$  and outer half or more of  $M$ ,  $Cu$  and the Anals. Venation:  $Sc$  relatively short,  $Sc_1$  ending just beyond origin of  $Rs$ ;  $R_3$  oblique, its length subequal to the distance on costa between  $R_{1+2}$  and  $R_3$ ; cell  $M_2$  open by atrophy of basal section of  $M_3$ ;  $m-cu$  about two-thirds its length beyond the fork of  $M$ .

Abdominal tergites bicolored, bases narrowly pale, apices brown, subterminal segments dark brown to form a ring; basal sternites and hypopygium yellowed. Male hypopygium (fig. 107) with the ninth sternite, 9 s, produced into two slender divergent horns, forming a lyrate structure; eighth sternite with median region produced into a broad appendage, its apex very gently emarginate, surface of disk with a triangular area of dense setae, the point of the triangle directed basad. Basistyle, b, with setae of mesal face abundant, especially on basal half. Outer dististyle, d, about two-thirds as long as the basistyle, appearing as a very gently curved black rod, apex with three teeth, outer margin with smaller appressed denticles on more than distal half; inner style slightly longer, appearing as a slender gently curved rod. Gonapophyses and aedeagus very small, pale.

Holotype, ♂, Locotal, Chapare, Cochabamba, 1200 meters, November 15, 1953 (Martinez).

*Atarba (Ischnothrix) aprica*, in the open cell  $M_2$  of the wings, agrees with *A. (I.) patens* Alexander, of Panama, which still is known only from the female sex. The two flies differ in all details of venation. The structure of the appendage of the eighth sternite of the present species is distinctive.

#### 158. *Atarba (Ischnothrix) obtusiloba* Alexander

*Atarba (Ischnothrix) obtusiloba* Alexander; Ann. Mag. Nat. Hist., (11) 11: 172—175, fig. 8 (♂ hypopygium); 1944.

Type from Tarma, Junin, Peru, 3600—5400 feet, March 5, 1940, by Woytkowski.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

**159. *Atarba (Ischnothrix) rectangularis* Alexander**

*Atarba (Ischnothrix) rectangularis* Alexander; Jour. N. Y. Ent. Soc., 62: 145—146; 1954.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 7—8, 1953; Locotal, Chapare, 1200 meters, October 25, 1953 (Martinez).

**160. *Atarba (Atarba) boliviana* Alexander**

*Atarba (Atarba) boliviana* Alexander; Ann. Ent. Soc. Amer., 23: 736—737; 1930.

Bolivia: Santa Cruz, February 1929 (Francisco Steinbach), ex Schade.

**161. *Atarba (Atarba) laterospina* sp. n.**

General coloration of thorax obscure yellow; basal segments of antennal flagellum bicolored, the bases yellow; wings brownish yellow, stigma pale brown, Sc short; male hypopygium with tergal horns unusually tumid, at tips produced into acute spines; outer dististyle with relatively few spines, including a major one on outer edge.

Male. — Length about 5 mm.; wing 5 mm.; antenna about 2.2 mm.

Rostrum brownish yellow; palpi black. Antennae of moderate length; scape and pedicel yellow, basal flagellar segments bicolored, the proximal third or less light yellow, remainder black, the amount of pale color decreasing on outer segments, beyond the fifth uniformly blackened; flagellar segments elongate-cylindrical, with a dense white erect pubescence, verticils a little longer, about one-half the segment. Head brownish yellow; anterior vertex slightly broader than the diameter of scape.

Pronotum infuscated. Mesonotum obscure yellow, pleura somewhat clearer yellow, dorsopleural membrane vaguely darkened. Halteres with stem yellow, knob infuscated. Legs with coxae and trochanters light yellow; remainder of legs broken. Wings (fig. 106) brownish yellow, costal border light yellow, stigma very pale brown; veins brownish yellow, trichia dark. Macrotrichia on longitudinal veins beyond general level of origin of Rs, including also the outer half of Sc, Cu<sub>1</sub> and 2nd A, and the extreme tip of M, lacking on 1st A. Venation: Sc short, Sc<sub>1</sub> ending just beyond origin of Rs, branches of latter diverging very gradually, cell R<sub>3</sub> at margin a little more extensive than cell R<sub>2</sub>; cell 1st M<sub>2</sub> shorter than M<sub>3</sub>+<sub>4</sub>; m—cu about one-third its length beyond the fork of M.

Abdominal tergites brownish yellow, darker laterally, hypopygium yellow. Male hypopygium (fig. 108) with the tergal horns, t, unusually tumid, each produced at tip into an acute spine. Outer dististyle, d, entirely blackened, distal half of inner edge with three spines, additional to the more strongly curved apex; outer edge at near midlength with a very strong slightly curved spine, with one or more nearer the base; inner style slender, tip obtuse. Aedeagus relatively short and stout.

**H o l o t y p e**, ♂, Locotal, Chapare, Cochabamba, 1200 meters, October 26, 1953 (Martinez).

Although it is closely allied to *Atarba* (*Atarba*) *restricta* Alexander, of Peru, the present fly appears to differ sufficiently in the details of structure of the hypopygium, especially the tergite, inner dististyle and aedeagus.

**162. *Atarba* (*Atarba*) *macracantha* Alexander**

*Atarba* (*Atarba*) *macracantha* Alexander; Ann. Mag. Nat. Hist., (11) 10: 217—219; 1943.

The type was from Tarma, Junin, Peru, 4000—8000 feet, taken November 6, 1940, by W o y t k o w s k i.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 6, 1953 (Martinez).

**163. *Atarba* (*Atarba*) *scabrosa* Alexander**

*Atarba* (*Atarba*) *scabrosa* Alexander; Ann. Mag. Nat. Hist., (11) 11: 175—177, fig. 9 (♂ hypopygium); 1944.

Type from Tarma, Junin, Peru, 3600—5400 feet, March 10, 1940, taken by W o y t k o w s k i.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

**164. *Atarba* (*Atarba*) *stigmosa* Alexander**

*Atarba* (*Atarba*) *stigmosa* Alexander; Ann. Ent. Soc. Amer., 23: 737—738; 1930.

Bolivia: Santa Cruz, February 1929 (Francisco Steinbach), ex Schade.

**165. *Atarba* (*Atarba*) *subdentata* Alexander**

*Atarba* (*Atarba*) *subdentata* Alexander; Ann. Ent. Soc. Amer., 45: 121—122; 1952.

Bolivia: Cristal Mayu, Chapare, Cochabamba, 1200 meters, October 15, 1949 (Peña).

**166. *Elephantomyia* (*Elephantomyia*) *boliviensis* Alexander**

*Elephantomyia* (*Elephantomyia*) *boliviensis* Alexander; Ann. Ent. Soc. Amer., 23: 736; 1930.

Bolivia: Santa Cruz, February 1929 (Francisco Steinbach), ex Schade.  
El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

In the male sex the broad conspicuous middorsal stripe of the abdomen is interrupted at the incisures and especially at the posterior borders of the individual tergites, eighth segment more extensively darkened. Male hypopygium (fig. 111) with the outer dististyle, d, relatively slender, axial spine elongate, the narrow tip decurved, outer lateral spine slender. Inner dististyle elongate, narrowed gradually to the obtuse tip. Gonapophysis, g, relatively slender, the very long apex with relatively sparse scabrous points. Penefilum, of moderate length.

The most similar species are *Elephantomyia* (*Elephantomyia*) *decincta* sp. n., and *E. (E.) uncinata* sp. n., all differing among themselves in hypopygial



structure, including especially the outer dististyle and gonapophysis (compare figs. 111, 112 and 113).

**167. *Elephantomyia* (*Elephantomyia*) *distinctior* Alexander**

*Elephantomyia distinctior* Alexander; Ann. Ent. Soc. Amer., 45: 122—123; 1952.

Bolivia: Cristal Mayn, Chapare, Cochabamba, 1200 meters, September 26, 1949 (Peña).

**168. *Elephantomyia* (*Elephantomyia*) *decincta* sp. n.**

Size medium (wing of male to 6.5 mm.); thorax fulvous yellow, unpatterned; legs brownish yellow; wings yellow, stigma pale brown; abdomen of male brownish yellow, tergites unpatterned, eighth sternite restrictedly brownish black; male hypopygium with outer dististyle narrow; apex of gonapophysis produced into a long decurved submembranous flap, its outer margin conspicuously serrulate.

Male. — Length, excluding rostrum, about 5.8—6 mm.; wing 6—6.5 mm.; rostrum about 5—5.2 mm.

Female. — Length, excluding rostrum, about 7—7.5 mm.; wing 7—7.2 mm.; rostrum about 5.5 mm.

Rostrum brown, darker in female, in male about five-sixth the length of wing. Antennae with scape and pedicel light brown, flagellum slightly darker; flagellar segments long, with very long verticils. Head light gray; anterior vertex narrower than the scape.

Thorax fulvous yellow, unpatterned. Halteres yellow. Legs with coxae and trochanters yellow, remainder of legs slightly darker, brownish yellow. Wings faintly tinged with yellow, prearcular and costal regions clearer yellow; stigma oval, pale brown; veins light brown. Macrotrichia on longitudinal veins beyond general level of origin of Rs. Venation: Sc<sub>1</sub> ending about opposite three-fourths the length of Rs, Sc<sub>2</sub> near its tip; branches of Rs diverging very gradually, cell R<sub>2</sub> at margin from about one and one-half to nearly twice R<sub>4</sub>; cell 1st M<sub>2</sub> rectangular, varying from shorter than to subequal in length to distal section of M<sub>3</sub>; m—cu about two-thirds its length beyond the fork of M.

Abdomen in male brownish yellow, tergites unpatterned, eighth sternite on central portion restrictedly brownish black. In female, abdomen somewhat darker, unpatterned. Male hypopygium (fig. 112) differing from that of *unicincta* in several important regards. Outer dististyle, d, narrower; apex of inner style stouter. Gonapophysis, g, longer, at apex produced into a long decurved submembranous flap, its outer margin conspicuously serrulate.

Holotype, ♂, Locotal, Chapare, Cochabamba, 1200 meters, November 15, 1953 (Martinez). Allotopotype, ♀. Paratopotypes, 1 ♂, 1 ♀, October 26—November 8, 1953 (Martinez).

*Elephantomyia* (*Elephantomyia*) *decincta* is readily told from *E. (E.) boliviensis* Alexander and *E. (E.) unicincta* sp. n., by the abdominal pattern and

the structure of the male hypopygium. The male hypopygia of the latter two species are shown for comparison (figs. 111, 113).

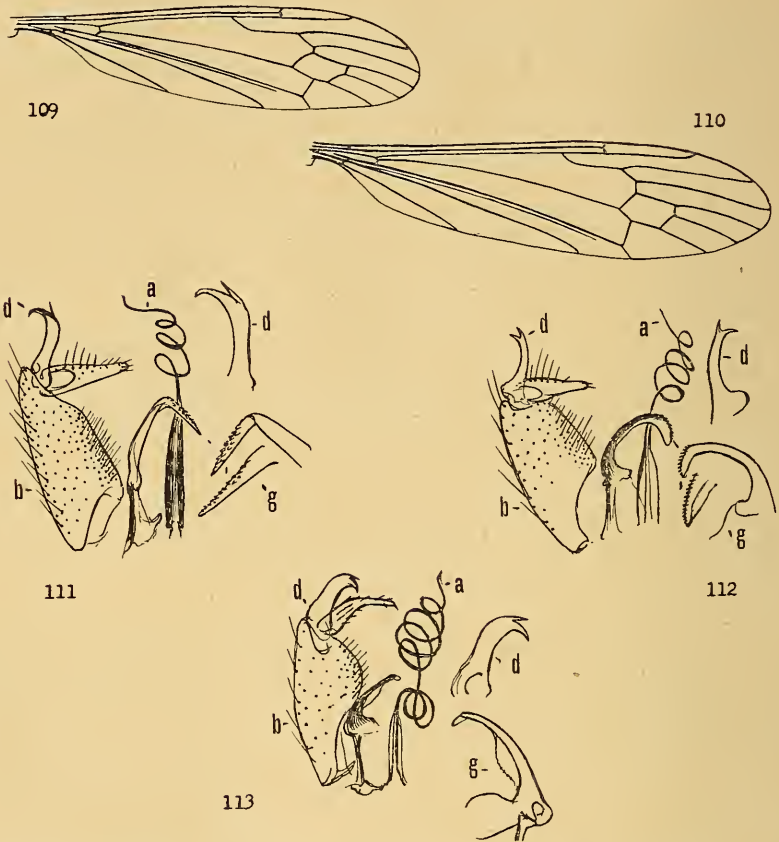


Fig. 109 *Elephantomyia (Elephantomyia) sordidipes* sp. n.; venation.

Fig. 110 *Elephantomyia (Elephantomyia) uncinata* sp. n.; venation.

Fig. 111 *Elephantomyia (Elephantomyia) boliviensis* Alexander; male hypopygium.

Fig. 112 *Elephantomyia (Elephantomyia) decincta* sp. n.; male hypopygium.

Fig. 113 *Elephantomyia (Elephantomyia) uncinata* sp. n.; male hypopygium.  
(Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis)

### 169. *Elephantomyia (Elephantomyia) sordidipes* sp. n.

General coloration of thorax dull black; head brown, front and orbits buffy yellow; knobs of halteres infuscated; fore and middle coxae darkened, remainder of legs brown, tarsi paling to obscure yellow; wings weakly darkened, stigma oval, medium brown, a slight darkening over base of Cu; branches of Rs parallel, cell  $R_2$  at margin more than twice as extensive as cell  $R_1$ ; m—cu at near two-thirds  $M_3 + 4$ .

Female. — Length, excluding rostrum, about 7 mm.; wing 7.3 mm.; rostrum about 6 mm.

Rostrum light brown, shorter than remainder of body. Antennae brownish black; outer flagellar segments long-cylindrical, shorter than the verticils.

Head with the front and broad orbits buffy yellow, posterior vertex abruptly brown.

Cervical region and pronotum brownish black. Mesonotum almost entirely dull black, humeral region of praescutum and adjoining part of pronotal scutellum very restrictedly obscure yellow; pleura slightly more pruinose, especially behind. Halteres with stem yellow, knob infuscated. Legs with midcoxae brownish black, fore coxae brown, hind pair yellowed; trochanters yellow; femora and tibiae brown, bases of femora restrictedly more yellowed, tarsi paling to obscure yellow; tibial spurs lacking. Wings (fig. 109) weakly darkened, base more yellowed; stigma oval, medium brown; a slight darkening in wing axilla and over basal half of vein Cu; veins medium brown. Longitudinal veins beyond general level of origin of Rs with macrotrichia, including outer half of Sc, lacking on Anal veins. Venation: Branches of Rs parallel except at tips, cell  $R_2$  at margin more than twice  $R_1$ ;  $m-cu$  at near two-thirds  $M_3+4$ ; cell 2nd A relatively narrow.

Holotype, ♀, El Limbo, Chapare, Cochabamba, 2000 meters, November 4, 1953 (Martinez).

*Elephantomyia (Elephantomyia) sordidipes* is readily told from *E. (E.) boliviensis* Alexander, and the species described at this time, by the black body coloration and by the details of venation.

#### 170. *Elephantomyia (Elephantomyia) uncinata* sp. n.

Size medium (wing to 7 mm.); rostrum somewhat shorter than wing; general coloration of thorax reddish yellow, unpatterned; halteres yellow; legs brownish yellow; wings faintly tinged with yellow, stigma oval, very pale brown; abdomen yellow, eighth segment uniformly black, forming a narrow subterminal ring; male hypopygium with outer dististyle relatively broad; gonapophysis with apical flap small, its surface roughened by small tubercles.

Male. — Length, excluding rostrum, about 6–6.5 mm.; wing 5.8–7 mm.; rostrum about 4.8–6 mm.

Female. — Length, excluding rostrum, about 8 mm.; wing 7 mm.; rostrum about 6 mm.

Rostrum brown, only a little shorter than the wing. Antennae with scape and pedicel yellow, flagellum brownish yellow, outer segments darker brown; segments elongate, with very long outspreading verticils. Head whitened, the occipital region brownish yellow; anterior vertex about two-thirds the diameter of scape.

Thorax uniformly fulvous or reddish yellow; notal vestiture very short and sparse. Halteres yellow. Legs with coxae fulvous; trochanters yellow; remainder of legs brownish yellow, tarsi not darkened; vestiture of legs short. Wings (fig. 110) faintly tinged with yellow, prearcular and costal fields more saturated yellow; stigma oval, scarcely evident, very pale brown. Macrotrichia on longitudinal veins beyond the general level of origin of Rs; a few near outer ends of Sc and 2nd A, lacking on 1st A. Venation:  $Sc_1$  ending about opposite three-fourths Rs, branches of the latter diverging very gradually,



cell  $R_2$  at margin from about one-third to one-half times more extensive than  $R_1$ ; cell 1st  $M_2$  rectangular, a little shorter than distal section of  $M_3$ ;  $m$ —cu before midlength of  $M_3 + 4$ .

Abdomen obscure yellow; eighth segment, including both tergite and sternite, black, forming a narrow subterminal ring. Male hypopygium (fig. 113) with the dististyles, d, small, as compared to the basistyle; outer style relatively broad, glabrous, axial spine decurved, outer spine more slender; inner dististyle longer, outer third narrowed. Gonapophysis, g, appearing as a dusky gently curved blade, the tip with a small membranous flap, with large membranous flanges on inner margin; surface roughened but margins without distinct serrations. Aedeagus, a, with penefilum relatively elongate but much shorter and more slender than in *tenuissima*, longer than in the genotype, *westwoodi* Osten Sacken.

Holotype, ♂, Locotal, Chapare, Cochabamba, 1200 meters, November 15, 1953 (Martinez). Allotopotype, ♀, pinned with a paratype male. Paratopotypes, 3 ♂♂, October 25—November 15, 1953 (Martinez).

The nearest regional allies of the present fly are *Elephantomyia* (*Elephantomyia*) *boliviensis* Alexander and *E. (E.) decincta* sp. n., all three species being separable by the pattern of the abdomen and by the structure of the male hypopygium, especially the dististyles and gonapophyses. Important characters for the definition of the various species are to be found in these latter structures. The hypopygium of *boliviensis* (fig. 111) and of *decincta* (fig. 112) are shown for comparison with the present fly.

## ERIOPTERINI

### 171. *Sigmatomera* (*Eufurina*) *rufithorax* Wiedemann

*Limnobia rufithorax* Wiedemann; Aussereur, zweifl. Ins., 1: 548, pl. 6 b, fig. 5 (venation); 1828.

*Furina rufithorax* Jaenicke; Abhand. Senckenb. Ges., 6: 318, pl. 43, fig. 1; 1867.

*Gnophomyia rufithorax* Osten Sacken; Berlin. Entomol. Zeitschr., 31: 198; 1887.

*Sigmatomera* (*Eufurina*) *rufithorax* Alexander; Jour. N. Y. Ent. Soc., 54: 307; 1946.

*Sigmatomera* (*Eufurina*) *rufithorax* Alexander; Rev. de Entomologia, 18: 68; 1947.

The present fly is the subgenotype and only known member of the subgenus. It has been known previously only from Brazil.

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

The venation (fig. 114) and male hypopygium are illustrated.

Male hypopygium (fig. 118) with the tergite, t, large, narrowed outwardly, the posterior border with a V-shaped emargination, lobes broadly rounded, glabrous, disk with abundant setae, longer on the lateral parts. Sternal lobes long-conical, with conspicuous setae. Basistyle, b, stout, mesal face with very long setae. Dististyle, d, a simple curved rod, shaped like a boomerang, near base with a slender arm. Phallosome, p, including a very large compressed-flattened glabrous darkened plate and two slender rods, the latter divergent, tips with about six or seven denticles.

**172. *Trentepohlia* (*Paramongoma*) *calliope* Alexander**

*Trentepohlia* (*Paramongoma*) *calliope* Alexander; Ann. Mag. Nat. Hist., (11) 11: 304—306; 1944.

Described from Amazonian Peru, taken at Satipo, Jauja, Junin, 800—900 meters, collected July 16, 1940, by P a p r z y c k i.

Bolivia: Cristal Mayu, Chapare, Cochabamba, 1200 meters, October 28 to November 6, 1949 (P e ñ a).

**173. *Trentepohlia* (*Paramongoma*) *conscripta* Alexander**

*Trentepohlia* (*Paramongoma*) *conscripta* Alexander; Ann. Ent. Soc. Amer., 42: 102; 1949.

The types were from Carpish, Huanuco, Peru, in dwarf fog forests, 2800 meters, taken October 10, 1946, by W o y t k o w s k i.

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (M a r t i n e z).

**174. *Trentepohlia* (*Paramongoma*) *montivaga* Alexander**

*Trentepohlia* (*Paramongoma*) *montivaga* Alexander; Ann. Ent. Soc. Amer., 42: 102—103; 1949.

Types from Sariapampa, Huanuco, Peru, in fog forests, 3600 meters, taken May 1946, by W o y t k o w s k i.

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (M a r t i n e z).

**175. *Gnophomyia* (*Gnophomyia*) *perdebilis* Alexander**

*Gnophomyia* (*Gnophomyia*) *perdebilis* Alexander; Ann. Ent. Soc. Amer., 42: 109—110; 1949.

Type from Huanuco, Peru, collected by S c h u n k e.

Bolivia: Locotal, Chapare, Cochabamba, 1200 meters, March 1956 (M a r t i n e z).

**176. *Gnophomyia* (*Gnophomyia*) *stenochorema* sp. n.**

Belongs to the *tristissima* group; general coloration black, subnitidous; apex of knob of haltere obscure yellow; antennae and legs black; wings strongly tinged with black, prearcular field more yellowed; vein  $R_2$  virtually atrophied, cell 1st  $M_2$  long and unusually narrow; male hypopygium with the outer dististyle narrowed into a slender blade.

Male. — Length about 6 mm.; wing 5 mm.; antenna about 1.3 mm.

Rostrum and palpi black. Antennae black, relatively short, as shown by the measurements; flagellar segments long-subcylindrical, shorter than the verticils. Head black.

Thorax uniformly black, surface subnitidous, variegated by the restricted pale yellow anterior pretergites and a smaller area before the wing root; dorsal pleurotergite a trifle paler. Halteres black, apex of knob restrictedly obscure yellow. Legs black. Wings (fig. 115) with a strong blackish tinge, prearcular field more yellowed; stigma very small, restricted to cell  $R_3$ ; veins

brown, paler in the prearcular field. Macrotrichia on longitudinal veins beyond general level of cord, including also Rs; lacking on M and the Anals. Venation:  $Sc_1$  ending about opposite one-third  $R_2 +_3 +_4$ ,  $Sc_2$  removed, opposite two-thirds the length of Rs; vein  $R_2$  virtually atrophied, indicated only by a faint line at or just beyond the radial fork;  $r-m$  at or just before fork of Rs; cell 1st  $M_2$  long and unusually narrow, gently widened outwardly, subequal in length to  $M_4$ ;  $m-cu$  about one-half its length beyond fork of M.

Abdomen, including hypopygium, black. Male hypopygium (fig. 119) with the basistyle, b, short and stout. Dististyles, d, terminal, the outer one hinged

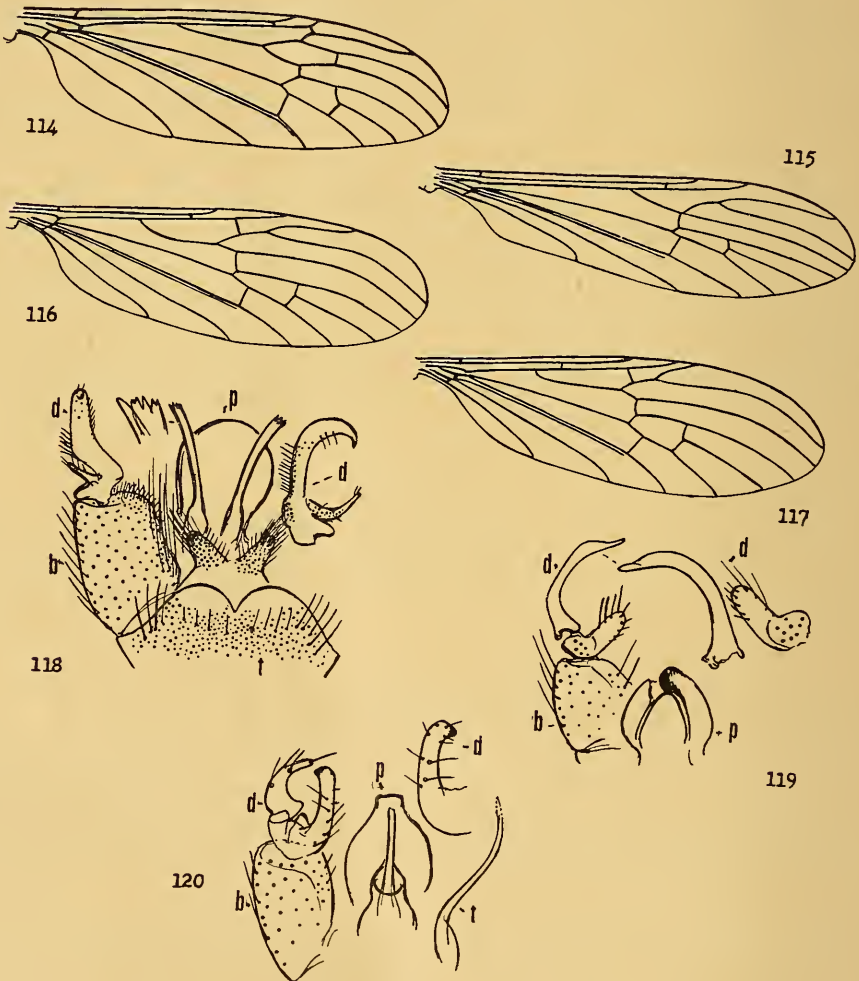


Fig. 114 *Sigmatomera (Eufurina) rufithorax* (Wiedemann); venation.

Fig. 115 *Gnophomyia (Gnophomyia) stenochorema* sp. n.; venation.

Fig. 116 *Neognophomyia paprzyckiana* Alexander; venation.

Fig. 117 *Neognophomyia pinckerti* sp. n.; venation.

Fig. 118 *Sigmatomera (Eufurina) rufithorax* (Wiedemann); male hypopygium.

Fig. 119 *Gnophomyia (Gnophomyia) stenochorema* sp. n.; male hypopygium.

Fig. 120 *Neognophomyia pinckerti* sp. n.; male hypopygium.

(Symbols: b, basistyle; d, dististyle; p, phallosome; t, tergite)



to the shorter inner style, long, glabrous, narrowed at tip into a slender blade; inner style with distal half provided with numerous setae, the outer ones pale, longer and more slender. Phallosome, p, massive, lateral arm blackened, its tip obtuse.

**Holotype**, ♂, Locotal, Chapare, Cochabamba, 1200 meters, October 26, 1953 (Martinez).

*Gnophomyia* (*Gnophomyia*) *stenochorema* is most similar to various other regional species having black bodies and legs, including *G. (G.) nigrina* (Wiedemann), *G. (G.) peracutior* Alexander, and *G. (G.) subflebilis* Alexander, differing from all in the details of venation and structure of the male hypopygium.

#### 177. *Gnophomyia* (*Gnophomyia*) *toleranda* Alexander

*Gnophomyia* (*Gnophomyia*) *toleranda* Alexander; Jour. N. Y. Ent. Soc., 62: 148—149; 1954.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

#### 178. *Neognophomyia cochlearis* Alexander

*Neognophomyia cochlearis* Alexander; Ann. Mag. Nat. Hist., (11) 12: 31—33; 1945.

The type was from Zumbi, Rio Zamora, Ecuador, 700 meters, taken November 2, 1941, by David Laddley.

Bolivia: Cristal Mayu, Chapare, Cochabamba, 1200 meters, August 11, 1949 (Peña).

#### 179. *Neognophomyia paprzyckiana* Alexander

*Neognophomyia paprzyckiana* Alexander; Ann. Mag. Nat. Hist., (11) 11: 306—307, fig. 6 (♂ hypopygium); 1944.

Types from Satipo, Junin, Peru, collected by Paprzycki. The venation (fig. 116) is distinct from that of the other known species in the unusual length and course of vein  $R_3$ , with cell  $R_2$  at margin nearly two-thirds as extensive as cell  $R_3$ . The condition in *N. pinckerti* sp. n. may be compared (fig. 117).

Bolivia: General Saavedra, Santa Cruz, 650 meters, April 26, 1958 (Pinckert).

#### 180. *Neognophomyia pinckerti* sp. n.

Size medium (wing of male 5 mm.); general coloration of thorax fulvous, notum with a short dense pale pubescence; pleura with a broad interrupted black stripe; wings brownish yellow, restrictedly patterned with brown; abdominal tergites narrowly yellow medially, broadly dark brown on sides; male hypopygium with tergal spines long and slender, pale; inner dististyle narrow, its outer apical angle a darkened knob; phallosomic plate narrowed outwardly, the apex truncate.

**Male.** — Length about 5 mm.; wing 5 mm.

Rostrum and palpi small, yellow. Antennae black, base of scape paler; flagellar segments oval, shorter than the verticils. Head with the swollen anterior vertex light yellow, with a short white pubescence and few longer yellow setae; posterior vertex darkened.

Pronotum yellow. Mesonotum almost uniformly fulvous, surface with a short dense pale pubescence. Pleura light yellow, with a conspicuous black longitudinal stripe that is slightly interrupted, including areas on propleura, anepisternum, dorsal pteropleurite and pleurotergite, the last largest. Halteres with stem yellow, knob infuscated. Legs with coxae and trochanters yellow; remainder of legs broken. Wings (fig. 117) brownish yellow, prearcular field clearer yellow; a brown seam over cord, broadest at costa, narrowed posteriorly, ending about at fork of M; outer end of cell 1st  $M_2$  very narrowly darkened; veins brown, the basal ones more yellowed. Longitudinal veins beyond origin of Rs with long delicate trichia, basal of these more sparse, including outer ends of both Anal veins. Venation:  $Sc_1$  very long, only a little shorter than Rs;  $R_2 +_3 +_4$  and  $R_2$  subequal; vein  $R_3$  parallel to  $R_1 +_2$ , narrowly separated at margin,  $R_4$  long and strongly decurved, cell  $R_3$  at margin very extensive; cell 1st  $M_2$  widened outwardly; m—cu about its own length beyond fork of M.

Abdominal tergites narrowly yellow medially, with broad brown lateral stripes; sternites yellowed; hypopygium horn yellow. Male hypopygium (fig. 120) with the tergal spines, t, long and slender, pale throughout, gradually narrowed to the tips, the actual apices difficult to delimit. Dististyles, d, as figures; inner style with outer half parallel-sided, the outer apical angle a blunt darkened knob; outer style with a single terminal seta. Phallosomic plate, p, broad, apex truncate, not or scarcely darkened, without modified projections.

**Holotype**, ♂, General Saavedra, Santa Cruz, 650 meters, April 26, 1958 (Pinckert).

This interesting fly is named for the collector, Mr. Guillermo Pinckert, a member of the Sociedad Cruceana de Ciencias Naturales in Santa Cruz, to whom I am indebted for various Bolivian *Tipulidae*. The species belongs to a group of generally similar forms that have the so-called disjointed tergal spines of the hypopygium pale and elongate, including also *Neognophomyia bisetosa* Alexander, *N. debilitata* Alexander, *N. hostica* Alexander, *N. productissima* Alexander, *N. sparsiseta* Alexander, and some others, all differing from one another in details of structure of the hypopygium, particularly the tergal spines, dististyles and phallosome.

### 181. *Teucholabis* (*Paratropesa*) *fumidapicalis laetabilis* Alexander

*Teucholabis* (*Paratropesa*) *fumidapicalis laetabilis* Alexander; Ann. Ent. Soc. Amer., 45: 123—124; 1952.

Bolivia: Cristal Mayu, Chapare, Cochabamba, 1200 meters, October 4, 1949 (Peña).

**182. *Teucholabis* (*Paratropesa*) *lindneri* Alexander**

*Teucholabis* (*Paratropesa*) *lindneri* Alexander; Konowia, 12: 42—44, fig. 1 (wing), fig. 2 (♂ hypopygium); 1933.

Bolivia: El Cairo, August 1926 (Erwin Lindner); type, Württ. Naturhistorische Sammlung, Stuttgart.

**183. *Teucholabis* (*Euparatropesa*) *martinezi* sp. n.**

Belongs to the *jactans* group; size relatively large (wing of male over 7 mm.); general coloration polished black, thorax restrictedly patterned with yellow; legs black, bases of fore and middle femora narrowly yellowed; wings strongly fulvous brown, restrictedly patterned with darker brown, chiefly as the stigma and a narrow seam over the cord; r—m distinct, cell 1st  $M_2$  closed; male abdomen with a U-shaped glabrous blackened pocket on fifth sternite; apex of basistyle produced into a small glabrous blade.

Male. — Length about 8.5 mm.; wing 7.2 mm.

Rostrum and palpi black. Antennae black throughout; flagellar segments long-oval, slightly exceeding the verticils. Head polished black.

Cervical region and pronotum black; posterior angles of pronotal scutellum and the very narrow pretergites yellow. Mesonotal praescutum polished black, the humeral triangle and a small central spot at suture yellow; scutum black, central region with a Y-shaped yellow area, the fork at the suture; scutellum obscure yellow, base and the parascutella black; postnotum, including both mediotergite and pleurotergite black. Pleura black, dorsopleural region and an irregular longitudinal ventral stripe whitish yellow, the latter including the dorsal sternopleurite, ventral pteropleurite, meron and metapleura. Halteres with stem black, knob light yellow. Legs with all coxae and trochanters black; fore legs black, basal fifth of femora yellowed; remainder of legs black, extreme base of mid-femur brownish yellow, posterior femora uniformly black; posterior basitarsus dilated on proximal half. Wings (fig. 121) with a strong fulvous brown tinge, very restrictedly patterned with darker, including the large suboval stigma and a delicate seam along the cord; outer end of wing vaguely to scarcely darker than the base; whitened streaks in cell R adjoining vein M, entering cell 1st  $M_2$ , and in base of cell 1st A adjoining the vein; veins brown. Macrotrichia on  $R_s$ , all outer longitudinal radial veins,  $M_1+2$  and  $M_3$ . Venation: Sc short,  $Sc_1$  ending virtually opposite origin of  $R_s$ ,  $Sc_1$  subequal to  $R_2$ , the latter in alignment with basal section of  $R_5$ ; vein  $R_4$  subequal to  $R_3+4$ ; cell 1st  $M_2$  closed, elongate, only slightly widened outwardly, longer than vein  $M_4$ ; distal section of  $M_1+2$  slightly arched at origin; m—cu about one-half its length beyond fork of M.

Abdomen black, the hypopygium more intensely so. Sternal pocket, s, on fifth segment U-shaped, virtually smooth, blackened, the arms of the U directed posteriorly. Male hypopygium (fig. 124) with apex of basistyle, b, produced into a small glabrous blade. Dististyles, d, subterminal, the outer elongate, its apex shortly apiculate; inner style with a low flange on face of the



cylindrical basal arm. Aedeagus, a, with about a score of long setae on the low ventral protuberance, with five or six more on the produced dorsal lobe.

**Holotype**, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, November 6, 1953 (Martinez).

This distinct fly is named for the collector, Mr. Antonio Martinez, student of the Coleoptera, to whom I am indebted for large and valuable collections of Tipulidae from Argentina and Bolivia. The most similar species is *Teucholabis (Euparatropesa) xystophanes* (Alexander), of Tucumán, Argentina, which differs conspicuously in the coloration of the thorax, abdomen, legs and wings. The present fly is readily told by the almost uniformly blackened legs and the slightly patterned wings. The Neotropical species of the subgenus fall in two distinct groups, the *fasciolaris* group, having r—m present and cell M<sub>2</sub> open by the atrophy of the basal section of M<sub>3</sub>, including, besides *T. (E.) fasciolaris* (Wiedemann), also *T. (E.) amatrix* Alexander, *T. (E.) fumidapicalis* Alexander, *T. (E.) invenusta* Alexander, *T. (E.) laetifica* Alexander, and *T. (E.) lindneri* Alexander. The second group, named for the first described species, *T. (E.) jactans* Alexander, has r—m present and cell 1st M<sub>2</sub> closed, including also *T. (E.) amoena* Alexander, *T. (E.) heteropoda* Alexander, *T. (E.) martinezi* sp. n., *T. (E.) praenobilis* Alexander, *T. (E.) sanguinolenta* Alexander, and *T. (E.) xystophanes* Alexander. The subgenus *Paratropesa* Schiner, with r—m obliterated by the fusion of veins R<sub>5</sub> and M<sub>1+2</sub>, includes the following Neotropical species: *T. (P.) chalybeia* Alexander, *T. (P.) collaris* (Osten Sacken), *T. (P.) laneana* Alexander, *T. (P.) neocollaris* Alexander, *T. (P.) nigrocoxalis* Alexander, *T. (P.) nodulifera* Alexander, *T. (P.) paracollaris* Alexander, *T. (P.) placabilis* Alexander, *T. (P.) praeusta* (Osten Sacken), *T. (P.) singularis* (Schiner), and *T. (P.) subcollaris* Alexander.

#### 184. *Teucholabis (Teucholabis) analis* Alexander

*Teucholabis (Teucholabis) analis* Alexander; Jour. N. Y. Ent. Soc., 62: 146—147; 1954.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

#### 185. *Teucholabis (Teucholabis) cybele* Alexander

*Teucholabis (Teucholabis) cybele* Alexander; Jour. N. Y. Ent. Soc., 62: 147—148; 1954.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

#### 186. *Teucholabis (Teucholabis) ducalis* Alexander

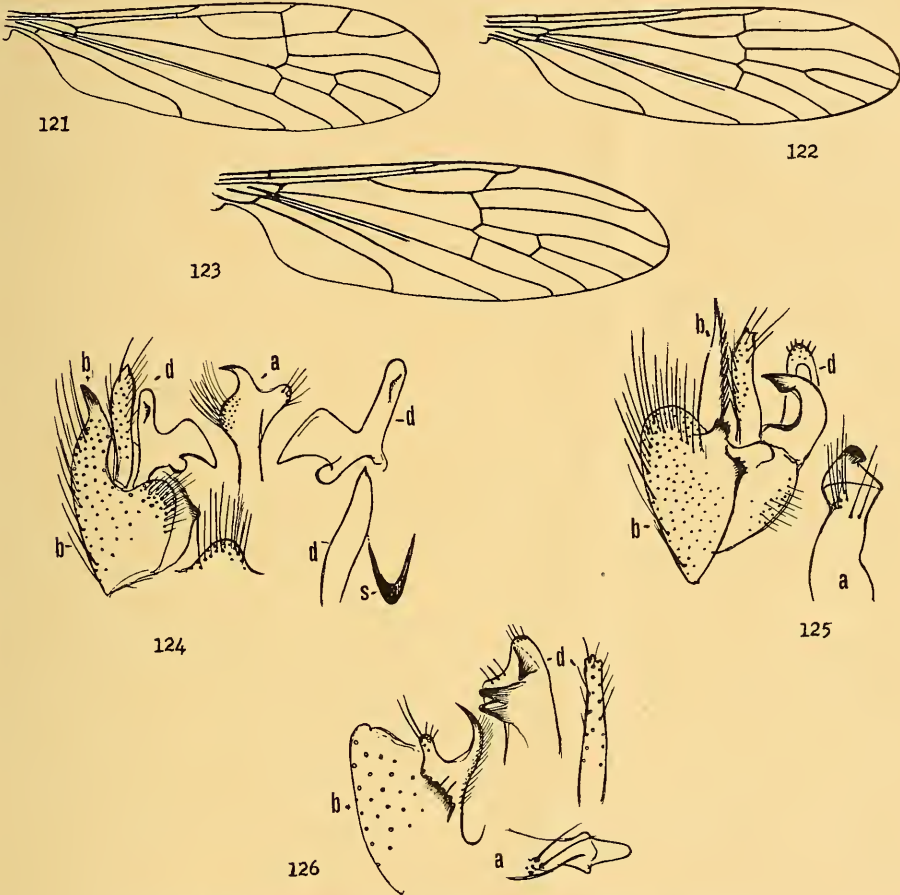
*Teucholabis (Teucholabis) ducalis* Alexander; Ann. Ent. Soc. Amer., 42: 104—105; 1949.

The types were from Fundo Sinchono, Huanuco, Peru, collected in August 1947 by Schunke.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

**187. *Teucholabis* (*Teucholabis*) *egens* Alexander***Teucholabis* (*Teucholabis*) *egens* Alexander; Ann. Ent. Soc. Amer., 45: 124—125; 1952.

Bolivia: Cristal Mayu, Chapare, Cochabamba, 1200 meters, September 24, 1949 (Peña).

Fig. 121 *Teucholabis* (*Euparatropesa*) *martinezi* sp. n.; venation.Fig. 122 *Teucholabis* (*Teucholabis*) *paraxantha* sp. n.; venation.Fig. 123 *Teucholabis* (*Teucholabis*) *rubroatra* sp. n.; venation.Fig. 124 *Teucholabis* (*Euparatropesa*) *martinezi* sp. n.; male hypopygium.Fig. 125 *Teucholabis* (*Teucholabis*) *rubroatra* sp. n.; male hypopygium.Fig. 126 *Teucholabis* (*Teucholabis*) *fulvinota* sp. n.; male hypopygium.

(Symbols: a, aedeagus; b, basistyle; d, dististyle; s, sternite)

**188. *Teucholabis* (*Teucholabis*) *fulvinota* sp. n.**

Allied to *melanocephala*; mesonotum yellow, praescutum vaguely patterned with light brown, pleura extensively darkened; femora yellow with two narrow inconspicuous pale brown rings, the outer subterminal; wings yellow with three brown bands; male hypopygium with the spine of basistyle slender, acute; outer dististyle obtuse at tip; aedeagus entirely pale yellow, apex narrowly obtuse.

Male. — Length about 11.5 mm.; wing 8.5 mm.

Rostrum fulvous; palpi black. Antennae with scape and pedicel brown, flagellum black; basal flagellar segments long-oval, outer segments longer but shorter than the longest verticils; terminal segment shorter than the penultimate. Head above with disk dark brown, occiput and orbits more fulvous.

Cervical region very long, light brown. Pronotum yellow. Mesonotal praescutum yellow, vaguely patterned with light brown, including broad lateral areas on posterior half, interconnected by short intermediate marks some distance before suture, leaving a large yellow central area before suture; scutal lobes pale brown, central area, scutellum and mediotergite yellow, the latter reddened behind, possibly an abnormal condition. Conspicuous setae on notum, including the praescutal interspaces, scutal lobes and scutellum; postnotum glabrous. Pleura dark brown on propleura, anepisternum and ventral pteropleurite, paler brown on sternopleurite, more yellowed on dorsal pteropleurite excepting the posterior border which bears a group of very long setae. Halteres with stem yellow, knob obscure yellow, narrowly darkened above. Legs with coxae fulvous; trochanters yellow; femora conspicuously hairy, yellow, with two narrow and very inconspicuous pale brown rings, one before midlength, the other subterminal; tibiae and proximal three or four tarsal segments light yellow, hairy; outer tarsal segment brownish black. Wings yellow, with three brown bands, one subbasal, the second at the cord, the third apical, narrower than the ground interspaces; basal darkening extending from arculus to origin of Rs; prearcular field yellow; second darkened band narrow, including the stigma and m-cu; wing tip narrowly darkened; veins yellow, brown in the patterned areas. Longitudinal veins beyond cord with small trichia, basad of cord, including Rs, glabrous; wings badly torn and deformed. Venation: Sc long, Sc<sub>1</sub> ending about opposite two-thirds Rs, Sc<sub>2</sub> removed, darkened; R<sub>2</sub> oblique, about twice R<sub>2</sub>+<sub>3</sub>+<sub>4</sub>; cell 1st M<sub>2</sub> widened outwardly; m-cu about one-half its length beyond fork of M.

Abdomen with basal tergite yellow, margined with brown, remainder of abdomen, including the hypopygium, virtually all yellow. Sternal pocket on segment five semicircular, with abundant setae that are directed inwardly toward center of pocket, with more basal larger scattered bristles; sixth sternite with a small semioval darkened area, with a row of about 15 setae on either side, directed mesad. Male hypopygium (fig. 126) with the basistyle, b, terminating abruptly, the margin obliquely truncate; armature of inner angle including a pale rod that is extended into a gently curved spine, its tip acute, blackened, inner surface of spine with dense yellow setae; mesal flange narrowly darkened, the margin irregularly crenulate. Outer dististyle, d, a darkened rod, very slightly narrowed outwardly, surface with long scattered setae; inner style shorter but broader, yellow, apex obtuse, with a subterminal triangular darkened flange, more basally with a larger darkened extension. Aedeagus, a, entirely pale yellow, apex narrowly obtuse, beyond midlength with a few long setae.

Holotype, ♂, Rio Yacuma, Espiritu, 250 meters, July 29, 1950 (Forster).



*Teucholabis* (*Teucholabis*) *fulvinota* is generally similar to a few other Neotropical species that center around *T. (T.) melanocephala* (Fabricius), including also *T. (T.) angustapicalis* Alexander, *T. (T.) catharinensis* Alexander, and *T. (T.) pilipes* (Walker), all differing evidently in the pattern of the body, legs and wings and, where this is known, in the hypopygial structure.

189. *Teucholabis* (*Teucholabis*) *jocosa* Alexander

*Teucholabis jocosa* Alexander; Ent. News, 24: 440—441, pl. 16, fig. 3 (wing); 1913.

Bolivia: Coroico (Fassl); type formerly in the Hungarian National Museum (destroyed).

190. *Teucholabis* (*Teucholabis*) *laeta* Alexander

*Teucholabis laeta* Alexander; Ent. News, 24: 442—443, pl. 16, fig. 5 (wing); 1913.

Bolivia: Songo (Fassl); type formerly in the Hungarian National Museum (destroyed).

191. *Teucholabis* (*Teucholabis*) ***paraxantha*** sp. n.

Allied to *xantha*; general coloration of thorax fulvous; dorsal thoracic pleura with a broad brown longitudinal stripe; femora yellow with a narrow nearly terminal dark brown ring; wings with cell  $M_2$  open by atrophy of basal section of  $M_3$ .

Female. — Length about 5.5 mm.; wing 5 mm.

Rostrum light yellow; palpi medium brown. Antennae with scape and pedicel dark brown, flagellum slightly paler brown; flagellar segments long-suboval, shorter than the conspicuous verticils. Head light yellow; posterior vertex with a small darkened central spot.

Pronotum and pretergites clear light yellow. Mesonotal praescutum fulvous, the lateral borders and humeri light yellow, with a small brownish black spot at extreme cephalic border; posterior sclerites of notum more testaceous yellow, posterior third of mediotergite infuscated. Pleura light yellow, dorsally with a broad medium brown longitudinal stripe extending from the propleura to the mediotergite, narrowly interrupted at suture between pleurotergite and pteropleurite. Halteres with stem yellow, knob weakly infuscated. Legs with coxae pale yellow, fore pair vaguely darker; trochanters yellow; femora yellow, with a narrow dark brown nearly terminal ring; tibiae yellow, tips very narrowly dark brown; tarsi dark brown, basitarsi chiefly yellowed. Wings (fig. 122) tinged with pale yellow, prearcular and costal fields clearer yellow; stigma oval, pale brown; veins pale brown, anterior cord slightly darker, prearcular and costal veins clearer yellow. Most longitudinal veins beyond cord with macrotrichia, lacking on  $Cu_1$ ; basad of cord with a few on Rs, lacking on Sc, M, Cu and the Anals. Venation: Sc relatively long,  $Sc_1$  ending about opposite one-third Rs;  $R_2+3+4$  about one-half  $R_2$ ; branches of Rs generally parallel to one another for about the proximal three-fourths; cell  $M_2$  open by atrophy of basal section of  $M_3$ .

Abdomen discolored by enclosed eggs, apparently dark brown; genital segment light yellow. Ovipositor with cerci strongly upcurved to the acute tips.

**Holotype**, ♀, General Saavedra, Santa Cruz, 650 meters, April 26, 1958 (Pinckert). **Paratopotype**, ♀.

Among the numerous Neotropical members of the genus that have cell  $M_2$  of the wings open by the atrophy of vein  $M_3$ , the present fly is closest to *Teucholabis* (*Teucholabis*) *xantha* Alexander, differing evidently in the broad darkened pleural stripe and the darkened femoral tips.

## 192. *Teucholabis* (*Teucholabis*) *rectangularis* Alexander

*Teucholabis* (*Teucholabis*) *rectangularis* Alexander; Ann. Ent. Soc. Amer., 45: 126—127; 1952.

Bolivia: Cristal Mayu, Chapare, Cochabamba, 1200 meters, December 9, 1949 (Peña).

## 193. *Teucholabis* (*Teucholabis*) *rubroatra* sp. n.

Allied to *flavithorax*; size relatively large (wing of male about 8.5 mm.); general coloration polished black; mesonotal praescutum orange with a median oval black area on anterior third; scutum and scutellum orange, dorso-pleural membrane orange yellow, remainder of pleura black; legs black, proximal three tarsal segments pale yellow; wings with disk infuscated, base, costal border and apical margin more strongly darkened; vein  $R_2$  very oblique; male hypopygium with spine of basistyle densely setiferous, on inner margin narrowed to a straight apical spine; aedeagus terminating in a small darkened blade, not spinelike.

**Male**. — Length about 10.5 mm.; wing 8.5 mm.

Rostrum and palpi black, the former about one-half the remainder of head. Antennae black throughout; basal flagellar segments oval, the outer ones more elongate, shorter than their longest verticils. Head polished black; anterior vertex slightly broader than the diameter of scape.

Cervical region and prothorax black. Mesonotal praescutum polished orange, with a conspicuous black oval area on anterior third, scutum and scutellum orange; mediotergite brownish black, anapleurotergite obscure orange, katapleurotergite brownish black; vestiture of praescutum, scutum and scutellum sparse but long and erect. Pleura chiefly polished black; dorso-pleural membrane orange yellow; dorsal pteropleurite obscure orange, with long setae on posterior part; meron and metapleura duller black. Halteres black. Legs black; proximal three tarsal segments pale yellow, with blackened setae, outer tarsal segments black; legs conspicuously hairy. Wings (fig. 123) with the disk infuscated, the base, costal border, stigma and apical margin more strongly darkened; veins brown, darker in the strongly infuscated fields. Longitudinal veins beyond cord with long macrotrichia, lacking on  $M_1$  and the veins behind; basad of cord with trichia on Rs. Venation: Sc long,  $Sc_1$  ending about opposite two-thirds Rs;  $R_2$  very oblique, longer than  $R_1 +_2$  or  $R_2 +_3 +_4$ ; cell 1st  $M_2$  widened outwardly, subequal to distal section of vein  $M_3$ ; m—cu about one-third its length beyond fork of M.

Abdomen, including hypopygium, polished black. Sternal pocket on segment five conspicuous, obtusely narrowed at anterior end, broader behind, surrounded by numerous setae; sternite six with still longer setae on either side of midline. Male hypopygium (fig. 125) relatively small; apex of basistyle, b, obtuse, with very long black setae; mesal flange blackened, divided into two smaller parts, the apical flange smaller; apical spine straight, broad basally, gradually narrowed into a slender spine, the inner margin densely fringed with subappressed yellow setae. Outer dististyle, d, stout, apex weakly bidentate; outer surface with setae, longer at apex; inner style as figured, the outer lobe with short spinoid yellow setae; apex of lateral arm blackened. Aedeagus, a, stout, terminating in a flattened dark blade, not spinoid; setae about four in number, elongate.

**Holotype**, ♂, Espiritu, Rio Yacuma, 250 meters, April 23, 1954 (Forster).

The closest relative of the present fly appears to be *Teucholabis* (*Teucholabis*) *flavithorax* (Wiedemann), whose identity still remains uncertain. Wiedemann's type, a female, was from Brazil, presumably from the general region of Rio de Janeiro. His description indicates a black species with the thoracic dorsum and sides of the pleura reddish yellow. In 1921 I was able to re-examine this type, together with numerous other species preserved in the Natural History Museum in Wien, and furnished some additional notes on the type specimen (Encycl. Entomol., Diptera, 4: 25—26; 1927). This shows that *flavithorax* represents a species having the entire mesonotum and dorsal thoracic pleura orange-yellow, with only the ventral pleurites blackened, these including the propleura, ventral mesepisternum, mesepimeron and metapleura. Several specimens of a species of *Teucholabis* have been taken in southeastern Brazil that are closer to the present fly and provisionally had been determined as being *flavithorax*, apparently in error. Such material very probably represents a further still undescribed member of the genus.

#### 194. *Teucholabis* (*Teucholabis*) *volentis* Alexander

*Teucholabis* (*Teucholabis*) *volentis* Alexander; Ann. Ent. Soc. Amer., 45: 125—126; 1952.

**Bolivia:** Cristal Mayu, Chapare, Cochabamba, 1200 meters, August 16, 1949 (Peña).

#### 195. *Teucholabis* (*Teucholabis*) *xantha* Alexander

*Teucholabis* (*Teucholabis*) *xantha* Alexander; Jour. N. Y. Ent. Soc., 60: 246—247; 1952.

**Bolivia:** Rio Yapacani, Buena Vista, Santa Cruz, August 10, 1950 (Peña); Ichilo, Puerto Greether, August 20, 1950 (Peña).

#### 196. *Gonomyia* (*Progonomyia*) *ovalis* Alexander

*Gonomyia* (*Progonomyia*) *ovalis* Alexander; Rev. de Entomologia, 20: 609—610, fig. 31 (♂ hypopygium); 1949.

Type from Utcuyacu, Junin, Peru, March 7, 1948, taken by Woytkowski.

**Bolivia:** km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).



**197. *Gonomyia* (*Gonomyia*) *aymara* sp. n.**

Allied to *remota*; rostrum black; basal antennal segments yellowed; thoracic pleura conspicuously striped with brownish black and yellow; wings with cell 1st  $M_2$  closed; outer dististyle of male hypopygium with a strong lateral spine; inner style with outer arm bent into a darkened spine, inner arm slender; phallosome terminating in an obtuse head.

Male. — Length about 4.8 mm.; wing 5.4 mm.

Rostrum and palpi black. Antennae with scape and pedicel chiefly light yellow, the former darkened at base, flagellum black; basal flagellar segments long-oval with short verticils, outer segments elongate, verticils much longer, exceeding the segments. Head yellow beneath, dorsal surface concealed in mounting.

Pronotum above light yellow, sides brownish black, pretergites light yellow. Mesonotal praescutum with disk covered by confluent grayish brown stripes, scutal lobes concolorous, median region and scutellum obscure yellow, the base of latter restrictedly darkened; mediotergite chiefly light yellow, less than its posterior half brownish black, this representing the posterior end of a broad dorsal pleural stripe; ventral sternopleurite and meron similarly brownish black, remainder of pleura and the dorsopleural region light sulphur yellow. Halteres with stem brownish yellow, knob broken. Legs with coxae light yellow, bases more darkened, more extensive but paler on the middle and hind coxae; trochanters dark brown; remainder of legs brownish black. Wings (fig. 127) weakly tinged with brown, prearcular and costal fields more yellowed; stigma faintly indicated, pale brown; veins brown, more yellowed in the brightened fields. Longitudinal veins of outer three-fourths of wing with macrotrichia, these lacking on Sc, basal half of M, basal third of 1st A and basal two-thirds of 2nd A. Venation: Sc short,  $Sc_1$  ending some distance before origin of Rs,  $Sc_2$  close to its tip; vein  $R_4$  long, converging very gradually toward  $R_5$ , cell  $R_4$  at margin slightly narrowed; cell 1st  $M_2$  closed; m—cu near fork of M.

Basal abdominal tergites brownish black, the outer ones broadly yellow on sides, intermediate and outermost segments with the amount of yellow increasing, restricting the darkened part to central areas, smallest on the eighth tergite; sternites yellowed. Male hypopygium (fig. 129) with apical lobe of basistyle, b, small, pale, longer than its setae. Outer dististyle, d, flattened, with a long lateral spine, setae conspicuous, some equal in length to the style; inner style profoundly bifid, outer arm straight, its apical fourth bent laterad into a strong spine, surface with several setae, including an outer fasciculate one; inner arm a very slender pale blade, tip acute, inner margin beyond midlength with a single setae. Phallosome, p, with the gonapophyses unequal, appearing as slender black spines; apex of aedeagus obtuse.

Holotype, ♂, El Limbo, Chapare, Cochabamba, 2000 meters, February 17, 1959 (Martinez).

Various other Neotropical species having cell 1st  $M_2$  of the wings closed include *Gonomyia* (*Gonomyia*) *appendiculata* Alexander, *G. (G.) remota* Alex-

ander, and *G. (G.) subappendiculata* Alexander, all differing in hypopygial structure. I am illustrating the hypopygium of *G. (G.) remota* (fig. 132) and *G. (G.) subremota* Alexander (fig. 133), calling attention to the spinoid apex of the aedeagus and the different structure of the inner dististyles.

198. *Gonomyia (Gonomyia) furcula furcula* sp. n.

Size medium (wing 6 mm.); mesonotum dark gray, praescutum with three scarcely differentiated dark brown stripes, scutellum broadly light yellow; pleura dark brown with a broad light yellow longitudinal stripe; antennae and legs black; wings weakly tinged with brown, stigma pale brown; Sc long, Sc<sub>1</sub> ending about opposite one-third the length of Rs, m—cu beyond fork of M; male hypopygium with tergite terminating in a small furcula; outer dististyle black, strongly curved into a strong spine; gonapophyses narrow, passing into blackened spines.

Male. — Length about 5.8 mm.; wing 6 mm.

Female. — Length about 6 mm.; wing 6 mm.

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

Pronotum above light yellow, sides abruptly black; pretergites light yellow. Mesonotal praescutum dark gray, the disk almost covered by three scarcely differentiated dark brown stripes; scutal lobes dark brown, central area dark gray; scutellum broadly light yellow, its base restrictedly gray; postnotum dark brown, central area of mediotergite gray pruinose, pleurotergite conspicuously light gray pruinose. Pleura dark brown, with a broad light yellow longitudinal stripe, beginning on fore coxae, widened behind, extending to the metapleura. Halteres with stem yellow, knob dark brown. Legs with coxae and trochanters dark brown, fore coxae brightened, as discussed above; remainder of legs black. Wings (fig. 128) weakly tinged with brown, base more yellowed; stigma pale brown, poorly delimited; veins brown, paler at wing base. Longitudinal veins of about the outer two-thirds of wing with relatively short macrotrichia, including more than the outer two-thirds of M and 1st A and the outer third or less of basal section of Cu<sub>1</sub> and 2nd A. Venation: Sc long, Sc<sub>1</sub> ending about opposite one-third the length of Rs, Sc<sub>1</sub> alone subequal to r—m; cell R<sub>3</sub> large, vein R<sub>4</sub> deflected strongly caudad almost to wing tip; m—cu about one-third to nearly its own length beyond fork of M.

Abdomen, including hypopygium, brownish black. Male hypopygium (fig. 130) with posterior border of tergite, t, produced into a median lobe that divides into two lobules to form a short furcula, the lobules with few setae. Basistyle, b, with apical lobe darkened, slender. Dististyles, d, terminal; outer style whitened, inner style black, subequal in length, the apex decurved into a powerful spine; ventral margin of style with several setae, including two longer fasciculate bristles. Phallosome, p, simple, including the aedeagus and subtending gonapophyses, the latter subequal, appearing as narrow blades that pass very gradually into blackened spines.

Holotype, ♂, km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez). Allotopotype, ♀, with the type.

The present fly is closest to *Gonomyia* (*Gonomyia*) *andicola* Alexander and *G. (G.) catamarcae* Alexander, which differ in size and in the details of venation and structure of the hypopygium, particularly the dististyles and phallosome.

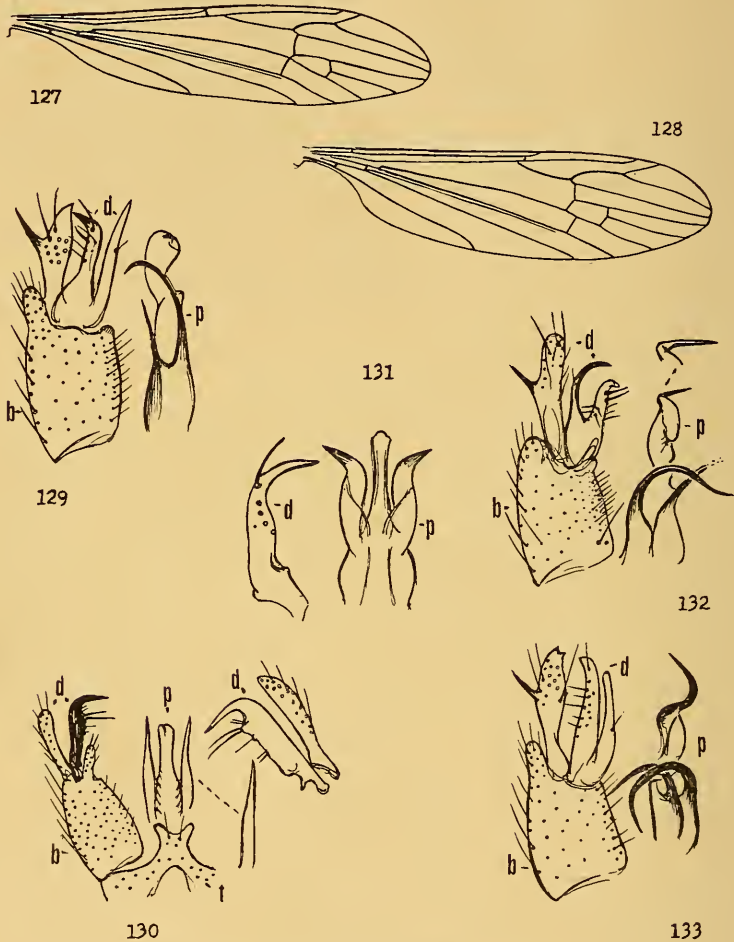


Fig. 127 *Gonomyia* (*Gonomyia*) *aymara* sp. n.; venation.  
 Fig. 128 *Gonomyia* (*Gonomyia*) *furcula furcula* sp. n.; venation.  
 Fig. 129 *Gonomyia* (*Gonomyia*) *aymara* sp. n.; male hypopygium.  
 Fig. 130 *Gonomyia* (*Gonomyia*) *furcula furcula* sp. n.; male hypopygium.  
 Fig. 131 *Gonomyia* (*Gonomyia*) *furcula brevispica* subsp. n.; male hypopygium.  
 Fig. 132 *Gonomyia* (*Gonomyia*) *remota* Alexander; male hypopygium.  
 Fig. 133 *Gonomyia* (*Gonomyia*) *subremota* Alexander; male hypopygium.  
 (Symbols: b, basistyle; d, dististyle; p, phallosome; t, tergite)

198 a *Gonomyia* (*Gonomyia*) *furcula brevispica* subsp. n.

Male. — Length about 6.2 mm.; wing 6.2 mm.

Generally similar to typical *furcula*, differing as follows:

Mesonotal scutellum almost uniformly darkened, the posterior third very vaguely brightened, not broadly yellow as in the typical subspecies. Wings



with  $Sc$  long,  $Sc_1$  ending beyond midlength of  $Rs$ ,  $Sc_2$  closer to tip,  $Sc_1$  alone less than one-third  $r-m$ . Male hypopygium (fig. 131) with the outer dististyle,  $d$ , less strongly curved, outer margin at point of angulation with a single very strongly curved spinoid seta. Phallosome,  $p$ , with the gonapophyses quite distinct, appearing as flattened blades, the short blackened tip directed laterad.

**Holotype**, ♂, El Limbo, Chapare, Bolivia, 2000 meters, February 17, 1959 (Martinez).

The points of difference between the two subspecies of *Gonomyia* (*Gonomyia*) *furcula* are such that it is probable that further material will show that the present fly represents a valid species.

### 199. *Gonomyia* (*Paralipophleps*) *heteromera* Alexander

*Gonomyia* (*Lipophleps*) *heteromera* Alexander; Ann. Mag. Nat. Hist., (11) 9: 438—439, fig. 10 (♂ hypopygium); 1942.

The type was from Tarma, Junin, Peru, 3600—5400 meters, taken February 10, 1940 by W o y t k o w s k i.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 7, 1953 (Martinez).

### 200. *Gonomyia* (*Paralipophleps*) *pleuralis* Williston

*Atarba pleuralis* Williston; Trans. Ent. Soc. London 1896: 289, pl. 10, fig. 61 (antenna ♂), 61 a, b (♂ hypopygium), 61 c (wing); 1896.

*Gonomyia* (*Paralipophleps*) *pleuralis* Alexander; Rev. de Entomologia, 18: 97—98; 1947.

Widespread in the Neotropics at low and moderate altitudes, to the north extending into the southeastern United States.

Bolivia: Santa Cruz, Santa Cruz, March 10—12, 1958 (Pinkert); General Saavedra, Santa Cruz, 650 meters, April 19—26, 1958 (Pinkert).

### 201. *Gonomyia* (*Lipophleps*) *ctenophora* Alexander

*Gonomyia* (*Leiponeura*) *ctenophora* Alexander; Proc. Acad. Nat. Sci. Philadelphia 1921: 81—82, pl. 4, fig. 6 (♂ hypopygium); 1921.

The type was from Iquitos, Amazonian Peru, taken in May 1920 by P a r i s h.

Bolivia: Provincia del Sara, 350 meters, March 1913 (José Steinbach).

### 202. *Gonomyia* (*Lipophleps*) *projecta* Alexander

*Gonomyia* (*Lipophleps*) *projecta* Alexander; Ann. Mag. Nat. Hist., (11) 8: 129—130, fig. 13 (♂ hypopygium); 1941.

The type was from Abitagua, Napo-Pastaza, Ecuador, 100 meters, taken in September 1939 by M a c I n t y r e.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 8, 1953 (Martinez).

**203. *Gonomyia* (*Lipophleps*) *senaria* Alexander**

*Gonomyia* (*Lipophleps*) *senaria* Alexander; Ann. Mag. Nat. Hist., (11) 10: 234—236, fig. 2 (♂ hypopygium); 1943.

Type from Yanamonte, La Mar, Ayacucho, Peru, in fog forests, 3000—4100 meters, taken in August 1941 by W o y t k o w s k i.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March, November 1953 (M a r t i n e z); km. 104, Chapare, 3150 meters, February 1959 (M a r t i n e z).

**204 *Rhabdomastix* (*Rhabdomastix*) *illudens* Alexander**

*Rhabdomastix* (*Rhabdomastix*) *illudens* Alexander; Ent. News, 25: 210—211, pl. 9, fig. 6, (wing); 1914.

Bolivia: Coroico (F a s s l); type formerly in Hungarian National Museum (destroyed); El Limbo, Chapare, Cochabamba, 2000 meters, November 6, 1953 (M a r t i n e z).

**205. *Rhabdomastix* (*Rhabdomastix*) *perglabrata* sp. n.**

Size small (wing of female 5 mm.); general coloration of mesonotum gray, praescutum with four inconspicuous brownish gray stripes; legs brownish yellow; wings tinged with gray, veins very pale brown, inconspicuous; no macrotrichia on veins excepting costa;  $Sc_1$  ending about opposite two-thirds  $Rs$ , vein  $R_3$  erect,  $R_4$  about three-fourths as long as  $R_2 +_3 +_4$ .

F e m a l e. — Length about 4.5 mm.; wing 5 mm.

Rostrum reduced, light brown; palpi darker brown. Antennae short; scape yellowish brown, remainder darker brown; scape (in female) enlarged; basal flagellar segments cylindrical, the outer ones short and crowded, verticils very insignificant. Head dark gray; anterior vertex broad.

Pronotum light yellow. Mesonotal praescutum gray with four inconspicuous more brownish gray stripes, humeral region restrictedly yellow; pseudo-sutural foveae and tuberculate pits black, conspicuous; scutal lobes brown, central area obscure brownish yellow; scutellum testaceous brown, mediotergite brownish gray, paler laterally; notum glabrous. Pleura yellow, vaguely clouded with brown, most evident on the anepisternum and meron. Halteres short and stout, obscure yellow. Legs with fore coxae weakly darkened, remaining coxae and the trochanters yellow; remainder of legs brownish yellow. Wings (fig. 134) tinged with gray, the base restrictedly more yellowed; veins very pale brown, inconspicuous. Veins unusually glabrous, macrotrichia lacking on all veins excepting costa where the trichia are numerous but short. Venation:  $Sc_1$  ending about opposite two-thirds  $Rs$ ; vein  $R_3$  erect, short, about one-third the costal distance between it and  $R_1 +_2$ ; vein  $R_4$  short, very gently curved, about three-fourths  $R_2 +_3 +_4$ ;  $m-cu$  about equal to the first section of  $M_3 +_4$ ; vein  $Cu_1$  strongly inshirred at  $m-cu$ .

Abdomen dark brown. Ovipositor with cerci elongate, very gently upcurved to the acute tips.

Holotype, ♀, General Saavedra, Santa Cruz, 650 meters, April 26, 1958 (Pinckert).

*Rhabdomastix* (*Rhabdomastix*) *perglabrata* is most similar to the still smaller *R. (R.) satipoensis* Alexander, of Peru, and *R. (R.) tantilla* Alexander, of Colombia, which differ further in the coloration, vein trichiation and details of venation.

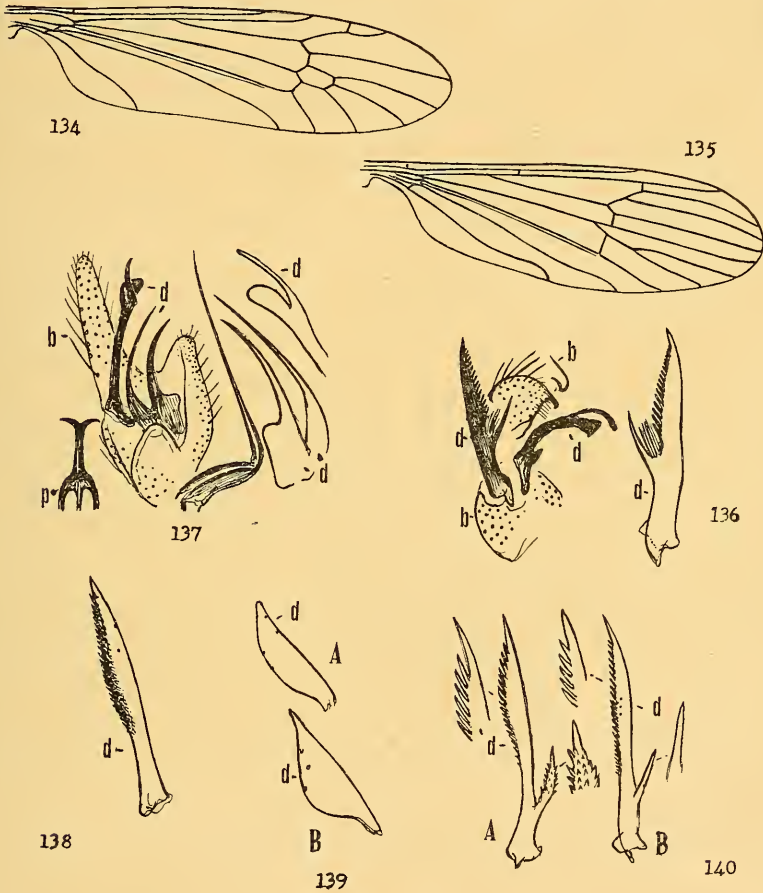


Fig. 134 *Rhabdomastix* (*Rhabdomastix*) *perglabrata* sp. n.; venation.

Fig. 135 *Erioptera* (*Erioptera*) *multiannulata* Alexander; venation.

Fig. 136 *Molophilus* (*Molophilus*) *axillispinus* sp. n.; male hypopygium.

Fig. 137 *Molophilus* (*Molophilus*) *dizygus* sp. n.; male hypopygium.

Fig. 138 *Molophilus* (*Molophilus*) *carpishensis* Alexander; male hypopygium.

Fig. 139 *Molophilus* (*Molophilus*) *pala* Alexander; male hypopygium.

Fig. 140 A *Molophilus* (*Molophilus*) *sicarius sicarius* Alexander; male hypopygium.

Fig. 140 B *Molophilus* (*Molophilus*) *sicarius partitus* Alexander; male hypopygium.

(Symbols: aedeagus; b, basistyle; d, dististyle; p, phallosome)



**206. Cheilotrichia (Empeda) austronymphica Alexander**

*Erioptera (Empeda) austronymphica* Alexander; Ann. Mag. Nat. Hist., (11) 10: 241—242; 1943.

Type from Ayna, La Mar, Ayacucho, Peru, 2400 meters, taken in April 1941, by W o y t k o w s k i.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 4, 1953 (Martinez); km. 104, Chapare, 3150 meters, February 1959 (Martinez).

**207. Cheilotrichia (Empeda) boliviana Alexander**

*Erioptera (Empeda) boliviana* Alexander; Ann. Ent. Soc. Amer., 23: 739—740; 1930.

Bolivia: Santa Cruz, February 1929 (Steinbach, ex Schade); El Limbo, Chapare, Cochabamba, 2000 meters, November 8, 1953 (Martinez).

**208. Cheilotrichia (Empeda) percupida Alexander**

*Erioptera (Empeda) percupida* Alexander; Ann. Mag. Nat. Hist., (11) 8: 255—256; 1941.

Types from Huacapistana, Tarma, Junin, Peru, 3600—5400 feet, taken in February 1940 by W o y t k o w s k i.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 8, 1953 (Martinez); km. 104, Chapare, 3150 meters, February 1959 (Martinez).

**209. Erioptera (Symplecta) macroptera argentina Alexander**

*Erioptera (Symplecta) macroptera argentina* Alexander; Jour. N. Y. Ent. Soc., 52: 383; 1944.

Types from Catamarca and Jujuy, Argentina, taken by Vladimir Weiser.

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

**210. Erioptera (Erioptera) andina Alexander**

*Erioptera (Erioptera) andina* Alexander; Jour. N. Y. Ent. Soc., 21: 200—201, pl. 5, fig. 5 (venation), pl. 6, fig. 6 (♂ hypopygium); 1913.

Types from the Valle de las Papas, Cordillera Central, Colombia, taken March 1912, by John T. Lloyd.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 5, 1953 (Martinez).

**211. Erioptera (Erioptera) multiannulata Alexander**

*Erioptera (Erioptera) multiannulata* Alexander; Ann. Mag. Nat. Hist., (10) 20: 499—500; 1937.

Types from Nova Teutonia, Brazil, taken October 6, 1936 by Plaumann.

The wing venation is shown (fig. 135).

Bolivia: El Limbo, Chapare, Cochabamba, November 5, 1953, February 1959 (Martinez).

**212. Erioptera (Erioptera) urania Alexander**

*Erioptera (Erioptera) urania* Alexander; Ann. Mag. Nat. Hist., (11) 11: 614—615; 1944.

Described from Zamora, Santiago-Zamora, Ecuador, 1000 meters, collected in December 1941 by David Ladd.

Bolivia: El Limbo, Chapare, Cochabamba, November 5, 1953 (Martinez).

### 213. *Erioptera* (*Mesocyphona*) *caliptera* Say

*Erioptera caliptera* Say; Jour. Acad. Nat. Sci. Philadelphia 3: 17; 1823.

*Erioptera* (*Mesocyphona*) *caloptera* Alexander; Crane-flies of New York, 1: 908, pl. 35, fig. 77 (wing); 1919.

*Erioptera* (*Mesocyphona*) *caloptera* Alexander; Diptera of Connecticut, 1: 457, fig. 52, I (♂ hypopygium); 1942.

Widespread in the Nearctic and Neotropical Regions.

Bolivia: Locotal, Chapare, Cochabamba, 1200 meters, October 26, 1953 (Martinez); El Limbo, Chapare, 2000 meters, November 8, 1953 (Martinez).

### 214. *Erioptera* (*Mesocyphona*) *parva* Osten Sacken

*Erioptera parva* Osten Sacken; Proc. Acad. Nat. Sci. Philadelphia 1859: 227; 1859.

*Erioptera* (*Mesocyphona*) *parva* Alexander; Rev. de Entomologia, 18: 331; 1947.

Described from the eastern United States, widely distributed southward in the Neotropics.

Bolivia: Locotal, Chapare, Cochabamba, 1200 meters, October 25—26, 1953 (Martinez).

### 215. *Molophilus* (*Molophilus*) *axillispinus* sp. n.

Belongs to the *plagiatus* group; general coloration of thorax dark brown; antennae moderately long, segments with a dense white pubescence, verticils of the more proximal segments elongate; halteres pale yellow; legs brown; wings yellow, veins more intensely so; male hypopygium with basal dististyle a powerful blackened rod, the inner margin with a lateral spine and a series of about 18 appressed spines, in the axil of the major lateral spine with a group of about a dozen longer and more slender black spinoid setae.

Male. — Length about 5.5 mm.; wing 6.5 mm.; antenna about 1.8 mm.

Rostrum and palpi black. Antennae of male moderately long, dark brown; flagellar segments elongate, with a dense white pubescence; verticils of the more proximal segments very long, approximately twice the segments, on the outer articles much shorter, not longer than the segment. Head gray.

Pronotum brownish yellow, with very long erect setae, pretergites light yellow. Mesonotal praescutum dark brown, the narrow interspaces faintly darker, with long setae; humeral region very restrictedly yellowed; pseudosutural foveae darkened; remainder of mesonotum dark brown. Pleura dark plumbeous brown; dorsopleural membrane brownish yellow; pteropleurite with very long yellow setae. Halteres pale yellow. Legs with fore coxae dark brown, remaining coxae brownish yellow; trochanters obscure yellow; remainder of legs medium brown, femoral bases more yellowed. Wings yellow, veins more intensely so; trichia very pale brown. Venation:  $R_2$  lying beyond level of  $r-m$ ; petiole of cell  $M_3$  scarcely longer than the oblique sinuous  $m-cu$ ; vein 2nd A gently sinuous, ending about opposite the cephalic end of  $m-cu$ .

Abdomen, including hypopygium, brownish black. Male hypopygium (fig. 136) with the beak of basistyle, b, black, elongate, the apex slightly decurved. Outer dististyle, d, with arms unequal, the inner longer and more slender. Basal dististyle distinctive; a powerful blackened rod that narrows gradually to a short apical spine, on inner margin at near one-third the length with a powerful spine, the margin beyond this with about 18 appressed spines, those at either end of the series smaller; in axil of lateral spine with a further group of about a dozen longer more slender black spinoid setae.

Holotype, ♂, km. 104, Chapare, Cochabamba, 3150 meters, February 14, 1959 (Martinez).

The most similar regional species is *Molophilus (Molophilus) sicarius* Alexander and its subspecies *partitus* Alexander, both of Peru. I have illustrated the basal dististyle of the hypopygium of the holotype specimens of these, showing the differences from the present fly, *sicarius sicarius*, fig. 140 A, *sicarius partitus*, fig. 140 B. It should be noted that the serrations of the style are on the inner margin, as in the present fly but the basal lateral spine is on the outer face of style and closer to the base. In typical *sicarius*, this spine is conspicuously spinulose while in *partitus* it is glabrous or virtually so.

## 216 *Molophilus (Molophilus) carpishensis* Alexander

*Molophilus (Molophilus) carpishensis* Alexander; Rev. de Entomologia, 20: 615—616, fig. 40 (♂ hypopygium); 1949.

The type was from Carpish, Huanuco, Peru, taken in the dwarf fog forests in October 1946 by Woytkowski. The basal dististyle of the male hypopygium of the holotype is shown (fig. 138).

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (Martinez).

## 217. *Molophilus (Molophilus) dizzygus* sp. n.

Belongs to the *gracilis* group, *ruficollis* subgroup; size relatively large (wing of male over 6 mm.); mesonotal praescutum brownish yellow, the disk with three brown stripes, median one broad and conspicuous, pleura dark brown; halteres light yellow; legs brownish yellow; wings light yellow, with a brown cloud extending from stigma over the anterior cord; m—cu very oblique, subequal to the petiole of cell M<sub>3</sub>, vein 2nd A long; male hypopygium with basal dististyle produced into two slender spines; phallosome a slender rod that divides at tip into two divaricate spines; aedeagus exceedingly long and slender, filamentous.

Male. — Length about 5.6 mm.; wing 6.3 mm.; antenna about 1.5 mm.

Rostrum and palpi black. Antennae relatively long, as shown by the measurements; scape and pedicel light yellow, basal flagellar segment light brown, the outer ones dark brown; flagellar segments long-oval, with a dense erect white pubescence and single unilaterally arranged verticils that exceed the segments. Head yellowish brown, with conspicuous setae, the posterior ones longer and paler.



Cervical region, pronotum and pretergites light yellow. Mesonotal praescutum with the restricted ground brownish yellow, disk with three brown stripes the median one broad and conspicuous, especially anteriorly, sublateral stripes faint, humeral region restrictedly yellow; interspaces with very long yellow setae; scutal lobes brown, central area and the scutellum brownish yellow; postnotum dark brown, paler anteriorly; scutum and scutellum with long yellow setae. Pleura dark brown; dorsopleural membrane brownish yellow. Halteres light yellow. Legs with coxae yellow, fore pair vaguely darker; trochanters yellow; remainder of legs brownish yellow, tarsi beyond the basitarsi black. Wings light yellow, somewhat more darkened beyond cord; a still darker cloud from stigma over the anterior cord; veins yellow, slightly darker in the patterned portions; macrotrichia pale brown. Venation:  $R_2$  some distance beyond level of  $r-m$ ; petiole of cell  $M_3$  subequal in length to the very oblique  $m-cu$ ; vein 2nd A very long, ending about opposite the fork of  $M_3+4$ .

Abdomen dark brown, hypopygium more brownish yellow. Male hypopygium (fig. 137) with the ventral lobe of basistyle,  $b$ , long and slender, the tip obtuse; mesal lobe narrowly truncate at tip, dorsal lobe smallest. Dististyles,  $d$ , lying close together in the notch of the basistyle; outer style elongate, at apex forking into two unequal arms, the slender outer one unusually long; basal style distinctive, consisting of two black spines from a common base, the outer spine slightly longer and more slender, inner spine from a dilated base. Phallosome,  $p$ , trifid at base or cephalic end, consisting of a slender sclerotized rod, the tip divided into two divaricate spines. Aedeagus dilated at base, geniculate, the long outer part unusually slender, soon narrowing into a hairlike penis filament.

**H o l o t y p e**, ♂, km. 104, Chapare, Cochabamba, 3150 meters, February 15, 1959 (M a r t i n e z).

*Molophilus (Molophilus) dizygus* is one of the most distinct species of the genus so far made known, especially in the structure of the male hypopygium, particularly the basal dististyle, phallosome and aedeagus. Other regional members of the *ruficollis* subgroup include *M. (M.) hyperarmatus* Alexander, *M. (M.) inarmatus* Alexander, *M. (M.) shannoninus* Alexander and others, all with the hypopygial structure entirely different from that of the present fly.

## 218. *Molophilus (Molophilus) othello* Alexander

*Molophilus (Molophilus) othello* Alexander; Ann. Mag. Nat. Hist., (11) 8: 257—259, fig 12 (♂ hypopygium); 1941.

Type from Carpapata, Junin, Peru, 2600 meters, taken in May 1940 by W o y t k o w s k i.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 4—8, 1953 (M a r t i n e z).

**219. *Molophilus (Molophilus) pala* Alexander**

*Molophilus (Molophilus) pala* Alexander; Ann. Mag. Nat. Hist., (11) 8: 261—262, fig. 15 (♂ hypopygium); 1941.

Type from Huasahuasi, Junin, Peru, 2800 meters, collected in April 1940 by W o y t k o w s k i. The basal dististyle of the male hypopygium of the holotype is illustrated (fig. 139 A). Some of the metatypical specimens here available have the style slightly broader and more extended at tip (fig. 139 B).

Bolivia: km. 104, Chapare, Cochabamba, 3150 meters, February 1959 (M a r t i n e z).

**220. *Molophilus (Molophilus) piger* Alexander**

*Molophilus (Molophilus) piger* Alexander; Ann. Mag. Nat. Hist., (11) 9: 446—447, fig. 14 (♂ hypopygium); 1942.

Type from Carpapata, Tarma, Junin, Peru, 2600 meters, taken in May 1940 by W o y t k o w s k i.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 7, 1953 (M a r t i n e z).

**221. *Molophilus (Molophilus) planitas* Alexander**

*Molophilus (Molophilus) planitas* Alexander; Jour. N. Y. Ent. Soc., 60: 249—250; 1952.

Bolivia: Cristal Mayu, Chapare, Cochabamba, 1200 meters, August 24, 1949 (P e ñ a).

**222. *Molophilus (Molophilus) sagittarius* Alexander**

*Molophilus sagittarius* Alexander; Ent. News, 25: 207, pl. 9, fig. 4 (♂ hypopygium); 1914.

Bolivia: Coroico (F a s s l); Cillutincara; type formerly in the Hungarian National Museum (destroyed).

**223. *Molophilus (Molophilus) sponsus* Alexander**

*Molophilus (Molophilus) sponsus* Alexander; Jour. N. Y. Ent. Soc., 62: 150—151; 1954.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March, November 1953 (M a r t i n e z).

**224. *Molophilus (Molophilus) tucumanus* Alexander**

*Molophilus tucumanus* Alexander; Jour. N. Y. Ent. Soc., 37: 97—98; 1929.

Type from the Parque Aconquija, Tucuman, Argentina, taken in February 1920 by J. Chester B r a d l e y.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, February 17—18, 1959 (M a r t i n e z).

**225. *Styringomyia simplex* Alexander**

*Styringomyia americana* Alexander, in error; Konowia, 12: 46; 1933.

*Styringomyia simplex* Alexander; Ann. Mag. Nat. Hist., (11) 12: 263—264, fig. 9 (♂ hypopygium); 1945.

The type of *simplex* was from Bartica, British Guiana, collected in January 1913 by P a r i s h; paratypes were from Peru.

Bolivia: El Cairo, August 1926 (Erwin Lindner); material in poor condition and was tentatively determined as being *Styringomyia americana* Alexander (reference above); Cristal Mayu, Chapare, Cochabamba, 1200 meters, August 20, 1949 (Peña).

**226. *Toxorhina* (*Ceratocheilus*) *revulsa* Alexander**

*Toxorhina* (*Ceratocheilus*) *revulsa* Alexander; Jour. N. Y. Ent. Soc., 62: 151—152; 1954.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, March 1953 (Martinez).

**227. *Toxorhina* (*Toxorhina*) *pergracilis* Alexander**

*Toxorhina pergracilis* Alexander; Ann. Mag. Nat. Hist., (11) 11: 181—182, fig. 13 (♂ hypopygium).

The types were from La Mar, Ayacucho, Peru, 2400 meters, taken in April 1941 by Woytkowski.

Bolivia: El Limbo, Chapare, Cochabamba, 2000 meters, November 5, 1953 (Martinez); Cristal Mayu, Chapare, 1200 meters, September 24, 1949 (Peña).

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