

**Notes on the Tropical American Species of the Genus *Tipula*  
Linnaeus (Tipulidae, Diptera). Part III.**

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(With 7 figures)

In the first part under this general title (Rev. de Entomologia, 16: pp. 330-356; 1945) I prepared an account of the subgenus *Microtipula* Alexander, indicating that in a future report the subgenus *Eumicrotipula* Alexander would be treated in similar manner. Accordingly I am presenting herewith a discussion of this subgenus, the largest and most characteristic group of Tipulidae in Tropical America.

*Eumicrotipula* Alexander

*Eumicrotipula* Alexander; Bull. Mus. Hist. Nat., Paris 1922: 74-75; 1922; (type: *macrotrichiata* Alexander 1922).

As indicated in the earlier report above cited, the present subgenus was based upon a very small Tipuline fly having abundant macrotrichia in the outer cells of the wing. Since the original definition, a large number of species have been discovered and our conception of the subgeneric limits has been modified so as to include not only the small species that center about the typical form but also the more numerous species belonging to the so-called *glaphyoptera* and *monilifera* groups,

containing flies of medium or large size and, in most cases, entirely without macrotrichia in the wing cells.

The wing pattern in the subgenus shows a most unusual range, from a relatively few forms that have the wings unicolorous and quite unpatterned to the very abundant members of the *glaphyoptera* and *monilifera* groups that show a very characteristic and diversified pattern of light and dark color. A few other species show a more striped wing pattern but this condition does not appear to have any special taxonomic significance in defining groups of species since approximately the same pattern may be found in at least three of the four groups herein included.

#### Subgeneric Characters

Nasus almost invariably present and elongate. Antennae varying from short to very long, the latter condition reaching its culmination in the *monilifera* group where virtually all of the species show, in the male sex, the remarkable bead-like antennae that has suggested the specific name of the typical form. Antennae usually with 13 segments, in one species (*virgulata*) with 16 segments. Claws usually simple. Wings with vein  $R_{1-2}$  usually present but lacking in many species in various groups, particularly the *macrotrichiata* and *glaphyoptera* groups; macrotrichia of cells present in several species of the *macrotrichiata* group, lacking in others; in other groups, macrotrichia of the cells are very uncommon. In a few species subapterous females are found, while in one high andean form (*phalangioides*) both sexes are virtually wingless. Male hypopygium showing a marked similarity in all the groups. Ninth tergite usually transverse, the caudal margin variously toothed and notched; proctiger inconspicuous. Basistyle complete, often produced into a conspicuous lobe, as is also the ninth sternite. Outer dististyle lacking in the *virgulata* group. Eighth sternite very commonly bearing a median lobe or appendage. Gonapophyses showing distinctive characters.

A few additional observations may be given. The antennae are strongly verticillate except in *phalangioides* where these bristles are very reduced, almost as in the genus *Holorusia*. The genus *Pectinotipula* Alexander, with the antennae of the male very conspicuously branched, is apparently closely allied to the present group, despite the antennal characters, since the basic plan of the male hypopygium is very similar. The ovipositor of the female sex shows both the cerci and hypovalvae elongate and strongly sclerotized.

#### Geographical Distribution of Eumicrotipula.

The geographical range in the Americas of the various species in the subgenus as a whole is more extensive than in *Microtipula*, previously considered. One species, *chiricahuensis* Alexander, crosses the southern border of the United States in to southeastern Arizona. In the Antillean islands, another

the Dominican Republic, Hispaniola. The entire *virgulata* group is virtually restricted to Mexico. Elsewhere in tropical America, the members of the other three groups herein considered occur commonly but are more characteristic of the Andean and other mountain ranges, relatively few species being found at sea-level excepting at the extreme southern part of the range, where several species are found in Tierra del Fuego (Alexander, Arkiv för Zoologi, 13, no. 6: 1-32, pls. 2; 1920). In Chile, members of the *glaphyoptera* group are very numerous in species, to the exclusion of all other groups in the genus (Alexander, Diptera Patagonia and South Chile, Part 1 — Crane-flies, pp. 1-240, pls. 12, text-figs. 3; 1929). The latitudinal range of the groups may be summarized:

1. The *virgulata* group; Mexico, chiefly at high altitudes; one species in southeastern Arizona.
2. The *macrotrichiata* group; southern Mexico to northern Argentina.
3. The *glaphyoptera* group; Greater Antilles (Hispaniola); Mexico to Tierra del Fuego.
4. The *monilifera* group; central Mexico to northern Argentina.

As regards altitudinal distribution, this may be summarized as follows:

1. The *virgulata* group; chiefly mountainous; one species reaches an altitude of 4,100 meters near Mexico City.
2. The *macrotrichiata* group; none of the species reaches a very high altitude.
3. The *glaphyoptera* group; the highest altitudes attained are for *agrippina* and *rucana*, reaching 3100 meters and over in Ecuador and Peru, respectively. *Tipula phalangioides* reaches the maximum altitude of 4650 meters (15,112 feet) in Ecuador (see Ann. Mag. Nat. Hist., (11) 12: 17-18; 1945).
4. The *monilifera* group; several species reach high altitudes in the Andes, as follows:  
*auricomata*, 3000 meters, in Peru.  
*callisto* and *callithrix*, over 3000 meters, in Peru.  
*carizona*, 3200-3900 meters (paramo), in Peru.  
*chacopata*, 2800 meters, in Venezuela.  
*martin-browni*, 4000 meters, in Ecuador.  
*moniliformis*, 3800 meters, in Ecuador.  
*olssoniana*, 4080 meters (paramo), in Venezuela.  
*pilulifera*, 4150 meters, in Ecuador.

#### List of Species of *Eumicrotipula*.

The various species are listed in the four groups herein recognized. It should be understood that although the group distinctions seem to be clear-cut in the type species of each group, the extremes gradually merge into other groups, making their distinction and definition very difficult. As a consequence, these various groups are here maintained chiefly for convenience.

1. The *virgulata* group. A somewhat isolated group of species, best defined on the structure of the male hypopygium. This is generally the same in all species, consisting of a large pale-colored ninth tergite and a single dististyle, with the outer basal lobe very large and conspicuous. The median lobe on the eighth sternite is found in all species excepting *azteca*. Variation in structure of the antennae is noteworthy, especially the 16-segmented condition found in *virgulata*. The tendency of the first flagellar segment to become much elongated in comparison with all the others reaches its culmination in *longibasis*.

<i>azteca</i> Alexander.	Mexico
<i>longibasis</i> , sp. n.	Mexico
<i>moctezumae</i> Alexander	Mexico
<i>nimbinervis</i> Alexander	Mexico
<i>novaleonensis</i> Alexander	Mexico
<i>(oreomyzoides</i> Alexander, see <i>virgulata</i> )	
<i>reciproca</i> , sp. n.	Mexico
<i>tyranna</i> , sp. n.	Mexico
<i>virgulata</i> Williston ( <i>oreomyzoides</i> Alexander)	Mexico
<i>zeltale</i> Alexander	Mexico
<i>Tipula</i> ( <i>Eumicrotipula</i> ) <i>chiricahuensis</i> Alexander	occurs in southeastern Arizona.

2. The *macrotrichiata* group. Usually very small species that fall into two groups based on the presence or absence of macrotrichia in the outer wing cells.

A. Macrotrichia in outer cells of wing.

<i>atroscapa</i> Alexander	Brazil
<i>hostifica</i> Alexander	Brazil
<i>iguazuensis</i> Alexander	Argentina
<i>immerens</i> Alexander	Venezuela
<i>macrotrichiata</i> Alexander	Brazil
<i>perstudiosa</i> Alexander	Brazil
<i>petiolaris</i> Alexander	Ecuador

B. No macrotrichia in outer cells of wing.

<i>atrovelutina</i> Alexander	Paraguay
<i>costaricensis</i> Alexander	Costa Rica
<i>fatidica</i> Alexander	Ecuador
<i>legitima</i> Alexander	Paraguay
<i>nigriscapa</i> , sp. n.	Surinam
<i>obscuricincta</i> Alexander	Mexico
<i>tunguraguana</i> Alexander	Ecuador
<i>votiva</i> Alexander	Bolivia

3. The *glaphyoptera* group. A large and complex group of flies, distinguishable from the next (*monilifera*) only by the structure of the male antennae which are never elongate and moniliform.

<i>abortiva</i> Alexander	Peru
<i>absona</i> Alexander	Ecuador

<i>agrippina</i> Alexander	Ecuador
<i>andalgala</i> Alexander	nw Argentina
<i>andina</i> Bréthes	nw Argentina
<i>angolensis</i> Alexander	Chile
<i>antarctica</i> Alexander	Chile, Patagonia
<i>anthonympha</i> Alexander	Chile
<i>apterogyne</i> Philippi	Chile
<i>araucania</i> Alexander	Chile
<i>arecuna</i> Alexander	Venezuela (Roraima)
<i>atacama</i> Alexander	Bolivia
<i>australandina</i> Alexander	Patagonia
<i>bäckströmi</i> Alexander	Chile (Juan Fernandez)
<i>barretoi</i> Alexander	n Argentina
<i>bigotiana</i> Alexander	Chile, Patagonia
<i>brethesiana</i> Alexander	Chile, Patagonia
<i>brevicoma</i> Alexander	Chile
<i>browniana</i> Alexander	Panama
<i>bruchi</i> Alexander	n Argentina
<i>campa</i> Alexander	Peru
<i>chicana</i> Alexander	Ecuador
<i>chilensis</i> Alexander	Chile
<i>chilota</i> Alexander	Chile
<i>clarkiana</i> Alexander	Chile
<i>clavaria</i> Alexander	Peru
<i>consonata</i> Alexander	Ecuador
<i>conspicillata</i> Alexander	Peru
<i>coronaria</i> Alexander	Ecuador
<i>cristata</i> Alexander	Venezuela
<i>crossospila</i> Alexander	Chile
<i>curinão</i> Alexander	Peru
<i>darlingtoniana</i> Alexander	Dominican Republic
<i>delectata</i> Alexander	Ecuador
<i>dimorpha</i> Alexander	Chile
<i>duidae</i> Alexander	Venezuela
<i>duséni</i> Alexander	Chile
<i>efficax</i> Alexander	Ecuador
<i>enderleinana</i> Alexander	Chile
<i>exilis</i> Alexander	Peru
<i>fazi</i> Alexander	Chile
<i>flavidula</i> Alexander	Ecuador, Peru
<i>flavo-annulata</i> Jacobs	Patagonia
<i>fraudulenta</i> Alexander	Ecuador
<i>fuégiensis</i> Alexander	Patagonia
<i>glaphyoptera</i> Philippi	Chile
<i>guarani</i> Alexander	se Brazil
<i>hedymopa</i> Alexander	Ecuador
<i>huanca</i> Alexander	Peru
<i>hylonympha</i> Alexander	Chile
<i>inca</i> Alexander	Peru
<i>itaiayensis</i> Alexander	se Brazil
<i>jacobsiana</i> Alexander	Chile, Patagonia
<i>jaennickeana</i> Alexander	Chile
<i>javori</i> Alexander	Ecuador
<i>jubilans</i> Alexander	Ecuador
<i>juventa</i> Alexander	Ecuador
<i>lanigera</i> Alexander	Patagonia

<i>lanigera tau</i> Alexander	Chile
<i>laterosetosa</i> Alexander	Colombia
<i>latifolia</i> Alexander	Chile
<i>ligulata</i> Alexander	Chile
<i>magellanica</i> Alexander	Patagonia
<i>(magellanicola</i> Alexander, see <i>magellanica</i> )	
<i>microspilota</i> Alexander	Chile
<i>miranha</i> Alexander	Colombia
<i>mocoa</i> Alexander	Colombia
<i>mordax</i> Alexander	se Brazil
<i>nordenskjöldi</i> Alexander	Patagonia
<i>nothofagetorum</i> Alexander	Patagonia
<i>notoria</i> Alexander	Ecuador
<i>novatrix</i> Alexander	Peru
<i>nubifera</i> van der Wulp	n Argentina
<i>obirata</i> Alexander	Ecuador
<i>ona</i> Alexander	Patagonia
<i>oreonympha</i> Alexander	Patagonia
<i>osculata</i> Alexander	Ecuador
<i>pallidisignata</i> Alexander	Chile
<i>p. saluatoria</i> Alexander	Chile
<i>paranensis</i> Alexander	se Brazil
<i>parviloba</i> Alexander	Chile
<i>patagonica</i> Alexander	Patagonia
<i>perjovialis</i> Alexander	Peru
<i>phalangioides</i> Alexander	Ecuador
<i>philippiana</i> Alexander	Chile, Patagonia
<i>pictipennis</i> Walker	Patagonia
<i>pirioni</i> Alexander	Chile
<i>piro</i> Alexander	Peru
<i>profuga</i> Alexander	se Brazil
<i>reedi</i> Alexander	Chile
<i>resplendens</i> , sp. n.	Ecuador
<i>riveti</i> Edwards	Ecuador
<i>r. tolimensis</i> Alexander	Colombia
<i>rucana</i> , sp. n.	Peru
<i>rufirostris</i> Bigot	Tierra del Fuego
<i>runtunensis</i> Alexander	Ecuador
<i>scriptella</i> Alexander	Panama
<i>semivulpina</i> Alexander	Peru
<i>serrilobata</i> Alexander	Chile
<i>serval</i> Alexander	se Brazil
<i>spatulifera</i> Alexander	Chile
<i>steinbachi</i> , sp. n.	Bolivia
<i>subanilina</i> Philippi	Chile
<i>subligulata</i> Alexander	Chile
<i>tehuelche</i> Alexander	Patagonia
<i>tephronota</i> Alexander	Peru
<i>tersa</i> Alexander	Chile
<i>tersoides</i> Alexander	Chile
<i>thalia</i> Alexander	Ecuador
<i>triemarginata</i> Alexander	Chile
<i>tristillata</i> Alexander	Chile
<i>unistriata</i> Alexander	Brazil
<i>valdiviana</i> Philippi	Chile

*varineura* Bigot  
*wittei* Alexander

Tierra del Fuego  
 Patagonia

4. The *monilifera* group. In its typical form, readily distinguished by the beautiful moniliform antennae of the male sex. In some species the antennae are much shorter than in the typical form, while in still others the abruptly knotlike swellings at the base of each flagellar segment are more oval and thus tend to approach the condition found in the *glaphyroptera* group of species.

<i>accipitrina</i> , sp. n.	Ecuador
<i>armillata</i> Alexander	Colombia
<i>auricomata</i> Alexander	Peru
<i>balloui</i> Alexander	Costa Rica
<i>bogotana</i> Alexander	Colombia
<i>callisto</i> Alexander	Peru
<i>callithrix</i> Alexander	Peru
<i>carizona</i> Alexander	Colombia, Ecuador, Peru
<i>chacopata</i> Alexander	Venezuela
? <i>chanca</i> Alexander	Peru
<i>emerita</i> Alexander	Ecuador
<i>graphica</i> Schiner	South America
<i>immorsa</i> Alexander	Peru
<i>inaequidens</i> , sp. n.	Ecuador
<i>infinita</i> Alexander	Venezuela
<i>innubens</i> Alexander	Peru
<i>ligulipenicillata</i> Alexander	Mexico
<i>macintyreana</i> Alexander	Ecuador
<i>martin-browni</i> , sp. n.	Ecuador
<i>mediodentata</i> Alexander	Peru
<i>mitua</i> Alexander	Colombia
<i>monilifera</i> Loew	se Brazil, Argentina
<i>(moniliferoides</i> Alexander, see <i>monilifera</i> )	
<i>moniliformis</i> Röder	Colombia
<i>morphea</i> , sp. n.	Ecuador
<i>neivai</i> Alexander	Venezuela
<i>olssoniana</i> Alexander	Venezuela
<i>orizabensis</i> Alexander	Mexico
<i>ornaticornis</i> van der Wulp	Colombia
<i>palenca</i> Alexander	Venezuela
<i>pantherina</i> Alexander	Venezuela
<i>pilulifera</i> Edwards	Ecuador
<i>procericornis</i> Edwards	Ecuador
<i>quichua</i> Alexander	Peru
<i>(sphaerulifera</i> Edwards, see <i>carizona</i> )	
<i>stenoglossa</i> Alexander	Peru
<i>s. propitia</i>	Peru
<i>subcana</i> Edwards	Ecuador
<i>tovarensis</i> Alexander	Venezuela
<i>trispilota</i> Alexander	Peru
<i>woytkowskiana</i> Alexander	Peru
<i>yanamonteana</i> Alexander	Peru
<i>zotzil</i> Alexander	Mexico

## Species Incertae Sedis

<i>associans</i> Walker	Mexico
<i>edwardsi</i> Bellardi	Mexico
<i>filigera</i> Walker	South America; genus incertae sedis
<i>gracilipes</i> Walker	Brazil
<i>marmoripennis</i> Rondani	Venezuela
<i>quadrinaculata</i> Bellardi	Mexico
<i>seticornis</i> Macquart	South America; genus incertae sedis
<i>spilota</i> Wiedemann	Brazil
<i>trimaculata</i> Macquart	South America (Chile?)
<i>trina</i> Wiedemann	Brazil; genus incertae sedis

New species of *Eumicrotipula**Tipula* (*Eumicrotipula*) *longibasis*, sp. n.

Belongs to the *virgulata* group; general coloration of mesonotal praescutum and scutum blackened, the ground color more yellowish gray pruinose; antennae short, first flagellar segment of unusual length, approximately equal to the succeeding four segments combined; fore femora black, only the bases narrowly yellow; wings with a strong and almost uniform brownish yellow tinge, not or scarcely patterned; abdominal tergites and sternites conspicuously striped medially with black; male hypopygium with the lateral tergal lobes obtusely rounded; dististyle with the outer basal lobe expanded on its outer half; lobe of eighth sternite about three times as long as wide, the setae a little more than one-half the length of the lobe.

Male. — Length, about 13 mm.; wing, 16 mm.; antenna, about 3 mm.

Frontal prolongation of head yellow; nasus long and conspicuous; palpi with basal segment obscure yellow, the outer ones black. Antennae 13-segmented; basal three segments yellow; the succeeding two somewhat more obscure yellow; following segments very weakly bicolored, brownish yellow with slightly darker bases; outer segments more uniformly dark brown; first flagellar segment very long, cylindrical, nearly twice the combined scape and pedicel and approximately as long as the succeeding four flagellar segments combined; flagellar segments beyond the first short, with poorly defined basal swellings; longest verticils nearly as long as the segments. Head brownish black, with a grayish yellow pollen, especially on front and orbits, the center of vertex only thinly pollinose.

Pronotum light brown, sparsely pollinose; scutellum and pretergites more yellowed. Mesonotal praescutum with the



ground yellowish gray pruinose, with three subnitidous black stripes that are faintly obscured by the pruinosity; scutum yellowish gray, each lobe with two confluent brownish black areas; scutellum and postnotum yellow, grayish yellow pollinose. Pleura chiefly yellow, with a light gray pruinosity; dorsopleural membrane yellow, the posterior portions more infuscated. Halteres elongate, stem yellow, knob brownish black. Legs long and slender; coxae and trochanters yellow; fore femora black, the bases narrowly yellow; tibiae dark brown, passing into black; tarsi black; middle femora with about the proximal half yellow, outer portion black; hind femora yellow with only the narrow tips black; tibiae and tarsi of middle and hind legs colored about as on fore pair; claws small, simple. Wings with a strong and almost uniform brownish yellow tinge, the prearcular field and cell *Sc* clearer yellow, cell *C* weakly infuscated; stigma concolorous with the ground; narrow and inconspicuous oblitative streaks before stigma and across cell *1st M*<sub>2</sub>; veins brown, more brownish yellow in the brightened fields. Venation: *Rs* about one-half longer than *m-cu*; *R*<sub>1-2</sub> with distal half atrophied, the basal portion pale and semiatrophied; cell *1st M*<sub>2</sub> relatively small, pentagonal; *m* subequal to or a little longer than the petiole of cell *M*<sub>1</sub>; *m-cu* close to fork of *M*<sub>3-4</sub>.

Abdominal tergites yellow, with a conspicuous median black stripe that is interrupted by the gray posterior borders of the segments; lateral tergal borders brownish gray; sternites beyond the yellow first segment chiefly black, the more proximal ones slightly variegated with obscure yellow; subterminal segments more extensively blackened; hypopygium yellow. Male hypopygium with the lateral tergal lobes obtusely rounded, the median notch narrow. Dististyle with the outer basal lobe expanded on distal half, the width across the blade about twice the diameter across the stem. Gonapophyses small and inconspicuous, the tips broad. Lobe of eighth sternite relatively long and conspicuous, its length about three times the width, provided with relatively sparse coarse setae over the entire surface, the longest of these setae a little more than one-half the length of the lobe.

Habitat: Mexico.

Holotype, ♂, Lagunas de Zempole, Morelos, altitude 2,800 meters, in open pine forest, swept from grass and *Alnus* bushes between boulders on rocky hills, September 2, 1937 (A. M. Dampf); Dampf M. F. 6189.

The present fly is very different from the other described species of the group in the structure of the antennae, and less evidently, in the coloration of the body, legs and wings, and in the details of structure of the male hypopygium.

*Tipula (Eumicrotipula) reciproca*, sp. n.

Belongs to the *virgulata* group; antennae relatively short, 13-segmented, the outer flagellar segments uniformly blackened; mesonotal praescutum with three gray stripes that are conspicuously bordered by dark brown; legs black, the femoral bases restrictedly brightened; wings with a strong brownish yellow tinge, restrictedly patterned with brown, including a seam in cell *M* adjoining vein *Cu*; abdominal tergites yellow, with a continuous brown median stripe, the subterminal segments almost uniformly brownish gray.

Male. — Length, about 14-15 mm.; wing, 14.5-15 mm.; antenna, about 3 mm.

Frontal prolongation of head moderately long, gray above, somewhat more infuscated below; nasus distinct; palpi black. Antennae relatively short, 13-segmented, if bent backward scarcely reaching the wing root; scape and pedicel obscure yellow; first flagellar segment elongate, a little shorter than the succeeding three segments combined, yellow basally, passing into black; remaining flagellar segments black throughout; flagellar segments with the basal enlargements only weakly developed; verticils shorter than the segments. Head gray, the central portion of vertex restrictedly more infuscated.

Mesonotal praescutum brownish gray, with three clearer gray stripes that are broadly bordered by dark brown, almost covering the narrow lateral stripes; posterior sclerites of notum somewhat clearer gray, the scutal lobes weakly darkened. Pleura yellowish gray, the dorsopleural membrane more buffy. Halteres elongate, the stem obscure yellow, knob dark brown. Legs with the coxae yellowish gray; trochanters yellow; remainder of legs black, the femoral bases narrowly yellow; claws simple. Wings with a strong brownish yellow tinge, the basal and central portions somewhat clearer; posterior prearcular field and cell *Sc* clearer yellow; stigma small, pale brown, scarcely differentiated from the ground; a well-defined brown seam along vein *Cu*, most distinct on the outer half in cell *M*; cord and outer end of cell *1st M*<sub>2</sub> very narrowly and indistinctly seamed with brown; obliterative areas across cell *1st M*<sub>2</sub> restricted; veins brown, more

flavous in the brighter yellow fields. Venation:  $R_{1-2}$  faint but persistent; cell *1st M*<sub>2</sub> small, pentagonal.

Abdominal tergites yellow, with a broad continuous median brown stripe, the lateral borders of the basal two segments more narrowly darkened; on segments five to seven, inclusive, the segments are more uniformly dark brownish gray to form a broad subterminal ring that involves both the tergites and sternites; succeeding segments, including hypopygium, chiefly yellow; basal sternites yellow, restrictedly patterned with darker. Male hypopygium as in the group, the outer basal lobe of the inner dististyle long and conspicuous, virtually as long as the style itself.

Habitat: Mexico.

Holotype, ♂, Cerro Tancitaro, Michoacan, altitude 10,600 feet, July 17, 1941 (Hoogstraal, No. IV-28a). Paratopotypes, 1 ♂, altitude 10,500 feet, July 18, 1941 (Hoogstraal, No. IV-27); 1 ♂, altitude 11,500 feet, July 18, 1941 (Hoogstraal, No. IV-30).

The most similar species is *Tipula (Eumicrotipula) azteca* Alexander, from the high mountains near Mexico City. This differs from the present fly in the longer antennae and in the details of coloration of the thorax and wings.

*Tipula (Eumicrotipula) tyranna*, sp. n.

Belongs to the *virgulata* group; size large (wing approximately 20 mm.); mesonotal praescutum obscure orange yellow with four entire black stripes; antennae with basal three segments yellow, the remainder uniformly dark brown or virtually so; fore and middle femora darkened, the tips blackened, preceded by a yellow ring; posterior femora more extensively yellow; wings cream-yellow, extensively clouded and seamed with brown and brownish gray, including major areas in cell *M* and in the Anal field; male hypopygium with the lobe of the eighth sternite small, darkened, oval, less than twice as long as wide, provided with abundant long yellow setae, the longest subequal in length to the lobes.

Male. — Length, about 16-17 mm.; wing, 19.5-20 mm.; antenna, about 4-4.1 mm.

Female. — Length, about 22-23 mm.; wing, 18-20 mm.; antenna, about 3.1-3.2 mm.

Frontal prolongation of head reddish brown above, including the long nasus, more reddish on the ventral half; palpi brown,

the outer two segments a trifle darker. Antennae 13-segmented, of moderate length; basal three segments yellow, succeeding segments dark brown, the proximal two or three with the bases a trifle darker in color than the pedicels; flagellar segments moderately incised; longest verticils subequal in length to the segments. Head dark brownish gray, the front and posterior orbits more buffy, the central portion of vertex more or less distinctly darker.

Pronotum dark brown, sparsely pruinose. Mesonotal praescutum with the ground color obscure orange yellow, with four entire black stripes, the intermediate pair at cephalic border more or less expanded laterally, pointed behind and ending far before the suture; posterior sclerites of notum dark brown, more or less pruinose, especially the mediotergite which has a more or less distinct dark central line. Pleura dark brownish gray, in cases the pleurotergite vaguely brightened; dorsopleural membrane buffy yellow. Halteres with stem yellow, knob dark brown. Legs with coxae dark brown, more or less pruinose, the posterior pair more brownish yellow; trochanters yellow; fore and middle femora more or less infuscated on basal portion, the tips conspicuously blackened, preceded by a clear yellow subterminal ring; posterior femora less darkened basally; tibiae and tarsi brownish black to black. Wings with the ground color cream-yellow, very extensively clouded and seamed with dark brown and brownish gray; the darker brown areas include the stigma and a seam on distal section of vein *Cu*; large slightly paler brown areas elsewhere on surface, most extensive in outer radial cells, cell *M* and in the Anal field; wing margin in outer radial field narrowly and continuously brown; cells *C* and *Sc* more uniformly brownish yellow, unvariegated; dark area at origin of *Rs* very small; veins beyond cord in medial field very narrowly seamed with brown; veins brown, more reddish brown in the costal and prearcular fields. Venation:  $R_{1-2}$  pale but entire; *Rs* at least one-half longer than *m-cu*.

Abdominal tergites reddish yellow, narrowly trivittate with brownish black, the stripes encroaching on the ground color on the outer segments, forming a virtually continuous ring at tip of abdomen, the styli paler. Ovipositor with the cerci unusually long and slender, straight. Male hypopygium having the general structure of the group. Ninth tergite large, the caudal border bisinuate, there being a very broad and shallow notch, with a further narrower and deeper U-shaped median emargination;

lateral lobes truncate. Dististyle about as in other members of the group; outer basal lobe with abundant dense setae producing a cushion-like appearance. Eighth sternite with a small darkened oval median lobe that is less than twice as long as wide, provided with abundant long yellow setae, the longest subequal in length to the lobes.

Habitat: Mexico.

Holotype, ♂, Cerro Tancitaro, Michoacan, altitude 7,800 feet, July 3, 1941 (Hoogstraal, No. IV-23). Allotopotype, ♀, pinned with type. Paratopotypes, 1 ♂, altitude 6,000 feet, June 25, 1941 (Hoogstraal, No. IV-3); 1 ♀, altitude 7,700 feet, June 25, 1941 (Hoogstraal, No. IV-15); 1 ♀, altitude 7,800 feet, July 3, 1941 (Hoogstraal, No. IV-19).

Among the now rather numerous species of the *virgulata* group, the present fly is closest to *Tipula (Eumicrotipula) nimbinervis* Alexander, which has the body, leg and wing patterns distinct, and with the details of structure of the male hypopygium different, especially the ninth tergite and the eighth sternite.

*Tipula (Eumicrotipula) nigriscapa*, sp. n.

Belongs to the *macrotrichiata* group, allied to *costaricensis*; antennae with scape, pedicel and outer flagellar segments blackened, the first flagellar segment abruptly yellow; mesonotum fulvous yellow, conspicuously patterned with brownish black, on the praescutum including three areas at the cephalic and humeral borders; pleura conspicuously patterned with yellow and brownish black; femora with a conspicuous yellow subterminal ring; wings conspicuously patterned with brown on a yellow ground, including alternate dark and pale oblique bands in cells *R* and *M*.

**Female.** —Length, about 11 mm.; wing, 11 mm.; antenna, about 1.9 mm.

Frontal prolongation of head yellow, very weakly darkened above; nasus very short and blunt; palpi black. Antennae with the scape and pedicel black, the tip of the latter restrictedly obscure yellow; first flagellar segment yellow, the succeeding segments brownish black; flagellar segments nearly cylindrical; verticils short. Head buffy, unmarked; vertical tubercle low, slightly notched at summit.

Pronotum light yellow, the lateral ends brownish black. Mesonotal praescutum fulvous yellow, polished, the anterior and humeral portions with three polished brownish black areas that

are narrowly disconnected at the humeri; scutum and postnotum blackened, the scutellum testaceous-yellow. Pleura light yellow, variegated with brownish black on the propleura, anepisternum and meron; dorsopleural region light yellow, with a narrow blackened line on the pretergites, immediately beneath the lateral praescutal darkenings. Halteres with stem yellow, knob brownish black. Legs with all coxae brownish black, contrasting conspicuously with the light yellow trochanters; femora obscure yellow at base, becoming more infuscated outwardly, with a broad subterminal yellow ring that is about equal in width to the blackened apex; tibiae obscure brownish yellow, the tips narrowly darkened; tarsi yellow, the outer segments infuscated. Wings with a conspicuous pattern of medium and pale brown on a light yellow ground, the prearcular field and costal interspaces more saturated yellow; bands of anterior half of wing appearing as three slightly oblique dark areas that alternate with subequal yellow ones, not or scarcely interconnected in either of cells *R* or *M*; the major darkened area, including the stigma and cord, connected with the third band by a seam along vein *M*; beyond the cord, a major yellow poststigmal area extending from costa into cell *R*<sub>5</sub>; outer ends of the cells enclosing yellow spots; cubital and anal fields paler brown, more restrictedly patterned with yellow; cell *C* chiefly infuscated, the first pale interspace reaching the border; veins yellow, darker in the patterned areas. Venation: *R*<sub>1-2</sub> entirely atrophied; cell 1st *M*<sub>2</sub> relatively long, second section of *M*<sub>1-2</sub> more than twice the basal one; *m* and petiole of cell *M*<sub>1</sub> subequal.

First abdominal tergite light yellow; succeeding tergites conspicuously variegated with dark brown and yellow the former appearing as a major sublateral area, the base and apex of each segment with a narrow median line light yellow, producing a figure shaped more or less like an hourglass; sternites chiefly dark brown, with broad yellow posterior borders; sub-terminal segments more uniformly darkened.

Habitat: Surinam.

Holotype, ♀, Marowynne, near Gran Creek, June 29, 1939 (Geijskes); found resting on a tree-trunk.

*Tipula (Eumicrotipula) nigriscapa* is most nearly allied to *T. (E.) costaricensis* Alexander, differing conspicuously in the pattern of the body, antennae, legs and wings. In this latter species, the darkened areas in cells *R* and *M* are all broadly interconnected.

*Tipula (Eumicrotipula) resplendens*, sp. n.

Belongs to the *glaphyroptera* group; size large (wing, male, 20 mm. or more); mesonotal praescutum with the ground color yellowish gray, with four entire dark brown stripes additional to the broad darkened lateral borders; antennae (male) relatively long, flagellum beyond the basal segments blackened; femora with an inconspicuous subterminal ring before the nearly apical blackened one; wings with a handsome and highly contrasted pattern of yellow, brown and whitish; male hypopygium with the posterior margin of ninth tergite with a small rounded notch; eighth sternite without a lobe but with a concentration of strong setae.

Male. — Length, about 17-18 mm.; wing, 20-22 mm.; antenna, about 5.8-6 mm.

Frontal prolongation of head brown, sparsely pruinose; nasus elongate; palpi dark brown. Antennae (male) relatively long when compared with the generally similar species listed below; scape and pedicel fulvous yellow, succeeding segments weakly bicolored, the bases brownish black; the stems obscure yellow or brownish yellow, the outer segments uniformly blackened; flagellar segments moderately incised; longest verticils nearly equal in length to the segments. Head yellowish gray, the obtuse vertical tubercle with a delicate brown median vitta; sides of posterior vertex similarly darkened.

Pronotum obscure yellow, with three brown areas. Mesonotal praescutum with the restricted ground yellowish gray, with four entire dark brown stripes, additional to the broadly infuscated lateral borders; intermediate stripes narrow, converging behind; scutum brown, each lobe with two confluent dark brown areas, the median portion with a blackened spot immediately behind the suture, the posterior portion grayish pruinose; scutellum light gray pruinose, contrasting conspicuously with the dark brown parascutella; mediotergite with a large dark brown triangular area, its point in front, the broad basal triangles reddish, pruinose; pleurotergite chiefly pale brown, the katepleurotergite yellow sericeous on dorsal edge, more infuscated on the ventral portion. Pleura reddish brown sparsely pruinose, restrictedly variegated with still darker; dorsopleural membrane chiefly darkened; lateral portions of the cervical sclerites and the propleura extensively dark brown. Halteres with stem weakly infuscated, restrictedly brightened at base, knob paling to obscure

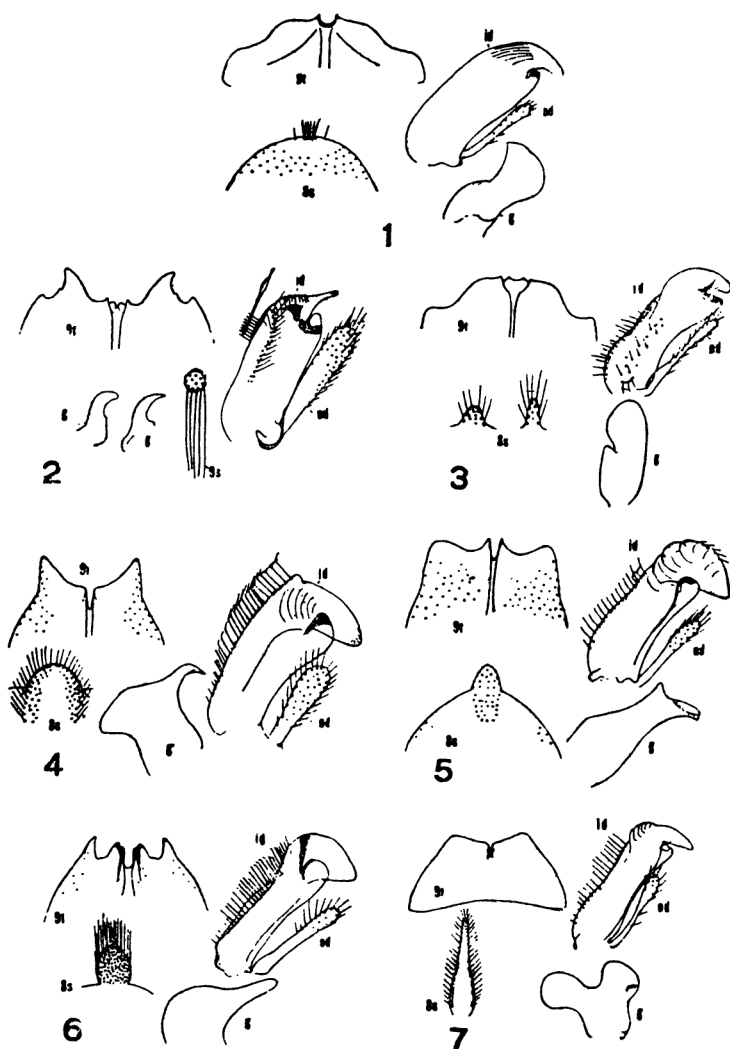


Fig. 1. *Tipula (Eumicrotipula) resplendens*, sp. n.; male hypopygium. — Fig. 2. *Tipula (Eumicrotipula) rucana*, sp. n.; male hypopygium. — Fig. 3. *Tipula (Eumicrotipula) steinbachi*, sp. n.; male hypopygium. — Fig. 4. *Tipula (Eumicrotipula) accipitrina*, sp. n.; male hypopygium. — Fig. 5. *Tipula (Eumicrotipula) inaequidens*, sp. n.; male hypopygium. — Fig. 6. *Tipula (Eumicrotipula) martin-browni*, sp. n.; male hypopygium. — Fig. 7. *Tipula (Eumicrotipula) morpheia*, sp. n.; male hypopygium. — (Symbols: g, gonapophysis; ld, inner dististyle; od, outer dististyle; s, sternite; t, tergite).

yellow. Legs with the coxae reddish brown, sparsely pruinose; trochanters obscure yellow; fore and middle femora chiefly brownish black, the bases and a narrow subterminal ring obscure yellow; posterior femora less darkened, the extreme tips of all femora slightly pale; tibiae brownish yellow, the tips narrowly



blackened; tarsi passing into black; tibial spurs yellow with broadly blackened tips; claws simple. Wings with an unusually handsome and contrasted yellow and brown pattern, much broken, especially in the cells of the posterior two-thirds of wing where the yellow is isolated into spots and streaks; cell *C* a little more brownish yellow than cell *Sc*; four brown spots in cell *Sc*; a conspicuous more whitened obliterative area across the base of cell *1st M*<sub>2</sub> and in the adjoining cells, in cell *1st A* the pattern becoming even more irregular and zigzag; veins brown in the clouded portions, yellow in the flavous areas. Venation: *Rs* more than twice *m-cu*; *R*<sub>1-2</sub> entire; *m* and petiole of cell *M*<sub>1</sub> subequal; *m-cu* on *M*<sub>4</sub> beyond the base, the proximal section of the latter, in cases, unusually long and perpendicular.

Abdominal tergites obscure yellow, in cases, including the type, conspicuously patterned with dark brown, including the lateral margins of the basal portions, these areas connected with the broad posterior borders, the posterior lateral angles of the segments gray pruinose; on the subterminal segments, the amount of dark color is increased; basal sternites pale brown, sparsely pruinose, their posterior borders more darkened, on the fourth to seventh segments the bases more yellow, the posterior borders conspicuously darkened; hypopygium more chestnut-brown. In some cases, the basal tergites are somewhat less evidently patterned. Male hypopygium (Fig. 1) with the tergite, *9t*, transverse, narrowed posteriorly, the caudal and lateral borders sinuous, at apex with a small rounded median notch, the lateral subtending angles produced into small points; a paler dorsal furrow present. Appendages of basistyle and ninth sternite low and inconspicuous. Outer dististyle, *od*, a slender dusky club. Inner dististyle, *id*, with the beak blackened, long-produced, lower beak likewise blackened, obtuse at tip; setae of dorsal crest sparse and small; surface back from the beak longitudinally ridged. Gonapophyses, *g*, appearing as pale blades. Eighth sternite, *8s*, with the posterior border rounded, without an evident lobe but with a concentration of about a dozen long pale setae at this point; subbasal impressions reaching the pale membrane of the lateral margins.

Habitat: Ecuador.

Holotype, ♂, Minza Chica, Mount Tungurahua, altitude 3,500 meters, April 9, 1939 (F. Martin Brown). Paratopotypes, 2 ♂♂, April 7-9, 1939.

This large and showy species is most similar to forms such as *Tipula* (*Eumicrotipula*) *arecuna* Alexander, *T. (E.) duida* Alexander, *T. (E.) juvena* Alexander, and *T. (E.) laterosetosa* Alexander, differing from all in the coloration of the body and wings, and in the structure of the antennae and male hypopygium.

*Tipula* (*Eumicrotipula*) *rucana*, sp. n.

Belongs to the *glaphyroptera* group; general coloration of mesonotum gray, with four brown stripes, the intermediate pair separated by a darker line; antennal flagellum bicolored, more evidently so in female; femora yellow, with a subterminal brown ring; wings yellow, restrictedly patterned with brown; abdomen yellow, the tergites bordered laterally with dark brown; a narrow dark brown subterminal ring; male hypopygium with the tergite conspicuously notched and lobed; dorsal crest of inner dististyle with a row of more than thirty setae that are bulbous before their tips; gonapophyses appearing as slender curved horns; appendage of eighth sternite very small.

Male. — Length, about 15-16 mm.; wing, 17-18 mm.; antenna, about 4.2-4.3 mm.

Female. — Length, about 19-20 mm.; wing, 20-20.5 mm.; antenna, about 2.5 mm.

Frontal prolongation of head light yellow above, including the elongate nasus, the ventral half weakly infuscated; palpi with proximal two segments yellow, third segment brown, terminal segment black, its extreme tip paler. Antennae (male) moderately elongate; basal three segments yellow, succeeding two or three segments weakly bicolored, the small basal swellings dark brown, the stems a little brightened; remaining segments more nearly uniformly darkened; flagellar segments slightly incised, a little shorter than the longest verticils; in the female, antennae shorter, the flagellar segments beyond the second conspicuously bicolored, light yellow, the basal enlargement brownish black. Head above buffy yellow, the sides of the posterior vertex a trifle more darkened.

Pronotum testaceous yellow, weakly darkened medially. Mesonotal praescutum with the ground color gray, lighter gray on the humeral and lateral portions; four stripes, the intermediate pair separated only by a darker capillary vitta that becomes obsolete before the posterior end, the lateral stripes somewhat darker; in female, the praescutum more nearly trivittate, the central stripe nearly entire, the anterolateral portions paler;

posterior sclerites of notum yellow, pruinose, the scutal lobes each with two darker areas, the mediotergite with a reddish brown central vitta. Pleura and pleurotergite chiefly yellow, sparsely pruinose, in cases vaguely patterned with darker. Halteres elongate, yellow, the base of the knob a trifle darker. Legs with the coxae and trochanters yellow; femora yellow, in male with a narrow brown subterminal ring, in female this ring broader and more nearly terminal in position; tibiae and basitarsi yellow, the tips very narrowly infuscated; outer tarsal segments more darkened; claws of male toothed. Wings light yellow, the prearcular and costal fields more saturated bright yellow; a restricted but relatively conspicuous pale brown pattern, including small spots at arculus, midlength of vein *R*, over origin of *Rs*, on anterior cord and over the outer end of cell *1st M*<sub>2</sub>; a continuous darker and more conspicuous mark over *m-cu* and distal section of *Cu*<sub>1</sub>, sending a spur basad into the outer end of cell *M*; other very pale brown spots beyond the cord, especially in the radial field and as marginal spots, with weak central streaks in the outer medial cells; other more extensive and conspicuous, more or less zigzag areas in the cubital and anal cells and at near midlength of vein *Cu* in cell *M*, the latter sometimes quite lacking; obliterative areas before stigma and across cell *1st M*<sub>2</sub> more whitened, the latter relatively conspicuous; veins yellow, a trifle infuscated in the darkest areas. Squama with a small tuft of setae; veins with abundant trichia. Venation: *R*<sub>1-2</sub> entire; *Rs* approximately twice as long as *m-cu*; *m* subequal to or shorter than the petiole of cell *M*<sub>1</sub>.

Abdomen of male chiefly yellow, the lateral tergal borders conspicuously dark brown, narrowly broken at either end of segments; no evident middorsal stripe; caudal borders of segments narrowly more whitened; sternites yellow, on outer segments with vague indications of a midventral stripe; a narrow brown subterminal ring, involving segments eight and parts of seven and nine; in female, abdomen more uniformly yellow, the tergites virtually unpatterned. Abdominal sternites with unusually long pale setae, especially in male. Male hypopygium (Fig. 2) with the caudal margin of tergite, *9t*, conspicuously lobed and notched, about as shown, the sublateral pair of lobes large and conspicuous; a whitened dorsal furrow. Appendage of ninth sternite, *9s*, subglobular, the lower surface with a few strong yellow setae of unusual length. Outer dististyle, *od*, relatively broad. Inner dististyle, *id*, with the beak slender; dorsal crest

with a row of more than 30 modified setae, straight, bulbous near outer end thence produced directly outward into a hairlike point (one seta shown). Gonapophyses, *g*, appearing as small curved hornlike plates, more acute in the paratype than in the holotype (as shown). Eighth sternite with the appendage very small.

Habitat: Peru.

Holotype, ♂, Yanamonte, La Mar, Ayacucho, in fog forests, altitude 3,000-4,100 meters, September 27, 1941 (Woytkowski). Allotopotype, ♀, August 29, 1941. Paratopotypes, 1 ♂, 2 ♀♀, August 12, September 29, October 12, 1941 (Woytkowski).

The specific name is that of an aboriginal tribe inhabiting Ayacucho. The species is most similar to *Tipula* (*Eumicrotipula*) *delectata* Alexander, *T* (*E.*) *scriptella* Alexander, and *T* (*E.*) *unistriata* Alexander, differing in the coloration of the body and wings and in the structure of the male hypopygium where this is known, particularly the tergite, inner dististyles and gonapophyses.

*Tipula* (*Eumicrotipula*) *flavidula* Alexander

1940. *Tipula flavidula* Alexander; Ann. Mag. Nat. Hist., (11) 6: 205-207, fig. (male hypopygium).

Peru: Tulumayo Valley, Junin, October 9-16, November 3, 1940 (Woytkowski). Formerly only from Ecuador.

*Tipula* (*Eumicrotipula*) *steinbachi*, sp. n.

Belongs to the *glaphyroptera* group; mesonotal praescutum obscure yellowish gray, with three entire brown stripes, the median one split and margined with darker on about the cephalic third; antennae (male) moderately long, basal flagellar segments weakly bicolored; femora brownish black, with a very conspicuous yellow subterminal ring; wings with the ground brown, variegated with yellow and whitish subhyaline, the cells beyond cord more uniformly darkened than those of basal half of wing; male hypopygium with the caudal border of tergite with a bi-dentate median plate; inner dististyle with the setae or dorsal margin sparse and pale.

Male. — Length, about 14-15 mm.; wing, 15-17 mm.; antenna, about 5-6 mm.

Female. — Length, about 17-18 mm.; wing, 17-18 mm.; antenna, about 3 mm.

Frontal prolongation of head above brownish yellow, somewhat clearer yellow on sides and beneath; nasus elongate;

palpi obscure brownish yellow, the outer segments a trifle darker. Antennae with scape and pedicel light yellow, flagellum weakly bicolored, the basal enlargements black, the stems brown to dark brown, on the outer segments becoming more uniformly blackened; flagellar segments rather strongly incised; longest verticils unilaterally distributed, shorter than the segments. Head above with the ground yellow, more darkened on the entire vertical tubercle and sides of the posterior vertex; a narrow darker brown median vitta extending to the occiput.

Pronotum obscure brownish yellow, usually with three darker areas, the median one sometimes faint or obsolete, especially in the female. Mesonotum with the ground color obscure yellowish gray, the praescutum with three entire brownish stripes, the median one split on the cephalic third by a central black line, the lateral stripes similarly bordered; lateral margins of praescutum behind the pseudosutural foveae blackened, this also including the anterior pretergites; posterior sclerites of notum gray pruinose, patterned with brown, including the central areas of the scutum, scutellum and mediotergite, as well as two areas on each scutal lobe; pleurotergite and pleura chiefly obscure yellow, very vaguely marked with darker; dorsopleural membrane weakly darkened. Halteres with stem weakly infuscated, apex of knob paling to yellow. Legs with the coxae and trochanters yellow; femora obscure yellow basally, passing into brownish black and finally into black; a broad and conspicuous pale yellow subterminal ring that is nearly equal in extent to the black apical or nearly apical band, in cases the extreme femoral tip yellowed on the lower face; tibiae and tarsi brown; claws simple. Wings with the ground rather dark brown, restrictedly but conspicuously variegated with yellow and whitish subhyaline; cells beyond cord more nearly of the dark ground color, with a more or less distinct poststigmatal yellow band extending from costa to vein  $R_{4-5}$  or just beyond into cell  $R_5$ ; tiny marginal yellow spots in centers of cells  $R_5$  to 1st  $A$ , usually very reduced or lacking in  $R_3$ ,  $Cu$  and 2nd  $A$ , the remainder of the margin narrowly more darkened; basad of cord with a much more extensive yellow pattern, in cells  $C$ ,  $R$ ,  $M$  and bases of the anal cells much exceeding the dark color; in the remaining cells less extensive and arranged in a zigzag pattern; small brown areas at arculus, origin of  $R_s$  and basad of the latter, this sending a streak along the center of cell  $R$  to the cord; stigma dark brown; oblitative areas before stigma and especially across cell 1st  $M_2$

whitened; veins brown, in cases more yellowed in the ground areas. Venation:  $R_{1-2}$  entire.

Abdomen yellow, the lateral tergal borders conspicuously blackened to form a broad continuous stripe; small isolated brown median spots on tergite one and again on tergites four and five; basal sternites yellow, the outer segments uniformly blackened, including much of the hypopygium, the appendages of the latter yellow. Male hypopygium (Fig. 3) with the tergite, *9t*, narrowly transverse, the posterior margin about as shown, with broad lateral lobes, a dorsal furrow, and a flattened median plate that is weakly bidentate. Basistyle entire, darkened, strongly protuberant, the appendage relatively small. Appendage of ninth sternite tumid, conspicuous, its apical portion with long yellow setae. Outer dististyle, *od*, elongate, more expanded on outer third. Inner dististyle, *id*, with the beak pale, the lower beak broader and more blackened; a low blackened flange on face of beak near base; setae of outer margin of style yellow, relatively sparse, long and straight; on disk of basal half with fewer but stronger darkened setae. Gonapophyses, *g*, appearing as flattened yellow blades, the apex obtuse, as shown. Appendage of eighth sternite, *8s*, small, somewhat variable in shape, as shown, broader and more obtuse in the holotype.

Habitat: Bolivia.

Holotype, ♂, Santa Cruz, February 1929 (F. Steinbach). Allotopotype, ♀. Paratopotypes, 2 ♂♂; paratypes, 2 ♀♀, Chapare, Cochabamba, November 1934 (Steinbach).

This interesting crane fly is named for the collector, Mr. Francisco Steinbach. The species is most similar and related to *Tipula* (*Eumicrotipula*) *conspicillata* Alexander, which differs in various details of coloration of the body and wings and, especially, in the structure of the male hypopygium, particularly of the ninth tergite and gonapophyses.

*Tipula* (*Eumicrotipula*) *accipitrina*, sp. n.

Belongs to the *monilifera* group; antennae (male) elongate, approximately two-thirds the wing; flagellum beyond the basal two or three segments black; knobs of halteres brightened; wings with a contrasted pattern of dark brown, light brown and whitish subhyaline; abdominal tergites yellowish brown with blackened sublateral stripes; male hypopygium with the outer dististyle broadly expanded on outer portion; inner dististyle with a comb of angularly bent setae on the dorsal crest; gonapophyses with mesal angle produced into a slender arm

that terminates in an acute decurved point; appendage of eighth sternite unusually short but broad.

Male. — Length, about 14 mm.; wing, 15.5 mm.; antenna, about 10.5 mm.

Frontal prolongation of head brownish yellow; nasus elongate; palpi black. Antennae (male) elongate, approximately two-thirds the wing; scape and pedicel light yellow, first flagellar segment light brown, succeeding two or three segments brown, their basal swellings black; outer segments uniformly blackened; basal swellings abruptly subspherical; verticils shorter than the segments which are also provided with very long pale setae, the longest exceeding one-half the length of the longest verticils. Head buffy brown, with a capillary black median vitta on the vertex; sides of vertex adjoining the eyes weakly infuscated.

Pronotum buffy, restrictedly patterned with brown. Mesonotal praescutum buffy yellow with three stripes; median stripe only a little darker than the ground, narrowly bordered by brown and split by a delicate capillary dark central vitta; lateral stripes darker brown, entire; praescutal interspaces with a few conspicuous brown punctures; border of praescutum before the suture weakly darkened; scutum brownish gray, the lobes conspicuously patterned with darker brown; scutellum light brown, somewhat darker at base, parascutella dark brown; mediotergite brownish gray, the posterior border with a large darkened spot on either side. Pleura and pleurotergite buffy yellow, scarcely patterned with darker except for a weak infuscation on the posterior dorsopleural region. Halteres blackened, the base of stem and apex of knob obscure yellow. Legs with the coxae and trochanters yellow; remainder of legs broken. Wings conspicuously patterned with dark brown, light brown and whitish subhyaline, the areas zigzag and contrasted, as in typical *monilifera* and other species; a conspicuous post-stigmal whitening extending from *C* through cell 1st  $M_2$  into the bases of cells  $M_3$  and  $M_4$ ; small whitish spots in bases of cells  $M_1$  and 2nd  $M_2$  and near the apex of cell  $R_5$ ; cells  $R$  and  $M$  with the white and dark areas subequal in amount, the dark including major areas in cell  $R$  at base, at one-third the length, and at origin of  $R_s$ , and a comparable darkening in cell  $M$  adjoining vein  $Cu$  at near two-thirds the length; cell  $Cu_1$  darkened; cell  $Cu$  on proximal half with three dark spots that alternate with pale areas, the outer half of the cell pale brown;

bases of Anal cells pale; veins dark brown, paler brown in the pale areas and in the costal field. Venation:  $R_{1-2}$  pale but entire;  $m$  about twice as long as the petiole of cell  $M_1$ .

Abdominal tergites yellowish brown, more yellowed at the incisures, with a blackened sublateral stripe, the lateral tergal margins pale; basal sternites yellow, restrictedly patterned with darker; subterminal segments more uniformly dark brown; hypopygium yellow. Male hypopygium (Fig. 4) with the lateral angles of the tergite,  $9t$ , produced caudad into relatively slender blades, the setae more or less restricted to the outer portions; caudal border with a broad U-shaped emargination, with a further deep median notch, the adjoining angles not produced. Appendage of ninth sternite low and inconspicuous. Outer dististyle,  $od$ , expanded on outer portion. Inner dististyle,  $id$ , with the dorsal crest provided with a single row of powerful, angularly bent setae, the tips long-produced, the most basal setae small and simple, the outer ones progressively stronger. Gonapophyses,  $g$ , with the mesal angle produced into a slender arm, its tip an acute decurved spine. Eighth sternite,  $8s$ , with the appendage short and unusually broad, fully as wide at base as long, the setae marginal, the rows continued onto the surface of the sternite, on either side of a triangular whitened space.

Habitat: Ecuador.

Holotype, ♂, Baños, Tungurahua, altitude 2,200 meters, May 5, 1939 (Macintyre).

The present fly much resembles species such as *Tipula* (*Eumicrotipula*) *armillata* Alexander, *T. (E.) chacopata* Alexander, *T. (E.) monilifera* Loew, *T. (E.) palenca* Alexander, *T. (E.) pantherina* Alexander, and others, differing from all in the structure of the male hypopygium, especially the inner dististyle, gonapophyses and eighth sternite. The hypopygium is somewhat more similar to that of the otherwise quite different *T. (E.) immorsa* Alexander. Probably the most similar single species is *pantherina* which has a somewhat similar comb of bent setae on the inner dististyle but differs in all details of structure.

### *Tipula* (*Eumicrotipula*) *carizona* Alexander

1913. *Tipula carizona* Alexander; Journ. N. Y. Ent. Soc. 21: 208-209.

1914. *Tipula sphaerulifera* Edwards; Mem. Mus. Paris 1914: 156-158, figs. 15-17.

Peru: Rio Pativilca, Junin, altitude 3,200-3,900 meters, May 1940 (W Weyrauch). Dr. Weyrauch writes that this fly was so abundant on the paramo that one could scarcely take a step without one or more individuals flying away.

Ecuador: Mount Tungurahua, altitude 2,400 meters, April



5, 1939 (Macintyre); near Baños, 1,700 meters, May 12, 1939 (Macintyre).

The types were from the Valle de las Papas, Cordillera Central, Colombia, altitude about 10,000 feet, March 11-29, 1912 (J. T. Lloyd). The altitudinal range above indicated is somewhat surprising. There is no doubt of the synonymy of *sphaerulifera* with *carizona*. I have paratype males of Edwards's species which was described from material taken at high altitudes in various parts of Ecuador. Edwards has informed me (in litt.) that his paper was written in 1913, printed in 1914 but not actually published until 1920.

*Tipula (Eumicrotipula) inæquidens*, sp. n.

Belongs to the *monilifera* group; antennae (male) elongate, approximately two-thirds the wing; basal flagellar segments bicolored, basal swellings black, abrupt; praescutal stripes poorly differentiated; wings with a highly contrasted dark brown, paler brown and whitish subhyaline pattern; male hypopygium with the mesal angles of the tergal lobes conspicuously produced; inner dististyle with setae of dorsal crest relatively weak and scattered, only a few angularly bent; gonapophyses unequally lobed at apex, the longest arm truncate and with a low flange back from the tip; appendage of eighth sternite small.

Male. — Length, about 13-14 mm.; wing, 15-16 mm.; antenna, about 10-11.5 mm.

Frontal prolongation of head buffy yellow above, darker on ventral half; palpi black, the third segment a little paler. Antennae (male) elongate, as shown by the measurements; scape and pedicel pale yellow; first flagellar segment brownish yellow, succeeding four or five segments bicolored, the basal swellings black, the stems obscure brownish yellow, becoming gradually more darkened on the outer segments, the outermost almost uniformly blackened; flagellar segments with the basal swellings abrupt, verticils of moderate length, shorter than the segments; abundant pale setae on the segments, these approximately one-half as long as the verticils. Head buffy yellow, the anterior vertex with a capillary dark brown median vitta; a more or less distinct brownish cloud on either side of the posterior vertex behind the eyes.

Pronotum buffy, darkened laterally. Mesonotal praescutum buffy gray, the stripes scarcely differentiated from the ground,

the interspaces best indicated by conspicuous brown setigerous punctures; lateral praescutal borders more infuscated; posterior sclerites of notum chiefly buffy gray, each scutal lobe with two brown areas; a capillary brown central stripe on scutum, extended onto base of scutellum; a small brownish area on either side of scutellum near base; parascutella dark brown; mediotergite buffy gray, conspicuously dark brown on sides. Pleura and pleurotergite yellow, sparsely pruinose, not or scarcely patterned. Halteres with stem dusky, base of knob slightly more darkened, the apex vaguely brightened; base of stem restrictedly yellow. Legs with coxae yellow, sparsely pruinose; trochanters yellow; femora yellow, the tips brown to brownish black, appearing heavier on the fore legs; tibiae brownish yellow, the tips weakly darkened; tarsi light brown, passing into darker; claws (male) small, simple. Wings with the highly contrasted dark brown, paler brown and whitish subhyaline pattern found in *monilifera* and allies; poststigmal pale band broad and conspicuous, extending into the bases of cells  $M_3$  and  $M_4$ , thence extended distad over the bases of cells  $2nd\ M_2$  and  $M_1$  to the wing tip in outer end of cell  $R_5$ ; the dark brown and whitish pattern basad of cord, including cells  $R$ ,  $M$  and bases of  $Cu$  and the Anals, contrasted, more or less zigzag and the two colors subequal in area; outer portions of cells  $Cu$ ,  $1st\ A$  and  $2nd\ A$  more uniformly pale brown. Venation: Tip of  $R_{1-2}$  very pale but preserved.

Abdominal tergites yellow, restrictedly patterned with brown, including a much broken sublateral stripe, the spots being on the proximal portions of the segments; middorsal stripe much less evident on the basal segments, becoming more distinct on the outer tergites; basal sternites yellow. Male hypopygium (Fig. 5) with the mesal angles of the tergal lobes,  $9t$ , conspicuously produced, in cases to nearly opposite the level of the lateral lobes, in others somewhat less developed. Outer dististyle,  $od$ , moderately dilated at apex. Inner dististyle,  $id$ , with the setae of the dorsal crest relatively weak and scattered, not forming a comb, only a few of the outermost angularly bent. Gonapophyses,  $g$ , appearing as flattened plates, at apex unequally toothed, the outer angle short, the inner one produced into a slender arm, its tip truncate or subtruncate, the surface back from the apex with a low flange. Appendage of eighth sternite,  $8s$ , small, the entire surface provided with moderately long setae, these continued cephalad onto the sternite itself.

Habitat: Ecuador.

Holotype, ♂, Baños, Tungurahua, altitude 1,700 meters, May 12, 1939 (Macintyre). Paratopotypes, 2 ♂♂, altitude 2,200 meters, May 5, 1939 (Macintyre).

The male hypopygium of the present species is most similar to that of *Tipula* (*Eumicrotipula*) *orizabensis* Alexander, of Mexico, differing in details, including the glabrous tergal lobes and the distinct conformation of the tergite and inner dististyle. It is quite distinct from other generally similar regional species, as *T. (E.) armillata* Alexander and *T. (E.) chacopata* Alexander.

*Tipula* (*Eumicrotipula*) *martin-browni*, sp. n.

Belongs to the *monilifera* group; antennae (male) elongate, approximately two-thirds the wing; pubescence of flagellar segments dark-colored, unusually long and conspicuous; femora and tibiae reddish brown, the tips narrowly more darkened; wings brownish yellow, almost unpatterned except for the darker stigma; male hypopygium with the caudal border of the tergite four-lobed; appendage of eighth sternite broadly oval, the entire surface with long pale setae.

Male. — Length, about 14-16 mm.; wing, 18-19 mm.; antenna, about 12-13 mm.

Frontal prolongation of head obscure buffy yellow above, darker on sides and beneath; nasus conspicuous; palpi black, the incisures restrictedly pale. Antennae (male) elongate, approximately two-thirds as long as wing; basal three or four segments yellow, the succeeding ones almost uniformly brownish black; basal swellings of segments subglobular, abrupt; verticils long, the longest nearly equal in length to the stem of the segment; stems with long erect shorter setae, dark-colored and conspicuous. Head gray, the center of vertex with a conspicuous dark brown area; a smaller spot on either side of posterior vertex behind eyes.

Pronotum brownish gray, narrowly darkened medially. Mesonotal praescutum light gray, with four darker gray stripes that are poorly delimited, excepting the anterior half or more of the median capillary vitta that is more blackened; humeral region of praescutum somewhat infuscated; dark setigerous punctures of the interspaces sparse; posterior sclerites of notum clear light gray, more or less variegated with brownish gray, including two areas on each scutal lobe; a nearly continuous capillary vitta on the scutellum and mediotergite; parascutella obscure yellow. Pleura gray pruinose, variegated with darker

brownish gray; dorsopleural membrane conspicuously buffy yellow. Halteres with stem obscure yellow, knob infuscated. Legs with coxae brownish yellow, pruinose; trochanters yellow; femora and tibiae reddish brown, the tips narrowly more darkened; claws simple. Wings brownish yellow, almost unpatterned; stigma darker; very vague darkenings elsewhere on wing disk, the most conspicuous in cell *M* just beyond midlength of vein *Cu* and again closer to *m-cu*; obliterative area across cell *1st M*<sub>2</sub> relatively conspicuous; veins light brown to yellowish brown. Venation: *R*<sub>1-2</sub> entire.

Basal abdominal tergites with the ground obscure yellow, trivittate with dark brown, the median stripe broader and barely interrupted at the posterior borders of the segments; sublateral dark stripes narrow and sinuous on the more proximal segments, becoming heavier on the outer ones; segments five and beyond more uniformly darkened; hypopygium chiefly brownish yellow; exposed portions of the sternites chiefly infuscated. Male hypopygium (Fig. 6) with the caudal border of the tergite, *9t*, conspicuously notched and lobed; lateral lobe subtriangular, separated from the shorter and more sclerotized intermediate lobe by an irregular incision; median notch oval; setae pale and sparse. Appendages of both basistyle and ninth sternite small and inconspicuous. Inner dististyle, *id*, with the beak relatively broad, obtuse; dorsal fringe of setae long but pale, not forming a regular comb. Gonapophysis, *g*, with its outer portion produced into a long slender blade, the apex obtuse. Appendage of eighth sternite, *8s*, broadly oval, the length only a little greater than the extreme width, the entire surface covered with long pale setae, the longest only a little shorter than the appendage itself.

Habitat: Ecuador.

Holotype, ♂, Urbina, Chimborazo, altitude 3,650 meters, April 18, 1939 (F. Martin Brown). Paratopotypes, 6 ♂♂, altitude 3,620-3,650 meters; paratype, 1 ♂, south side of Chimborazo, altitude 4,000 meters, May 12, 1939 (F. Martin Brown).

I take unusual pleasure in dedicating this fine species to Professor F. Martin Brown, to whom I am indebted for many interesting Tipulidae from the Ecuadorean Andes. The only other species with which this fly might be confused is *Tipula (Eumicrotipula) morphea*, sp. n., which similarly has the wing pattern nearly obsolete. The two flies differ very conspicuously in the structure of the antennae and in virtually all details of the male hypopygia.

*Tipula (Eumicrotipula) morphea*, sp. n.

Belongs to the *monilifera* group; antennae (male) about one-half the length of the wing, flagellum black, the basal swellings of the segments abrupt; setae of segments pale and inconspicuous; femora obscure yellow, the tips very vaguely darkened; wings brownish yellow, virtually unpatterned; abdominal tergites yellow, trivittate with dark brown; male hypopygium with the caudal border of the ninth tergite with a deep and narrow median notch; appendage of eighth sternite long and narrow, fringed with long pale setae.

Male. — Length, about 14-15 mm.; wing, 17-19 mm.; antenna, about 8-9 mm.

Frontal prolongation of head buffy yellow above, slightly infuscated beneath; nasus elongate; palpi dark brown. Antennae (male) with scape and pedicel testaceous yellow, flagellum black; flagellar segments with the basal knots subglobular, abrupt; pubescence of the segments very pale and inconspicuous, of different lengths, the longest about one-half the length of the verticils. Head buffy yellow, with exceedingly faint indications of a middorsal brown vitta.

Pronotum buffy yellow, restrictedly patterned with brown. Mesonotum yellow, the praescutum with three stripes, the median one reddish yellow, scarcely differentiated from the ground, the lateral stripes and centers of the scutal lobes more grayish; setigerous punctures of the praescutal interspaces dark brown, conspicuous; median region of scutum and the scutellum pale brown, the postnotum more yellowed. Pleura and pleurotergite clear yellow, unpatterned. Halteres with the stem brown, its base narrowly yellow, knob slightly darker brown. Legs with the coxae and trochanters yellow; femora and tibiae obscure yellow, the tips of the former very vaguely darkened; tarsi passing into brownish black. Wings brownish yellow, the usual pattern virtually lacking; prearcular field and cell *Sc* a trifle darker than cell *C*; stigma and exceedingly vague clouds over the anterior cord, along vein *Cu*, three areas in cell *Cu*, and less evident markings in Anal field a trifle darker than the ground; obliterative areas restricted, the larger one across the proximal end of cell *1st M*<sub>2</sub>; no post-stigmal brightening; veins brownish yellow. Venation: *R*<sub>1-2</sub> faint but entirely preserved;

*m* and petiole of cell  $M_1$  subequal or the latter shorter; *m-cu* on  $M_4$  beyond base.

Abdominal tergites yellow, trivittate with dark brown, interrupted by the testaceous posterior borders of the segments, somewhat heavier on outer tergites; segments seven and eight more blackened, to form a narrow ring; sternites chiefly light yellow; hypopygium brownish yellow, the tergites more infuscated. Male hypopygium (Fig. 7) with the tergite, *9t*, transverse, narrowed posteriorly, the posterior border with a very deep and narrow median split that is subtended on either side by a low flange; lateral lobes yellow, unusually broad, both angles obtusely rounded and unproduced. Outer dististyle, *od*, at apex expanded into a weak spatula, with relatively few setae. Inner dististyle, *id*, narrow, the beak a long flattened blade; dorsal crest restricted in size, just back of the beak with about five or six ridges; outer setae long and pale but not forming a regular row, the tips of the longest setae bent and twisted. Gonapophysis, *g*, appearing as two large, flattened, obtuse blades. Appendage of eighth sternite, *8s*, long and narrow, margined laterally and sublaterally with long pale setae; greatest width near base, a little more than one-fourth the length.

Habitat: Ecuador.

Holotype, ♂, Mount Tungurahua, altitude 2,400 meters, April 5, 1939 (Macintyre). Paratopotype, 1 ♂, altitude 2,300 meters, March 18, 1939 (Macintyre).

This species and *Tipula* (*Eumicrotipula*) *martin-browni*, sp. n., are quite distinct from the other regional members of the group by the almost unpatterned wings. The two flies are readily distinguished from one another by the coloration, vestiture of the antennae, and by all details of structure of the male hypopygium.

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