

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

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(With 9 figures)

In the short series of papers here contemplated, I expect to discuss the vast and complex genus *Tipula* Linnaeus as it occurs in South and Middle America. When compared with the Oriental Region or with the north temperate and subarctic portions of the northern hemisphere, there is seen to be a marked reduction in the number of subgeneric groups occurring over this vast area. Thus, in all of South and Central America, south of Mexico, I am able to recognize only four valid subgeneric groups, two of which, *Bellardina* Edwards and *Neotipula* Alexander, have but few species while the other two, *Microtipula* Alexander and *Eumicrotipula* Alexander, are very numerous in forms and correspondingly complex in structure, the two together including virtually all species of the genus within this area.

In northern and central Mexico, together with the Greater Antilles, representatives of five further subgenera occur, these being:

Trichotipula Alexander (Mexico).
Yamatotipula Matsumura (Cuba, Jamaica).
Tipula Linnaeus (Mexico).
Oreomyza Pokorný (Mexico).
Lunatipula Edwards (Mexico).

As regards *Trichotipula*, *Oreomyza* and *Lunatipula*, as they occur in Mexico, these are merely southern extensions of an even greater concentration of species of these same groups in the southwestern United States, particularly in the Californian, Mohavian, Navahonian and Apachian biotic provinces (Dice, Lee R., *The Biotic Provinces of North America*, pp. 78, 1 map; 1943). All through the arid southwest of the United States, including also vast areas in Mexico, the isolated mountain ranges scattered over the desert places provide oases of coniferous forests and mountain streams that support a relatively abundant crane-fly fauna, in the genus *Tipula* being particularly rich in species of *Trichotipula* and *Lunatipula*.

In the present report I expect to consider briefly the subgenus *Microtipula*, to define the group, list the approximately 100 species that are now known and to describe a few new species. I have on hand many further undescribed forms in this unusually

interesting group of flies. In a still later report it is hoped to treat in a comparable manner the equally large and interesting subgenus *Eumicrotipula*.

Microtipula Alexander

Microtipula Alexander; Ann. Ent. Soc. America, 5: 360-361; 1912; (type: *amazonica* Alexander 1912).

Nephrotomodes Alexander; Anales Escuela Nacional Ciencias Biologicas, Mexico, (in press); (type: *smilodon* Alexander 1940).

In 1912 I erected the supposed new genus *Microtipula*, based on one of the smallest Tipuline crane-flies ever discovered, the tiny size being used in conjunction with certain venational peculiarities in order to define the group. In 1922 (Bull. Mus. Hist. Nat., Paris, 1922: 74-75; 1922), I proposed a second name, *Eumicrotipula* (type: *macrotrichiata* Alexander, of southeastern Brazil), placing this as a subgenus of *Microtipula*, here again using the very small physical size of the fly as a character, in conjunction with the presence of macrotrichia in the outer cells of the wing. As the Neotropical crane-fly fauna became better known and many species of *Tipula* became available for study, and, especially, when the structure of the male hypopygium became better known and appreciated, it was clear that two entirely distinct subgenera were involved, each having been founded on an unusually small species in a subgenus where the majority of the numerous species are known to be of medium or large physical size.

Before this realization came that *Microtipula* included such a surprising variety of forms, a further segregate was proposed under the subgeneric name *Nephrotomodes*, based upon the large and striking species that are allied to *smilodon*. The original description of this has been delayed in press and would have been withdrawn before publication except for the fact that the name had been mentioned in various other publications and it is felt best to permit the name to be published and so better explain the situation.

Despite the somewhat surprising range in size, venation, wing armature and trichiation, and structure of the male hypopygium, I feel certain that all of the species listed below actually pertain to a single subgeneric group. The male antennae are almost invariably elongate and because of this single character the various species that were described or discussed by earlier authors were almost invariably considered as belonging to other genera, including *Macromastix* Osten Sacken (by *Enderlein*),

Megistoœra Wiedemann (by Wiedemann), *Habromastix* Skuse (by Alexander), and *Nephrotoma* Meigen. — as *Pachyrrhina* Macquart (by Alexander and Osten Sacken).

As regards the geographical distribution, all known species are virtually restricted to the lands between the two Tropics, the most northerly species, as known, being from Guerrero and Michoacan, Mexico (Lat. about 19° North), the most southerly from Tucuman, Argentina (Lat. about 27° South). This is a latitudinal range of 46° or more than 3000 miles. The members of the subgenus are virtually restricted to the Tropical and Subtropical zones, with only a few species invading the Temperate zone in the Andes. The optimum altitudes for the group seem to lie between 500 and 1000 meters (1,615-3,250 feet). In the Andes the highest altitudes attained are in Peru (Huanuco, altitude 3000 meters, 9750 feet, — *languidula* and *myriatricha*) and in Argentina (Tucuman, altitude 2500 meters, 8125 feet, — *amoenicornis*). No species have as yet been discovered in the paramo zone of the Andes, their place being taken by a few scattered species of the subgenus *Eumicrotipula*. Over their great range in the Torrid Zone, no species have reached the Greater Antilles although two species are found in the southern Lesser Antilles (Grenada, St. Vincent) while several others are known from Trinidad. No member of the subgenus is known from the Chilean subregion.

The various species of *Microtipula* form natural groups and complexes, some of which are very isolated and striking, as, for example, *armatipennis* and allies; *effera*, *smilodon* and allies; *gutticellula* and allies; *myriatricha*; *laticostata* and allies, and several others. When finally known there is no question but that this will be found to be one of the largest groups of crane-flies in the entire World and certainly one of the most interesting.

Subgeneric characters

Nasus usually distinct, rarely lacking (*tecta*). Antennae of male long to very long, in most cases one-third the length of body, in other instances much longer, equal to or exceeding the body; antennae short in *schildeana* and a few others; scape unusually short; flagellar segments only slightly incised, the basal enlargements small; verticils much shorter than the segments. Vertical tubercle lacking. Vestiture of praescutum and scutum exceedingly sparse and reduced in size. Claws (male) toothed or simple. Wings with R_{1-2} preserved or atrophied; R_s short, subequal to or a little longer than $m-cu$; M_{3-4} short to very short; cell 2nd A of moderate width to very narrow. In rare cases (*armatipennis*), wings of male with a costal spur in the stigmal area. Cells of wings usually

glabrous, rarely (*languidula*, *myriatricha*) with macrotrichia in outer cells; squama usually naked, rarely provided with setae (*epione* and allies).

Male hypopygium with the tergite distinct from the sternite, of various forms, often with a median as well as lateral lobes; in other species the caudal border of tergite merely bilobed; still more rarely the tergite produced into an elongate compressed median blade (*mediocompressa*, *percompressa*). Proctiger unusually conspicuous, projecting from beneath the tergite, usually as long as the tergite or even longer; usually fleshy or feebly sclerotized, sometimes conspicuously hairy; in some species (*macrosterna* and allies; *smilodon*; *terribilis*) heavily blackened and toothed or spined at apex. Basistyle often with a blackened squamose lobe on mesal face (including the subgenotype, *amazonica*); in cases this entirely pale, frequently lacking. Dististyle unusually complex, the outer lobe or style often blackened and toothed or otherwise modified. Gonapophyses simple, usually appearing as small flattened blades that subtend the aedeagus. Penis commonly very to excessively long, filiform. Ninth sternite usually with a fleshy, simple to more or less deeply bilobed setiferous structure in its notch. Eighth sternite simple or bilobed; short to very long and strongly sheathing (*macrosterna* and allies, reaching its culmination in species such as *gladiator* and *zeteki*); in cases (*smilodon* and allies) bearing two or more conspicuous spines or fleshy lobes on the caudal border. Ovipositor with the valves usually fleshy, the outer faces of the cerci with short setae to the tips; in cases (*didactyla*), the cerci more elongate and sclerotized but stout.

List of Species.

<i>aequitorialis</i> Alexander	Amazonian Ecuador
<i>affabilis</i> Alexander	Southeastern Brazil
<i>amazonica</i> (Alexander)	Brazil (Pará)
<i>amoenicornis</i> Alexander	Argentina (Tucuman)
<i>appendens</i> (Enderlein)	Ecuador
<i>ariranhæ</i> , sp. n.	Southeastern Brazil, Paraguay
<i>armatipennis</i> Alexander	Brazil (Mato Grosso, Goyaz)
<i>a. napoensis</i> Alexander	Peru
<i>(auricularis</i> Alexander see <i>tecta</i> Alexander)	
<i>aymara</i> Alexander	Bolivia
<i>bilimeki</i> Alexander	Mexico
<i>blaseri</i> Alexander	Brazil (Minas Geraes)
<i>brasiliensis</i> (Wiedemann)	Brazil (near Rio?)
<i>cerogama</i> Alexander	Ecuador
<i>colombicola</i> Alexander	Colombia
<i>cienopyga</i> Alexander	Northern Panama
<i>aecens</i> Alexander	Peru
<i>decolorata</i> (Alexander)	Paraguay, southeastern Brazil
<i>detecta</i> Alexander	Venezuela
<i>diacanthos</i> Alexander	Peru
<i>didactyla</i> Alexander	Peru
<i>(effera</i> Alexander see <i>diacanthos</i> Alexander)	
<i>efferox</i> Alexander	Southeastern Brazil
<i>effeta</i> Alexander	Amazonian Peru
<i>effulta</i> Alexander	Ecuador
<i>epione</i> Alexander	Bolivia
<i>eurymera</i> Alexander	Southeastern Brazil
<i>e. goyazicola</i> Alexander	South-central Brazil
<i>e. paraguayicola</i> Alexander	Paraguay

<i>falcifer</i> Alexander	Ecuador
<i>feliciana</i> Alexander	Southeastern Brazil
<i>ferocia</i> Alexander	Southeastern Brazil
<i>fiebrigi</i> Alexander	Paraguay
<i>?flavopolita</i> Alexander	Southeastern Brazil
<i>gladiator</i> Alexander	Southeastern Brazil
<i>guata</i> Alexander	Southern Brazil
<i>guerreroensis</i> Alexander	Mexico
<i>gutticellula</i> Alexander	Southeastern Brazil
<i>heterodactyla</i> Alexander	Ecuador
<i>histrionica</i> , sp. n.	Costa Rica
<i>horribilis</i> , sp. n.	Bolivia (Santa Cruz)
<i>icasta</i> Alexander	Ecuador
<i>inaequilobata</i> Alexander	Ecuador
<i>inarmata</i> Alexander	Northern Argentina
<i>infida</i> Alexander	Ecuador
<i>(insolabilis</i> Alexander see <i>aequitorialis</i> Alexander)	
<i>intemperata</i> Alexander	Ecuador
<i>jivaronis</i> Alexander	Ecuador
<i>juquiella</i> Alexander	Southeastern Brazil
<i>klagesi</i> , sp. n.	Brazil (Pará)
<i>lagotis</i> Alexander	Southeastern Brazil
<i>languidula</i> Alexander	Peru
<i>laticostata</i> Alexander	Southeastern Brazil
<i>lenta</i> Alexander (see <i>neolenta</i> new name)	
<i>letal</i> Alexander	Southeastern Brazil
<i>lichyana</i> Alexander	Venezuela
<i>luctifica</i> Alexander	Ecuador
<i>luteilimbata</i> Alexander	Ecuador
<i>lyriformis</i> Alexander	Amazonian Peru
<i>macrosterna</i> (Alexander)	Guatemala, Honduras
<i>mediocompressa</i> Alexander	Ecuador, Peru
<i>mulfordi</i> Alexander	Bolivia (Beni)
<i>myriatricha</i> Alexander	Peru
<i>neolenta</i> , n. n.; for <i>lenta</i> Alexander, nec <i>Tipula lentus</i> (Moses Harris 1776)	
	Ecuador
<i>nicoya</i> Alexander	Costa Rica
<i>nigroabdominalis</i> (Alexander)	Southeastern Brazil
<i>nigrovariegata</i> Alexander	Ecuador
<i>ortoni</i> Alexander	Bolivia (Beni)
<i>pala</i> Alexander	Southeastern Brazil
<i>palaeogama</i> Alexander	Ecuador
<i>paloides</i> Alexander	Southeastern Brazil
<i>parishi</i> Alexander	Brazil (Pará)
<i>perangustula</i> Alexander	Colombia, Venezuela
<i>percompressa</i> Alexander	Ecuador
<i>perdelecta</i> Alexander	Peru
<i>perlaticosta</i> Alexander	Southeastern Brazil
<i>plaumannina</i> Alexander	Southeastern Brazil
<i>plumbeithorax</i> Alexander	Peru
<i>pritchardi</i> Alexander	Mexico
<i>p. glabristyla</i> Alexander	Mexico
<i>prolixisterna</i> Alexander	Ecuador
<i>quadricollis</i> , sp. n.	Bolivia (Santa Cruz)
<i>retrusa</i> Alexander	Venezuela

<i>schildeana</i> , sp. n.	Costa Rica
<i>schwarzmaieri</i> Alexander	South-central Brazil
<i>sex-cincta</i> Alexander	Southeastern Brazil
<i>smilodon</i> Alexander	Ecuador
<i>smithi</i> Alexander	Southern Brazil
<i>spinicauda</i> Alexander	Panama
<i>sternohirsuta</i> Alexander	Ecuador
<i>subarmata</i> Alexander	Paraguay
<i>subinfuscata</i> Williston	Lesser Antilles (St. Vincent)
<i>tabida</i> Enderlein	Peru
<i>tancitaro</i> Alexander	Mexico
<i>tecta</i> Alexander	Venezuela, Ecuador
<i>temperata</i> Alexander	Mexico
<i>tenuicula</i> Enderlein	Colombia
<i>tenuilobata</i> Alexander	Ecuador, Peru
<i>terribilis</i> Alexander	Ecuador
<i>tijucensis</i> Alexander	Southeastern Brazil
<i>trichoprocta</i> Alexander	Peru
<i>trihastata</i> , sp. n.	Peru
<i>trinidadensis</i> (Alexander)	Trinidad
<i>trinitatis</i> Alexander	Trinidad
<i>urophora</i> Alexander	Colombia, Ecuador
<i>volen's</i> Alexander	Peru
<i>zeteki</i> , sp. n.	Panama
<i>zonalis</i> Alexander	Venezuela

A few comments concerning certain of the above species are made. Concerning *neolenta* (*lenta*, preoccupied), I am indebted to Dr. Alan Stone for calling to my attention the name *Sylvicola lentus* Moses Harris 1776, which apparently refers to a British species of the genus *Tipula* and is earlier than my own name. The name *flavopolita* has been questioned as belonging to this subgenus. The species is still known only from the female sex and in this the ovipositor is different from the other species of *Microtipula* in which this sex is known, the cerci being long and slender and more as in the normal condition in the genus *Tipula*. The possibility is not excluded that the discovery of the male sex of *flavopolita* may show that it belongs to a different genus although it appears now to be correctly assigned. The species *Tipula paraguayensis* Alexander, which much resembles certain small species of *Microtipula*, is considered as being a somewhat aberrant species of *Macromastix*. The two Enderlein species, *tabida* and *tenuicula*, are known only from single female specimens and it is probable that they cannot be determined.

Description of new Species

Tipula (*Microtipula*) *trichoprocta*, sp. n.

General coloration of mesothorax uniformly yellow; antennal flagellum beyond basal segment black, the basal swellings small;

knobs of halteres infuscated; legs black, the femoral bases narrowly obscure yellow; wings with a weak brownish tinge, conspicuously patterned with brown, especially as a narrow costal border and as seams over the veins beyond the cord; male hypopygium with the tergite short, narrowed outwardly, the posterior border with a decurved median group of about thirty black spines, with lateral groups of more normal black setae; proctiger with its dorsal lobe bearing a dense brush of long delicate setae; outer dististyle subrectangular in outline, the margins blackened; eighth sternite with the outer lateral angle provided with a few unusually long setae.

Male. — Length, about 11 mm.; wing, 11.3 mm.; antenna, about 6 mm.

Frontal prolongation of head obscure yellow; nasus distinct; palpi with basal three segments brown; terminal segment elongate, with about the proximal third blackened, paling outwardly, the tip broadly orange. Antennae (male) elongate, approximately one-half the length of wing; scape, pedicel and base of first flagellar segment yellow, the outer portion of the last infuscated; remainder of flagellum black; segments elongate, moderately incised; basal swellings relatively small; verticils shorter than the segments, all of the long ones unilaterally distributed on upper faces of segments. Head fulvous yellow, paler on front; no vertical tubercle; anterior vertex moderately wide, about three times the diameter of scape.

Pronotum infuscated above, paling to yellow on sides. Mesonotum uniformly yellow, the surface subnitidous; praescutum with sparse setae, a few of these longer and more conspicuous. Pleura paler yellow. Halteres with stem obscure yellow, knob infuscated. Legs with coxae and trochanters pale yellow; femora blackened, the bases narrowly obscure yellow; remainder of legs black; claws (male) with conspicuous tooth. Wings with a very weak brownish tinge, restrictedly but conspicuously patterned with brown, including the prearcular field, costal border, stigma and wing-tip, especially in the outer radial field; costal darkening including cells *C* and *Sc* but not *R*; relatively broad and conspicuous brown seams at origin of *Rs*, along cord and over most of the veins beyond the latter, especially at base of *R*₄₋₅ and over the medial and cubital veins; remaining cells basad of cord virtually unpatterned except for very weak clouds at ends of both anal veins; veins brown, deepest in the patterned fields. Squama with a few setae. Venation: *Rs* relatively long, subangulated at base,

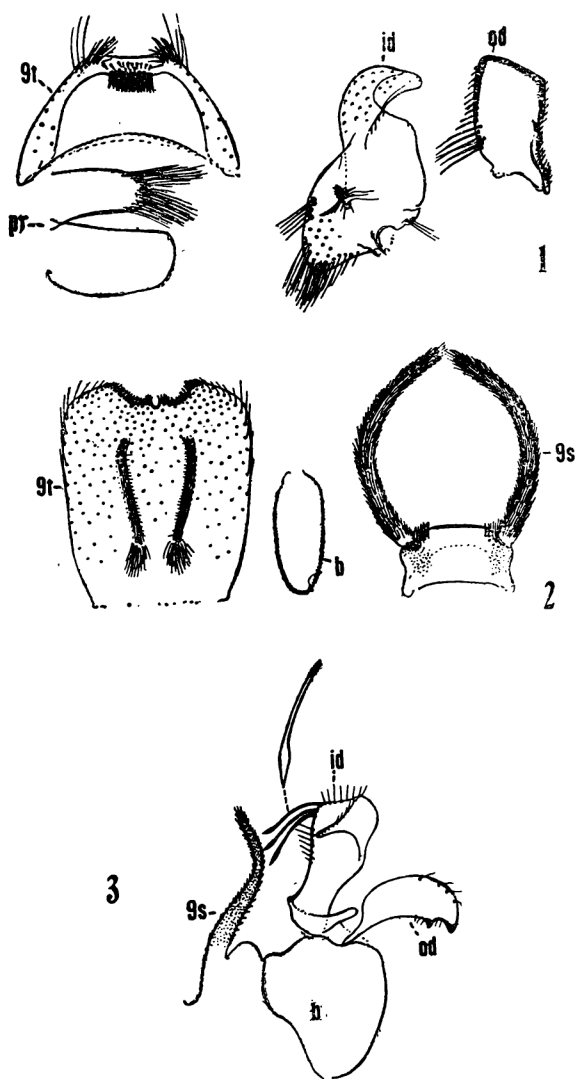


Fig. 1. *Tipula (Microtipula) trichoprocta*, sp. n.; male hypopygium. — Fig. 2. *Tipula (Microtipula) artranhae* sp. n.; male hypopygium. — Fig. 3. *Tipula (Microtipula) trihastata*, sp. n.; male hypopygium. — (Symbols: b, basistyle; id, inner dististyle; od, outer dististyle; pr, proctiger; s, sternite; t, tergite).

about one-half longer than *m-cu*; R_{1-2} present; *r-m* short, basal section of R_{4-5} correspondingly long; cell M_1 subequal to its petiole; cell *1st* M_2 narrowed outwardly, *m* being only about one-half the basal section of M_{1-2} ; cell *2nd* *A* relatively wide.

Abdomen obscure yellow, the tergites beyond the first somewhat more darkened; a conspicuous black subterminal ring, including segments six and seven, tergite eight, and more than

the basal half of sternite eight; hypopygium, including the remainder of the eighth sternite, yellow. Male hypopygium (Fig. 1) with the tergite, *9t*, unusually short and broad, transverse, narrowed outwardly, the median region with a dense group of more than thirty blackened spines, decurved or bent ventrad, with a few other setae back from the apex, the median ones of the latter very short and stout; on either side of these latter with a brush of longer black hairs, directed inward. Proctiger, *pr*, with both its dorsal and ventral portions unusually short, the former terminating in a brush of long delicate setae, these exceeding one-half the length of the lobe that bears them. Basistyle relatively short, without a blackened basal lobe. Outer dististyle, *od*, subrectangular in outline, the margin narrowly but heavily blackened; inner face near base with a group of unusually long strong bristles. Inner dististyle, *id*, short and compact, the head blackened, microscopically papillose, the rostral portion produced into a broad flattened beak; posterior lobe with a dense brush of long yellow setae at apex, with a small aggregation of five or six strong black bristles on outer crest before apex; face of style with a small black conical lobe or tooth, with a few strong setae. Appendage of ninth sternite partially destroyed and its outlines not clearly ascertainable. Gonapophyses long-oval, closely adnate with the base of aedeagus, leaving only about their outer fourth free. Eighth sternite broad, moderately sheathing; each outer angle with a group of about fifteen unusually long setae, the longest nearly two-thirds the entire length of the sternite opposite the point of their insertion; central portion of sternite with much smaller and more delicate setae.

Habitat: Peru (Junin).

Holotype, ♂, Tulumayo Valley, November 3, 1940 (Woytkowski).

The presence of elongate hairs on the proctiger of the male hypopygium is very unusual in the subgenus. The present fly differs from all other somewhat similar species in the light yellow color of the body, the patterned wings, and, especially, in details of structure of the male hypopygium, especially the ninth tergite, proctiger, both dististyles, and the eighth sternite. Among such described species it is closest to *Tipula* (*Microtipula*) *jivaronis* Alexander.

Tipula (*Microtipula*) *ariranhæ*, sp. n.

Size medium (wing, male, 12.5 mm.); general coloration of mesonotal praescutum reddish brown; antennae bicolored; male hypopygium with the caudal margin of the ninth tergite broadly

emarginate, fringed with conspicuous blackened setae; lobe of basistyle large, oval; appendage of ninth sternite appearing as two long conspicuous curved arms from a common basal plate.

Male. — Length, about 10.5-11 mm.; wing, 12-12.5 mm.; antenna, about 5.3-5.5 mm.

Female. — Length, about 12 mm.; wing, 12 mm.

Frontal prolongation of head obscure yellow, moderately long, approximately two-thirds the remainder of head; nasus distinct; palpi testaceous yellow. Antennae with basal three segments yellow, the succeeding segments bicolored, the small basal enlargement blackened, the outer portion obscure yellow; outer three or four segments more uniformly infuscated; flagellar segments only gently incised, the outer portion approximately as thick as the base; verticils shorter than the segments. Head light brown, slightly more pruinose on front; no vertical tubercle; anterior vertex relatively wide, nearly four times the diameter of scape.

Pronotum testaceous yellow. Mesonotum almost uniformly reddish brown, the praescutum with indications of a slightly darker median area that separates two ground stripes; scutellum and postnotum more testaceous brown; praescutum almost glabrous. Pleura yellow. Halteres with stem yellow, the knob infuscated. Legs with the coxae and trochanters light yellow; remainder of legs yellowish brown, the elongate outer tarsal segments blackened; claws (male) with a very powerful tooth. Wings brownish yellow, the prearcular and costal fields, together with the stigma and outer radial cells, more strongly infuscated, the costal darkening slightly involving cell *R*; very narrow to scarcely evident seams on cord and along outer medial veins; veins dark brown, more brownish yellow in the prearcular and costal fields. Venation: *Rs* longer than *m-cu*; *R*₁₋₂ distinct; *R*₂ long, about one-third *R*₁₋₂; cell 1st *M*₂ relatively long, its outer end a trifle narrowed; petiole of cell *M*₁ about one-half longer than *m*; cell 2nd *A* relatively wide.

First abdominal tergite yellow, succeeding segments infuscated, more blackened laterally; basal sternites yellow; a conspicuous black subterminal ring in male; hypopygium yellow. Male hypopygium (Fig. 2) with the ninth tergite, *9t*, long, the caudal margin broadly and gently emarginate, on either side of the midline produced into a small lobule bordering a tiny notch; entire emargination fringed with coarse blackened setae; lateral

tergal lobes broad; on ventral side of tergal plate with an elongate strip or thickening, the surface roughened, its cephalic portion more setiferous. Proctiger with the blades moderately long and very deep, smooth, the apices obliquely truncated. Basistyle with an unusually large oval blackened lobe, *b*, on mesal face near cephalic end. Outer dististyle relatively large, gently widened outwardly, the tip obliquely truncated, with long setae. Inner dististyle with a conspicuous hairy lobe on lower face near base; in addition to the usual beak with two more slender blackened blades before the apex. Appendage of ninth sternite, *9s*, distinct, appearing as a broad transverse central plate, from each outer lateral angle produced into a long slender hairy lobe, incurved and almost touching its mate of the opposite side. Eighth sternite moderately sheathing, the apex strongly convex, less so than in *pala* or *paloides*.

Habitat: Brazil (Santa Catharina); Paraguay.

Holotype, ♂, Nova Teutonia, Santa Catharina, Brazil, altitude 500 meters, October 1, 1936 (Plaumann). Allotype, ♀, Santa Barbara, Paraguay, November 12, 1924 (Schade). Paratype, 1 ♂, with the allotype, November 5, 1924. The specific name is derived from the stream Ariranha, a tributary of the Rio Uruguay, close to Plaumann's home at Nova Teutonia.

Tipula (Microtipula) ariranhae appears to be most closely allied to *T. (M.) pala* Alexander and *T. (M.) paloides* Alexander, differing especially in the structure of the male hypopygium, especially the tergite and the appendage of the ninth sternite, the latter being distinctive of the species.

Tipula (Microtipula) trihastata, sp. n.

Generally similar to *luctifica*; coloration of thorax light brown, the scutal lobes more grayish, the pleura and pleurotergite yellow; antennae (male) elongate, flagellum blackened; legs black, the femoral bases yellow; claws (male) toothed; wings grayish, the costal border narrowly blackened, the tip and seams over the cord and elsewhere paler brown; abdomen with basal segments yellow, intermediate tergites brownish yellow, with broad blackened lateral borders; subterminal segments black, to form a ring; male hypopygium with the appendage of the ninth sternite elongate, sinuous, on either side of the midline, each clothed with short setae, the two together appearing lyriform; inner dististyle at its outer apical angle bearing three long black spinous setae that are more or less spear-shaped at their tips.

Male. — Length, about 11 mm.; wing, 12 mm.; antenna, about 7 mm.

Frontal prolongation of head pale brownish yellow, more cinereous above; nasus distinct; palpi with basal two segments pale brown, the outer two segments pale yellow, a trifle infuscated in places, especially the tip of the elongate terminal segment. Antennae (male) elongate, exceeding one-half the length of the body; scape, pedicel and base of first flagellar segment obscure yellow, remainder of flagellum black; flagellar segments elongate-cylindrical, with small basal enlargements. Head light brown, the front and orbits light gray; no vertical tubercle.

Thorax above almost uniformly light brown or yellowish brown, the scutal lobes distinctly more grayish; praescutal setae small and inconspicuous, those of the posterior sclerites elongate, yellow. Pleura and pleurotergite more yellowed. Halteres with stem obscure yellow, knob blackened. Legs with coxae and trochanters yellow; femora black, their bases yellow, more narrowly so on the fore legs, broader on the posterior femora where about the basal third is included; tibiae and tarsi black; claws (male) toothed. Wings patterned, the ground grayish; prearcular field, cells *C* and *Sc*, and the stigma dark brown, this color barely involving cell *R*; wing tip, especially in the outer radial field, paler brown; comparable paler brown seams at origin of *Rs*, along anterior cord, outer end of cell 1st *M*₂ and over *m-cu*, the latter most distinct; veins brown. Venation: *Rs* about equal in length to *m-cu*; *R*₁₋₂ entire; cell 1st *M*₂ parallel-sided; *m* shorter than the petiole of cell *M*₁; cell 2nd *A* relatively broad.

Abdomen with the first and second segments light yellow, the succeeding four tergites more brownish yellow, with broad conspicuous blackened lateral borders; segments seven to nine, inclusive, black, with the dististyles and adjoining portions of the basistyles paler. Male hypopygium (Fig. 3) with the tergite relatively small, transverse, its posterior border emarginate, provided with blackened peglike spinous setae that extend to the lateral lobes; proctiger fleshy, feebly sclerotized, not blackened, the surface and margins with very abundant pale spinous points. Appendage of ninth sternite, *9s*, on either side of a narrow median notch produced into a sinuous yellow arm that is covered with abundant short setae, the two arms together appearing more or less lyriform. Basistyle without a blackened lobe on its mesal face. Outer dististyle, *od*, flattened, more or less reniform in

outline, its apex with two blackened teeth, the outer margin on about the distal third narrowly blackened and provided with four or five strong setae. Inner dististyle, *id*, larger, its beak slender, straight; outer apical portion of style with three modified blackened spinous setae, elongate, each slightly dilated and pointed at its apex to appear more or less spearlike.

Habitat: Peru (Junin).

Holotype, ♂, Tulumayo Valley, Tarma, altitude 4000-6000 feet, October 19, 1940 (Woytkowski).

The most similar described species include *Tipula* (*Microtipula*) *decens* Alexander and *T. (M.) luctifica* Alexander, which are generally similar in the coloration of the body and wings but differ very strikingly in the structure of the male hypopygium. The three curious modified setae of the inner dististyle are especially noteworthy and have suggested the specific name. Various other species of the subgenus have setae of various types and forms on this style but none as in the present fly.

Tipula (*Microtipula*) *mulfordi* Alexander 1945.

The type was from Cavinass, Beni, Bolivia, collected in January by Dr. William M. Mann, entomologist on the Mulford Biological Expedition of 1921-1922. The male hypopygium has not been figured hitherto and details of the tergite, *9t*; appendage of ninth sternite, *9s*; dististyles, *d*, and the eighth sternite, *8s*, are shown (Fig. 4).

Tipula (*Microtipula*) *zetecki*, sp. n.

Allied to *macrosterna*; general coloration yellow, heavily patterned with polished black, including three very broad areas on praescutum, the lateral pair reaching the margin of the sclerite and continued cephalad to fuse with the widely expanded cephalic end of the median stripe; antennal flagellum bicolored, the segments rather strongly incised; halteres yellow; wings grayish yellow, the prearcular and costal fields brighter yellow; a conspicuous dark brown stigma; male hypopygium with the eighth sternite unusually long projecting, narrowed outwardly, the distal end closed and upturned, more or less resembling a long narrow canoe.

Male. — Length, about 12 mm.; wing, 11.5 mm.; antenna, about 5.3 mm.

Frontal prolongation of head yellow, very deep at its base, joining the remainder of front without a notch; nasus distinct; palpi obscure yellow, terminal segment broken. Antennae (male)

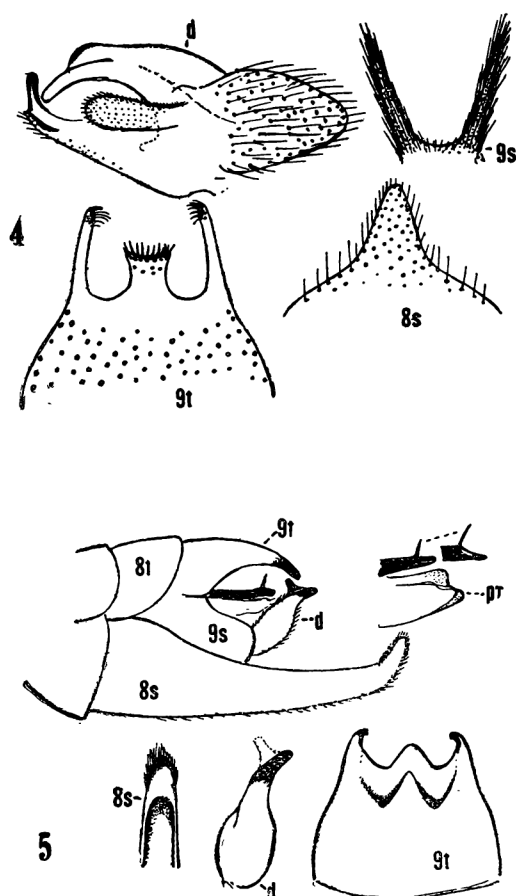


Fig. 4. *Tipula (Microtipula) mulfordi* Alexander; male hypopygium. — Fig. 5. *Tipula (Microtipula) zeteki*, sp. n.; male hypopygium. — (Symbols: *d*, dististyle; *pr*, proctiger; *s*, sternite; *t*, tergite).

moderately long, slightly less than half the length of wing; basal three segments yellow, succeeding segments bicolored, black, the apex of each conspicuously and abruptly light yellow, the pale color persisting to the end of the organ and remaining proportional to the dark color throughout; flagellar segments rather strongly incised, the outer portion of the stem approximately as thick as the basal enlargement; verticils shorter than the segments. Head shiny yellow, with an elongate brown median dark on the anterior vertex, this area narrowed behind; anterior vertex relatively narrow, somewhat less than three times the diameter of scape.

Pronotum pale yellow. Mesonotum with the ground pale yellow, heavily patterned with black, the surface polished to subnitidous; praescutum with the median stripe very widely

expanded at its cephalic end, narrowly inter-connected along the border with the lateral darkenings; median stripe narrowed behind and split medially by a more reddish line; lateral stripes bent laterad to the margin, connected with the anterior blackening, as described; scutal lobes conspicuously patterned with two confluent black areas; lateral border of pretergites before wingroot brownish black; scutellum yellow, parascutella dark brown; mediotergite with the broad central area yellow, the lateral borders, especially the cephalic portion, dark brown, more or less pruinose; pleurotergite yellow. Pleura yellow, restrictedly variegated with darker, including spots on the propleura; cephalic portions of the sternopleurite and anepisternum; most of the pteropleurite, more or less interrupted toward its ventral portion; surface of pleura with an extensive silvery white bloom. Halteres yellow. Legs with the coxae and trochanters yellow; remainder of legs broken. Wings grayish yellow, the prearcular field and costal border clear light yellow; cell Cu_1 more brownish yellow; stigma oval, rather dark brown; veins brown, yellow in the brightened fields. Squama naked; veins beyond cord unusually glabrous, there being a sparse series on R_{2-3} , basal third of R_3 and central section of R_{4-5} ; no trichia on Rs or the outer medial branches. Venation: Rs unusually straight, subequal to $m-cu$, both longer than R_{2-3} ; R_{1-2} preserved; cell 1st M_2 narrowed outwardly; m and petiole of cell M_1 subequal; cell 2nd A relatively wide.

Abdomen yellow, the lateral borders of the tergites narrowly but conspicuously brownish black, the color becoming paler and less evident at near midlength of abdomen; basal sternites clear light yellow; outer segments more fulvous yellow, without a blackened subterminal ring as is frequent in the subgenus; hypopygium fulvous, the tip of the lobe of the eighth sternite blackened. Male hypopygium (Fig. 5, drawn from the dried type) with the caudal margin of tergite, $9t$, trilobed, the lateral lobes more elongate, the long decurved tips narrowed, the inner margins and apices heavily blackened; median tergal lobe broad at base, its tip obtusely rounded, the broad apex more depressed and paler yellow than the triangular central portion. Proctiger, pr , with the dorsal arms appearing as a pair of slender blackened rods, before apex of each with an erect black spine; ventral blades of proctiger deep, pale and submembranous. Apex of basistyle subtruncate to broadly obtuse, bilobed and heavily

blackened at tip. Eighth sternite, 8s, unusually long and sheathing, projecting far beyond all elements of the hypopygium, narrowed outwardly, the closed dusky apex upcurved, a short distance back from tip becoming sheathing, the entire structure somewhat suggesting the end of a long narrow canoe.

Habitat: Panama (Canal Zone).

Holotype, ♂, Barro Colorado Island, June 14, 1939 (Zetek); United States National Museum.

I am very pleased to dedicate this fly to the collector, M. James Zetek, who has added most materially to our knowledge of the natural history of the Canal Zone. In its rather remarkable hypopygium, this fly differs conspicuously from all other approximately similar forms. The unusually long eighth sternite is exceeded by that of *Tipula (Microtipula) gladiator* Alexander, of southeastern Brazil. All other species have it less developed and with all details of structure of the male hypopygium distinct. It should be emphasized that the above description and figures of the male hypopygium were made from the unique dried type since it did not seem advisable to dissect and mount on a slide this unusually large and bulky structure.

Tipula (Microtipula) schildiana, sp. n.

Size medium (wing, male, 11.5 mm.); general coloration of thoracic notum almost uniformly fulvous, the pleura more fulvous yellow; basal flagellar segments bicolored; wings with a brownish tinge, the costal region darker brown; a narrow brown seam over the posterior end of *m-cu*; male hypopygium with the ninth tergite broad, the outer lateral angles produced into slender lobes, the median portion truncate, with a brush of black setae but not produced; both dististyles modified and twisted; appendage of ninth sternite an entire median lobe, broader across the basal half than across apex.

Male. — Length, about 11 mm.; wing, 11.5 mm.; antenna, about 5 mm.

Frontal prolongation of head fulvous yellow, about one-half the remainder of head; nasus apparently lacking or extremely reduced; palpi obscure brownish yellow. Antennae (male) moderately long, a little less than one-half the length of body; basal three segments yellow, succeeding six or seven segments bicolored, the basal enlargement and slightly beyond black, the remainder of stem yellow, the amount of the latter color decreasing on the outer segments, becoming obsolete near outer end of organ; segments moderately incised, their outer ends not quite as thick as the bases; longest verticils shorter than the segments,

unilaterally distributed, those of the lower face very small. Head light brown, more yellowed on front and orbits; no vertical tubercle.

Pronotum and mesonotum almost uniformly fulvous, without clearly defined stripes; vestiture much reduced; posterior sclerites of notum somewhat clearer yellow. Pleura fulvous yellow. Halteres with stem obscure yellow, knob weakly infuscated. Legs with the coxae and trochanters yellow; femora yellowish brown, clearer yellow basally; tibiae very slightly darker brown; tarsi passing into black. Wings with a brownish tinge, the prearcular field, costal border and stigma darker brown; wing tip rather strongly darkened; a narrow brown seam over posterior half of *m-cu*, not evident on the remainder of cord; a slightly brightened spot before and beyond stigma; oblitative areas much reduced; veins brown. Stigma without trichia; squama naked; on veins beyond cord, trichia present on R_{2-3} , basal two-thirds of R_3 , and distal section of R_{4-5} , more crowded on outer end; all outer medial branches, R_{1-2} and R_s glabrous. Venation: R_{1-2} entire; petiole of cell M_1 about one-half longer than *m*; cell 1st M_2 long; basal section of M_{1-2} and *m* subequal; cell 2nd *A* relatively wide.

Abdomen fulvous yellow; a narrow subterminal black ring involving segment seven and the base of segment eight; hypopygium fulvous. Male hypopygium (Fig. 6) with the ninth tergite, $9t$, relatively broad, transverse, its caudal margin broadly truncated; lateral angles produced caudad and slightly mesad into slender lobes that are tipped with several short black setae; median region of caudal border not produced but provided with a group of long black setae, some of which arise from punctures as far basad as one-third the length of the sclerite. Proctiger simple, relatively long, appearing more or less scoop-shaped, the surface near tip with exceedingly small setoid projections. Basistyle without a modified lobe on mesal face, closely fused with the ninth sternite, the latter broad, on either side of midline with a small tubercle that is tufted with from ten to twelve strong black setae; appendage of ninth sternite, $9s$, an entire depressed-flattened lobe, widest on basal half, thence very slightly narrower, its apex obtusely rounded, the surface with very dense setulae. Both dististyles, *d*, complex in structure, about as shown, each twisted and produced into one or more slender projections. Aedeagus, *a*, stout, split by pale membrane to appear bifid;

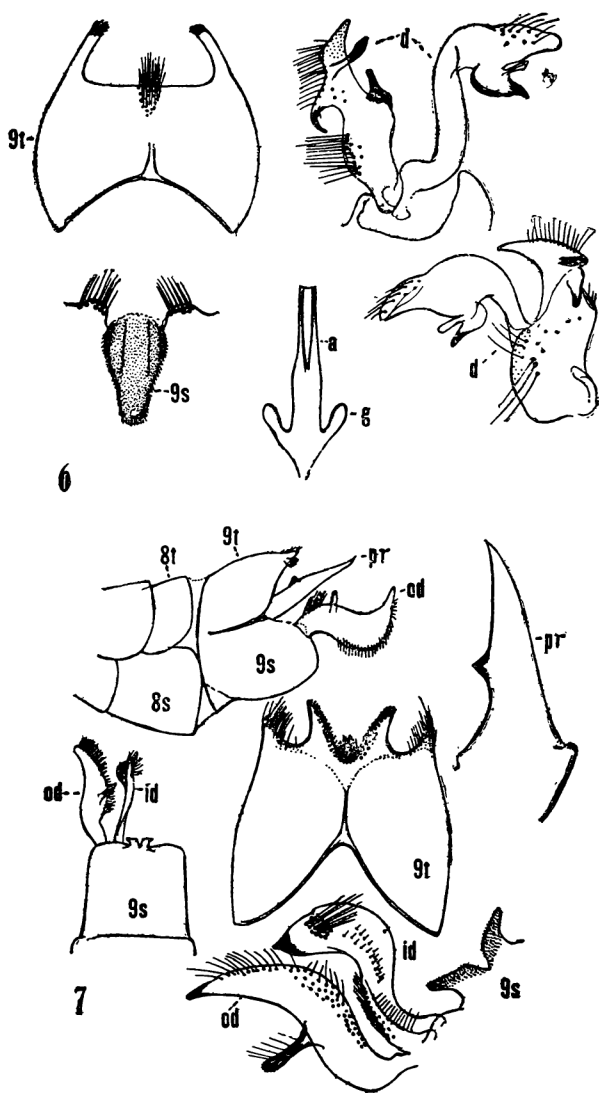


Fig. 6. *Tipula (Microtipula) schildeana*, sp. n.; male hypopygium. — Fig. 7. *Tipula (Microtipula) klagesi*, sp. n.; male hypopygium. — (Symbols: *a*, aedeagus; *d*, dististyle; *g*, gonapophysis; *id*, inner dististyle; *od*, outer dististyle; *pr*, proctiger; *s*, sternite; *t*, tergite).

gonapophyses, *g*, relatively small, ovoid, diverging rather strongly from the aedeagus. Eighth sternite moderately sheathing, relatively short, the caudal border entire, unmodified.

Habitat: Costa Rica.

Holotype, ♂, Higuito, San Mateo (Schild); United States National Museum.

I dedicate this interesting species to the collector, the late Pablo Schild, who added most materially to our knowledge of the insect fauna of Costa Rica. As is usual in this subgenus, the species is best defined on characters of the male hypopygium, including the tergite, both dististyles, the appendage of the ninth sternite, and the gonapophyses. It agrees most closely with species such as *Tipula (Microtipula) decens* Alexander *T. (M.) percomptaria* Alexander, and *T. (M.) sternohirsuta* Alexander, yet is very different from all.

Tipula (Microtipula) klagësi, sp. n.

Size above medium (wing, male, 14 mm.); antennae (male) exceeding one-half the length of the body or wing; head and much of thorax gray pruinose; wings with ground color of proximal half brownish gray, of outer half more whitened, the cephalic border heavily and very conspicuously patterned with dark brown; abdominal segments yellow, heavily patterned with brown, including median and lateral stripes on the tergites and broad basal rings on the sternites; male hypopygium with the tergite deeply emarginate behind, the posterior border with four lobes; proctiger appearing as two elongate compressed blades, each with a conical tubercle on its dorsal margin; both dististyles appearing as compressed blades, the outer one bearing a blackened rod at near midlength.

Male. — Length, about 13 mm.; wing, 14 mm.; antenna, about 8.3 mm.

Frontal prolongation of head relatively long, about one-half the remainder of head; brownish gray above, more fulvous brown on sides and beneath; nasus short and stout; palpi brown, the terminal segment paling to obscure brownish yellow outwardly. Antennae (male) relatively long, about three-fifths the length of wing; scape reddish brown, narrowly darkened on lower surface; pedicel and first flagellar segment yellow; remainder of flagellum black, the extreme bases of segments two and three obscure yellow, the remainder black; basal enlargements moderately developed, stems cylindrical, without apical dilations; longest verticils only about one-half the segments, the longest unilaterally distributed, those of the opposite side placed on the enlargement and very small. Head above brownish gray, front and orbits clearer gray; no vertical tubercle.

Pronotum brownish gray. Mesonotal praescutum with the restricted ground brownish gray, with four fulvous brown stripes; setae of interspaces pale, somewhat longer and more abundant

than usual; posterior sclerites of notum dark brown, gray pruinose, especially the postnotum which becomes clear gray on its posterior portion; pleurotergite with the anapleurotergite infuscated, the katapleurotergite fulvous, presumably gray pruinose in fresh specimens. Propleura infuscated; mesopleura extensively fulvous, virtually denuded in type but showing patches of pruinosity to indicate the probability that the entire pleura in fresh specimens is light gray pruinose over the fulvous ground; dorsopleural membrane yellow in front, more infuscated behind. Halteres dark brown, only the base of stem restrictedly brightened. Legs with the fore and middle coxae dark brown, the posterior pair more fulvous, all presumably heavily pruinose in fresh specimens; fore and middle trochanters dark brown, the posterior pair brighter; remainder of legs brown, the femoral bases narrowly yellow; outer segments more brownish black; claws (male) simple. Wings with the ground color of proximal half brownish gray, of the outer half from the level of the origin of *Rs* outwards more whitened; an unusually heavy and conspicuous dark brown pattern, involving the prearcular field; broad costal border, including cells *C*, *Sc* and all but the posterior portion of *R*; stigma, and all of outer radial field excepting a spot near the base of cell *R*₂; a broad brown seam over *m-cu*, widened behind, continued along the distal section of *Cu*₁ to the margin; veins *M*₁, *M*₂, *m* and part of *M*₃ seamed with brown. Macrotrichia on *R*₂₋₃, basal two-thirds of *R*₃, outer three-fifths of distal section of *R*₄₋₅; lacking on *Rs* and all branches of *M*. Venation: *Rs* relatively long, about one-fourth longer than *m-cu*, weakly angulated at origin; *R*₁₋₂ preserved; cell *M*₁ moderately deep, about one-half greater than its petiole; *m* about one-half longer than the basal section of *M*₁₋₂; cell 2nd *A* moderately wide.

Abdominal tergites obscure brownish yellow; basal tergite brown medially, second segment extensively brown on the basal ring and on lateral portions of the posterior half; succeeding tergites with median and lateral brown stripes, broken on the basal rings; sternites two to six yellow, with a conspicuous brown area across base; segments seven and eight chiefly blackened to form a subterminal ring, the posterior border of the seventh sternite broadly yellow; hypopygium yellow. Male hypopygium (Fig. 7) having the ninth tergite, *9t*, with its total length about equal to the greatest width, longest on the sides, at mid-width much shorter due to a deep V-shaped incision on cephalic border;

outer tergal margin with four lobes, the central pair a little longer, separated from one another by a deep U-shaped notch, their margins with blackened spinous setae, those at apex of lobes very short and densely crowded; lateral lobes slender, their margins with very long setae. Proctiger, *pr*, consisting of two elongate yellow blades jutting from the genital chamber; compressed, the dorsal margin of each at near midlength with a low triangular dark brown tubercle. Outer dististyle, *od*, a flattened blade, narrowed to the subacute blackened tip, the outer surface of blade with abundant long coarse setae; from lower face of blade at near midlength with a stout straight black rod, its apex microscopically spiculate. Inner dististyle, *id*, about two-thirds as long as the outer, appearing as a sinuous flattened blade, the stem narrow, the apex blackened, obtusely rounded; a group of about a score of long setae before apex, these directed backward. Ninth sternite, *9s*, apparently without a pendulous lobe, as is common in the subgenus; on either side of midline with a small slender lobe, the surface with microscopic setae, these lobes divergent. Eighth sternite, *8s*, relatively small, not sheathing, unarmed.

Habitat: Brazil (Pará).

Holotype, ♂, Benevides, October 1918 (Klages); Carnegie Museum Accession No. 6174.

This very distinct fly is named for the collector, Mr. S. M. Klages. There are now rather numerous species in *Microtipula* belonging to the so-called *parishi* subgroup, having heavily patterned wings and unusually widened cells beyond the cord, especially cell M_1 . The present species is one of the largest and handsomest of all such species. It is readily told from all related forms by the structure of the male hypopygium, including virtually every part of the same.

Tipula (Microtipula) histrionica, sp. n.

General coloration of thorax orange or yellow, unpatterned; frontal prolongation of head stout, sloping almost directly to the remainder of head, with scarcely any indication of a notch; wings very strongly patterned with dark brown on a creamy white ground; R_{1-2} atrophied; *m-cu* long and sinuous, at near midlength of M_{3-4} ; ovipositor with cerci fleshy, setiferous for their entire length.

Female. — Length, about 10 mm.; wing, 10.3 mm.

Frontal prolongation of head yellow, stout at base, sloping almost directly into the remainder of front, with but slight indication of the usual notch; nasus short and stout; palpi yellow. Antennae with scape and pedicel yellow; flagellum broken. Head above yellow; no vertical tubercle.

Pronotum and mesonotum uniformly orange yellow, without markings; praescutal vestiture very short and sparse, that of the more posterior sclerites pale but longer and more conspicuous, especially on the mediotergite. Pleura somewhat clearer yellow. Halteres with stem obscure yellow, knob infuscated. Legs with the coxae and trochanters yellow; femora and tibiae obscure yellow, their tips weakly darkened; tarsi brownish black. Wings very strongly patterned with dark brown on a creamy white ground, the dark and pale colors about equalling one another in degree; the dark pattern includes the prearcular and costal fields; stigma and a broad seam along cord; outer end of cell *1st M*₂; *Rs* and the outer portion of vein *M*; wing margin broadly darkened, being especially wide and conspicuous in the medial, cubital and anal fields; still darker brown clouds at outer end of cell *1st M*₂, fork of *M*₁₋₂, on distal half of *R*₄₋₅, along *m-cu*, and as a major area at near midlength of cell *M*; the pale ground includes the outer third of cell *R*; most of *R*₁ before stigma; bases of cells *R*₃, *R*₅, *1st M*₂, *M*₃ and *M*₄; large areas in cell *M* and the broad bases of the anal cells, including the basal half of cell *2nd A*; veins chiefly brown. Venation: *Rs* arcuated, shorter than the unusually long, sinuous *m-cu*, the latter at near midlength of *M*₃₋₄; *R*₁₋₂ atrophied; branches of *Rs* diverging outwardly, cell *R*₃ widest at wing margin; cell *2nd A* relatively wide.

Abdomen with the basal tergites yellow, the succeeding segments more or less discolored by eggs within the body, apparently obscure brownish yellow, the intermediate tergites blackened laterally; sternites apparently darkened at their bases, with yellow caudal borders, but this coloration likewise may result from discoloration; genital segment and ovipositor orange, the former blackened basally. Cerci fleshy, with setae over their entire extent, the tips obtuse; hypovalvae small and slender.

Habitat: Costa Rica.

Holotype, ♀, Higuito, San Mateo (Schild); United States National Museum.

Tipula (Microtipula) histrionica has the heaviest and most contrasted wing pattern of any member of the subgenus yet described. Superficially it most resembles species such as *T. (M.) intemperata* Alexander, *T. (M.) temperata* Alexander and others, yet is entirely distinct.

Tipula (Microtipula) horribilis, sp. n.

Belongs to the *macrosterna* group; antennae (male) approximately three-fourths the length of body; general coloration yellow or reddish yellow, the praescutum with four brownish black areas; wings yellowish brown, the prearcular and costal portions more saturated; male hypopygium very large and powerfully constructed, particularly the long, sheathing eighth sternite which is deeply divided beneath, each half bearing three unequal spinous projections, the longest one directed dorsad and caudad; proctiger with two nearly straight dorsal blades; dististyle small, its lower portion produced into a powerful arm that terminates in a spine.

Male. — Length, about 15 mm.; wing, 14 mm.; antenna, about 10.5 mm.

Frontal prolongation of head yellow; sparsely pruinose at base, relatively long being nearly equal to the remainder of head, broad at base and sloping directly to the vertex without a notch; nasus distinct; palpi yellow, the tip of the terminal segment narrowly darkened. Antennae (male) very long, approximately three-fourths as long as either the wing or body; basal three segments yellow; succeeding segments almost uniformly brownish black, restrictedly yellow at the incisures; basal swelling small but conspicuous, with long verticils that are shorter than the elongate apical stems; verticils not unilaterally distributed. Head yellow; no vertical tubercle; anterior vertex moderately wide, a little more than three times the diameter of scape.

Pronotum restrictedly darkened medially and on sides, the remainder yellow. Mesonotal praescutum reddish yellow, subnitidous, with four brownish black areas, including two triangular ones on the cephalic portion, these representing the outer anterior angles of the usual median vitta, and less intense lateral darkenings that represent the cephalic portions of the usual lateral stripes; praescutum virtually glabrous; posterior sclerites of notum restrictedly yellow. Pleura and pleurotergite yellow, more darkened on propleura and sternopleurite, as well as on the fore coxae

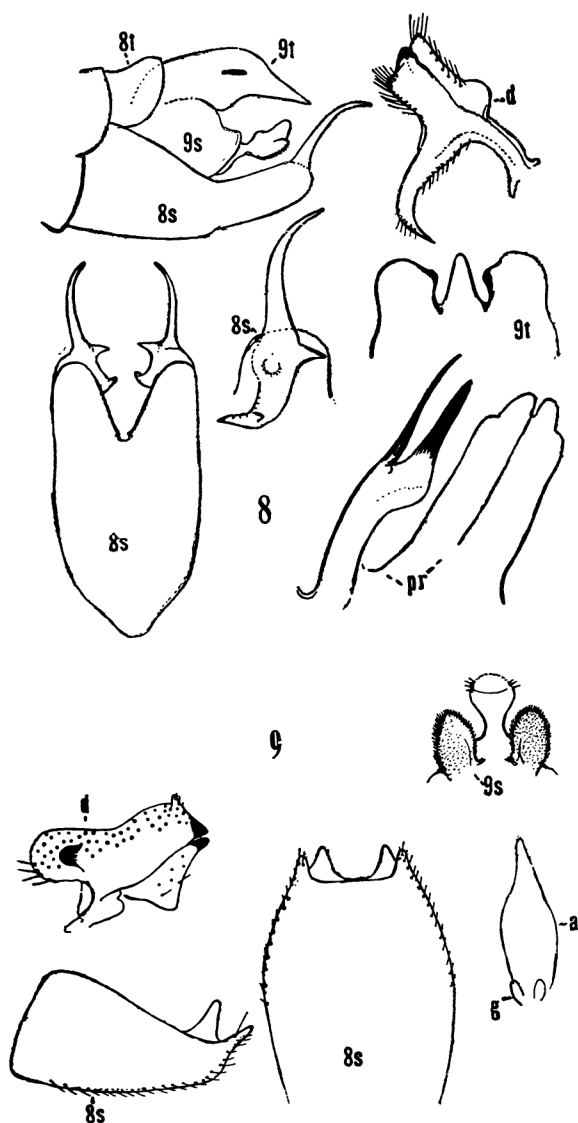


Fig. 8. *Tipula* (*Microtipula*) *horribilis*, sp. n.; male hypopygium. — Fig. 9. *Tipula* (*Microtipula*) *quadricollis*, sp. n.; male hypopygium. — (Symbols: a, aedeagus; d, dististyle; g, gonapophysis; pr, proctiger; s, sternite; t, tergite).

and trochanters. Halteres with stem yellow, knob weakly infuscated. Legs with the fore coxae and trochanters darkened, as described, the remaining ones yellow; fore femora yellow with the broad central portion more blackened, remaining femora and all tibiae obscure yellow; tarsi obscure yellow basally, passing into black;

legs long and slender. Wings relatively narrow, strongly suffused with yellowish brown, the prearcular and costal fields, especially cell *Sc*, more flavous; stigma brownish yellow; veins brown, more flavous in the brightened fields, including vein *Cu*. Venation: *Rs* subequal to *m-cu*, in longitudinal alignment with *R*₄₋₅; *R*₁₋₂ preserved; cell *M*₁ narrow, exceeding three times its petiole; cell 1st *M*₂ narrowed outwardly; *m-cu* long, arcuated near *Cu*, cell *M*₄ widest at this point; cell 2nd *A* of moderate width.

Abdomen reddish brown, variegated only by a very narrow and weak brownish black ring on segment six and most of seven. Male hypopygium (Fig. 8) very large, in shape and bulk almost equal to the entire thorax. Ninth tergite, *9t*, with caudal border trifid, the lateral arms broadly obtuse at tips, their mesal margins with a low blackened flange; median lobe about equal in length to the laterals, slender, narrowed to the obtuse tip. Proctiger, *pr*, with the dorsal arm produced into two blackened and spiniform blades, subequal in length but one much broader, both nearly straight. Dististyles, *d*, small but complex, the base unusually narrow; lower or ventral portion produced into a powerful setiferous arm, at its apex bent at nearly a right angle into a blackened spine. Gonapophyses appearing as unusually long and slender blades, nearly one-half as long as the aedeagus which they subtend. Eighth sternite, *8s*, very long and sheathing; viewed from beneath with a deep U-shaped median notch, the apical horns directed strongly dorsad and caudad, narrowed to the acute tips; a strong conical tubercle at base, directed mesad, and a very powerful inner arm that is directed cephalad and dorsad; there are thus a total of three points or lobes on either half.

Habitat: Bolivia (Santa Cruz).

Holotype, ♂, Buena Vista (Fr. Steinbach).

Although it superficially resembles various other large species of the *macrosterna* group, such as *Tipula (Microtipula) diacanthos* Alexander and *T. (M.) smilodon* Alexander, the present fly is entirely distinct in the structure of the male hypopygium, particularly of the eighth sternite and dististyle. The male hypopygium of this insect represents about the maximum size so far found in this subgenus.

Tipula (Microtipula) quadricollis, sp. n.

Belongs to the *macrosterna* group; antennae (male) approximately three-fourths the length of body; general coloration yellow or reddish yellow, the praescutum with three brownish

black areas, all in the region of the usual median stripe, the laterals being unpatterned; male hypopygium of medium size, the eighth sternite sheathing, at apex produced into four weak fleshy lobes, the apical setiferous pair particularly small.

Male. — Length, about 15 mm.; wing, 15 mm.; antenna, about 10 mm.

Frontal prolongation of head yellow, deep at base, with but a slight indication of a notch at the point of union with the remainder of head; nasus distinct; palpi yellow. Antennae (male) very long, approximately two-thirds the body or wing; scape and pedicel obscure yellow; first flagellar segment with basal fourth yellow, the remainder infuscated; succeeding segments black, the extreme base of about the first three segments very restrictedly yellow; basal enlargements of segments very conspicuous, the stem cylindrical; verticils distributed on all faces of the swelling, shorter than the segments; setae of stems black and unusually conspicuous. Head dull brownish yellow, more pruinose in front; no vertical tubercle; anterior vertex somewhat less than three times the diameter of scape.

Pronotum testaceous yellow. Mesonotum chiefly obscure yellow, the surface subnitidous; praescutum vaguely patterned with brownish black, including two spots at the anterior angles of the usual median vitta, together with a long-triangular stripe behind, representing the posterior portion of the same stripe; lateral stripes not differentiated; scutal lobes vaguely patterned with darker; posterior sclerites of notum very pale testaceous yellow. Pleura and pleurotergite testaceous brown, unpatterned. Halteres with stem yellow, knob infuscated. Legs with the femora obscure yellow, the outer faces of the tips more infuscated, fore femora concolorous with the other pairs; remainder of legs obscure yellow, the tarsi passing into black. Wings relatively narrow, tinged with brownish yellow; prearcular and costal fields, with the stigma, more saturated brownish yellow; veins brown, more yellowish in the saturated fields. Venation: R_{1-2} about one-half R_{2-3} ; Rs gently arcuated, subequal to $m-cu$; cell 1st M_2 small and narrow, almost parallel-sided, the basal section of M_{1-2} and m subequal in length; petiole of cell M_1 a little longer than m ; cell 2nd A relatively wide.

Abdomen yellow, the subbasal tergites vaguely more darkened medially; outer segments, seven to nine inclusive, slightly more

brownish yellow, without a definite blackened ring. Male hypopygium (Fig. 9) with the ninth tergite trilobed, as in related species; all three lobes subequal in width across their bases. Proctiger with the dorsal lobe produced into two slender blackened spines, somewhat as in *diacanthos* but less curved. Lobes of ninth sternite, 9s, appearing as two separate oval cushions, densely and evenly setiferous; between them a short central bulbous appendage, near its tip with a few acute spinous points. Dististyles, *d*, compact, the posterior portion produced into a flattened obtuse lobe, on the face of style near base of the latter with a more flattened glabrous lobe. Aedeagus, *a*, unusually short and broad; gonapophyses small. Eighth sternite, 8s, only moderately elongate, projecting and sheathing as in the group, its posterior end extending about as far caudad as the apex of the ninth tergite; terminal lobes unusually small and fleshy, directed caudad, provided with setae; viewed from beneath these lobes are widely separated by a truncated notch, the distance between them fully three times the length of the lobe itself; before apex on dorsal surface with a stouter and even more fleshy glabrous lobe, directed chiefly dorsad.

Habitat: Bolivia (Santa Cruz).

Holotype, ♂, Buena Vista (Fr. Steinbach).

Although it is very similar in its general appearance to *Tipula* (*Microtipula*) *horribilis*, sp. n., the present fly differs conspicuously in the structure of the male hypopygium, especially the proctiger, dististyle and eighth sternite. The dististyle does not bear a spinous lower arm, as in *horribilis*, while the lobes of the eighth sternite, especially the apical pair, are unusually small.