

NEW SPECIES OF CRANE FLIES FROM SOUTH
AMERICA. PART IV.*†

(Family Tipulidæ, Order Diptera.)

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The majority of the species discussed at this time were collected in *Bolivia* by Mr. Schade, and in *Colombia* by Messrs. George Salt and Fred W. Walker. Fewer specimens are from *Brazil*, collected by Messrs. Davis and Shannon and from *British Guiana*, collected by Miss Alice Mackie, kindly sent to me by Professor Cockerell, and by Dr. John G. Myers. A beautiful new species of *Eriocera* from Brazil was contained in the collections of the Deutsches Entomologisches Museum and sent to me for naming by Dr. Walther Horn. I wish to express my sincere thanks to all the above entomologists for this kindly co-operation. Where not stated to the contrary, the types of the novelties are preserved in my collection. Only a small part of the collections made by Mr. Walker on Mt. Santa Marta are discussed at this time, the remainder being reserved for consideration in a later article. This important collection is the property of the Museum of Zoology of the University of Michigan and was loaned to me for study through the kindness of Professor J. Speed Rogers.

Limonia Meigen.

Limonia (Limonia) splendidula sp. n.

General coloration black, the body pruinose with gray and yellowish gray areas; halteres yellow, the knobs black; femora yellow, each with a conspicuous black subterminal ring; wings whitish hyaline, the prearcular, costal and subcostal regions yellow; a conspicuous dark brown reticulate pattern, distributed chiefly in the radial and medial fields; *m-cu* nearly its own length before the fork of *M*.

*Contribution from the Entomological Laboratory, Massachusetts Agricultural College.

†The preceding part under this general title was published in these ANNALS in 1929 (XXII: 768-788):

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

Rostrum approximately one-half the length of the remainder of head, black, the palpi concolorous. Antennal scape brownish black; flagellum dark brown, the basal segments and incisures of the succeeding segments reddish brown; flagellar segments subglobular to short-oval, the outer segments more elongate; terminal segment subequal to the penultimate. Anterior vertex golden-gray, the posterior vertex more brownish gray; a brownish spot near center of the posterior vertex.

Pronotum brownish black, with a grayish pollen. Mesonotal praescutum with the median region dark brown, the area broadened behind by fusion with the lateral stripes; humeral region brown with a heavy golden-gray pollen, the latter best developed as an oval area behind the pseudosutural foveæ; scutal lobes extensively dark brown or black, the median area paler; scutellum and postnotum brownish black, the surface sparsely pruinose. Pleura black, the surface with a dense yellowish gray pollen, lacking on portions of the sternopleurite and anepisternum. Halteres yellow, the knobs black. Legs with the coxæ and trochanters brownish black; femora yellow, with a conspicuous black subterminal ring; tibiæ brownish yellow, the bases and tips blackened, the latter a little more broadly so; tarsi black. Wings whitish hyaline, the prearcular, costal and subcostal regions clearer yellow; a conspicuous dark brown pattern, arranged chiefly in the radial and medial fields, elsewhere appearing as narrow apical seams to the veins and in the axillary region; most of the areas are geminate, appearing as margins to pale centers that are of exactly the same color as the ground of the wing, the whole producing a reticulate appearance; veins brown, *C*, *Sc*, *R* and *Cu* more yellowish. Venation: *Sc*₁ ending about opposite midlength of *Rs*, *Sc*₂ near its tip; *R*₂ and free tip of *Sc*₂ about in alignment; *m-cu* nearly its own length before the fork of *M*.

Abdominal tergites brownish black; sternites more grayish pruinose, with a narrow blackish median stripe that is nearly continuous. Ovipositor with the valves reddish horn-color; tergal valves relatively small, gently upcurved.

HABITAT: Bolivia. *Holotype*, ♀, Santa Cruz, February, 1929 (ex Fr. Schade).

Limonia splendidula is allied to *L. (L.) elegantula* (Alexander) of Colombia, differing especially in the coloration of the wings and legs.

Limonia (Limonia) sanctæ-martæ sp. n.

General coloration yellow; mesonotal praescutum with a broad dark brown median stripe; femora blackened at bases and just before tips; wings yellow with a restricted dark brown pattern; stigma and an extensive clouding in cell *R*₃ paler brown; *Sc* long; *Rs* angulated and spurred at origin; outer abdominal tergites bicolorous, the sternites yellow.

Female.—Length about 9 mm.; wing, 11 mm.

Rostrum and palpi black. Antennæ with the basal segment black, flagellar segments oval, pale brown, the verticils exceeding the segments. Head brownish black, the anterior vertex more grayish, reduced to a narrow strip.

Pronotum dark brown medially, light yellow laterally. Mesonotal praescutum yellow with a broad dark brown median stripe that extends to the suture; scutum obscure brownish yellow, the mesal edge of each lobe dark brown; scutellum and postnotum dark brown, the surface weakly pruinose. Pleura, including the pleurotergite, uniformly pale yellow. Halteres pale yellow, the knobs weakly infuscated. Legs with the coxæ and trochanters yellow; femora broadly blackened basally, thence paling to brownish yellow, at near apex again broadly blackened, preceded by a vague brighter yellow ring; extreme tips of femora and bases of tibiæ whitened; remainder of tibiæ brown, the tips somewhat darker; tarsi black, the terminal segments broken. Wings yellow, clearer yellow in the costal region, with longitudinal pale streaks in cells *R*, *M* and *Cu*; a restricted dark brown pattern, appearing as narrow seams at origin of *Rs*, fork of *Sc*, cord, outer end of cell *1st M*₂, fork of *R*₁ and as narrow seams back from the margin of all longitudinal veins; stigma paler brown, delimited at outer end by the dark seam at fork of *R*₁; cell *R*₃ and caudal portion of *R*₂ suffused with pale brown; veins pale yellow, dark brown in the infuscated areas. Venation: *Sc* long, *Sc*₁ ending about opposite two-thirds the length of *Rs*, *Sc*₂ at its tip; *Rs* long, angulated and weakly spurred at origin; inner end of cell *R*₃ lying considerably proximad of cell *R*₅; inner end of cell *1st M*₂ pointed; *m-cu* shortly before the fork of *M*.

Abdominal tergites bicolorous, the bases yellow, the apices brown, the basal segments more uniformly darkened; sternites yellow. Ovipositor with the tergal valves relatively small and slender, gently upcurved; sternal valves stout and straight, reddish horn-color, blackened at base.

HABITAT: Colombia. *Holotype*, ♀, La Cumbre, Mt. Santa Marta, in open clearing, altitude 7,500 feet, August 8, 1926 (F. W. Walker). Type to be preserved in the Museum of Zoology, University of Michigan.

Limonia sanctæ-martæ is very distinct from all described regional species.

Limonia (Dicranomyia) boliviana sp. n.

Allied to the Mexican *L. (D.) filicauda* (Alexander), differing especially in the details of structure of the male hypopygium.

Male.—Length about 7 mm.; wing, 7.2 mm.

Rostrum and palpi black. Antennæ with the scape obscure yellow, the flagellum black. Head light gray.

Pronotum yellow. Mesonotal praescutum brownish gray, with three darker brown stripes, the lateral pair less distinct; scutal lobes and scutellum dark, with a narrow pale median vitta; postnotum dark, sparsely pruinose. Pleura gray. Halteres very long and slender, as in the group, pale, the knobs infuscated. Legs with the coxæ and trochanters yellow; femora yellowish brown, the tibiae and tarsi passing through dark brown to black. Wings suffused with brown, the oval stigma slightly darker brown; veins brown. Venation: Sc_1 ending opposite the origin of Rs , Sc_2 some distance from its tip, Sc_1 alone being about two-thirds Rs ; $m-cu$ close to fork of M , subequal to the distal section of Cu_1 .

Abdomen dark brown, the basal sternites slightly paler. Male hypopygium with the caudal margin transverse or nearly so, with numerous setæ, including two more powerful setæ on either side of the median line close to the margin. Basistyle with very complex ornamentation, as in *filicauda*, including a long pale fleshy lobe. Dorsal dististyle a very slender, nearly straight rod. Ventral dististyle with the rostral prolongation long and conspicuous, the two rostral spines subequal in length, closely appressed to the prolongation; a conspicuous hairy oval lobe at the axil of the prolongation.

HABITAT: Bolivia. *Holotype*, ♂, Santa Cruz, February, 1929 (ex Fr. Schade).

The much longer filiform lobes of the hypopygium in *filicauda* seem to be borne by the tergite rather than by the basistyle, as is the case in *boliviana*.

Limonia (*Geranomyia*) *bahiensis* sp. n.

Rostrum and antennæ entirely black; mesonotal praescutum with three narrow brown stripes, the median one darker; knobs of halteres black; femora with the tips broadly yellow, enclosing a narrow dark brown subterminal ring; wings grayish yellow, with a sparse brown pattern; Sc_1 extending a short distance beyond origin of Rs ; male hypopygium with caudal margin of the tergite very gently emarginate; rostral spines subequal in length, arising from slightly unequal basal tubercles, placed on the face of the rostral prolongation at base.

Male.—Length (excluding rostrum) about 5.5 mm.; wing, 6.5 mm.; rostrum about 2.5 mm.

Rostrum and palpi black. Antennæ black throughout. Head yellowish gray with two narrow black lines on the vertex that enclose a narrower median area of the ground-color.

Mesonotal praescutum obscure ochreous, with three narrow brown stripes, the median stripe darker brown, the lateral stripes more reddish brown, paler behind; lateral margins of praescutum likewise slightly darkened; scutum pale brown, the cephalic and mesal portions of each

lobe narrowly darker brown; scutellum and postnotum pale, vaguely marked with darker. Pleura obscure yellow, the anepisternum and dorsopleural region slightly darker. Halteres dark brown, the stem chiefly pale yellow. Legs obscure yellow, the fore coxæ a trifle darkened; femora obscure brownish yellow, the tip broadly pale yellow, enclosing a narrow dark brown ring that is a little wider than the yellow apical portion beyond; tibiae obscure yellow, the tips narrowly brownish black; basitarsi obscure yellow, the outer tarsal segments dark brown. Wings grayish yellow, the costal region in cells C and Sc brighter yellow; a sparse brown pattern, arranged as follows: A subcostal series of three areas, the last a common spot that includes the tip of Sc and the origin of Rs ; stigma small; conspicuous pale brown seams and clouds along cord, outer end of cell $1st M_2$ and as marginal seams on the Anal veins; veins pale brown, Sc , R and Cu chiefly yellowish. Venation: A supernumerary crossvein in cell Sc at near midlength; Sc_1 ending shortly beyond origin of Rs , Sc_2 at its tip; Rs weakly angulated at origin; $m-cu$ shortly before the fork of M .

Abdomen brown. Male hypopygium with the tergite transverse, the caudal margin only weakly emarginate, the low lateral lobes densely setiferous. Dorsal dististyle widest at near midlength, somewhat angularly bent, gradually narrowed to a long acute point. Ventral dististyle large and fleshy, the rostral prolongation long and slender, yellow, with the two rostral spines arising on the side at the base, subequal in length from slightly unequal basal tubercles. Gonapophyses with the mesal apical lobe entirely pale, long, slender, narrowed gradually to nearly acute points.

HABITAT: Brazil. *Holotype*, ♂, Bahia, stream-pool, March, 1929 (Davis and Shannon).

The present fly is allied to Neotropical species like *L. (G.) inaequituberculata* Alexander (Paraguay) and *L. (G.) platensis* Alexander (Argentina), differing from all known species in the details of structure of the male hypopygium.

Limonia (*Geranomyia*) *guianensis* sp. n.

General coloration of mesonotum reddish, with three narrow dark brown stripes, the interspaces more silvery; antennal flagellum yellowish brown; legs yellow, the femora with a vague dark subterminal ring; wings yellow, sparsely variegated with brown; Sc relatively short; cell $1st M_2$ longer than any of the veins beyond it; male hypopygium with the ventral dististyle large and fleshy, the spines arising from the face of style at base of the prolongation; mesal apical lobe of gonapophysis darkened, spinous.

Male.—Length (excluding rostrum) about 4 mm.; wing, 4.6 mm.; rostrum about 1.9 mm.

Rostrum relatively short, black, the tips of the labial palpi obscure yellow. Antennæ with the scape black, the flagellum yellowish brown; basal flagellar segments short-oval, the outer ones more elongate. Head silvery gray, the posterior vertex with two conspicuous black areas that enclose a narrower linear strip of the ground-color; anterior vertex narrow, more yellowish white.

Mesonotal praescutum reddish gray, with three narrow dark brown stripes, the interspaces more silvery gray; lateral margins of praescutum broadly but vaguely darkened; median region of scutum whitish, the lobes darkened, especially their mesal margin; scutellum weakly darkened, narrowly pale medially at base; postnotal mediotergite brownish testaceous with a capillary impressed median line. Pleura chiefly plumbeous, the dorsal pleural region and pteropleurite paler. Halteres yellow, the knobs weakly darkened. Legs with the coxæ and trochanters yellow; femora obscure yellow with a vague diffuse darker subterminal ring that is wider than the pale apex; a narrow subobsolete yellow ring before the darkened annulus; tibiae and tarsi obscure yellow, the latter passing into dark brown at tips. Wings with a yellow ground-color, the prearcular and costal regions brighter yellow; a restricted dark pattern, including four subcostal areas, the first just beyond *h*, the second at the supernumerary crossvein, the third a common area at origin of *Rs* and fork of *Sc*, the last stigmal; wing-apex broadly but vaguely darkened; narrow paler seams along cord, outer end of cell *1st M*₂ and along vein *2nd A*; veins pale yellow, darker in the infuscated areas. Venation: *Sc* short, *Sc*₁ ending just beyond origin of *Rs*, *Sc*₂ at its tip; *Rs* weakly angulated at origin; cell *1st M*₂ longer than any of the veins beyond it; *m-cu* close to the fork of *M*.

Abdomen brownish yellow, the segments more darkened basally; subterminal segments more uniformly infuscated; hypopygium chiefly brownish yellow. Male hypopygium with the ninth tergite transverse, the caudal margin with a conspicuous U-shaped median notch. Ventral dististyle very large and fleshy, exceeding twice the size of the basistyle and its lobe; rostral prolongation slender, the spines arising from the face of the style at its base; spines slightly unequal, arising from conspicuous subequal basal tubercles. Dorsal dististyle a strongly curved sickle. Gonapophyses with the mesal apical lobe a relatively short dusky spine, narrowed to the acute tip.

HABITAT: British Guiana. *Holotype*, ♂, Koriabo, Barima River, May 5, 1929 (J. G. Myers).

Limonia (Geranomyia) guianensis is closest to *L. (G.) scolopax* (Alexander), differing in the diagnostic features listed above.

***Limonia (Geranomyia) marthæ* sp. n.**

General coloration gray, the praescutum more brownish gray, with three narrow black lines; rostrum about as long as the combined head and thorax; femora paling to yellow at

tips, this area enclosing a broad dark brown subterminal ring; wings subhyaline, with a very restricted dark pattern; a supernumerary crossvein in cell *Sc*; *Sc* short, *Sc*₁ ending shortly beyond the origin of *Rs*; cell *1st M*₂ long; male hypopygium with the tergite deeply notched medially; ventral dististyle large and fleshy; rostral spines subequal but arising from very unequal basal tubercles.

Male.—Length (excluding rostrum) about 6.5 mm.; wing, 7 mm.; rostrum about 2.5 mm.

Female.—Length (excluding rostrum) about 7 mm.; wing, 7 mm.; rostrum about 3 mm.

Rostrum of moderate length, as shown by the measurements, subequal to the combined head and thorax, dark brown. Antennæ black throughout; flagellar segments oval. Head yellowish gray, the posterior vertex with a blackish area on either side of the midline.

Mesonotum gray, the praescutum more brownish gray, with three narrow velvety black lines; scutum gray, the mesal edge with a narrow black line, this being a caudal prolongation of the lateral praescutal stripe; scutellum and postnotum clearer gray. Pleura dark gray. Halteres relatively short, pale, the knobs infuscated. Legs with the coxæ and trochanters yellow; femora brownish yellow, the apex paling to yellow, this enclosing a broad brown ring that is much wider than the yellow areas enclosing it; tibiae and tarsi brown. Wings subhyaline, with a very sparse dark pattern, including restricted clouds at the supernumerary crossvein, origin of *Rs* and fork of *Sc*, the stigma and narrow seams along the cord and outer end of cell *1st M*₂; wing-apex broadly and distinctly grayish brown; veins pale, darker in the infuscated areas. Venation: *Sc* short, *Sc*₁ ending just beyond the origin of *Rs*, *Sc*₂ at its extreme tip; a supernumerary crossvein in cell *Sc*; cell *1st M*₂ elongate, the second section of *M*₁₊₂ about one-fourth longer than the last section; *m-cu* close to the fork of *M*.

Abdomen dark grayish brown, the caudal margins of the segments insensibly paler; basal sternites obscure yellow; male hypopygium dark, the ventral dististyle paler. Male hypopygium with the ninth tergite deeply notched medially, the lobes thus formed broadly obtuse, with abundant setæ. Basistyle small, the ventro-mesal lobe conspicuous. Ventral dististyle very large and fleshy, its extent three or four times that of the basistyle; rostral prolongation slender, arcuated, the spines arising from its base, one from a small basal tubercle that is about one-third to one-fourth the length of the spine, the other from an elongate tubercle that is only a little shorter than the spine itself, the actual spines nearly equal in length. Dorsal dististyle a strongly curved yellow hook. Gonapophyses with the mesal apical lobe appearing as a stout curved yellow point.

HABITAT: Colombia. *Holotype*, ♂, Vista Nieve, Mt. Santa Marta, altitude 5,000 feet, August 6, 1925 (F. W. Walker).

Allotopotype, ♀, August 8, 1926, at light, 4 A. M. (F. W. Walker).

Type to be preserved in the Museum of Zoology, University of Michigan.

Limonia (Geranomyia) marthæ is readily told by the combination of characters outlined above. The general coloration is much as in *cinereinota* (Alexander), but the species is more nearly allied to *plumbeipleura* (Alexander) and allied forms.

Limonia (Geranomyia) versuta sp. n.

General coloration gray, the praescutum with three narrow black stripes; halteres yellow, the knobs infuscated; femora brown, the tips very imperceptibly paler; wings whitish subhyaline, with a very restricted dark pattern; *Sc* short; male hypopygium with the tergite deeply notched medially; ventral dististyle relatively small, the rostral prolongation short and stout, with two spines, one arising from a stout broad-based tubercle.

Male.—Length (excluding rostrum) about 5.5 mm.; wing, 7 mm.; rostrum about 2.8 mm.

Rostrum and palpi black. Antennæ dark brown; flagellar segments short-oval, with inconspicuous verticils. Head gray, the posterior vertex with a narrow black line on either side of the median vitta.

Pronotum brownish gray, with a median and lateral black stripes. Mesonotal praescutum gray with a faint brown tinge, with three narrow black stripes; posterior sclerites of mesonotum gray, the mesal edge of each scutal lobe with a narrow black line, this being a backward continuation of the lateral praescutal stripe. Pleura brownish gray, the dorsal sternopleurite somewhat paler. Halteres yellow, the knobs infuscated. Legs with the coxæ yellowish testaceous, the fore coxæ more infuscated; trochanters yellowish testaceous; femora obscure yellow at base, soon passing into dark brown, the tips very imperceptibly paler; tibiae brown, the tips passing into black; tarsi black. Wings whitish subhyaline, with a very restricted dark pattern; stigma very pale brown; restricted slightly darker brown clouds at the supernumerary crossvein, tip of *Sc* and origin of *Rs*, and as very vague clouds along the cord, outer end of cell *1st M*₂ and at ends of longitudinal veins; veins yellow, somewhat darker in the infuscated areas. Venation: *Sc* short, *Sc*₁ ending before origin of *Rs*, *Sc*₂ at its tip; a supernumerary crossvein in cell *Sc* at near midlength; distal section of *R*₅ arcuated just beyond origin; cell *1st M*₂ about as long as the longest vein beyond it; *m-cu* just before the fork of *M*.

Abdominal tergites dark brown, the basal sternites pale yellow; hypopygium dark. Male hypopygium with the tergite deeply notched medially, the conspicuous lateral lobes bluntly rounded, provided with

coarse setæ. Basistyle with the ventro-mesal lobe conspicuous, with long setæ. Ventral dististyle relatively small, not exceeding twice the size of the basistyle; rostral prolongation very short and stout, with two spines, one arising from a stout basal tubercle whose base occupies about one-half the total length of the prolongation; second spine sessile or from a very inconspicuous tubercle, situated at the base of the first. Gonapophyses with the mesal apical lobe appearing as a flattened blade.

HABITAT: Colombia. *Holotype*, ♂, Vista Nieve, Mt. Santa Marta, altitude 5,000 feet, August 8, 1926 (F. W. Walker). Type to be preserved in the Museum of Zoology, University of Michigan.

The general appearance of *Limonia (Geranomyia) versuta* is much like *L. (G.) cinereinota* (Alexander), but the fly is very distinct in the longer rostrum and structure of the male hypopygium.

Limonia (Geranomyia) neonumenius sp. n.

General coloration of praescutum gray with three reddish brown stripes, the sublateral portions further darkened; femora yellow with a subterminal dark brown ring; wings sandy, with a restricted dark pattern; *Sc* long, *Sc*₁ ending about opposite midlength of *Rs*; male hypopygium with the rostral prolongation of the ventral dististyle short and stout, with two slender gently curved spines placed close to tip.

Male.—Length (excluding rostrum) about 8–8.5 mm.; wing, 8–8.5 mm.; rostrum about 5.3–5.5 mm.

Female.—Length (excluding rostrum) about 9 mm.; wing, 8.5 mm.; rostrum about 5.3 mm.

Rostrum elongate but still shorter than in *numenius*, black, including the maxillary palpi. Antennæ black throughout; flagellar segments cylindrical, the verticils relatively inconspicuous. Head behind blackish, the anterior vertex and an equally wide line on the posterior vertex light gray.

Pronotum brown, with two silvery lines. Mesonotal praescutum with the ground-color silvery gray, with three reddish brown stripes, in addition to the sublateral darkening; median stripe narrower but not darker than the laterals; sublateral ground stripes more yellowish gray; scutum with the median area silvery, the lobes darkened; scutellum chiefly pale, a little infuscated at base; postnotum light brown, sparsely pruinose. Pleura testaceous yellow or brownish yellow. Halteres pale, the knobs weakly infuscated. Legs with the coxæ and trochanters testaceous or slightly tinged with green; femora yellow, the distal fourth brighter yellow, enclosing a narrow dark brown ring that is subequal to the yellow apex; tibiae obscure yellow, the tips weakly

darkened; tarsi greenish yellow, passing into dark brown; claws (σ) with three long teeth. Wings with the ground-color light sandy or cream-color, the prearcular and costal regions clearer yellow; a restricted pale brown pattern, including clouds at the supernumerary crossvein, origin of *Rs*, fork of *Sc*, stigma and as seams along the cord and outer end of cell *1st M*₂; veins yellow, darker in the infuscated areas, *2nd A* dark. Venation: *Sc* long, *Sc*₁ ending opposite or shortly beyond mid-length of *Rs*, *Sc*₂ not far from its tip; a supernumerary crossvein in cell *Sc*; cell *1st M*₂ relatively large, approximately as long as *M*₁₊₂ beyond it; *m-cu* at or just beyond the fork of *M*.

Abdominal tergites brown, vaguely variegated with paler; sternites more yellowish; hypopygium reddish brown. Male hypopygium with the tergite transverse, shallowly notched medially, the low lateral lobes conspicuously setiferous. Basistyle with the ventral-mesal lobe long. Ventral dististyle large and fleshy, the rostral prolongation short and stout, with two slender spines placed close to its tip; neither spine from basal tubercles, subequal in length, very gently curved. Gonapophyses with the mesal apical lobe narrowed to a curved blackened spine. Aedeagus long, constricted at near midlength, the apex simple.

HABITAT: Columbia. *Holotype*, σ , Vista Nieve, Mt. Santa Marta, altitude 5000 feet, August 8, 1926, at light, 4 A. M. (F. W. Walker). *Allotopotype*, σ , August 6, 1929. *Paratopotype*, σ , with the holotype. Type to be preserved in the Museum of Zoology, University of Michigan.

Limonia (Geranomyia) neonumenius is closest to *numenius* (Alexander), differing in the coloration of the thorax and details of venation, as the larger cell *1st M*₂. I have never seen a male of *numenius*.

Limonia (Geranomyia) walkeri sp. n.

Mesonotal praescutum grayish white, with two reddish brown stripes in addition to the darkened lateral margin; femora with a subterminal brown ring; wings creamy-yellow with a conspicuous darker pattern, including dark marginal seams on all the posterior longitudinal veins; *Sc* relatively long, *Sc*₁ ending about opposite one-third the length of *Rs*; male hypopygium with the rostral prolongation of the ventral dististyle bearing a single very long spine from a slender basal tubercle.

Male.—Length (excluding rostrum) about 6 mm.; wing, 7 mm.; rostrum about 3.8 mm.

Female.—Length (excluding rostrum) about 6.5 mm.; wing, 7.5 mm.; rostrum about 4 mm.

Rostrum elongate, if bent backward extending about to opposite one-third the length of the abdomen, black, the outer ends of the labial palpi paler; maxillary palpi black. Antennæ with the scapal segments black, the flagellum dark brown; flagellar segments long-oval to subcylindrical. Head gray, the lateral portions of the posterior vertex blackened, restricting the ground-color to a narrow vitta that is subequal in width to the anterior vertex.

Pronotum yellow above, darkened laterally. Mesonotal praescutum grayish white with two reddish brown stripes, one on either side of a capillary median vitta; lateral margins of the sclerite more broadly darker brown; scutal lobes reddish brown; median region of scutum and the scutellum pale whitish; postnotal mediotergite grayish brown medially, paling to yellowish white on the sides. Pleura chiefly pale yellowish white. Halteres yellow, the knobs infuscated. Legs with the coxæ and trochanters yellowish testaceous; femora brownish yellow, clearer yellow at outer ends, this enclosing a conspicuous dark brown ring that is a little more extensive than the yellow apical portion; tibiæ and tarsi light brown, the outer tarsal segments more darkened. Wings creamy yellow, with a conspicuous darker pattern; prearcular and costal regions clearer yellow, especially cell *Sc*; the darkened areas are as follows: Base of cell *Sc*, at supernumerary crossvein, origin of *Rs* and fork of *Sc*, the two latter areas separated or barely contiguous; stigma; clouds along cord and outer end of cell *1st M*₂; seams back from the margin on veins *R*₃, *M*₁₊₂, *M*₃, *M*₄, *Cu*₁ and the Anal veins, the largest on vein *1st A*; veins pale, darker in the infuscated areas. Venation: *Sc* of moderate length, *Sc*₁ extending to about opposite one-third the length of *Rs*, *Sc*₂ at its tip; a supernumerary crossvein in cell *Sc*; cell *1st M*₂ subequal to vein *M*₁₊₂ beyond it; *m-cu* at fork of *M*.

Abdominal tergites dark brown, the sternites obscure yellow; male hypopygium brownish black, excepting the conspicuous yellow ventral dististyles. Male hypopygium with the tergite transverse, the caudal margin with a broad, shallow emargination, the lateral lobes thus formed obliquely truncate. Basistyle small, the ventro-mesal lobe large. Ventral dististyle large and fleshy, the rostral prolongation slender, shortly before tip with an elongate basal tubercle that bears a single long curved spine; the tubercle alone is about one-half the length of the dorsal dististyle, while the spine is fully one-half longer than this dististyle. Dorsal dististyle nearly straight on basal two-thirds, thence curved to the tip. Gonapophyses with the mesal apical angle appearing as a very long and nearly straight spine. Aedeagus at tip with two divergent flaps.

HABITAT: Colombia, Brazil. *Holotype*, σ , Vista Nieve, Mt. Santa Marta, altitude 5000 feet, August 8, 1926 (F. W. Walker). *Allotopotype*, σ , August 6, 1926. *Paratopotypes*, 5 σ σ , August 6-8, 1926. *Paratype*, σ Jaraguá, Santa Catharina, Brazil, August 29, 1929 (F. Schade).

Type to be preserved in the Museum of Zoology, University of Michigan.

Limonia (Geranomyia) walkeri is named in honor of the collector, Mr. Fred W. Walker, who has collected numerous Tipulidæ in Colombia. The species is very distinct from all described forms in the single very long spine on the rostral prolongation of the ventral dististyle.

Orimarga Osten Sacken.

Orimarga bahiana sp. n.

Generally similar to *O. punctipennis* Alexander (British Guiana), differing especially in the details of venation.

Female.—Length about 7 mm.; wing, 5.6 mm.

Head light silvery gray. Mesonotal praescutum dull gray with four poorly defined grayish brown stripes; scutal lobes with two similarly colored areas. Legs pale yellow. Wings brownish yellow, the outer ends of the radial cells darker; small but conspicuous brown spots at origin of R_s , fork of Sc , tip of R_{1+2} and R_2 ; on anterior cord, $m-cu$ and at fork of M_{3+4} ; veins chiefly pale, darker in the infuscated areas. Venation: R_2 shorter than R_{1+2} , straight, not angulated and spurred as in *punctipennis*; basal section of R_5 long and conspicuously arcuated, not short and straight as in *punctipennis*. Abdomen brownish black.

HABITAT: Brazil. *Holotype*, ♀, Bahia, May 1929 (R. C. Shannon).

Diotrepha Osten Sacken.

Diotrepha myersiana sp. n.

Generally similar and closely allied to *D. fumicosta* Alexander, differing especially in the venation.

Female.—Length about 6 mm.; wing, 4.6 mm.

General coloration dark brown, the abdomen black, only the tergal valves of the ovipositor yellowish horn-color. Halteres black. Legs broken beyond the trochanters. Wings with a strong blackish tinge, more saturated along the costal margin. Venation: Sc_1 ending shortly before the fork of R_s , Sc_2 a short distance from its tip, Sc_1 alone being about equal to R_2 ; free tip of Sc_2 a little shorter than R_1 beyond it; R_2 a trifle longer than R_1 before it; R_{1+2} elongate, exceeding the distance between Sc_2 and R_2 and nearly as long as R_s .

HABITAT: British Guiana. *Holotype*, ♀, Koriabo, Barima River, May 5, 1929 (J. G. Myers).

I take great pleasure in naming this interesting *Diotrepha* in honor of my friend and colleague, Dr. John G. Myers.

Limnophila Macquart.

Limnophila kaieturana sp. n.

General coloration brownish gray; antennæ short, black throughout; mesonotal praescutum brownish gray with three dark brown stripes; halteres pale; legs chiefly darkened; wings grayish with a heavy brown pattern; cell M_1 present; $m-cu$ at near one-third the length of the relatively small cell $1st M_2$.

Female.—Length about 6.5–7.5 mm.; wing, 6–7.3 mm.

Rostrum and palpi black. Antennæ black throughout, short; flagellar segments short-oval, becoming smaller outwardly. Head gray, the posterior vertex with a large dusky area on either side of the median line.

Mesonotal praescutum brownish gray with three dark brown stripes, the median stripe broad, not reaching the suture behind; lateral stripes relatively short and indistinct; no tuberculate pits; pseudosutural foveæ reduced to a blackened marginal pit; scutum brownish gray, the centers of the lobes dark brown; scutellum and postnotum gray. Pleura brownish gray. Halteres pale yellow. Legs with the coxæ brownish gray; trochanters yellowish brown; femora yellowish brown, passing into dark brown at tips; tibiæ brown, the tips narrowly dark brown; basitarsi yellowish brown, the tips and remainder of tarsi dark brown. Wings grayish, the prearcular and costal regions more yellowish gray; a heavy brown pattern, as follows: Base of cell R ; origin of R_s ; along cord and outer end of cell $1st M_2$; a marginal series at ends of all longitudinal veins; fork of M_{1+2} ; at near midlength of cell R_4 ; near outer end of cell M ; at near midlength of cell $2nd A$ and in the axilla; veins pale, darker in the infuscated areas. Venation: Sc_1 ending opposite or just beyond fork of R_s , Sc_2 at tip; R_2 subequal to or shorter than R_{1+2} ; inner ends of cells R_4 , R_5 and $1st M_2$ in nearly transverse alignment; cell M_1 subequal to its petiole; cell $1st M_2$ relatively small, $m-cu$ at near one-third its length.

Abdomen dark grayish brown, the valves of the ovipositor blackened.

HABITAT: British Guiana. *Holotype*, ♀, Kaietur Falls, May 26, 1929 (Miss Alice Mackie). *Paratopotype*, ♀.

I have to thank Miss Mackie and Professor Cockerell for this interesting crane-fly. The species is amply distinct from allied regional forms in the coloration of the body and wings.

Shannonomyia Alexander.

Shannonomyia austrolathræa sp. n.

General coloration gray; mesonotal praescutum with a black median vitta; legs black, the tips of the femora abruptly yellow;

wings cream-colored, with a restricted dark brown pattern; vein R_{2+3+4} shorter than the basal section of R_5 .

Female.—Length about 7 mm.; wing, 7.5 mm.

Rostrum gray; palpi black. Antennæ with the scapal segments black; flagellum paler, the incisures vaguely obscure yellow; flagellar segments oval, decreasing in size outwardly. Head gray.

Mesonotal praescutum brownish gray with a single very conspicuous median black vitta that extends to the suture; posterior sclerites of mesonotum gray. Pleura gray, vaguely marked with darker. Halteres pale, the knobs light yellow. Legs with the coxæ pale yellow, sparsely pruinose; trochanters obscure yellow; femora black, the extreme tips abruptly yellow; remainder of legs black. Wings cream-yellow, with a restricted dark brown pattern, arranged as follows: Post-arcular; origin of R_s ; fork of Sc ; along cord, beginning at stigma, narrowly interrupted on M_{3+4} ; tips of all longitudinal veins except R_5 , largest on R_3 and R_4 ; outer end of cell *1st* M_2 ; veins yellow, darker in the infuscated areas. Venation: Sc_1 ending about opposite two-thirds the length of R_s , Sc_2 at its tip; R_s long; R_{2+3+4} short to very short; cell *1st* M_2 of unusual length, as in *lathræa*; *m-cu* about two-thirds its length beyond the fork of M .

Abdomen brownish black, pruinose. Ovipositor with the sternal valves blackened, the tergal valves horn-yellow, gently upcurved to the acute tips.

HABITAT: Bolivia. *Holotype*, ♀, Santa Cruz, February 1929 (ex Fr. Schade).

Shannonomyia austrolathræa is most closely allied to the Colombian *S. lathræa* (Alexander), differing especially in the coloration and details of venation.

Eriocera Macquart.

Eriocera flammeinota sp. n.

General coloration of body black, only the mesonotal praescutum and scutum fiery orange; knobs of halteres and legs black; wings dusky at base and apex, the central portion yellow, clearest and most extensive on the cephalic portion.

Female.—Length about 23 mm.; wing, 17 mm.

Rostrum and palpi black. Antennæ brownish black throughout, 10-segmented (♀), the flagellar segments gradually decreasing in length and diameter outwardly. Head black, the vertical tubercle very shallowly notched.

Pronotum brownish black. Mesonotal praescutum and scutum fiery orange; remainder of thorax black. Halteres brownish yellow, the knobs blackened. Legs brownish black throughout. Wings dusky at

base and apex, the central portion broadly yellow, widest along the costal margin, gradually narrowing posteriorly, the band not crossing the wing, being obscured in the marginal Anal and Cubital cells; veins yellow, darker in the infuscated areas. Venation: R_2 a little shorter than R_{2+3} ; cell M_1 lacking; distal section of Cu_1 short, about two-thirds *m-cu*.

Abdomen black, including the ovipositor, only the extreme tips of the valves brightened.

HABITAT: Brazil. *Holotype*, ♀, Minas Geraes, 1897, ex Fruhstorfer Coll. Type in the Deutsches Entomologisches Museum.

Eriocera flammeinota is very distinct from all regional species of the genus.

Eriocera antennata sp. n.

General coloration light brown; antennæ (♂) elongate, approximately four times the body; vertical tubercle very high; wings tinged with brown; a restricted darker brown pattern along the cord and other veins; R_s angulated and spurred at origin; cells R_2 and R_3 subequal at margin.

Male.—Length about 7.5 mm.; wing, 8 mm.; antenna about 30 mm.

Rostrum very reduced, brownish yellow; palpi short, dark brown. Antennæ (♂) approximately four times as long as body; basal segments obscure yellow, the outer segments passing into brown; basal four flagellar segments gradually increasing in length and slenderness, all armed with spinous setæ; remaining segments abruptly shorter. Head testaceous yellow, the vertical tubercle very developed, subequal to the basal segment of scape in length and stouter.

Mesonotum light brown, the surface very sparsely pruinose, the praescutum with scarcely indicated stripes. Pleura with the dorsal sclerites brown, the ventral ones yellow. Halteres yellow, the knobs infuscated. Legs with the coxæ and trochanters yellowish testaceous; remainder of legs broken. Wings with a faint brown tinge, sparsely variegated with darker; stigma pale brown; origin of R_s , cord, outer end of cell *1st* M_2 , R_{1+2} and R_2 , and tip of vein R_3 narrowly seamed with darker brown; veins pale, dark brown in the infuscated areas, especially along the oblique cord. Venation: R_s much shorter than in *macrocera*, angulated and spurred at origin; R_{2+3+4} subequal to R_{2+3} ; R_3 deflected strongly cephalad at end so cell R_2 is subequal to cell R_3 at margin; veins beyond cell *1st* M_2 not longer than the cell; *m-cu* at fork of M .

Abdomen brownish yellow, the hypopygium dark brown; incisures appearing darker than the ground-color.

HABITAT: Colombia. *Holotype*, ♂, Sevilla, Department of Magdalena, May 17, 1926 (F. W. Walker).

Type to be preserved in the Museum of Zoology, University of Michigan.

Eriocera antennata is allied to *E. macrocera* Alexander (Brazil), differing especially in the details of venation and wing-pattern.

Elephantomyia Osten Sacken.

Elephantomyia boliviensis sp. n.

General coloration of thorax uniform yellow; head fulvous yellow, the anterior vertex and posterior orbits grayish white; halteres yellow; legs yellow, the tibial spurs lacking; wings grayish yellow, the base and costal region clearer yellow; abdominal tergites obscure yellow, with a nearly continuous brownish black median stripe.

Female.—Length (excluding rostrum) about 6.5 mm.; wing, 7.8 mm.; rostrum about 6 mm.

Rostrum nearly as long as body (in female), dark brown. Antennae dark brown throughout, relatively long and slender. Head fulvous yellow, the narrow anterior vertex and posterior orbits grayish white.

Mesonotum and pleura uniform yellow, the surface nitidous, without markings. Halteres yellow. Legs with the coxæ and trochanters yellow; remainder of legs yellow to brownish yellow; no tibial spurs. Wings grayish yellow, the base and costal region clearer yellow; stigma oval, pale brown; veins before the cord chiefly yellowish, the outer veins passing into brown. Venation: Sc_1 ending about opposite five-sixths the length of R_s , Sc_2 at its extreme tip; branches of R_s extending parallel for nearly their total length, cell R_2 at margin thus being approximately twice as wide as cell R_3 ; $m-cu$ at near midlength of cell $1st M_2$, about one-half longer than the distal section of Cu_1 .

Abdominal tergites obscure yellow, with a conspicuous brownish black median stripe that is almost continuous, broadest in front, more narrowed and interrupted on the posterior segments; sternites more uniformly yellow.

HABITAT: Bolivia. *Holotype*, ♀, Santa Cruz, February 1929 (ex Fr. Schade).

Elephantomyia boliviensis differs from *E. clitellaria* Alexander (Chile) in the coloration of the body and wings.

Atarba Osten Sacken.

Atarba (Atarba) boliviana sp. n.

General coloration brownish yellow; antennae (♂) elongate; flagellum dark brown, the extreme proximal ends of the basal

segments obscure yellow; pleura infuscated; wings brownish yellow, the oval stigma only slightly darkened.

Male.—Length about 4.3 mm.; wing, 5.2 mm.; antenna about 3.8 mm.

Rostrum obscure yellow; palpi brown. Antennae (♂) elongate, only a little shorter than the body; scapal segments obscure yellow; flagellar segments dark brown, the extreme proximal ends of the basal segments pale yellow to produce a vague annulated appearance. Head dull brownish yellow.

Mesonotum shiny brownish yellow, without markings. Pleura chiefly infuscated, the ventral sternopleurite more yellowish. Halteres pale, the knobs infuscated. Legs with the coxæ and trochanters obscure yellow, the fore coxæ more infuscated; femora yellow, the extreme tips on outer face narrowly darkened; tibiae obscure yellow, the tips and tarsi passing into dark brown. Wings brownish yellow, the costal region clearer yellow; stigma oval, scarcely apparent against the ground-color; veins pale brown. Venation: Sc_1 ending shortly beyond origin of R_s , Sc_2 a corresponding distance before this origin; cell $1st M_2$ closed; $m-cu$ shortly beyond the fork of M .

Abdominal tergites yellow, the caudal margins of the segments darkened; a dark brown ring involving segments seven, eight and caudal portion of six; hypopygium yellow. Male hypopygium with the median lobe of the sternite long and narrow, gradually widened outwardly, the lateral angles produced into acute pale horns. Aedeagus unusually long and relatively slender, gradually narrowed outwardly.

HABITAT: Bolivia. *Holotype*, ♂, Santa Cruz, February 1929 (ex Fr. Schade).

Atarba boliviana is allied to *A. brunneicornis* Alexander (Colombia), differing in the details of coloration and venation.

Atarba (Atarba) stigmosa sp. n.

General coloration of mesonotum testaceous yellow, the dorso-pleural region and postnotum dark brown; antennae black; halteres yellow, the knobs infuscated; legs yellow, the femora narrowly tipped with brown; wings tinged with yellow, the stigma and a small cloud on the anterior cord dark brown; abdominal tergites dark brown.

Female.—Length about 6 mm.; wing, 6.5 mm.

Rostrum obscure yellow; palpi black. Antennae black throughout, the incisures between the first three or four flagellar segments insensibly paler; flagellar segments gradually decreasing in length outwardly, the last segment subequal to the penultimate. Head obscure yellowish testaceous, vaguely marked with darker.

Mesonotum shiny testaceous yellow, without markings, the postnotum dark brown. Pleura obscure yellow, with a conspicuous dark

brown dorsal stripe extending from the cervical region to the postnotum. Halteres yellow, the knobs infuscated. Legs with the coxæ and trochanters yellow; femora yellow, the tips narrowly but conspicuously infuscated; tibiæ and tarsi obscure yellow, the tips of the latter narrowly blackened. Wings tinged with yellow, clearer in the prearcular, costal and cubital regions; stigma large, dark brown, conspicuous; a restricted brown cloud on the anterior cord; veins light brown, slightly paler in the flavous areas. Venation: Sc_1 ending opposite the origin of R_s , Sc_2 a short distance from its tip; R_s short, strongly arcuated; $m-cu$ at near one-third the length of the lower face of cell $1st M_2$.

Abdominal tergites dark brown; sternites variegated yellow and dark brown, the median region more uniformly yellow, the lateral portions of the segments at near midlength with a darkened area. Ovipositor with the genital segment testaceous yellow, the valves more horn-colored.

HABITAT: Bolivia. *Holotype*, ♀, Santa Cruz, February 1929 (ex Fr. Schade).

By my key to the American species of *Atarba* (Annals Ent. Soc. America, 19: 171; 1926), the present species runs to couplet 3, disagreeing with all remaining species in the combination of marked wings and femora with darkened tips.

Teucholabis Osten Sacken.

Teucholabis (Teucholabis) salti sp. n.

General coloration of thorax chestnut, the praescutum with three black stripes; thoracic pleura ochre-yellow with two black longitudinal stripes; halteres yellow; legs yellow, the tips of the femora, tibiæ and basitarsi blackened; wings whitish subhyaline, the stigma brown, the veins of the cord darkened; abdomen black, the segments ringed with yellow; male hypopygium with the outer dististyle a long slender rod that bears an acute lateral spine at midlength.

Male.—Length about 5.5–6 mm.; wing, 5–5.5 mm.

Female.—Length, 5–6 mm.; wing, 4.5–5 mm.

Rostrum and palpi black, the former about as long as the remainder of head. Antennæ black throughout. Head gray, more ochreous beneath.

Pronotum yellow. Mesonotal praescutum chestnut, with three conspicuous black stripes, the lateral stripes delimiting the ground-color, the humeral and lateral margins broadly light yellow; median stripe more or less constricted and sometimes paler behind midlength, not reaching the suture; scutum chiefly chestnut, the lobes margined laterally with black, the median region, together with the adjacent

postero-median region of praescutum yellow; scutellum light yellow; postnotal mediotergite chestnut, the cephalic portion narrowly blackened. Pleura ochre-yellow with two black longitudinal stripes, the more dorsal extending from above the fore coxæ, including the anepisternum, dorsal pteropleurite and pleurotergite; ventral stripe including the fore coxæ, the ventral sternopleurite and meron. Halteres yellow, the knobs brighter. Legs with the coxæ black, more or less pruinose; trochanters brown; femora, tibiæ and basitarsi yellow, the tips broadly black; remainder of tarsi black. Wings whitish subhyaline, the oval stigma brown; veins brownish yellow to yellow, those comprising the cord dark brown. Venation: Sc long, Sc_1 ending opposite midlength of R_s , Sc_2 some distance from its tip, Sc_1 alone exceeding one-third the length of R_s ; R_2 longer than R_{1+2} , in alignment with $r-m$; m arcuated, much longer than the basal section of M_3 .

Abdominal segments black, the caudal margins conspicuously ringed with yellow; hypopygium black. Sternal pocket of sixth segment of male well-developed. Male hypopygium with the apex of basistyle produced into a short black spine, the base on mesal face with abundant delicate setulæ. Outer dististyle a long slender rod, at apex narrowed into an acute spine; at midlength with an acute lateral spine. Inner dististyle blackened, the apex bispinous, the spinous points separated by a rounded notch.

HABITAT: Colombia. *Holotype*, ♂, Rio Frio, Magdalena, December 3, 1927 (G. Salt). *Allotopotype*, ♀, July 8, 1927 (G. Salt). *Paratopotypes*, 7 ♂ ♀, July 21–December 3, 1927 (G. Salt), 25 ♂ ♀, February 18–May 26, 1925 (F. W. Walker), 2 ♂ ♂, November 12, 1925 (F. W. Walker). *Paratypes*, 100 ♂ ♀, Sevilla, Magdalena, November 19, 1925–June 8, 1926 (F. W. Walker); 1 ♂, Orihueca, November 13, 1925 (F. W. Walker). Type in author's collection, majority of paratypes in the Museum of Zoology, University of Michigan.

I take great pleasure in dedicating this interesting *Teucholabis* to Dr. George Salt, to whom I am indebted for several Neotropical Tipulidæ. By my key to the Neotropical species of *Teucholabis* (Trans. Amer. Ent. Soc., 40: 235–239; 1914), the present species runs to couplet 27, disagreeing with both included species in the diagnostic features listed above.

Erioptera Meigen.

Erioptera (Empeda) boliviana sp. n.

General coloration grayish brown; antennæ brownish black throughout; knobs of halteres infuscated; legs brownish black; wings strongly tinged with gray; Sc_1 and R_3 unusually long;

cell 1st M_2 open; male hypopygium with the outer dististyle elongate, very unequally bifid by a small lateral branch; gonapophyses appearing as broad flattened plates.

Male.—Length about 2.8 mm.; wing, 3.6 mm.

Female.—Length about 3.8 mm.; wing, 4.4 mm.

Rostrum and palpi dark brown. Antennæ brownish black throughout; flagellar segments oval. Head brownish gray, the anterior vertex and narrow posterior orbits silvery-gray.

Mesonotum dark grayish brown, the pleura more pruinose. Halteres pale, the knobs infuscated. Legs with the coxæ and trochanters pale yellow; remainder of legs brown, covered by still darker hairs, the outer segments black. Wings with a strong grayish suffusion, the oval stigma more brownish gray; veins brown, the macrotrichia brownish black. Macrotrichia relatively long and conspicuous. Venation: Sc_1 ending about opposite one-fourth the length of R_s , Sc_2 exactly opposite this origin, Sc_1 thus being of unusual length; R_2 a little shorter than R_{2+3+4} ; vein and cell R_3 of unusual length, both exceeding the petiole of the cell; cell 1st M_2 open; *m-cu* close to fork of M .

Abdomen dark brown, the sternites somewhat more yellowish brown. Male hypopygium relatively small. Outer dististyle elongate, with a very reduced lateral branch. Inner dististyle short and straight. Gonapophyses appearing as broad flattened plates.

HABITAT: Bolivia. *Holotype*, ♂, Santa Cruz, February 1929 (ex Fr. Schade).

Erioptera (Empeda) boliviana is very distinct from the remaining Neotropical species, none of which has been taken from farther south than Central America.