

NEW SPECIES OF CRANE-FLIES FROM SOUTH
AMERICA. PART XII
(Diptera: Tipulidae)

By

CHARLES P. ALEXANDER

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CHARLES P. ALEXANDER,
Amherst, Massachusetts

At this time I am considering a number of species, chiefly from Peru, where they were collected by Messrs. Pedro Paprzycki, J. Adger Smyth, and Felix Woytkowski. Other interesting forms are from Brazil, taken by Messrs. Thomaz Borgmeier, Lèrio Gomes, Fritz Plaumann and Michael Witte, and from Bolivia, taken by Dr. William M. Mann while a member of the Mulford Biological Expedition 1921-1922. I am greatly indebted to all of these entomologists for the privilege of studying these important additions to the known fauna of Tropical America. Except where stated to the contrary in the text, the types are preserved in my private collection of World Tipulidae.

Genus **Holorusia** Loew

Holorusia (Holorusia) vulpes sp. n.

Size large (wing, female, over 26 mm.); general coloration of thorax fulvous, the praescutum with a delicate brown median vitta; flagellar segments bicolored; halteres elongate; legs yellow, the extreme tips of tibiae and the outer tarsal segments infuscated; wings with a very strong fulvous ground, the centers of various cells, particularly *M*, with conspicuous paler lacunae; a very restricted dark pattern, including a prearcular costal darkening and an unusually small spot at origin of *Rs*; a paler cloud at near midlength of cell *M* adjoining vein *Cu*; *Rs* long, about two and one-half times *m-cu*; inner end of cell *1st M*₂ strongly arcuated; abdominal tergites fulvous, the basal ones darker except on their lateral portions.

Female.—Length, about 26 mm.; wing, 28 mm.

Frontal prolongation of head deep reddish brown, with a narrow, more darkened lateral line; nasus elongate, simple; palpi black, relatively short and stout, the terminal segment only about one-third longer than the penultimate. Antennae with scape and pedicel obscure yellow; flagellar segments weakly bicolored, brown, their tips narrowly yellow, involving about the distal third or fourth of segment; flagellar segments nearly cylindrical. Head rich fulvous brown; area surrounding antennal bases corrugated; anterior vertex relatively wide, approximately three times the diameter of scape.

Pronotum testaceous brown. Mesonotum more fulvous, the praescutum virtually unpatterned except for a delicate darkened

¹Contribution from the Entomological Laboratory, Massachusetts State College.

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vitta on about the posterior four-fifths; posterior lateral portions of praescutum more infuscated; scutum chiefly infuscated, paling to yellow posteriorly; scutellum pale brown, a little more darkened at base; mediotergite obscure yellow or brownish yellow, the posterior third more grayish pruinose; pleurotergite yellow. Pleura obscure yellow, dorsopleural membrane more fulvous. Halteres elongate, brown, the apex of knob more yellowed. Legs with coxae and trochanters yellowish testaceous; remainder of legs uniform yellow, the tips of tibiae narrowly infuscated; outer tarsal segments darkened. Wings with an unusually strong fulvous ground, with conspicuous paler centers to some of the cells, the one in cell *M* largest and most evident, forming an elongate triangle; other similar pale areas in centers of cells of 2nd *M*₂, *M*₃ and *M*₄, the last largest; linear pale streaks in centers of both anal cells; very indistinct similar lines in cell *R* immediately before origin of *Rs* and near outer portion of cell *Cu*, immediately adjoining the vein; prearcular costal field, including *h* and a small postarcular cloud dark brown; a similar tiny but conspicuous dark brown seam close to origin of *Rs*; a larger but more vague brown cloud in cell *M* near midlength, lying close to vein *Cu*; oblitative areas before stigma and across cord conspicuous; veins deep yellow. Veins unusually glabrous, those beyond cord and caudad of vein *R*₁ entirely without trichia. Venation: *Rs* long, about two and one-half times *m-cu*; distal section of *R*₄₊₅ strongly sinuous on basal half; cell 1st *M*₂ elongate, pointed at outer end, very strongly arcuated at inner end which lies far before level of either *R*₃ or *R*₅; petiole of cell *M*₁ a little more than one-half *m*.

Abdominal tergites fulvous, the basal segments slightly more infuscated; lateral borders of the more proximal tergites and all of the sternites more yellow. Ovipositor with cerci appearing as flattened vertical blades, their tips narrowly obtuse.

Habitat.—Brazil (Paraná). *Holotype*, ♀, Rio Negro, altitude about 600 meters, March 15, 1940 (Father Michael Witte, S. Franciscanos); through Borgmeier.

The most similar regional species is *Holorusia* (*Holorusia*) *parvamacula* sp. n., which differs conspicuously in the ground color and pattern of the wings, coloration of the body, and in the much shorter antennae.

***Holorusia* (*Holorusia*) *parvamacula* sp. n.**

Size relatively large (wing, female, 24 mm.); mesonotal praescutum pale brown, with four scarcely differentiated brown stripes; antennal flagellum bicolored, the bases of the segments brown; mesonotal pleurotergite with its dorsal border dark brown, the color continued caudad onto the lateral borders of the abdominal tergites; legs obscure yellow, the outer segments slightly darker; wings with a strong yellowish brown tinge, the costal border on proximal half darker; central area of wing on proximal portion more yellowish white; three small, dark brown areas on disk, the largest at midlength of vein *Cu* in cell *M*; veins pale; cell *R*₃ strongly constricted at near midlength.

Female.—Length, about 23 mm.; wing, 24 mm.

Frontal prolongation of head brown; nasus distinct, simple; palpi dark brown, the incisures a little whitened; terminal segment beyond the base paling to brownish yellow. Antennae with scape brown, pedicel yellow; flagellar segments bicolored, with approximately the basal half of each brown, the remainder yellow, the bicolorous nature involving all but the outer two segments; flagellar segments sub-cylindrical or with the basal enlargements barely indicated. Head brown.

Pronotum dark brown. Mesonotal praescutum pale brown, with four scarcely differentiated brown stripes that are very narrowly and insensibly margined by darker; scutum similar in color, the centers of the lobes a trifle darkened; scutellum testaceous brown, the parascutella pale gray; mediotergite gray pruinose; pleurotergite obscure yellow, the dorsal border conspicuously dark brown, the marking continued behind onto the lateral borders of the abdominal tergites. Pleura chiefly obscure testaceous yellow; dorsopleural region a trifle darker. Halteres dark brown, the base of stem paler. Legs with coxae and trochanters brownish yellow; remainder of legs passing through obscure yellow to brownish yellow. Wings with a strong yellowish brown tinge, the costal region on proximal half somewhat more darkened; central portion of wing on proximal half paler, more yellowish white, involving the posterior prearcular field, bases of cells *Cu* and *1st A*, and extensive outer portions of cells *R* and *M*; dark brown spots at arculus in base of cell *M*, at origin of *Rs*, and near midlength of cell *M* adjoining vein *Cu* all unusually small; stigma not or scarcely differentiated from the ground, a trifle darker on its outer portion near costa; veins pale, poorly indicated. Venation: *Rs* long, nearly twice the long *m-cu*; veins *R*₃ and *R*₄₊₅ unusually sinuous, greatly constricting cell *R*₃ at near midlength; petiole of cell *M*₁ about one-half *m*; *m-cu* on *M*₃₊₄ shortly before fork.

Abdominal tergites obscure brownish yellow to pale brown medially, the lateral borders darker brown, as above described, on the outer segments more uniformly brown. Ovipositor with the cerci compressed-flattened, relatively broad.

Habitat.—Brazil (Rio de Janeiro). *Holotype*, ♀, Manguinho, D. F., October, 1940 (Lèrio Gomes).

The present fly is most similar to species such as *Holorusia* (*Holorusia*) *vulpes* sp. n., as discussed above. Among the described species, it appears to be closest to *H. (H.) laevis* Alexander, but is quite different.

Genus *Tipula* Linnaeus

Tipula (*Microtipula*) *plaumannina* sp. n.

Allied to *gutticellula*; antennae (male) about one-half the length of wing; flagellar segments weakly tricolored; *M*₃₊₄ elongate, subequal to basal section of *M*₁₊₂; male hypopygium with the apex of inner dististyle lacking spinous points.

Male.—Length, about 11.5–12 mm.; wing, 12–12.5 mm.; antenna about 6.5 mm.

Female.—Length, about 12–14 mm.; wing, 11.5–13 mm.

Frontal prolongation of head pale brown; nasus short and stout;

palpi pale testaceous brown. Antennae (male) elongate; basal three segments yellow; succeeding segments weakly tricolored, the basal enlargement black, the extreme tip yellow, the intermediate portion of each segment brown; on the outermost segments this pattern is less evident; basal enlargements relatively conspicuous; longest verticils shorter than the segments. Head brown, sparsely pruinose; no vertical tubercle; anterior vertex about three times the diameter of scape.

Pronotum and mesonotum reddish brown, without distinct pattern; praescutal interspaces with conspicuous erect setae. Pleura obscure brownish yellow. Halteres with stem obscure yellow, knob brown. Legs with coxae and trochanters yellow; femora obscure yellow; tibiae obscure yellow, the tips very narrowly infuscated; tarsi brownish black, the basitarsi restrictedly brightened at proximal end; claws toothed. Wings patterned as in *gutticellula*. Venation: *Rs* shorter and more strongly arcuated; cell M_1 shorter and broader; M_{3+4} elongate, subequal to the basal section of M_{1+2} .

Abdomen obscure yellowish brown, the tergites with a conspicuous black longitudinal stripe on extreme lateral portions, continuous on basal segments, broken on the basal rings of outer segments; segments six to eight, inclusive, black; hypopygium yellow. Ovipositor with the cerci very short and blunt, hairy, as common in the subgenus. Male hypopygium with the apical lobes of tergite relatively stout, the notch correspondingly short and shallow; each lobe tipped with abundant black setae. Inner dististyle without apical spinous points. Notch of ninth sternite bearing a profoundly bilobed appendage, each lobe densely tufted with long yellow setae, the longest not much shorter than either lobe itself.

Habitat.—Brazil (Santa Catharina). *Holotype*, ♂, Nova Teutonia, November 18, 1936 (Fritz Plaumann). *Allotopotype*, ♀, with type. *Paratopotypes*, 1 ♂, October 30, 1935; 1 ♀, February 12, 1937.

I am privileged to name this species after the collector, Mr. Fritz Plaumann, who has added vastly to our knowledge of the insect fauna of extreme southern Santa Catharina. The best accounts of the nature of the country in the vicinity of Nova Teutonia have been given by Plaumann himself.² *Tipula (Microtipula) plaumannina* has the wing pattern much as in *T. (M.) gutticellula* Alexander and *T. (M.) tijucensis* Alexander, and all three species are closely inter-allied. The present fly differs from *tijucensis* especially in the details of structure of the male hypopygium, particularly of the tergite and dististyles. *Tipula gutticellula* is still known only from the female sex but shows sufficient differences in venation and coloration to warrant the expectation that the male sex, when discovered, will show further differences from the two species above discussed.

***Tipula (Microtipula) mulfordi* sp. n.**

General coloration yellow; antennae (male) long, weakly bicolored; basal enlargements of the segments small; wings with a weak brownish

²Im Urwald. Entomologischen Rundschau, 54: 120-125 (1936); 213-216, 293-298, 320-321 (1937). Ueber das Sammeln in brasilianischen Urwald. Koleopterologische Rundschau, 23: 236-243 (1937); 24: 7-13 (1938).

tinge, the prearcular, costal and outer radial fields darker brown; restricted brown seams on cord, outer end of cell *1st M*₂ and as marginal clouds on outer medial and cubital veins; male hypopygium with the caudal margin of tergite trilobed, the lateral lobes long and slender, the median one broad, tipped with about twenty spinous setae; eighth sternite moderately sheathing, at its apex with a small median lobe.

Male.—Length, about 11 mm.; wing, 11.5 mm.; antenna, about 6 mm.

Allied to *tenuilobata*, differing especially in the details of structure of the male hypopygium. Frontal prolongation of head obscure yellow; nasus relatively short; basal segments of palpi pale, the outer segments broken. Antennae (male) long, exceeding one-half the length of wing; basal segments yellow, the outer ones weakly bicolored, yellow, with the basal enlargements a trifle darker; outer segments more uniformly darkened; basal enlargements of segments small, the remainder nearly cylindrical; verticils shorter than the segments. Head pale brown; no vertical tubercle.

Mesonotum chiefly yellow, the praescutum and scutum without distinct pattern; praescutal setae sparse and delicate. Pleura pale yellow. Halteres with stem yellow, knob weakly darkened. Legs with coxae and trochanters yellow; femora and tibiae yellow, tarsi passing into brown. Wings with a weak brownish tinge, the prearcular, costal and outer radial fields more strongly darkened; restricted brown seams on cord, outer end of cell *1st M*₂, fork of *M*₁₊₂, and as small marginal clouds on veins *M*₁ to *Cu*₁, inclusive; veins pale brown, somewhat darker in the patterned areas. Venation: Compared with *tenuilobata*, cell *R*₁ slightly narrower; vein *R*₁₊₂ more oblique; cells *M*₁, *1st M*₂ and *2nd A* narrower.

Abdomen yellow, the tergites narrowly darkened laterally; sternites yellow; a narrow, dark brown, subterminal ring; hypopygium yellow. Male hypopygium generally as in *tenuilobata*, differing especially in the structure of the tergite and inner dististyle. Ninth tergite with the lateral lobes long and slender, each tipped with about ten long setae; median lobe shorter, broad, a little expanded outwardly, its caudal margin gently concave and provided with about a score of strong spinous setae. In *tenuilobata* the median lobe is narrow, not emarginate at apex, the setae fewer and more elongate. Appendage of ninth sternite much as in *tenuilobata*, appearing as two slender straight arms, divergent, provided with long appressed setae. Eighth sternite moderately projecting, the caudal border produced into a small median lobe, the tip narrowly obtuse, in *tenuilobata* more obtusely rounded.

Habitat.—Bolivia (Beni). *Holotype*, ♂, Cavinás, January, 1922 (M. W. Mann); Mulford Biological Expedition 1921–22; U. S. National Museum.

The nearest described relative of the present fly is *Tipula* (*Microtipula*) *tenuilobata* Alexander, of Amazonian Ecuador, which differs in the somewhat shorter antennae, broader wings, and especially the details of structure of the male hypopygium, as compared above.

Tipula (Microtipula) ortoni sp. n.

General coloration of mesonotum reddish brown, the praescutum with four poorly indicated stripes; antennae (male) relatively short, flagellum black; pleura uniformly pale yellow; halteres infuscated; wings with a weak brownish tinge, the cells beyond cord, especially the wing tip, more strongly darkened; stigma dark brown; cell *2nd A* narrow; male hypopygium with the basistyle produced caudad into a compressed yellow blade; inner dististyle large, bispinous; appendage of ninth sternite long and narrow, pale, at apex split into two finger-like lobes.

Male.—Length, about 11 mm.; wing, 12 mm.; antenna, about 4.2 mm.

Frontal prolongation of head obscure yellow, the dorsal surface with conspicuous black setae; nasus short and stout, tufted with black setae; palpi obscure yellow, elongate. Antennae (male) relatively short for a member of the subgenus; scape and pedicel yellow, flagellum black, the first segment obscure yellow, passing into brown; flagellar segments elongate, rather strongly incised; verticils shorter than the segments. Head grayish brown, the occiput slightly brightened; anterior vertex wide.

Pronotum obscure yellow. Mesonotal praescutum reddish brown, its cephalic portion more grayish; vague indications of four stripes that are poorly differentiated from the ground; posterior sclerites of notum dark reddish brown, the lateral portions of mediotergite still darker. Pleura and pleurotergite pale yellow. Halteres infuscated. Legs with coxae and trochanters pale yellow; femora pale brown, the tips weakly darkened; tibiae brown; tarsi brownish black. Wings with a weak brown tinge, the cells beyond cord, especially the wing tip, more strongly darkened; costal border, especially cell *Sc*, a trifle darker than the ground; stigma oval, dark brown; a restricted to scarcely evident darkened cloud on anterior cord; veins dark brown. Venation: *Rs* arcuated, about one-third longer than *m-cu*; *R*₁₊₂ preserved; petiole of cell *M*₁ longer than *m*; cell *2nd A* narrow.

Abdominal tergites reddish brown, the segments variegated with yellow areas on their glabrous basal rings, the second tergite further brightened at midlength; outer segments more uniformly dark brown; sternites yellow, the outer segments darkened. Male hypopygium with the tergite elongate, its caudal margin broadly and shallowly emarginate, the lateral lobes obtuse; from ventral surface of caudal margin lie two closely approximated oval black lobes that are provided with short black spines. What is interpreted as representing the proctiger appears as two strongly compressed yellow blades beneath the tergite. Basistyle produced into a long compressed yellow blade; mesal face of style near base with a blackened corrugated lobe, as is frequent in the subgenus. Outer dististyle appearing as a very small lobule provided with only five or six long setae. Inner dististyle a strongly bifid structure, produced into two blackened spines, the more ventral one longer, stouter and more acute at apex, the dorsal arm slender, blackened. Appendage of ninth sternite long, pale, at apex split into two fingerlike lobes, the entire appendage with abundant

pale yellow setoid projections. Eighth sternite sheathing, its apex broadly obtuse, with a group of relatively long, conspicuous setae. What appears to represent the aedeagus is a long slender rod, its lateral portions slightly produced into a flange, the margins microscopically fimbriate.

Habitat—Bolivia (Beni). *Holotype*, ♂, Cavinás, February, 1922 (W. M. Mann); Mulford Biological Expedition 1921–22; U. S. National Museum.

Named for the noted explorer, James Orton, who died in 1877 from exposure after investigating the Great Beni River. He is buried on Esteves Island in Lake Titicaca. The closest described ally of the present fly is *Tipula (Microtipula) didactyla* Alexander, of Peru, which has the inner dististyle of the male hypopygium of somewhat this same peculiar conformation. In all other details of coloration and hypopygial structure, the two flies are amply distinct.

***Tipula (Eumicrotipula) paranensis* sp. n.**

Belongs to the *glaphyoptera* group; allied to *profuga*; size large (wing, male, over 20 mm.); antennae short, basal flagellar segments bicolored; mesonotal praescutum with four entire dark brown stripes, the cephalic portion with an additional median capillary vitta dividing the ground line; posterior sclerites of notum conspicuously patterned; femora brownish yellow, tips conspicuously blackened; wings pale cream yellow, conspicuously clouded with dark brown and paler brown areas; R_{1+2} entire; cell 1st M_2 large; male hypopygium with the caudal margin of ninth tergite with three acute points; eighth sternite with a deeply bilobed appendage.

Male.—Length, about 19 mm.; wing, 22.5 mm.; antenna, about 2.8 mm.

Frontal prolongation of head light brown; nasus elongate; palpi with first segment black, second brown; outer segments broken. Antennae short; scape brownish yellow; pedicel yellow; first flagellar segment yellow, the succeeding ones bicolored, their basal portion brown, the distal two-thirds yellow, on outer segments uniformly infuscated; basal portion of segments enlarged but not forming a conspicuous swelling; verticils long and conspicuous. Head light brownish yellow, with a darker brown central vitta.

Pronotum with the ground obscure yellow, conspicuously patterned with dark brown. Mesonotal praescutum obscure yellow, with four entire dark brown stripes that greatly restrict the ground; intermediate stripes confluent behind, divided by a brownish yellow line on more than the anterior half, this latter further split by a capillary black vitta; scutum yellowish gray, each lobe with two conspicuous dark brown areas; scutellum light brown, the center brownish black, parascutella brown; mediotergite conspicuously patterned, the cephalic half infuscated, sending a central point backward to the caudal margin, this area bordered laterally and behind by buffy yellow, the posterior border of sclerite with a pair of circular brown spots; pleurotergite yellow, the posterior half of katapleurotergite conspicuously brownish black. Halteres with stem brownish yellow, knob weakly infuscated basally, the

apices obscure yellow. Legs with the coxae and trochanters obscure yellow; femora brownish yellow, the tips conspicuously blackened, the amount subequal on all legs, involving about the distal tenth of segment, preceded by a narrow, vaguely indicated, clearer yellow ring; remainder of legs brown, the outer tarsal segments darker; claws small, simple. Wings with the ground color pale cream yellow, cell *C* more brownish yellow, interspaces of cell *Sc* clear yellow; a heavy and very conspicuous dark brown and paler brown clouded pattern; most of prearcular field darkened; a series of four subcostal dark brown areas, the first large, extending from *h* across bases of cells *R* and *M* into cell *Cu*; second and third areas not involving cell *C*, behind almost crossing cell *R* and more or less interconnected by a central darkening in the latter cell; stigma pale brown, not differentiated from the extensive cloudings elsewhere on wing; the paler brown areas much exceed the yellow ground except in the subbasal portions of cells *R* and *M*; in cell *1st A* the dark and yellow patterns become very irregular; yellow post-stigmal mark very restricted, scarcely passing cell *R*₂ behind; cells *M*₁ to *M*₄ with central yellow marginal areas, subtended by darkenings at ends of the veins; ground areas in cells *R* and *M* paler and more conspicuous; veins brown, more brownish yellow in the subcostal interspaces. Venation: *R*₁₊₂ entire but with distal end pale and lacking trichia; *Rs* very long, about twice the long *m-cu*; cell *1st M*₂ large, especially when compared with *profuga*; petiole of cell *M*₁ less than one-half *m*.

Basal abdominal tergites fulvous yellow, narrowly trivittate with brown, the pattern less evident on the outer segments; sternites yellow, with a brownish black central spot before caudal border; subterminal segments more infuscated; hypopygium chiefly yellow. Male hypopygium with the tergite transverse; caudal border with three conspicuous acute points, all with a sharp carina leading backward from tip; median point a broad triangular blade, without lateral shoulders, as in *profuga*; lateral borders of tergite further produced into obtusely rounded lobes. Basistyle with the lobe triangular, its lower angle bearing a pencil of about ten setae, some of unusual length. Outer dististyle elongate, weakly expanded on distal half. Inner dististyle with the head expanded, the setae on outer margin strong and microscopically roughened, forming a linear series of bristles, not a dense outer brush as in *profuga*. Gonapophyses very unequally bilobed, the inner arm a conspicuous elongate blade that is expanded into a flattened spatula. Eighth sternite with its appendage deeply bilobed, broad, with conspicuous setae; this structure is damaged in the unique type and it cannot be affirmed as to whether the median split completely divides the appendage or not.

Habitat.—Brazil (Paraná). *Holotype*, ♂, Rio Negro, altitude 600 meters, May 12, 1940 (Father Michael Witte).

The most similar and allied species is *Tipula (Eumicrotipula) profuga* Alexander, likewise of southeastern Brazil. This differs conspicuously in the coloration of the body and wings, the small cell *1st M*₂, and especially in the structure of the male hypopygium, notably the ninth tergite, inner dististyle, and appendage of the eighth sternite.

Genus *Limonia* Meigen*Limonia* (*Limonia*) *brachycantha* sp. n.

Allied to *repanda*; wings with *Rs* square and spurred at origin, not bent backward; legs with femora brownish black, the distal third yellow, enclosing a broad black ring that is subequal in extent to the yellow subtending annuli vein; *2nd A* not suddenly curved into the anal margin; male hypopygium having the rostral prolongation of the ventral dististyle with a long basal portion, beyond the spines becoming relatively narrow; rostral spines two, short and straight.

Male.—Length, about 6.5–7 mm.; wing, 7.2–8 mm.

Female.—Length, about 6.5–7.5 mm.; wing, 7.5–8.5 mm.

Rostrum and palpi black, the former relatively long, including the labial palpi about equal to remainder of head. Antennae with scape and pedicel blackened, flagellum infuscated, tinged with greenish; basal flagellar segments subglobular, crowded, the outer ones becoming elongate; terminal segment nearly one-half longer than the penultimate. Anterior vertex silvery yellow, relatively broad, subequal in width to the diameter of scape; head more darkened behind.

Thorax greenish yellow, the pronotum and praescutum with a central black vitta that becomes obsolete just before the suture; mediotergite with a comparable but broader central line; in the holotype, the scutal lobes are undarkened and the posterior border of the scutellum is but weakly infuscated. Halteres uniformly pale green, in some of the paratypes with the knobs slightly darkened. Legs with the coxae and trochanters green or greenish yellow; femora chiefly brownish black, the bases restrictedly paler, with more than the distal third yellow, enclosing a broad black subterminal ring, in the holotype this being subequal in width to the subtending yellow rings; tibiae brown to brownish black; tarsi black, usually with the fore pair somewhat paler. Wings with a strong yellow tinge, the costal border conspicuously more saturated yellow; a restricted but conspicuous dark brown pattern, as follows: A small area at arculus; a narrow common mark over fork of *Sc* and origin of *Rs*, the latter wider; stigma not or scarcely darkened, restricted to isolated spots at ends of the free tip of *Sc*₂ and *R*₂; conspicuous seams over cord and outer end of cell *1st M*₂, interconnected along vein *M*₃₊₄; distal sections of veins *M*₃ and *M*₄ seamed; small dark marginal clouds over *R*₃, *M*₁₊₂, *Cu* and *1st A*, very large and conspicuous at *2nd A*, lacking at *R*₄₊₅; veins yellow, darker in the patterned areas. Venation: *Sc* relatively short, *Sc*₁ ending just beyond origin of *Rs*, *Sc*₂ near its tip; *Rs* square at origin, weakly to strongly spurred; *m-cu* before fork of *M* vein; *2nd A* not suddenly curved into the margin.

Abdomen yellow, including the hypopygium; posterior margins of tergites two to six, inclusive, with a narrow but conspicuous dark brown border that ordinarily does not reach the lateral margins. Male hypopygium with the tergite transverse, narrowed outwardly, with very low lobes that are provided with a few scattered long setae. Basistyle with coarse black setae on mesal face; ventromesal lobe simple. Dorsal dististyle a long strong rod, nearly straight for most of its length, thence strongly curved and narrowed to an acute blackened point. Ventral dististyle of moderate size, about one-half more extensive than the basi-

style; rostral prolongation with a long basal portion, the two spines unusually small; apex of prolongation beyond the spines long and narrow, approximately three or four times as long as the spines.

In other specimens regarded as being conspecific, the centers of the scutal lobes are more distinctly darkened; in still more heavily patterned individuals, the dark pattern of the scutal lobes converges behind over the scutellum, leaving the central basal portion of the latter pale. In still other cases, the dark spot on the wings over the fork of *Sc* is disconnected from the one at origin of *Rs*.

Habitat.—Peru (Ayacucho). *Holotype*, ♂, Yanamonte, La Mar, in fog forests, altitude 3,000–4,100 meters, August 29, 1941 (Woytkowski). *Allotopotype*, ♀, September 26, 1941. *Paratopotypes*, 7 ♂ ♀, August 31–October 2, 1941.

In its hypopygial structure, *Limonia* (*Limonia*) *brachycantha* comes closest to *L. (L.) repanda* Alexander, of Ecuador, which differs especially in the leg pattern and in the details of wing venation. In its general appearance, especially the leg pattern, the fly is more like *L. (L.) meridensis* Alexander, of the Venezuelan Andes, which has the spines of the male hypopygium much longer.

Limonia (*Dicranomyia*) *maligna* sp. n.

General coloration of thorax pale yellow, with a single, very conspicuous, black median stripe on pronotum and most of praescutum; a narrower dark vitta on mediotergite; head black; scape and pedicel of antennae obscure yellow, the flagellar segments weakly bicolored; knobs of halteres infuscated; legs brownish yellow, the outer tarsal segments dark brown; wings broad, variegated only by the pale brown stigma; *Sc*₁ and *Sc*₂ ending before origin of *Rs*; *m-cu* at fork of *M*; ovipositor with cerci shorter than the hypovalvae, compressed flattened, with very obtuse tips.

Female.—Length, about 8 mm.; wing, 10.5 mm.

Rostrum and palpi black. Antennae with scape and pedicel obscure yellow, flagellum pale brown, somewhat brighter on basal portions of the segments to produce a weak bicolored appearance; flagellar segments oval, the outer ones more elongate; terminal segment nearly one-half longer than the penultimate, constricted and narrowed on apical third. Head black, posterior vertex without pruinosity; anterior vertex a little pruinose, about as wide as the diameter of scape.

Pronotal scutum yellow, with a conspicuous median brownish black line, the scutellum yellow. Mesonotum uniform reddish yellow, the praescutum with a single black stripe that is not quite connected with the pronotal darkening, behind ending some distance before the suture; mediotergite with a very narrow and poorly indicated dusky median line. Pleura and pleurotergite uniformly pale yellow, unpatterned. Halteres with stem yellow, knob infuscated. Legs with coxae and trochanters pale yellow; remainder of legs more obscure yellow, the outer tarsal segments passing into dark brown. Wings broad, whitish subhyaline, scarcely patterned except for the wide, pale brown stigma; a scarcely evident darkening over the anterior cord; costal and prearcular fields a trifle more yellowed than the remainder of ground; veins brown.

Venation: Sc_1 ending a short distance before origin of Rs , Sc_2 some distance from its tip, Sc_1 alone a little longer than $r-m$; free tip of Sc_2 very short, in transverse alignment with R_2 ; Rs arcuated, about one-third longer than basal section of R_{4+5} ; cell 1st M_2 about as long as vein M_3 beyond it; $m-cu$ at fork of M ; vein 2nd A gently sinuous, long, the cell relatively narrow.

Abdominal segments weakly infuscated, with broad pale caudal borders; genital shield reddish yellow. Ovipositor with the dark-colored cerci compressed-flattened, unusually short, wide, their tips very obtuse; hypovalvae projecting a short distance beyond the tips of the cerci.

Habitat.—Peru (Ayacucho). *Holotype*, ♀, Yanamonte, La Mar, in fog forests, altitude 3,000–4,100 meters, October 2, 1941 (Woytkowski).

Limonia (Dicranomyia) maligna is quite different from all of the now numerous regional species of the subgenus. The type of thoracic pattern is found in certain Holarctic species but had not been recorded in the present fauna. The structure of the ovipositor is peculiar and indicates a somewhat isolated species of fly.

***Limonia (Dicranomyia) pennifera* sp. n.**

General coloration of thorax reddish brown, the praescutum with three brownish black stripes; rostrum and antennae uniformly blackened; thoracic pleura uniformly reddish brown; halteres long and slender, black; femora obscure yellow, narrowly more blackened at tips; wings brownish gray, variegated only by the slightly darker stigma; $m-cu$ a short distance before fork of M ; male hypopygium with the lobes of ninth tergite squarely truncated; face of basistyle bearing a curved appendage, the outer margin of which bears about fifteen strong spinous setae; gonapophyses with numerous tubercles near base of mesal-apical lobe, the face of the apophysis with a lateral flange.

Male.—Length, about 8–8.5 mm.; wing, 10–10.5 mm.

Rostrum black, relatively long, exceeding one-half of the remainder of head; palpi black. Antennae black; flagellar segments long-oval; terminal segment a trifle longer than the penultimate. Head brownish gray; anterior vertex moderately wide, somewhat less than twice the diameter of scape.

Pronotum dark brown, paler laterally. Mesonotal praescutum reddish brown with three nearly confluent brownish black stripes, the posterior interspaces very obscure; scutal lobes similarly darkened, the central area and the scutellum pale, the latter restrictedly more darkened at base; postnotum reddish brown. Pleura uniform reddish brown. Halteres long and slender, black, the base of stem restrictedly pale. Legs with coxae reddish yellow, the fore pair a trifle more darkened; trochanters yellow; femora obscure yellow, the tips narrowly more blackened; tibiae and tarsi brownish black. Wings with an almost uniform brownish gray suffusion, variegated only by the long-oval, slightly darker stigma; veins brown, with obliterative areas over fork of Rs and at posterior end of $r-m$. Venation: Sc short, Sc_1 ending a short distance before origin of Rs , Sc_2 some distance from its tip, Sc_1 alone exceeding $r-m$; Rs weakly angulated at origin, only a little

longer than the basal section of R_{4+5} ; cell $1st M_2$ a little shorter than vein M_4 beyond it; $m-cu$ a short distance before fork of M ; vein $2nd A$ sinuous.

Abdominal tergites dark brown, the posterior borders of the segments narrowly paler; sternites obscure yellow; hypopygium a trifle brightened. Male hypopygium with the tergite transverse, its caudal margin with a small but narrow median notch, the lateral lobes broad with truncated apices. Basistyle with ventromesal lobe simple; on face of style near base of lobe with a conspicuous curved appendage that is margined with about 13 to 15 strong spines; inner margin of style with additional strong scattered setae. Dorsal dististyle a strong sickle, the apex long-produced. Ventral dististyle large and fleshy, its area exceeding twice that of the basistyle; rostral prolongation small, bearing two strong spines, the more basal one from a strong tubercle on outer margin of prolongation, the outer spine more lateral in position. Gonapophyses with mesal-apical lobe stout, at apex produced laterad into a small point, the inner edge with a small notch; surface of body of style at base of lobe with numerous roughened papillae; face of apophysis with a lateral flange.

Habitat.—Peru (Ayacucho). *Holotype*, ♂, Yanamonte, La Mar, in fog forests, altitude 3,000–4,100 meters, September 9, 1941 (Woytkowski). *Paratopotype*, ♂, October 3, 1941.

The most similar species is *Limonia (Dicranomyia) quadrifurcata* Alexander, of Colombia, which differs in its general appearance and in all details of structure of the hypopygium, especially the rostral prolongation of the ventral dististyle and the conformation of the winglike lobe of the basistyle.

***Limonia (Dicranomyia) claribasis* sp. n.**

General coloration greenish yellow, the praescutum with a single broad and conspicuous black stripe; antennae black throughout; thoracic pleura greenish yellow, conspicuously patterned with dark brown; knobs of halteres brownish black; fore coxae blackened, the others pale; femora dusky, the tips broadly yellow; wings whitish subhyaline, variegated with brown, including two disconnected areas along cord, additional to the darker stigma; no dark markings on basal two-thirds of wing; abdominal tergites bicolored, brownish black subbasally, the narrow bases and broad tips yellow; male hypopygium with the gonapophyses smooth, the mesalapical lobe a slender curved hook.

Male.—Length, about 7 mm.; wing, 8.5 mm.

Rostrum and palpi black. Antennae black throughout; flagellar segments oval. Head dark brownish gray, somewhat paler behind; anterior vertex moderately wide, approximately twice the diameter of scape.

Pronotum brownish black medially, paler on sides. Mesonotal praescutum obscure greenish yellow with a single broad and conspicuous black median stripe, the usual lateral pair lacking; scutal lobes uniformly brownish black, the median region obscure yellow; posterior sclerites of notum black, the scutellum with a pale central line; pleurotergite greenish on posterior portion, more infuscated on proximal half. Pleura greenish yellow, conspicuously patterned with dark

brown on the propleura and anepisternum, the pteropleurite uniformly green. Halteres relatively long and slender, stem pale, greenish at base, knob brownish black; outer portion of stem with long erect setae. Legs with fore coxae extensively blackened, the remaining pairs greenish testaceous; trochanters greenish; femora dusky, brighter basally, the tips rather broadly and conspicuously yellow; tibiae and tarsi dark brown to brownish black. Wings whitish subhyaline, variegated with brown, including the oval, darker brown stigma and two extensive paler brown clouds, one over the fork of *Rs*, confluent with the stigma, the other over *Cu* at its junction with *m-cu*; the entire basal two-thirds of wing without darkenings; veins pale, somewhat darker in the clouded portions, except in the obliterative fields. Venation: *Sc*₁ ending just before origin of *Rs*, *Sc*₂ a short distance from its tip, *Sc*₁ alone about as long as *r-m*; *Rs* about twice the basal section of *R*₄₊₅; free tip of *Sc*₂ and *R*₂ in transverse alignment; cell *1st M*₂ about as long as vein *M*₄ beyond it; *m-cu* shortly before fork of *M*.

Abdominal tergites bicolored, the subbasal half or nearly so brownish black, the very narrow bases and broad apices abruptly yellow, on the subterminal segments the dark color more reduced; sternites and hypopygium pale. Male hypopygium with its general structure much as in *flavofascialis* and allies, differing especially in the gonapophyses. Ninth tergite with the lateral lobes obliquely truncate, the median notch very broadly and shallowly V-shaped. Ventral dististyle much more extensive than the basistyle; rostral prolongation short and obtuse, with the two spines exceeding the prolongation; on lower margin of rostrum with three strong, flattened setae. Gonapophyses entirely smooth, without spinous points; mesal-apical lobe a slender, strongly curved hook, its tip acute.

Habitat.—Peru (Ayacucho). *Holotype*, ♂, Yanamonte, La Mar, in fog forests, altitude 3,000–4,100 meters, September 3, 1941 (Woytkowski). *Paratopotypes*, 2 ♂♂.

There are various allied and generally similar species, such as *Limonia (Dicranomyia) alboapicalis* (Alexander), of Chile and Andean Argentina; *L. (D.) andicola* (Alexander), of Bolivia; *L. (D.) flavofascialis* (Alexander), of Argentina, and others. The present fly differs conspicuously in the wing pattern, body coloration, and in the details of structure of the male hypopygium, as the gonapophyses.

***Limonia (Dicranomyia) titicacana* sp. n.**

Size relatively large (wing, male, over 12 mm.); mesonotum obscure yellow, the praescutum with three conspicuous dark brown stripes; posterior sclerites of notum and the pleura patterned with brown; legs pale brown, the outer tarsal segments blackened; wings whitish subhyaline, restrictedly patterned with darker; stigma pale; a darkened seam in cell *M* adjoining vein *Cu*; male hypopygium with the tergite long, its caudal margin with a narrow median notch, the conspicuous lobes slightly emarginate, blackened; ventral dististyle large, its rostral prolongation with two spines, the apex with unusually long and conspicuous setae.

Male.—Length, about 11 mm.; wing, 12.5 mm.

Rostrum brownish yellow; palpi black. Antennae black, the basal half of scape obscure yellow, the pedicel a little paler than the flagellum; flagellar segments long-oval. Head dark gray, variegated with light gray on front and as a narrow central line on posterior vertex; anterior vertex relatively wide, about twice the diameter of scape.

Pronotum dark brown, paling to yellow on sides. Mesonotal praescutum with the ground obscure yellow, clearer on sides; three conspicuous, dark brown stripes, the median one widened behind and with a shallow median pale line; scutal lobes conspicuously dark brown, the median area and posterior lateral angles of lobes yellow; scutellum obscure yellow medially, slightly infuscated on either side of midline; mediotergite obscure yellow on sides of the cephalic half, more infuscated behind; pleurotergite weakly infuscated. Pleura obscure yellow, striped with medium brown, especially a more dorsal stripe from the sides of the pronotum and fore coxae, crossing the anepisternum and dorsal pteropleurite onto the pleurotergite; ventral sternopleurite less conspicuously darkened. Halteres relatively long, infuscated, the basal half of stem yellow. Legs with the fore coxae darkened, as described, the remaining coxae and all trochanters clear yellow; remainder of legs pale brown, the femoral bases clearer; outer tarsal segments passing into black. Wings whitish subhyaline, only slightly patterned with darker; stigma relatively large but very pale, a little heavier adjoining the veins; a darkened seam in cell *M* adjoining vein *Cu*; wing axilla narrowly darkened; veins brown. Venation: *Sc* short, *Sc*₁ ending just before origin of *Rs*, *Sc*₂ removed from its tip, *Sc*₁ alone about one-half the basal section of *R*₄₊₅; cell 1st *M*₂ long, approximately equal to the distal section of *M*₁₊₂; *m-cu* a short distance beyond fork of *M*; vein 2nd *A* gently sinuous.

Abdominal tergites dark brown, the extreme caudal margins pale; sternites yellow, with a broad median brown stripe, the caudal borders narrowly pale; outer abdominal segments more uniformly darkened; eighth tergite paler; ninth tergite pale excepting the darkened lobes; basistyles dark, ventral dististyles conspicuously pale. Male hypopygium with the ninth tergite relatively long, the length subequal to the width opposite midlength; caudal margin with a very deep and narrow median notch, the lobes broad, each weakly emarginate to produce a conspicuous mesal lobule and a low broad lateral shoulder; lobes conspicuously fringed with setae. Basistyle relatively small; ventromesal lobe simple. Dorsal dististyle small, strongly curved to the narrowly obtuse tip. Ventral dististyle large and fleshy; rostral prolongation small, stout, with two short, slightly unequal spines that are placed close together on outer face near base; spines subequal to or a little shorter than the apex of prolongation beyond their insertion; rostrum obtuse, provided with unusually numerous and conspicuous setae. Gonapophyses broad, smooth, the mesal-apical lobe stout, its lateral angle produced laterad into a sharp point.

Habitat.—Peru (Puno). *Holotype*, ♂, Chucuito, near Lake Titicaca, altitude 12,500 feet, April 7, 1939 (J. A. Smyth).

Limonia (Dicranomyia) titicacana, while generally similar to various other high Andean members of the subgenus, differs conspicuously

in the structure of the male hypopygium, especially the tergite and the rostral prolongation. Among such similar but not necessarily closely allied forms are the various species centering around *L. (D.) andicola* (Alexander) and *L. (D.) punoensis* Alexander.

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

General coloration gray, the praescutum with five black stripes; rostrum and antennae black; knobs of halteres blackened; femora weakly infuscated, with a broad brownish black subterminal ring, the actual tip narrowly yellow; wings grayish subhyaline, patterned with dark brown costal areas and brownish gray washes; third dark costal area a common one over fork of *Sc* and origin of *Rs*; male hypopygium with the rostral prolongation of the ventral dististyle bearing on its outer margin a very conspicuous flattened plate having the usual spines at the two outer angles; spines elongate, the outer one curved; gonapophyses with mesal-apical lobe long and slender, blackened, the tip acute.

Male.—Length, excluding rostrum, about 6.5 mm.; wing, 8 mm.; rostrum, about 3 mm.

Rostrum relatively long, black throughout. Antennae black throughout; flagellar segments cylindrical or nearly so, with inconspicuous verticils; terminal segment fully one-half longer than the penultimate. Head light gray, the posterior vertex with a conspicuous blackened area on either side of the ground median vitta.

Pronotum gray, with three black stripes. Mesonotal praescutum gray, with five narrow black stripes, the intermediate group of three slightly wider than the interspaces; lateral pair not reaching the margin; humeral region a trifle more buffy; scutum gray, the lobes rather weakly patterned with brown; scutellum testaceous brown, sparsely pruinose; postnotum gray. Pleura dark plumbeous gray; dorsopleural membrane dark. Halteres with stem light yellow, knob blackened. Legs with coxae yellow, the fore pair more blackened basally; trochanters yellow; femora chiefly infuscated, the bases narrowly clear, with a broad brownish black subterminal ring that is preceded by a very vague and diffuse more yellow band, the actual tip narrowly yellow; tibiae and tarsi brownish black to black; claws with a long basal spine. Wings grayish subhyaline, handsomely patterned with dark brown and more brownish gray; the darker areas appear as a series of four large costal areas, the first at and beyond arculus, the third a large common mark over fork of *Sc* and origin of *Rs*, much restricted in the radial field; last dark area at stigma; somewhat paler markings along cord, outer end of cell *1st M*₂ and at ends of the veins, most evident at *R*₃ and the anal veins; subcostal interspace between the second and third dark area conspicuously yellow; veins brown, paler brownish yellow in the ground fields, clear yellow in the costal interspaces. Venation: *Sc* moderately long, *Sc*₁ ending about opposite one-third to one-fourth the length of *Rs*, *Sc*₂ near its tip; *Rs* long, approximately three times the basal section of *R*₄₊₅; cell *1st M*₂ long, subequal to vein *M*₁₊₂ beyond it; *m-cu* a short distance beyond fork of *M*; vein *2nd A* gently sinuous.

Abdomen brownish black, the caudal borders of the segments restrictedly paler; hypopygium blackened. Male hypopygium with the tergal

margin with a broad U-shaped notch, the lateral lobes obtuse, with thickened margins that are provided with numerous long setae. Basistyle small, its area a little less than one-third that of the ventral dististyle; ventromesal lobe simple, relatively narrow. Dorsal dististyle a slightly curved rod, slightly widened before the very slender acute tip. Ventral dististyle with the rostral prolongation short and stout, its outer margin at base with a very conspicuous flattened basal tubercle or plate that is wider at its base than it is long; at apical angles of plate with two long spines, the outer one curved, the inner one subequal in length and size, straight; spines about one-half longer than the total length of the prolongation. Gonapophyses with mesal-apical lobe long and slender, blackened, very gently curved, the tip acute.

Habitat.—Peru (Ayacucho). *Holotype*, ♂, Yanamonte, La Mar, in fog forests, altitude 3,000–4,100 meters, October 9, 1941 (Woytkowski).

Although generally similar in its general appearance to species such as *Limonia* (*Geranomyia*) *diabolica* Alexander and *L. (G.) plumbeipleura* (Alexander), the present fly has the hypopygium more as in the other wise entirely different *L. (G.) laudanda* Alexander, but with the structural details entirely distinct.

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

Allied to *glauca*; general coloration greenish yellow, the praescutum with three widely separated dark brown stripes, the median one narrow; rostrum approximately one half the length of body; knobs of halteres blackened; femora brown, the distal third yellow, enclosing a conspicuous black subterminal ring; wings pale yellow, with a heavy brown pattern that is chiefly marginal in distribution; *Sc* relatively long, *Sc*₁ ending about opposite two-fifths to nearly one-half *Rs*; male hypopygium with the ventral dististyle very large, its rostral prolongation small, with two long straight spines from separate but closely approximated tubercles; proctiger very broad and obtuse, setiferous.

Male.—Length, excluding rostrum, about 8.5–10 mm.; wing, 8.8–10 mm.; rostrum, about 4.5–5 mm.

Female.—Length, excluding rostrum, about 9 mm.; wing, 10 mm.; rostrum, about 4.5 mm.

Rostrum elongate, approximately one-half the length of wing or body, black, the tips of the labial palpi paling to brown. Antennae black; flagellar segments cylindrical to long-cylindrical, exceeding the verticils in length, the longest of the latter unilaterally distributed; terminal segment elongate, more than one-half longer than the penultimate. Head with a light gray median line, the sides of the posterior vertex blackened; anterior vertex narrow, less than one-half the diameter of scape.

Pronotum greenish, more infuscated medially and on sides. Mesonotal praescutum with the ground obscure orange or fulvous, passing into greenish on the humeral portions; three dark brown stripes, the median one unusually narrow, broadest at its posterior end; lateral stripes relatively wide, occupying the extreme lateral border of sclerite, the ground interspaces thus being very wide; scutum with median area grayish testaceous, each lobe obscure orange with a single large and conspicuous dark brown central area; scutellum grayish testaceous, the

posterior border on either side of midline bordered with brownish black; mediotergite with central portion black, narrowly margined on all sides with obscure orange; pleurotergite pale, tinged with green. Pleura pale, suffused with greenish tints, more reddened on mesepisternum. Halteres with stem greenish, especially at base, knob blackened. Legs with coxae and trochanters greenish; femora pale basally, passing into brown; about the distal third is yellow, enclosing a conspicuous black subterminal ring which thus is preceded and followed by subequal yellow annuli; tibiae brownish black; tarsi pale brown. Wings pale yellow, the costal region even more saturated; an unusually heavy and handsome brown pattern that is chiefly marginal in distribution, including four costal areas, as well as major marks along the posterior border; third costal darkening usually a common one, covering both the fork of *Sc* and origin of *Rs*; fourth area confluent with a broad seam along cord, this becoming more widened at tip of vein *Cu*; of the dark marginal clouds, those of R_{4+5} and M_{1+2} are very small, thence becoming larger and more conspicuous, those at *Cu* and the Anal veins unusually striking; outer end of cell *1st M*₂ narrowly infuscated; additional brown clouds along vein *Cu* in cell *M* and along the axillary border; veins yellow, brown in the clouded portions. Venation: *Sc* relatively long, *Sc*₁ ending at near two-fifths to one-half the length of *Rs*, *Sc*₂ a short distance from its tip; *Rs* more or less angulated near origin; *r-m* shortened, the distal section of R_{4+5} more or less arcuated at this point; cell *1st M*₂ elongate, a little less than the distal section of vein M_{1+2} ; *m-cu* at or close to fork of *M*; vein *2nd A* very gently sinuous, the cell wide.

Abdominal tergites dark reddish brown, tinted with green, the sternites paler green; ventral dististyles of male conspicuously light yellow. Male hypopygium with the ninth tergite transverse, its caudal border with a broad notch, the lateral lobes low and obtuse, with abundant setae. Basistyle small, its area only about one-third to one-fourth that of the ventral dististyle; ventromesal lobe simple. Dorsal dististyle a gently curved darkened rod, its tip acute. Ventral dististyle elongate; rostral prolongation very small, slender, the two spines on outer face near base, placed close together but from small separate tubercles; spines subequal, exceeding the prolongation in length. Gonapophyses with mesal-apical lobe conspicuous, bearing a lateral flange. Proctiger very broad and obtuse, setiferous.

Habitat.—Peru (Ayacucho). *Holotype*, ♂, Yanamonte, La Mar, in fog forests, altitude 3,000–4,100 meters, August 18, 1941 (Woytkowski). *Allotopotype*, ♀, September 3, 1941. *Paratopotypes*, 3 ♂♂, July 26–September 7, 1941.

Among the described species, the present fly is closest to *Limonia* (*Geranomyia*) *glauca* (Alexander) which differs conspicuously in the pattern of the mesonotum, in other less evident details of coloration of the body and wings, and in the structure of the male hypopygium.

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

Allied to *stenophallus*; mesonotal praescutum with a broad median reddish brown stripe, bordered laterally by more silvery lines; rostrum black, elongate; knobs of halteres infuscated; femora yellow, with a narrow brown subterminal ring; wings brownish yellow, restrictedly

but conspicuously patterned with brown, including a series of five costal areas, the third at origin of *Rs* and the fourth at fork of *Sc* widely separated; *Sc* long, *Sc*₁ ending about opposite four-fifths *Rs* or beyond; male hypopygium with the mesal-apical lobe of gonapophysis appearing as a strong blackened rod, near its tip bent almost at a right angle, the surface with microscopic setulae; aedeagus relatively stout, especially on its basal portion.

Male.—Length, excluding rostrum, about 6.5 mm.; wing, 7.6 mm.; rostrum, about 3.4 mm.

Female.—Length, excluding rostrum, about 8 mm.; wing, 8 mm.; rostrum, about 4.5 mm.

Rostrum black, the distal half somewhat paler, elongate, approximately one-half the length of wing. Antennae black; flagellar segments cylindrical, the verticils of the more proximal segments elongate, unilaterally distributed. Head with a continuous narrow light gray line extending the entire length of the dorsum, the posterior vertex on either side strongly darkened; anterior vertex narrow, approximately one-fourth as wide as the diameter of scape.

Pronotum reddish brown. Mesonotal praescutum viewed from above broadly reddish brown medially, forming a broad central stripe that is bordered on either side by a silvery line; lateral praescutal borders narrowly darkened; posterior sclerites of notum, including the central portion of scutum, testaceous brown, pruinose; scutal lobes somewhat darker. Pleura reddish brown, vaguely patterned with darker, especially as a central stripe from the fore coxae backward. Halteres with stem obscure yellow, knob infuscated. Legs with coxae yellow, the fore pair darker; trochanters yellow; femora yellow with a narrow but conspicuous brown subterminal ring placed about its own length before the yellow tip; remainder of legs broken. Wings with a strong brownish yellow tinge, the costal border somewhat clearer yellow; a restricted but conspicuous brown pattern, as follows: Postarcular in cell *Sc*; over the supernumerary crossvein in cell *Sc*; origin of *Rs*, extending from vein *Sc* about midway across *R*; fork of *Sc*, this area widely separated from the last; stigma small, subcircular in outline; narrow brown seams along cord and outer end of cell 1st *M*₂; veins yellow, brown in the patterned areas. Costal fringe (male) short. Venation: *Sc* long, *Sc*₁ ending about opposite four-fifths to five-sixths *Rs*, *Sc*₂ at its tip; *Rs* long, square at origin; cell 1st *M*₂ elongate, the second section of vein *M*₁₊₂ longer than the distal section; *m-cu* close to fork of *M*, subequal to distal section of *Cu*₁; vein 2nd *A* virtually straight for most of its length, the cell relatively narrow.

Abdomen dark brown, sternites somewhat paler; hypopygium more brightened. Male hypopygium with the tergite transverse, its caudal margin with a small, shallow, median notch, the broad lateral lobes with wide thickened margins that are provided with numerous setae; a transverse row of setae behind midlength of sclerite. Basistyle relatively small, its area about two-thirds that of the ventral dististyle; ventromesal lobe simple. Dorsal dististyle a long, slender, strongly curved rod, the long-extended tip acute. Ventral dististyle with its rostral prolongation relatively small and stout, the two spines arising from a more sclerotized tubercle, relatively widely separated; beyond

the spines, the prolongation is relatively narrow, especially when viewed from the side. Gonapophyses with mesal-apical lobe appearing as a strong blackened rod, near its tip bent almost at a right angle into a powerful black spine; surface of rod over most of its length with microscopic setae. Aedeagus much stouter than in *stenophallus*, particularly on basal half, the distal portion narrowed, terminating in two unusually small apical lobes. Proctiger relatively broad, with abundant long coarse setae.

Habitat.—Peru (Junin). *Holotype*, ♂, Satipo, Jauja, altitude 800–900 meters, June 22, 1939 (Paprzycki).

Although very similar in its general appearance to *Limonia* (*Geranomyia*) *stenophallus* Alexander, with which it was associated in collections from Satipo, the present fly is entirely distinct, as shown by the structure of the male hypopygium. The pattern of the mesonotal praescutum differs slightly from that of *stenophallus* but in all other respects the general resemblance is very close.

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

General coloration of thorax almost uniformly reddish brown, without pattern; rostrum relatively short, less than one-half the body; knobs of halteres weakly infuscated; wings subhyaline, variegated only by the oval brown stigma; Sc_1 ending about opposite midlength of R_s ; male hypopygium with the ventral dististyle approximately three times as extensive as the entire basistyle; rostral prolongation short and stout, its apex very obtuse; rostral spines arising close together from slightly unequal tubercles; gonapophyses with mesal-apical lobe broad at base, the distal fourth narrowed into a dusky subacute point; aedeagus setiferous.

Male.—Length, excluding rostrum, about 6 mm.; wing, 6.5 mm.; rostrum, about 2.8 mm.

Rostrum dark brown, relatively short, the recurved tips of the labial palpi especially short; maxillary palpi dark brown. Antennae dark brown; flageller segments short-oval to subcylindrical (outer segments broken). Head discolored, apparently brown (mounted on microscope slide).

Pronotum testaceous yellow. Mesonotum almost uniformly reddish brown, without pattern; median region of scutum and basal portion of scutellum a little darkened. Pleura uniform reddish yellow. Halteres with stem dusky, restrictedly yellow at base, knob weakly infuscated. Legs with coxae and trochanters yellow; remainder of legs broken. Wings subhyaline, variegated only by the oval, medium brown stigma; veins brown. Venation: Sc moderately long, Sc_1 ending about opposite midlength of R_s , Sc_2 close to its tip, Sc_1 alone about equal to $r-m$; cell 1st M_2 shorter than any of the veins beyond it; $m-cu$ a short distance before the fork of M .

Abdomen almost uniformly dark brown, the eighth segment and basal portions of ninth tergite paler. Male hypopygium with the tergite moderately notched, the lobes very low and obtuse. Basistyle small, the ventromesal lobe obtuse. Dorsal dististyle a short curved sickle, a little dilated before the straight acute tip. Ventral dististyle relatively large and fleshy, its area at least three times that of the entire

basistyle; rostral prolongation short and stout, its tip very obtuse; rostral spines rising close together from the abbreviated, sloping outer margin of the prolongation, from slightly unequal tubercles; spines moderately long, about equal to the total length of rostrum, very slightly unequal in length, obliquely acute at tips. Gonapophyses with mesal-apical lobe of peculiar conformation, broad at base, the distal fourth narrowed into a more dusky subacute point. Aedeagus conspicuously setiferous.

Habitat.—Brazil (Rio de Janeiro). *Holotype*, ♂, Petropolis, altitude 2,700 feet, April 9, 1940 (Borgmeier).

The most similar described species include *Limonia* (*Geranomyia*) *brevispinula* Alexander and *L. (G.) infamosa* Alexander, which differ in the body coloration, venation, and details of structure of the male hypopygium, especially the tergite, rostral prolongation of the ventral dististyle, and the gonapophyses.

***Limonia* (*Rhipidia*) *leda* sp. n.**

General coloration of praescutum obscure yellow, with a median brown stripe; scutum and scutellum dark brown, with a pale central area; antennae black, the two subterminal segments yellow; flagellar segments (female) short-unipectinate; head gray, the anterior vertex reduced to a linear strip; thoracic pleura yellow, striped longitudinally with brownish black; posterior tarsi with segments three and four abruptly yellow; wings light cream-yellow, extensively patterned with brown, the center of wing pale; Sc_1 ending about opposite three-fourths the length of Rs , $m-cu$ close to fork of M ; basal abdominal tergite clear light yellow, the succeeding ones dark brown.

Female.—Length, about 8.5 mm.; wing, 9.8 mm.; antenna, about 2 mm.

Rostrum and palpi black, the former slightly produced. Antennae (female) black, the penultimate and antepenultimate segments yellow, contrasting conspicuously with the black terminal segment; flagellar segments one to ten, inclusive, with a stout branch from an oval basal swelling, the longest branch (flagellar segment five or six) a trifle shorter than the segment; apical pedicel more than one-half as long as the swollen base; terminal segment about one-half longer than the penultimate, narrowed to the tip. Head dark gray; anterior vertex reduced to a very narrow strip, less than the diameter of a single row of ommatidia.

Pronotum dark brown medially, obscure yellow on sides. Mesonotal praescutum with the ground obscure yellow, clearer on the humeral portions, with a conspicuous brown median stripe; the usual sublateral stripes lacking but the lateral borders again slightly darkened; viewed from the side, the praescutum appears more or less pruinose; scutal lobes and base of scutellum dark brown, the areas converging to a point behind, the central portion of scutum and scutellum more testaceous; posterior lateral borders of scutellum obscure yellow, the parascutella very slightly darker; mediotergite dark brown on more than the cephalic half, the remainder pale, including the lateral and still wider posterior borders. Pleura and pleurotergite obscure yellow, with two longitudinal brownish black stripes, the more dorsal one

extending from the cervical region across the propleura, anepisternum and pteropleurite onto the ventral pleurotergite; ventral dark stripe including the ventral sternopleurite and meral region, together with the coxal bases; dorsopleural membrane yellow. Halteres black, the extreme base of stem yellow; stem with conspicuous setae. Legs with coxae obscure yellow and brown, as described; trochanters yellow; femora obscure yellow, the tips narrowly dark brown; tibiae and proximal two segments of tarsi pale brown or yellowish brown; on fore and middle legs, remaining tarsal segments uniformly black; on hind legs, segments three and four light yellow, the fifth abruptly black. Wings with the ground light cream yellow, extensively and handsomely patterned with pale brown; stigma long-oval, darker brown, without trichia; the paler areas include major marks along costa, the first over *h* and arculus, the second about midway to the origin of *Rs*, these latter two continued caudad over the base of cells *M* to *1st A* and including most of cell *2nd A*; third costal darkening at origin of *Rs*, almost reaching vein *M* behind; fourth area at fork of *Sc*, virtually confined to the costal and subcostal fields but with an isolated spot immediately behind in cell *R*₁; conspicuous seams along cord and outer end of cell *1st M*₂; a broad subterminal wash across all outer cells from *R*₂ to *M*₃, inclusive, the apex again pale; other washes extend from the major basal cloud through cell *Cu* to the margin, involving much of outer end of cell *1st A* adjoining the vein; subcostal areas more extensive than the interspaces; axilla broadly pale; outer ends of cells *R* and *M* broadly pale so the center of wing is extensively unpatterned; veins pale brown, brighter in the yellow ground areas. Venation: *Sc* long, *Sc*₁ ending about opposite three-fourths the length of *Rs*, *Sc*₂ not far from its tip; inner end of cell *1st M*₂ somewhat arcuated; cell *1st M*₂ about as long as vein *M*₄; *m-cu* at fork of *M*.

Basal abdominal tergite clear light yellow; following tergites chiefly dark brown, the outer ones paler brown with more or less distinct darker borders; sternites obscure yellow, the genital segments more obscure fulvous. Ovipositor with cerci very slender, gently upcurved; hypovalvae long and straight.

Habitat.—Peru (Ayacucho). *Holotype*, ♀, Yanamonte, La Mar, in fog forests, altitude 3,000–4,100 meters, September 25, 1941 (Woytkowski).

Although I have only the female sex available, I believe that the present species will be found to belong to the group of species having unipetinate flagellar segments in the male sex, such species including *Limonia (Rhipidia) breviramosa* Alexander, *L. (R.) mystica* Alexander, and *L. (R.) pallatangae* Alexander, all of which differ in the coloration of the antennae and the posterior legs, as well as in details of pattern of the body and wings. The fly further differs from all of those species having bipetinate or tripetinate antennae in the male sex.

Genus *Helius* St. Fargeau

Helius (Helius) multivolutus sp. n.

General coloration black, the praescutum paler; femora obscure brownish yellow, the distal ends blackened to their very tips; tibiae

narrowly snow-white at base, thence abruptly infuscated, this color paling on outer portion of segment; tips of tibiae and the tarsi white; wings strongly tinged with brown; *Sc* long; cell *1st M*₂ rectangular, nearly parallel-sided, the longest element being the second section of *M*₁₊₂; *r-m* longer than the basal section of *R*₄₊₅.

Female.—Length, about 6 mm.; wing, 5.5 mm.

Rostrum black, a little shorter than remainder of head; palpi black. Antennae with scape and pedicel black; flagellum broken. Head blackened, the narrow anterior vertex more grayish; eyes large.

Cervical region and pronotum black. Mesonotum apparently paler than either the pronotum or pleura, particularly the praescutum. Pleura black. Halteres broken. Legs with the coxae and trochanters black; femora obscure brownish yellow, the distal ends blackened to the very apices of segments; tibiae narrowly but very conspicuously white at base, then abruptly more infuscated, this color gradually fading out to the broad pale tibial tips, the outer ends, with the tarsi, white. Wings with a strong brownish tinge, deepest in prearcular field and in distal ends of outer radial cells; stigma oval, still darker brown, preceded and followed by more whitened areas of approximately the same extent; pale longitudinal streaks, especially one along most of vein *M*, involving the adjoining membrane of both cells *R* and *M*, passing the cord and almost reaching the wing tip along vein *M*₄; somewhat similar whitenings in cells *1st A* and *Cu*; veins brown, more yellowish brown in the costal field. Macrotrichia on outer wing veins from *R*₃ to *M*₃, inclusive. Venation: *Sc*₁ ending a short distance before level of fork of *Rs*; *R*₁₊₂ bent strongly into *C* at its tip; *Rs* a little more than one-half its anterior branch; cell *1st M*₂ elongate, nearly parallel-sided, the longest element being the second section of *M*₁₊₂; *r-m* long, exceeding the basal section of *R*₄₊₅; *m* very short, the basal section of *M*₃ correspondingly long; *m-cu* about one-third to one-half its length beyond fork of *M*.

Abdomen black, the valves of the ovipositor elongate, rich fulvous horn color.

Habitat.—Peru (Junin). *Holotype*, ♀, Satipo, Jauja, altitude 800–900 meters, September 5, 1940 (Paprzycki).

The closest relative is *Helius* (*Helius*) *acanthostyla* Alexander, of this same general region. This latter is best told by the narrow but abruptly whitened tips of the femora and by distinct venational details, especially the short *Sc* and differently shaped cell *1st M*₂.

Genus *Trentepohlia* Bigot

Trentepohlia (*Paramongoma*) *faustina* sp. n.

Size large (wing, female, 10 mm.); general coloration of mesonotal praescutum and the pleura yellow; mediotergite dark brownish gray; femora yellow, the tips rather broadly and conspicuously snowy-white, preceded by a subequal dark brown ring; tibiae white, the basal third weakly infuscated; remainder of legs white; wings yellow, stigmal area conspicuous, dark brown, subtriangular in outline; *R*₂ at fork of *R*₂₊₃₊₄, the latter long and sinuous; vein *R*₃ suberect, its tip more or less evanescent; cell *Cu* narrowed at wing margin; abdomen yellow, the

tergites conspicuously brownish black on their central portions; ovipositor with elongate cerci.

Female.—Length, about 12 mm.; wing, 10 mm.

Rostrum yellow; palpi reduced, yellow. Antennae with scape and pedicel obscure brownish yellow; flagellum broken. Head buffy above, the very narrow anterior vertex, broader posterior orbits and the genae light gray.

Pronotum brownish testaceous. Mesonotal praescutum obscure yellow to fulvous yellow, without distinct stripes; interspaces with sparse black setae; scutum obscure yellow, the posterior half of lobes conspicuously infuscated; scutellum broad, testaceous yellow, clearest on central portion, more infuscated on sides; mediotergite dark brownish gray. Pleura and pleurotergite yellow. Halteres yellow, the knobs more infuscated. Legs with the coxae and trochanters yellow; femora yellow, the tips rather broadly and conspicuously snowy-white, preceded by a darker brown ring of approximately equal width, this pattern generally similar in amount on all legs; tibiae white, with a broad diffuse darkening on proximal third, beginning just beyond the narrow whitened bases; tarsi snowy-white. Wings yellow, the prearcular and costal fields clearer yellow; stigmal area subtriangular in outline, dark brown, conspicuous; vein *Cu* and the region of cell *1st M*₂ slightly more infuscated, indicated chiefly by a darkening of the veins; remaining veins yellow, especially those in the brightened costal portions. Venation: *R*₂ long, gently sinuous, uniting at fork of *R*₂₊₃₊₄; tip of the subrect vein *R*₃ more or less evanescent; *R*₂₊₃₊₄ long, nearly twice *R*₂, gently sinuous; *m-cu* at fork of *M*; cell *Cu* unusually narrow at margin, the distance being only about one-sixth *m-cu* or even less.

Abdominal tergites brownish yellow, conspicuously patterned with brownish black on the central portion of each segment, broadly interrupted on the basal rings and more narrowly by the pale posterior borders; sternites yellow. Ovipositor with the valves long and slender, almost straight to very gently upcurved, the tips acute.

Habitat.—Brazil (Rio de Janeiro). *Holotype*, ♀, Terezopolis, altitude 920 meters, August 6, 1942 (Lèrio Gomes).

This very distinct species has no close described relative. It is most similar to the Peruvian *Trentepohlia* (*Paramongoma*) *disparilis* Alexander, differing conspicuously in the pattern of the wings and legs and in the very distinct venational details, as the course of veins *R*₃ and *R*₂₊₃₊₄ and the unusually narrowed cell *Cu*.

Genus *Cryptolabis* Osten Sacken

Cryptolabis (*Cryptolabis*) *hilaris* sp. n.

General coloration of mesonotum uniform light reddish brown, the thoracic pleura with a blackened longitudinal stripe; antennae with scape and pedicel blackened, flagellum abruptly light yellow; head silvery white; fore femora dark brown, with a broad diffuse yellow ring on distal half, the tip darkened; middle and hind femora yellow, the tips narrowly darker; wings whitish subhyaline, handsomely variegated with darker, including a conspicuous darker seam along cord and paler washes at midlength of the cells beyond cord and again across cells

R to *Cu* before midlength of wing, these darkenings best shown by the coloration of the veins; vein M_3 arising from the upper fork of *M*.

Female.—Length, about 3.5 mm.; wing, 4 mm.

Rostrum and palpi pale testaceous yellow. Antennae with scape and pedicel blackened, the flagellum abruptly light yellow; flagellar segments oval, with long conspicuous verticils. Head silvery white; anterior vertex relatively broad.

Pronotum light brown. Mesonotum almost uniform light reddish brown, without conspicuous pattern, the median region of scutum and scutellum more silvery, the latter darkened behind. Pleura reddish, with a longitudinal black stripe across the more dorsal sclerites. Halteres broken. Legs with the coxae and trochanters yellowish testaceous; fore femora narrowly yellow at base, thence dark brown, on distal half with a broad diffuse yellow ring, the tip narrowly darkened; middle and hind femora yellow, the tips very narrowly and inconspicuously darkened; all tibiae yellow with narrow but conspicuous brown tips; basal segments of tarsi yellow, their tips dark brown, the outer segments more uniformly infuscated. Wings whitish subhyaline, sparsely but handsomely patterned with dark brown and pale gray; the darker areas include a seam along cord, broken over the fork of *M*, continued over the distal half of *Rs* and along vein Cu_1 for a short distance proximad of *m-cu*; axillary border darkened; the gray washes include a subterminal band across the outer cells, best-evidenced by the darkened color of the veins; a second gray cloud before midlength of wing, crossing cell *M* and involving the adjoining parts of *R* and *Cu*, the veins not conspicuously darkened in this area; veins light yellow except in the patterned areas, as described, deepest along cord. Macrotrichia of cells relatively sparse, in R_2 to M_4 inclusive, chiefly in the distal halves of the cells. Venation: *h* lacking; *Rs* relatively short and oblique, less than twice R_{2+3+4} ; R_{2+3} erect and transverse, R_2 directed basad, subequal in length to R_{2+3} ; a short basal section of vein R_5 ; vein M_3 arising from the upper fork of *M*.

Abdomen darkened, discolored by masses of eggs within body. Ovipositor with valves very small and inconspicuous.

Habitat.—Peru (Junin). *Holotype*, ♀, Satipo, Jauja, altitude 800–900 meters, March 6, 1941 (Paprzycki).

Readily distinguished from other generally similar species of the subgenus by the pattern and venation of wings, especially the gray washes before midlength of wing and again before the apex, and by the unique basal position of vein M_3 .

***Cryptolabis (Cryptolabis) jovialis* sp. n.**

Mesonotal praescutum and scutum light chestnut brown, the pronotum and head china-white; thoracic pleura white dorsally, with a broad black ventral stripe; fore coxae and bases of middle coxae infuscated; fore femora brownish black, remaining femora yellow with narrow brownish black tips; wings whitish subhyaline, particularly the basal portion; a scarcely evident darkening along cord; no darkening along vein *Cu* or in axillary region; *Rs* oblique, sinuous; *r-m* at fork of *Rs*.

Female.—Length, about 4–4.2 mm.; wing, 4.5–4.7 mm.

Rostrum and palpi black. Antennae with scape and pedicel black, flagellum brown; flagellar segments oval, gradually decreasing in size outwardly. Head abruptly china-white.

Pronotum china-white. Mesonotal praescutum light chestnut brown to slightly darker brown, in the type slightly more pruinose behind; humeral region extensively whitened; scutal lobes concolorous with the praescutum; posterior sclerites of notum darker. Pleura conspicuously striped with black and white, the former including a broad ventral stripe from the fore coxae backward, crossing the ventral pleurites to the abdomen, enclosing the root of the haltere; the white stripe includes the dorsal pleurites and dorsopleural membrane, involving the anaplcurotergite and extreme lateral portion of the mediotergite. Halteres dusky, the base of stem obscure white. Legs with coxae obscure yellow, the fore pair darker, the base of middle coxae narrowly blackened; fore femora black, remaining femora yellow with narrow brownish black tips; tibiae brownish yellow, the tips narrowly infuscated; tarsi brownish black, the proximal portions of basitarsi more yellowed. Wings whitish subhyaline, particularly the basal third to half; a scarcely evident darkening along cord, best indicated by an increase in intensity of the inclosed veins; no darkening along *Cu* or in axillary region; veins brown, paler in the brightened basal fields. Macrotrichia of cells moderately abundant, occupying the central portions of outer ends of cells R_2 and M_4 , inclusive, with a few further scattered trichia near outer end of cell *Cu*, and, in paratype, even in cell *1st A*. Venation: R_s oblique, rather strongly sinuous; R_2 in nearly vertical alignment with R_{2+3} ; $r-m$ at fork of R_s , obliterating the basal section of R_s ; $m-cu$ variable in position, from opposite mid-length to about opposite five-sixths the length of M_{3+4} .

Abdomen dark brown, the sternites with borders of segments narrowly paler; abdomen of female filled with large black eggs.

Habitat.—Peru (Ayacucho). *Holotype*, ♀, Ayna, La Mar, altitude 2,400 meters, May 18, 1941 (Woytkowski). *Paratopotype*, ♀.

Cryptolabis (*Cryptolabis*) *jovialis* is closest to *C. (C.) varipes* Alexander, of Costa Rica, differing especially in the coloration of the body and wings, especially the latter, where the dark pattern is so restricted as to be virtually lacking.