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Notes on the Tropical American species of Tipulidae: VII (Diptera)

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Notes on the Tropical American Species of Tipulidae (Diptera) VII. The Tribe Limoniini, genus Limonia, concluded; Helius, Orimarga and others; Tribe Pediciini; Subfamily Cylindrotominae

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(With 78 figures)

Between the years 1945 and 1951 I published in the *Revista de Entomologia* a series of ten papers that briefly considered the Neotropical Tipulidae, providing a record of generic synonymies, a listing of the known species, and a brief general account for each genus. At the time of cessation of publication of the *Revista* two parts of the series as originally contemplated remained unfinished and it is planned to complete this particular series of Notes and issue them in *Studia Entomologica.*

The parts previously published are as follows:

The Neotropical Limoniinae

Notes on the Tropical American species of Tipulidae (Diptera).

— I. The genus *Teucholabis* Osten Sacken. — Rev. de Entomologia, 17: 375-400, 14 figs; 1946.

— II. The same. The primitive Eriopterini: *Sigmatomera, Trentepohlia, Gnophomyia, Neognophomyia, Gonomyia,* and others. — *Ibid.,* 18: 65-100, 31 figs.; 1947.

— III. The same. The specialized Eriopterini: *Rhabdomastix, Cryptolabis, Erioptera, Molophilus, Styringomyia, Toxorhina,* and allies. — *Ibid.,* 18: 317-360, 32 figs.; 1947.

— IV. The same. The primitive Hexatomini: *Paradelphomyia, Austrolimnophila, Epiphragma, Lecteria, Polymera,* and allies. — *Ibid.;* 19: 149-190, 33 figs.; 1948.

— V. The same. The specialized Hexatomini: *Limnophila, Shannonomyia, Gynoplistia, Hexatoma, Atarba, Elephantomyia,* and allies. — *Ibid.,* 19: 509-556, 36 figs.; 1948.

— VI. The same. The tribe Limoniini, genus *Limonia:* Subgenera *Limonia, Neolimnobia, Discobola* and *Rhipidia.* — *Ibid.,* 21: 161-221, 42 figs.; 1950.

The Neotropical Tipulinae

Notes on the Tropical American species of the genus *Tipula* Linnaeus (Tipulidae, Diptera). Part. I. Rev. de Entomologia, 16: 330-356, 9 figs;. 1945.
— II. The same. — *Ibid.*, 16: 415-440, 25 figs.; 1945.
— III. The same. — *Ibid.*, 17: 172-201, 7 figs.; 1946.
— IV. The same. — *Ibid.*, 22: 265-314, 24 figs.; 1951.

It now is planned to complete this series of Notes, the present paper (VII) to include the remaining groups of the tribe Limoniini, the tribe Pediciini, and the subfamily Cylindrotominae. The final installment, VIII, will discus all of the Tipulinae other than the genus Tipula.

Tribe Limoniini
    Genus *Limonia* Meigen
    Genus *Helius* Lepeletier and Serville
    Genus *Protohelius* Alexander
    Genus *Antocha* Osten Sacken
    Genus *Orimarga* Osten Sacken
    Genus *Dicranoptycha* Osten Sacken
    Genus *Tonnoiromyia* Alexander
Tribe Pediciini
Subfamily Cylindrotominae

Limonia Meigen

Limonia Meigen; Illiger's Mag. für Insektenk., 2: 262; 1803; (type *tripunctata* Fabricius).

In Part VI of this series of Notes (Revista, 21; 1950) a detailed synonymy for the genus was given together with a preliminary account of this vast group of flies, probably the largest in the entire order Diptera. The subgenera discussed at this time are as follows:

Limonia Meigen (a re-consideration of subgeneric limits).
Atypophthalmus Brunetti (reinstated as a valid subgenus).
Caenoglochina Alexander
Caenolimonia, subgen. n.
Dicranomyia Stephens
Geranomyia Curtis
Idioglochina Alexander
Neoglochina, subgen. n.
Neolimonia Alexander
Peripheroptera Schiner
Rhipidia Meigen (further discussion of group)
Zalusa Enderlein
Zelandoglochina Alexander

The subgenus *Limonia,* as recognized in the *Revista* 1950 paper, has been critically re-examined, and the various species listed at that time (p. 170-175) have been distributed in other subgeneric groups, as indicated above. At this time it does not appear that any member of the subgenus *Limonia,* as presently restricted, occurs in the Neotropical fauna although it seems probable that such may be found to occur in northern Mexico. The majority of the species in the earlier list now are placed in *Dicranomyia* and in four subgenera proposed since 1950, including in the above list, *Caenoglochina, Caenolimonia, Neoglochina,* and *Neolimonia.* Before 1950 chief emphasis for subgeneric separation had been placed on wing venation whereas at the present time the characters found in the male hypopygium appear to furnish more dependable structures for this purpose.

Three recent papers on the subgenus *Limonia* may be consulted.

Alexander, C. P., New or little-known Tipulidae from Eastern Asia (Diptera), LV. — Philippine Jour. Sci., 93: 427-478, 54 figs.; 1964.
— New or little-known Tipulidae from Madagascar (Diptera). — Trans. Amer. Ent. Soc., 91: 42-58; 1965.
— New or little-known Tipulidae from Eastern Asia (Diptera). LVII. — Philippine Jour. Sci, 94: 397-434, 48 figs.; 1965.

Subg. **Atypophthalmus** Brunetti

Atypophthalmus Brunetti; Rec. Indian Mus., 6: 273; 1911; type *umbrata* (de Meijere), as *holopticus* (Brunetti).

The subgenus now is recognized as valid and is represented by rather numerous species in the Oriental and Ethiopian regions, with fewer elsewhere.

Limonia (Atypophthalmus) umbrata (de Meijere)

Dicranomyia umbrata de Meijere; Tijd. voor Ent., 54: 25; 1911.
Dicranomyia umbrata de Meijere; Zool. Jahrb., Syst., 40: 197-198; 1916; description of immature stages.
Limonia fissilis Alexander; Ann. Ent. Soc. America, 19: 159; 1926.
Limonia (Atypophthalmus) umbrata Byers; Jour. Kansas Ent. Soc., 39: 708-711, pl. (♂ hypopygium); 1966.

An Oriental species, widespread in southern and southeastern Asia, occurring also in Africa and various parts of Australasia. Records are available for Mexico (*fissilis,* cited above), Cuba, and Amazonian Peru, all presumably transported by commerce. The outstanding paper by Byers above cited records the species from Hawaii. In the *Revista* 1950 paper the species was placed in the subgenus *Limonia.*

Subg. **Caenoglochina** Alexander

Limonia (Caenoglochina) Alexander; Bull. Inst. Jamaica, Sci. Seer. 14: 31; 1964.

Type of subgenus, *apicata* Alexander (Neotropical). The various species listed below were included in the subgenus *Limonia* in the *Revista* 1950 report.

List of Species

acuminata (Alexander). — Amazonian Peru.
apicata apicata (Alexander). — Mexico, Panama, Venezuela, British Guiana.
apicata dominicensis Alexander. — Lesser Antilles: Dominica.
basistylata (Alexander). — Jamaica.
capitonius Alexander. — Southeastern Brazil.
egae (Alexander). — Amazonian Brazil.
fieldi, sp. n. — Honduras.
hoffmani Alexander. — Puerto Rico, Cuba.
myctera, sp. n. — Amazonian Peru.
napoensis (Alexander). — Amazonian Peru.

paucilobata Alexander. — Panama.
pugnax Alexander. — Surinam.
rapax (Alexander). — Amazonian Peru.
scaenalis Alexander. — Peru.
sica Alexander. — Panama.
singularis Alexander. — Ecuador.
somnifica Alexander. — Ecuador.
subacuminata, sp. n. — Amazonian Peru.
vorax Alexander. — Panama.

Limonia (Caenoglochina) fieldi sp. n.

General coloration brownish black; wings strongly suffused with brown, stigma darker; male hypopygium with basistyle conspicuously modified by lobes and outgrowths, including two separate ventromesal lobes with abundant setae; dististyle with a comb of blackened teeth extending over most of the length.

Male. — Length, about 5.5-6 mm.; wing, 4.5-5mm.; antenna, about 1.5 mm. Rostrum and palpi black. Antennae black throughout, nodulose, the flagellar segments with long apical pedicels; proximal segments subglobular to short-oval, outer segments progressively longer, terminal segment about one-half longer than the penultimate. Head large, brownish black.

Thorax almost uniformly brownish black, darkest on dorsum, humeral region of praescutum more reddened. Halteres black, base of stem obscure yellow. Legs with coxae and trochanters brownish black, remainder of legs brown. Wings (Fig. 1) strongly suffused with brown, stigma darker; veins dark brown. Venation: *Sc* long, Sc_1 ending shortly before fork of *Rs*, Sc_2 near its tip; cell *1st* M_2 small, much shorter than the veins beyond it.

Abdominal tergites brownish black, sternites slightly paler; hypopygium large, yellowish brown, dististyles and lobes of basistyle blackened. Male hypopygium (Fig. 4) with the tergite, *t*, broadly transverse, posterior border with a broad V-shaped emargination, the lobes terminating in a blackened flange provided with several very long and powerful setae, the remaining bristles small, especially the concentration at the midline. Basistyle, *b*, unique, the mesal face with two blackened lobes, the more basal one shorter and broader, outer lobe obtuse at tip, both lobes with abundant very long smooth setae and other shorter bristles that bear small nodules over most of their length, the bristles exceedingly numerous and crowded to darken the surface of the lobes; outer angle of style with small modified lobes bearing a small arcuated comb of peglike spines, together with a slender curved horn. Dististyle, *d*, massive, darkened, terminating in an

acute point, the dorsal margin with a black flange that bears a long comb of blackened spinelike teeth; outer lateral part of style produced into a yellow setiferous lobule. Gonapophysis, *g*, oval, the outer end produced into a blackened terminal spine. Aedeagus slender.

Habitat: Honduras.

Holotype, ♂, Lancetilla, September 2, 1953 (ex Gordon Field). Paratopotype, 1 ♂, pinned with type.

This very distinct fly is named for my former student, Lt. Colonel Gordon Field, USA, who has presented me with many Tipulidae, especially from Central America and Panama. The species is quite different from other member of the subgenus in hypopygial structure, including especially the tergite and basistyle.

Limonia (Caenoglochina) myctera sp. n.

General coloration of thoracic dorsum chestnut brown, median region of praescutum darker; antennae relatively long, black, flagellar segments nodulose, with abrupt apical pedicels, terminal segment elongate; wings brown, stigma very small; male hypopygium with tergite transverse, the margin nearly truncate; dististyle oval, narrowed into a slender blackened spine; gonapophyses pale throughout.

Male. — Length, about 6 mm.; wing, 6 mm.; antenna, about 2 mm. Rostrum brownish black; palpi black. Antennae black throughout, relatively long; flagellar segments nodulose, suboval, with abrupt apical pedicels; verticils slightly shorter than the segments; terminal segment elongate, about one-half longer than the penultimate, narrowed gradually to the nearly acute apex. Head dark gray; anterior vertex reduced to a linear strip.

Pronotum brown, pretergites obscure yellow. Mesonotal praescutum dark chestnut brown, the median region narrowly dark brown; remainder of notum brown, the scutal lobes dark brown. Pleura with propleura and anepisternum brown, remainder brownish yellow. Halteres brown, base of stem narrowly yellowed, knob black. Legs with fore coxae brown, remaining coxae and all trochanters yellow; remainder of legs brown; claws long with a slender appressed spine before midlength and a longer stout erect spine near base. Wings brown, the prearcular field paler; stigma very small and inconspicuous, slightly darker brown; veins brown. Longitudinal veins beyond general level of origin of *Rs* with conspicuous trichia. Venation: *Sc* long, Sc_1 ending about opposite four-fifths *Rs*, Sc_1 and Sc_2 subequal; *m-cu* shortly before fork of *M*.

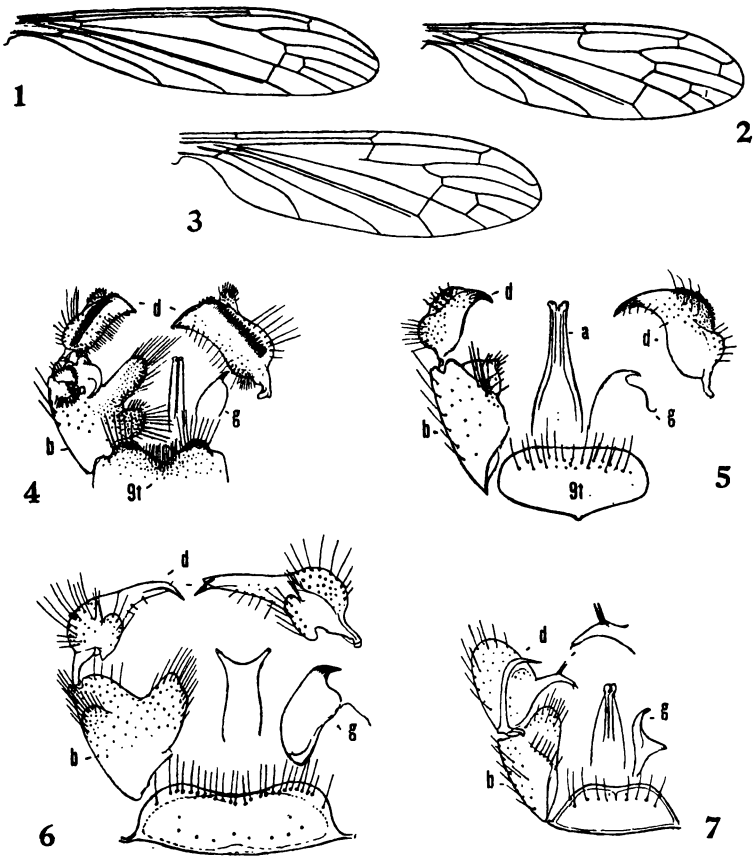

Fig. 1. *Limonia (Caenoglochina) fieldi*, sp. n.; venation. — Fig. 2. *Limonia Caenolimonia) combostena*, sp. n.; venation. — Fig. 3. *Limonia (Caenolimonia) galbipes*, sp. n.; venation. — Fig. 4. *Limonia (Caenoglochina) fieldi*, sp. n.; male hypopygium. — Fig. 5. *Limonia (Caenoglochina) myctera*, sp. n.; male hypopygium. — Fig. 6. *Limonia (Caenoglochina) subacuminata*, sp. n.; male hypopygium. — Fig. 7. *Limonia (Caenolimonia) combostena*, sp. n.; male hypopygium. — Symbols: *a*, aedeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *t*, tergite).

Abdominal tergites brownish black, basal sternites yellow, third and succeeding segments brownish black to black; internal structures of hypopygium yellowed. Male hypopygium (Fig. 5) with the tergite, *t,* transverse, with both the anterior and posterior borders nearly truncate, lateral ends obtuse; a transverse row of long setae on posterior third, removed from the border. Basistyle, *b,* with ventromesal lobe oval, with a further small apical lobule, provided with long setae; mesal face of style at base of lobe with several unusually long setae. Dististyle, *d,* oval, narrowed into a slender blackened spine, dorsal surface with two low lobes, the outer one broader, with dense delicate setae, the remainder setae long. Gonapophysis, *g,* pale throughout. Outer third of aedeagus slender.

Habitat: Peru.

Holotype, ♂, Quincemil, Cuzco, September 2, 1962 (Luis E. Peña).

The most similar species include *Limonia* (*Caenoglochina*) *acuminata* (Alexander) and *L.* (*C.*) *subacuminata,* sp. n., which have the hypopygium of the same general conformation but differ in all details.

Limonia (Caenoglochina) subacuminata sp. n.

Allied to *acuminata;* general coloration of thoracic dorsum brown, darker medially; antennae black throughout, flagellar segments nodulose; wings strongly suffused with brown, *Sc* long; male hypopygium having the basistyle with a large ventromesal lobe and a smaller outer lobule, both with long setae; dististyle small, body oval, the long blackened beak terminating in a slender black spine.

Male. — Length, about 5.5-6 mm.; wing, 6-6.5 mm.; antenna, about 2.2-2.4 mm. Rostrum and palpi black. Antennae black throughout; flagellar segments nodulose, with abrupt apical pedicels; terminal segment elongate, about one-fifth longer than the penultimate. Head dark gray, light gray in front; eyes large, anterior vertex eliminated or reduced to a capillary strip.

Pronotum dark brown. Mesonotal praescutum polished brown, darker brown medially, especially in front; posterior sclerites of notum brownish yellow, scutal lobes and scutellum darker brown. Pleura and pleurotergite brownish yellow. Halteres obscure yellow, clearer at base, knob brownish black. Legs with coxae and trochanters obscure yellow, remainder of legs light brown; claws of male as in the subgenus, long and slender, with three spines, the outer one appressed, the others subbasal in position. Wings strongly suffused with brown; stigma small, subcircular, darker before fork of *Rs*, Sc_2 shorter, near tip; *m-cu* at or shortly before fork of *M*.

Abdominal tergites brownish black, sternites yellow, outer segments darker. Male hypopygium (Fig. 6) with the tergite, *t*, narrowly transverse, posterior border very gently emarginate, the low lobes with thickened margins; a nearly continuous row of about 25 long setae close to posterior border. Basistyle, *b*, with a large ventromesal lobe provided with long setae, with a smaller lobule slightly more distad on outer margin. Dististyle, *d*, much smaller than the basistyle, body small, oval, with relatively sparse long setae; rostrum longer than the body, blackened, narrowed gradually into a slender black spine. Gonapophysis, *g*, with mesal-apical lobe a blackened spine. Aedeagus, *a*, relatively short and broad, the slender apical lobes widely separated.

Habitat: Peru.

Holotype, ♂, Quincemil, Cuzco, September 2, 1962 (Luis E. Peña).

Paratopotype, ♂, October 26, 1962.

Among the known species *Limonia* (*Caenoglochina*) *subacuminata* is most similar to *L.* (*C.*) *acuminata* (Alexander), differing in the structure of the hypopygium, especially the basistyle and dististyle. The latter has been figured elsewhere by the writer (Proc. Acad. Nat. Sci. Philadelphia 1921, pl. 4, fig. 9; 1921).

Caenolimonia subgen. n.

Proposed for the *neorepanda* group, formerly including species variously assigned to *Dicranomyia, Neolimnobia,* and to typical *Limonia,* as discussed below.

Labial palpi relatively long, exceeding one-half the maxillary palpi. Antennae short; proximal flagellar segments subglobular. Wings with vein *Sc* short, longest in *amaryllis* where Sc_1 is beyond midlength of *Rs*, shortest in species such as *brachycantha, melaxantha, orthogonia, neorepanda* and *paprzyckii,* where Sc_1

ends opposite or just beyond origin of *Rs*. Most species have the free tip of Sc_2 and R_2 short and in transverse alignment, in *meconeura* R_2 much shorter than Sc_2. *Rs* perpendicular at origin or in cases bent slightly basad before the bend. Certain species with a supernumerary crossvein in cell R_3, as listed below, this varying in position in different species, usually being far distad at near two- thirds the length of the cell, in *interstitialis* before one-third the length and in transverse alignment with vein R_2. Cell *1st* M_2 closed; cell *2nd A* broad. Vein *Sc* with long delicate trichia over most of length except at base. Male hypopygium (Fig. 7) generally as in *Dicranomyia,* having both dististyles present, outer style smooth. Mesal face of basistyle commonly with several coarse black setae. Rostral spines of ventral style two, of various lengths in the different species, in cases (*brachycantha*) very short.

Type of subgenus: *Limonia* (*Caenolimonia*) *neorepanda* nom. n. (for *Limonia repanda* Alexander, Ann. Ent. Soc. America, 21: 637-638; 1928; nec *Limonia repanda* Edwards, Trans. N. Z. Inst., 54: 278, fig. 17 (wing); 1923).

The following species likewise belong here.

A — Species without a supernumerary crossvein in cell R_3 of wings.

amaryllis Alexander. — Venezuela.
brachycantha Alexander. — Peru.
contradistincta Alexander. — Southeastern Brazil.
galbipes, sp. n. — Ecuador.
meconeura Alexander. — Bolivia.
melaxantha Alexander. — Panama.
meridensis Alexander. — Venezuela.
(*neorepanda* nom. n. — Ecuador).
osterhouti (Alexander). — Panama.
xanthomela Alexander. — Bolivia, Peru.

B — Species with a supernumerary crossvein in cell R_3 of wings.

combostena, sp. n. — Peru.
interstitialis Alexander. — Ecuador.
orthogonia Alexander. — Ecuador.
paprzyckii Alexander. — Peru.
translucida translucida (Alexander). — Panama.
t. nigrotincta Alexander. — Panama.

Caenolimonia includes a puzzling group of small species of *Limon* that show an unusual range in the relative length of vein *Sc,* in son species this being short, as in typical *Dicranomyia,* in others longe about as in typical *Limonia,* yet evidently distinct from these groups. further complication occurs in the various species above listed whe

there is a supernumerary crossvein in cell R_3, as in *Neolimnobia* Alexander, where they had been referred on the basis of this character. The various species are generally similar in appearance, the thorax being yellow with a narrow darkened central line on the pronotum and praescutum. The body and appendages frequently show strong greenish tints that presumably are more accentuated in living specimens. The legs, especially the femora, show an unusual range of distribution in the black and yellow pattern, providing strong characters for specific separation.

Limonia (Caenolimonia) combostena sp. n.

General coloration yellow, the pronotum and praescutum with a narrow darkened central line; femora yellow with a very narrow dark subterminal ring and more extensive basal areas; wings with a supernumerary crossvein in cell R_3 near outer end; abdomen yellow, posterior border of intermediate tergites narrowly brown; male hypopygium with rostral spines of the ventral dististyle relatively long.

M a l e. — Length, about 4.5-4.6 mm.; wing, 5-5.3 mm.; antenna, about 0.8-0.9 mm.

F e m a l e. — Length, about 5.5 mm.; wing, 5.5. mm.

Rostrum and palpi black. Antennae with scape and pedicel black, flagellum dark green. Head brown.

Thorax yellow, pronotum and praescutum to midlength with a capillary dark brown line that is narrower and paler behind. Halteres yellow. Legs with coxae and trochanters yellow, strongly tinged with green; femora yellow with a very narrow brown ring far before the tip, the yellow apex being three to four times as extensive; a broader darkened ring on proximal third, most distinct on fore femora, paler on mid pair, in cases becoming virtually obsolete on hind legs; remainder of legs obscure yellow with only the outer tarsal segments darker greenish. Wings (Fig. 2) yellow, prearcular and costal fields more saturated yellow; a restricted brown pattern that includes a common area from tip of Sc_2 across base of *Rs*, widened behind; further brown areas at arculus, the free tip of Sc_2 and R_2; narrower seams over cord, outer end of cell *1st* M_2; supernumerary crossvein in cell R_3 and tip of R_3; a narrow seam on outer fourth of vein *2nd A;* veins yellow, brown in the patterned areas. Venation: Sc_1 ending shortly beyond origin of *Rs*, Sc_2 near its tip; origin of *Rs* perpendicular or bent slightly basad, in cases with a short spur at the bend; a supernumerary crossvein near outer end of cell R_3, subequal in length to or slightly shorter than vein R_3 beyond it, the tip of the latter deflected cephalad.

Abdomen light yellow, in male with posterior borders of segments three to seven narrowly brown, eighth tergite with

a small darkened central spot; in female the darkened pattern much paler to nearly obsolete. Male hypopygium (Fig. 7) with the tergite, *t,* narrowed outwardly, posterior border very gently emarginate, the lobes scarcely indicated; anterior margin of tergite nearly truncate. Basistyle, *b,* subequal in area to the ventral dististyle; ventromesal lobe oval, body of style at its base with several coarse black setae. Dorsal dististyle, *d,* a slender rod, the outer third curved and narrowed into a long black spine; ventral style oval, the rostral prolongation long and narrow, its two spines placed close together at near midlength of outer margin, relatively long, about one-half as long as the prolongation beyond their insertion. Gonapophysis, *g,* with mesal-apical lobe gently curved to the subacute apex.

Habitat: Peru.

Holotype, ♂, Quincemil, Cuzco, Peru, altitude 780 meters, October 15-20, 1962 (Luis E. Peña). Allotopotype, ♀, August 1962. Paratopotype, 1 ♂, 1 ♀, September 2, 1962.

Limonia (*Caenolimonia*) *combostena* is most readily told from others that have a supernumerary crossvein near outer end of cell R_3 by the darkened pattern of the legs, all others having the blackened areas of the femora much more extensive. The rostral spines of the ventral dististyles are shorter than in *L.* (*C.*) *orthogonia* Alexander and *L.* (*C. paprzyckii* Alexander, the closest relatives.

Limonia (Caenolimonia) galbipes sp. n.

General coloration of thorax and abdomen yellow, the pronotum and anterior end of praescutum with a delicate brownish black central line; legs yellow, femora with a very vague narrow pale brown ring placed some distance from apex; wings yellow, restrictedly patterned with brown; *Sc* short, ending opposite the perpendicular origin of *R*, the latter spurred near origin.

Male. — Length, about 7 mm.; wing, 7.5 mm. Mouthparts brown, including the palpi, terminal segment of latter long-ovoid. Antennae with scape brown, pedicel and first flagellar segment yellowed, remainder broken. Head brown.

Thorax ligth fulvous yellow, pronotum and a short delicate vitta on anterior fourth of praescutum brownish black. Halteres yellow. Legs yellow, femora with a very narrow and vague pale brown ring some distance from tip; terminal two tarsal segments brown. Wings (Fig. 3) yellow, the prearcular and costal field more saturated yellow; narrow brown seams at origin of *Rs*, continued to costa on *Sc,* behind not reaching vein *M;* other similar narrow seams at Sc_2 and R_2, cord, outer end of

1st M_2 and at ends of all longitudinal veins, most restricted on R_{4-5} and M_{1-2}, extensive on vein *2nd A* and projecting cephalad into cell *1st A* almost to the vein; veins yellow, brown in the patterned areas. Venation: *Sc* short, Sc_1 and Sc_2 ending opposite origin of *Rs*, origin of the latter perpendicular to bent slightly basad, with a spur at the bend; R_2 slightly longer than free tip of Sc_2; *m-cu* subequal to distal section of Cu_1, placed close to fork of *M*.

Abdomen yellow, scarcely patterned with darker. Male hypopygium of the unique type with dististyles broken.

Habitat: Ecuador.

Holotype, ♂, Mapeto, Rio Pastaza, altitude 1300 meters, October 1, 1938 (William Clarke Macintyre).

The most similar species is *Limonia* (*Caenolimonia*) *brachycantha* Alexander, which differs evidently in the almost uniformly yellow legs.

Subg. **Dicranomyia** Stephens

Dicranomyia Stephens; British Insects, p. 53; June 1829; (type *modesta* Meigen).
Furcomyia Meigen; Syst. Beschr., 1: 133; 1818 (unavailable name, cited in specific synonymy); (type *lutea* Meigen).
Glochina Meigen; Syst. Beschr., 6: 280; 1830 (type *sericata* Meigen).
Siagona Meigen; Syst. Beschr., 6, pl. 65, fig. 7; 1830 (type *sericata* Meigen).
Numantia Bigot; Ann. Soc. Entomol. France, (3) 2: 470 (1854); (type *fusca* Meigen).
Telecephala Pierre; Bull. Soc. Sci. Nat. Maroc, 1: 21-22, 3 figs.; 1921 (type *longicollis* Macquart).
Tedotea Santos Abreu: Mem. R. Acad. Cien. Art. Barcelona, 18: 111-112, fig. 23 (♂ hyp.). Pl. 3, fig. 28 (wing, color); 1923; (type *domestica* Santos Abreu, nec *domestica* Osten Sacken).

Dicranomyia is one of the major subgenera in *Limonia,* with many species in the area under consideration. It is one of the most widely distributed groups in the entire order, with representatives in all biotic regions, including not only Madagascar and New Zealand, but also many of the more remote oceanic islands, in the Hawaiian group being the most characteristic type of crane flies.

List of Species

acuproducta Alexander. — Bolivia.
affabilis Alexander. — Chile: Juan Fernandez.
alboapicalis Alexander. — Argentina, Chile.
alfaroi (Alexander). — Mexico, Costa Rica.
altandina Alexander. — Peru, Bolivia.
ambigua Alexander. — Argentina: Patagonia.
amphionis Alexander. — Chile: Juan Fernandez.
anax Alexander. — Peru.
andicola (Alexander). — Bolivia.
andinalta Alexander. — Peru.
apposita Alexander. — Peru, Bolivia.
argentina (Alexander). — Argentina: Patagonia.

ariadne Alexander. — Peru.
atritarsis Alexander. — Southeastern Brazil.
atrostyla Alexander. — Peru.
aurantiothorax Alexander. — Panama.
axierasta Alexander. — Chile: Juan Fernandez.
bicomifera Alexander. — Venezuela.
bigladia Alexander. — Peru.
(*bigoti* Alexander, new name for *longicollis* Bigot, preoccupied; see *Zelandoglochina*).
(*blanchardi* Alexander, see *phatta* (Philippi)).
boliviana Alexander. — Peru, Bolivia.
brevicubitalis Alexander. — Venezuela, Bolivia.
brevigladia Alexander. — Bolivia.
brevivena (Osten Sacken). — Bolivia.
b. capra Alexander. — Venezuela.
b. torrida Alexander. — Puerto Rico, Jamaica.
bullockiana Alexander. — Chile.
calliergon Alexander. — Hispaniola: Haiti.
c. polygrapha Alexander. — Hispaniola: Dominican Republic.
catamarcana Alexander. — Argentina.
cautinensis Alexander. — Chile.
cerbereana Alexander. — Argentina: Patagonia.
chilensis Alexander (new name for *guttata* Philippi, preoccupied).
chimborazicola Alexander. — Ecuador.
chlorotica (Philippi). — Chile.
claribasis Alexander. — Peru.
clavigera Alexander. — Chile.
clavistyla Alexander. — Peru.
coheri Alexander. — Jamaica.
commina, sp. n. — Chile.
complacita Alexander. — Peru.
concinna (Williston) — see *simulans concinna* (Williston).
contristans Alexander. — Peru.
croceiapicalis Alexander. — Bolivia.
dampfi Alexander. — Mexico.
dissoluta Alexander. — Chile, Argentina: Patagonia.
distans (Osten Sacken); includes *mediatlantica* Freeman, *parishi* (Alexander), *tricornis* Alexander. — Jamaica, Puerto Rico, Mexico, British Honduras, Venezuela, British Guiana, Brazil, Paraguay; South Atlantic; Nearctic.
diura Alexander. — Peru.
diversigladia Alexander. — Peru, Bolivia.
d. piabilis Alexander. — Venezuela.
dolerosa Alexander. — Brazil: Mount Roraima.
dorsolobata Alexander. — Ecuador.
elegantula (Alexander). — Colombia.
elnora Alexander. — Chile.
(*elquiensis* Blanchard. — Chile; subgenus incertum).
empelia Alexander. — Bolivia.
errabunda Alexander. — Chile.
exaeta (Alexander). — Mexico.
exercita Alexander. — Argentina: Patagonia.
extranea Alexander. — Brazil.
falcicula Alexander. — Bolivia.
farri Alexander. — Jamaica.
filicauda (Alexander). — Mexico.

(*fissilis* Alexander — see (*Atypophthalmus*) *umbrata* (de Meijere).
flavaperta Alexander. — Chile.
flavida (Philippi). — Chile.
flavofascialis (Alexander). — Argentina.
galapagoensis Alexander. — Galapagoes Islands.
gibbera Alexander. — Peru.
globulicornis (Alexander). — Argentina.
gloriosa (Alexander). — Guatemala.
(*guttata* Philippi, see *chilensis* (Alexander).
halophila Alexander. — Chile.
harpax Alexander. — Chile: Juan Fernandez.
hirsutissima Alexander. — Bolivia.
hostica Alexander. — Southeastern Brazil.
humerosa Alexander. — Peru.
ignara, sp. n. — Honduras.
illepida Alexander. — Brazil.
imitabilis Alexander. — Peru, Bolivia.
indefensa Alexander. — Hispaniola: Haiti.
infumata (Philippi). — Chila, Argentina.
ingrata (Alexander). — Mexico.
insignifica (Alexander). — Colombia, Peru.
insolabilis Alexander. — Mexico.
invalida (Alexander). — Peru.
itatiayana Alexander. — Southeastern Brazil.
jorgenseni Alexander. — Argentina.
jujuyensis Alexander. — Argentina.
j. obtusirostris Alexander. — Bolivia.
knabi (Alexander). — Guatemala, Mexico.
kuscheliana Alexander. — Chile: Juan Fernandez.
labecula Alexander. — Peru, Bolivia.
laistes, sp. n. — Mexico.
lapazensis Alexander. — Bolivia.
latebra, sp. n. — Chile.
latispina Alexander. — Peru.
lewisi Alexander. — Jamaica.
(*lineicollis* (Blanchard). — Chile; subgenus incertum).
livida (Say). — Mexico.
longiventris (Alexander). — Colombia, Venezuela.
luteiapicalis Alexander. — Bolivia.
lutzi (Alexander). — British Guiana.
lydia Alexander. — Southeastern Brazil.
maligna Alexander. — Peru.
malitiosa Alexander. — Peru.
masafuerae Alexander. — Chile: Juan Fernandez.
(*mediatlantica* Freeman — see *distans* Osten Sacken. — Gough Island, South Atlantic).
melanocera (Alexander). — Mexico.
meridicola Alexander. — Venezuela.
microscola, sp. n. — Chile.
microsoma Alexander. — Brazil.
microsomoides Alexander. — Brazil.
miseranda Alexander. — Brazil.
mistura Alexander. — Brazil.
mulierieus Alexander. — Peru.
mulsa (Alexander). — Peru, Bolivia.
mutata Alexander. — Brazil.
nefasta Alexander. — Peru.

nestor Alexander. — Peru.
nothofagi Alexander. — Argentina: Patagonia; Chile.
obtusistyla Alexander. — Mexico.
(*ocellata* (Roeder). — Colombia; genus incertum).
ohlini (Alexander). — Argentina: Patagonia.
omissa (Alexander). — Guatemala.
omissivena (Alexander). — Argentina.
onerosa (Alexander). — Mexico.
optabilis Alexander. — Peru.
(*ornatipennis* Blanchard. — Chile; subgenus incertum).
(*pallida* Blanchard. — Chile; subgenus incertum).
palliditerga Alexander. — Brazil.
pampoecila (Alexander). — Peru.
(*parishi* Alexander, see *distans* Osten Sacken).
patruelis (Alexander). — Argentina.
pedestris Alexander. — Chile: Juan Fernandez.
pelates Alexander. — Bolivia.
penana Alexander. — Peru.
pennifera Alexander. — Peru.
peralta Alexander. — Ecuador.
perdistalis Alexander. — Ecuador.
p. tulumayoensis Alexander. — Peru.
perexcelsior Alexander. — Bolivia.
perflaveola Alexander. — Mexico, Panama.
perpuncticosta Alexander. — Peru.
perretracta Alexander. — Bolivia.
perserena Alexander. — Mexico.
pertruncata Alexander. — Bolivia.
phatta (Philippi); includes *blanchardi* Alexander, *stictica* (Blanchard(. — Chile, Argentina: Patagonica.
pietatis Alexander. — Ecuador.
pinodes Alexander. — Chile.
pluvialis Alexander. — Chile, Argentina: Patagonia.
p. correntosana Alexander. — Argentina: Patagonia.
p. fuscolineata Alexander. — Argentina: Patagonia.
polysticta (Philippi). — Chile.
praecellans Alexander. — Peru.
praepostera (Alexander). — Mexico.
praevia Alexander. — Chile.
punoensis Alexander. — Peru, Bolivia.
quadrigladia Alexander. — Peru.
quadrituberculata Alexander. — Colombia.
rapida (Alexander). — Mexico.
ravida (Alexander). — Mexico.
regifica (Alexander). — Peru.
repentina Alexander. — Argentina: Patagonia.
reticulata (Alexander). — Cuba, Jamaica, Mexico.
sanctae-cruzae Alexander. — Argentina: Patagonia, Chile.
s. immaculosa Alexander. — Chile.
s. vana Alexander. — Argentina: Patagonia.
schindleri Alexander. — Bolivia.
scimitar Alexander. — Peru, Ecuador.
salkirki (Alexander). — Chile: Juan Fernandez.
seposita Alexander. — Chile, Argentina: Patagonia.
serratiloba Alexander. — Venezuela.
sibyllina Alexander. — Argentina.

simillima (Alexander). — Guatemala, Mexico, Venezuela, Peru.
simulans concinna (Williston). — Mexico; western Nearctic.
smythiana Alexander. — Peru.
s. curtispina Alexander. — Bolivia.
sparsituber Alexander. — Peru.
splendidula Alexander. — Bolivia.
(*stictica* Blanchard, see *phatta* (Philippi)).
(*stigmatica* Blanchard, see *subandina* Alexander).
stuardoi Alexander. — Chile: Juan Fernandez.
subandicola Alexander. — Peru, Bolivia, Venezuela.
(*subandina* Alexander, new name for *stigmatica* Blanchard, preoccupied).
subdola (Alexander). — Peru.
subflavida Alexander. — Argentina: Patagonia, Chile.
submutata Alexander. — Peru.
subravida Alexander. — Mexico.
subreticulata Alexander. — Ecuador.
teinoterga, sp. n. — Colombia.
thamyris Alexander. — Venezuela.
thixis, sp. n. — Chile.
titicacana Alexander. — Peru, Bolivia.
(*tragica* Alexander. — Mexico. Subgenus incertum, may be *Neolimonia*).
(*tricornis* Alexander, see *distans* Osten Sacken).
trilobifera, sp. n. — Chile.
trinitatis Alexander. — Cuba.
trituberculata Alexander. — Chile.
t. ingloria Alexander. — Argentina: Patagonia, Chile.
troglophila Alexander. — Argentina: Patagonia.
venatrix Alexander. — Chile: Juan Fernandez.
veneris Alexander. — Chile: Juan Fernandez.
venustior Alexander. — Peru.
vernalis (Philippi). — Chile.
villaricae Alexander. — Paraguay.
virilis (Alexander). — Peru.
weiseriana Alexander. — Argentina.
yunqueana Alexander. — Chile: Juan Fernandez.

Limonia (Dicranomyia) altandina Alexander

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

The type, a male, was from La Raya, Cuzco, Peru, altitude 4,300 meters, taken February 21, by Luis E. Peña. Venation, fig. 8; male hypopygium, fig. 10.

Limonia (Dicranomyia) andinalta Alexander

limonia (Dicranomyia) andinalta Alexander; Jour. N. Y. Ent. Soc., 63: 112-113; 1955.

The type was taken at the same time and place as the above species, La Raya, February 21, 1950. Male hypopygium, fig. 11.

Limonia (Dicranomyia) clavistyla Alexander

Limonia (Dicranomyia) clavistyla Alexander; Jour. N. Y. Ent. Soc., 63: 113-114; 195

The type, a male, was from Chinchao, Huanuco, Peru, alt tude 2,500 meters, taken September 22, 1947, by Georg Woytkowski, son of the late Felix Woytkowski. Venation, fig. male hypopygium, fig. 12.

Limonia (Dicranomyia) commina sp. n.

Allied to *seposita;* thorax yellowed, praescutum and scutal lot light brown; wings faintly suffused with brown, *Sc* long, Sc_1 endi about opposite one-fourth *Rs;* male hypopygium with rostral spi slightly unequal in length, both slender, placed close together on f of prolongation at near midlength.

Male. — Length, about 6-7 mm.; wing, 6.2-8 mm. Rostr short, brownish yellow; palpi brown. Antennae dark brown (t minal five segments broken); flagellar segments oval, each w a glabrous apical pedicel, longest verticils subequal to segments. Head brown.

Pronotum light brown. Mesonotal praescutum with c chiefly light brown, lateral borders yellow; scutal lobes brow yellow, scutellum and postnotum light yellow. Pleura polis yellow, propleura darker. Halteres with stem brownish yell base restrictedly brighter, knob brown. Legs with coxae trochanters yellow, remainder brown; claws long and slen gently curved, with a long straight spine near base, wit further concentration of about four microscopic spinules origin. Wings very faintly suffused with brown, stigma slightly darker brown; veins brown. Longitudinal veins be general level of origin of *Rs* with trichia, lacking on the A Venation: *Sc* long, Sc_1 ending about opposite one-fourth the le of *Rs*, Sc_2 longer, about opposite one-third *Rs*, the latter *m-cu* at fork of *M*.

Abdominal tergites brown, sternites and hypopygium brightened. Male hypopygium (Fig. 14) with the tergit transversely suboval, both anterior and posterior borders co the median area of latter slightly more produced and w concentration of setae, the more lateral setae about five on side. Basistyle, *b*, with ventromesal lobe large, broadly a to face of style. Dististyle, *d*, a weakly darkened rod, the half curved gently into an acute point, the surface smoot scabrous as in *latebra;* ventral style very small, its area

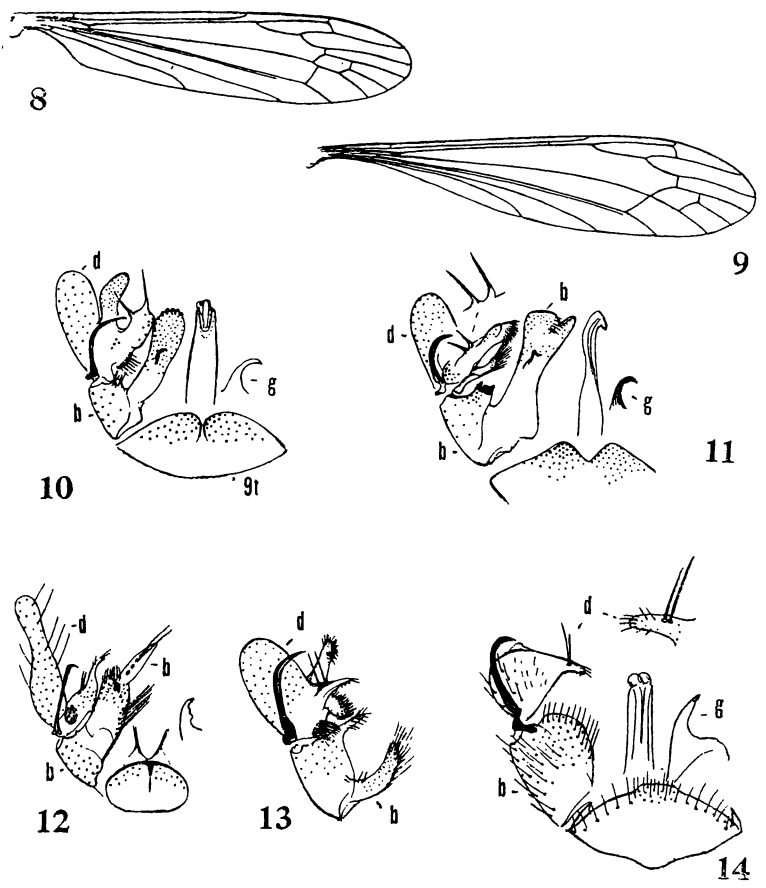

Fig. 8. *Limonia (Dicranomyia) altandina* Alexander; venation. — Fig. 9. *Limonia (Dicranomyia) clavistyla* Alexander; venation. — Fig. 10. *Limonia (Dicranomyia altandina* Alexander; male hypopygium. — Fig. 11. *Limonia Dicranomyia) andinalta* Alexander; male hypopygium. — Fig. 12. *Limonia (Dicranomyia) clavistyla;* male hypopygium. — Fig. 13. *Limonia (Dicranomyia) dorsolobata* Alexander; male hypopygium. — Fig. 14. *Limonia (Dicranomyia) commina,* sp. n.; male hypopygium. — (Symbols: *a,* aedeagus; *b,* basistyle; *d,* dististyle; *g,* gonapophysis; *t,* tergite).

two-fifths that of the basistyle, near its summit with a small paler lobule; rostral prolongation slender, the two spines unequal, placed close together on face of prolongation at near midlength, outer spine slightly shorter, apex of prolongation with numerous setae. Gonapophysis, *g,* with mesal-apical lobe nearly straight, narrowed to the subacute tip. Aedeagus straight, terminal lobes obtuse.

Habitat: Chile.

Holotype, ♂, Antillanca, Osorno, altitude 400 meters, March 18, 1955 (Luis E. Peña). Paratopotypes, 2 ♂♂.

The most similar regional species with unpatterned wings and vein *Sc* long include *Limonia (Dicranomyia) exercita* Alexander and *L. (D.) seposita* Alexander, both having the spines of the rostral prolongation widely separated, and *L. (D.) latebra*, sp. n., which has the rostral spines much as in the present fly but with other stuctures of the hypopygium quite different, these including the tergite, basistyle, both dististyles, and the phallosome. Other important differences are found in the venation and in antennal structure, including the glabrous apical pedicels of the flagellar segments in the present fly.

Limonia (Dicranomyia) dorsolobata Alexander

Limonia (Dicranomyia) dorsolobata Alexander; Ann. Mag. Nat. Hist., (11) 12: 398-400; 1945.

The type, a male, was from Riobamba, Chimborazo, Ecuador, altitude 2,700 meters, April 19, 1939 (F. Martin Brown). Male hypopygium, fig. 13.

Limonia (Dicranomyia) ignara sp. n.

Belongs to the *tristis* group; general coloration of thorax brownish gray; wings relatively short and broad, weakly tinged with brown, very restrictedly patterned with darker brown, costal border more whitened, including the narrow apices of the outer radial cells; male hypopygium with tergite narrow, posterior border very gently emarginate, rostral prolongation of ventral dististyle stout, the two spines from basal tubercles; gonapophysis with mesal-apical lobe straight, blackened.

Male. — Length, about 4.5 mm.; wing, 5.2 mm. Head broken. Thoracic dorsum dark gray, the central area of praescutum and the scutal lobes brown, posterior sclerites clearer gray. Pleura brownish gray. Halteres with stem dirty white, knob brown. Legs with coxae brown, trochanters more brownish yellow; remainder of legs broken. Wings (Fig. 15) relatively short and broad, weakly tinged with brown, very restrictedly patterned with darker brown, including the arculus, cord and small stigmal area, the color including especially the veins; prearcular field and narrow costal border more whitened, most evident as a spot before stigma and the narrow apices of the outer radial cells; veins brown, *C* and the prearcular veins paler. Venation: Sc_1 ending opposite origin of *Rs*, Sc_2 near its tip; free tip of Sc_2 and R_2 in transverse alignment; *m-cu* shortly before fork of *M*.

Abdomen, including hypopygium, dark brown. Male hypopygium (Fig. 18) with the tergite, *t*, narrow, the width about three and one-half times the length at median line; margins of lobes broadly thickened. Basistyle, *b*, subequal in area to the ventral dististyle; ventromesal lobe small; the very small accessory lobule darkened. Dorsal dististyle, *d*, nearly straight, at tip sud-

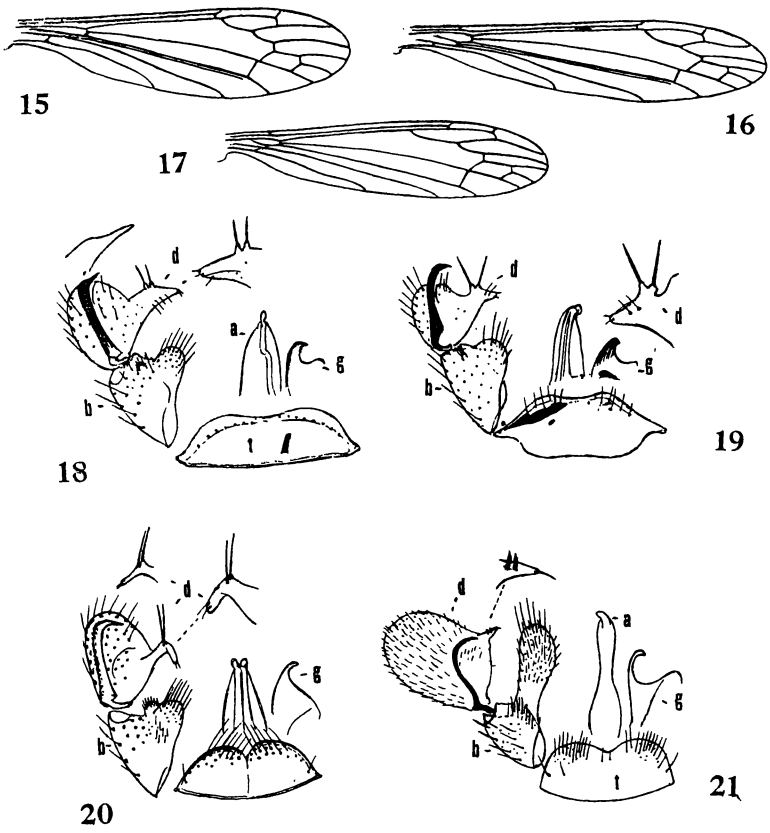

Fig. 15. *Limonia (Dicranomyia) ignara*, sp. n.; venation. — Fig. 16. *Limonia (Dicranomyia) laistes*, sp. n.; venation. — Fig. 17. *Limonia (Dicranomyia) latebra*, sp. n.; venation. — Fig. 18. *Limonia (Dicranomyia) ignara*, sp. n.; male hypopygium. — Fig. 19. *Limonia (Dicranomyia) laistes*, sp. n.; male hypopygium. — Fig. 20. *Limonia (Dicranomyia) latebra*, sp. n.; male hypopygium. — Fig. 21. *Limonia Dicranomyia) microscola*, sp. n.; male hypopygium. — (Symbols: *a*. aedeagus, *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *t*, tergite).

denly narrowed into a spine; ventral style with rostral prolongation stout, the two spines at near midlength, relatively short, from basal tubercles that are about one-thirds the length of the spine. Gonapophysis, *g*, with mesal-apical lobe straight, blackened, tip produced laterad into a small point. Apical lobe of aedeagus very small.

Habitat: Honduras.

Holotype, ♂, Lancetilla, August 13, 1953 (ex Gordon Field).

Limonia (*Dicranomyia*) *ignara* is quite different from other regional members of the *tristis* group in the hypopygial structure, such species including *L.* (*D.*) *knabi* (Alexander) and *L.* (*D.*) *rapida* Alexander. It is more like the Mexican *L.* (*D.*) *laistes*, sp. n., yet quite distinct.

Limonia (Dicranomyia) laistes sp. n.

Belongs to the *tristis* group; general coloration dark brown; antennae black throughout; halteres elongate, stem yellow, the small knob brown; wings relatively long, slightly darkened, stigma very reduced in size, *m-cu* before fork of *M;* male hypopygium with posterior border of tergite nearly truncate; accessory tubercle of basistyle very small; ventral dististyle with rostral prolongation unusually deep, pale throughout, spines two, from a sclerotized basal plate, the spines from small separate tubercles; gonapophyses with tips of mesal-apical lobes truncated.

Male. — Length, about 7 mm.; wing, 7.8 mm. Rostrum and palpi black. Antennae black throughout; flagellar segments oval, subequal to their verticils, terminal segment about two-thirds the penultimate. Head brown, discolored, possibly pruinose in fresh specimens.

Pronotum dark brown. Mesonotum of type discolored, appearing almost uniformly dark brown, paler at the wing root. Pleura similarly darkened, the meral region pale. Halteres elongate, stem yellow, the small knob brown. Legs with fore coxae darkened, middle and hind pairs brownish yellow; trochanters yellow; remainder of legs light brown, femoral tips slightly darker, outer three tarsal segments dark brown; claws of male with three spines, the outer one longest, at near midlength of claw. Wings (Fig. 16) relatively long, slightly infuscated, stigma reduced to a narrow darkened seam; veins brown. Venation: Sc_1 ending opposite origin of *Rs*, Sc_2 slightly removed; *m-cu* about one-third its length before fork of *M*.

Abdominal tergites dark brown, sternites more brownish yellow. Male hypopygium (Fig. 19) with the ninth tergite, *t*, transverse, the sides narrowly produced; posterior border virtually truncate to very slightly emarginate to produce low thickened lobes, setae sparse, pale. Basistyle, *b*, subequal in area to the ventral dististyle; ventromesal lobe low and stout, accessory tubercle small, short-oval, with sparse setae. Dorsal dististyle, *d*, a stout nearly straight blackened rod, tip narrowed into a short acute spine; ventral style oval, rostral prolongation unusually deep, pale throughout; spines two, from a sclerotized basal plate, spine subequal, arising from smaller individual basal tubercles. Gonapophysis, *g*, with mesal-apical lobe darkened, unusually stout, very slightly curved, tip truncate.

Habitat: Mexico.

Holotype, ♂, Barranca de Oblatos, Guadalajara, July 1953 (Noël L. H. Krauss).

In its hypopygial structure, *Limonia* (*Dicranomyia*) *laistes* is quite distinct from the three other regional species so far made known, *L.* (*D.*) *ignara,* sp. n., *L.* (*D.*)*knabi* (Alexander), and *L.* (*D.*) *rapida* (Alexander).

Limonia (Dicranomyia) latebra sp. n.

General coloration of mesothorax uniformly orange yellow, pronotal scutum brown; rostrum and antennae black; head brownish gray; legs light brown; wings brownish yellow, stigma very pale brown, *Sc* unusually long, Sc_1 at near five-sixths the length of *Rs;* abdominal tergites light brown, sternites and hypopygium more yellowed; male hypopygium with rostral spines elongate, closely approximated.

Male. — Length, about 5.2-5.5 mm.; wing, 5.3-6 mm.; Rostrum, palpi and antennae black, flagellar segments oval, the outer ones slender and more elongate, progressively lengthened outwardly, terminal segment about one-third longer than the penultimate. Head brownish gray; anterior vertex broad.

Pronotal scutum brown, scutellum and pretergites yellow. Mesothorax almost uniformly orange yellow, extreme cephalic border of praescutum wearkly infuscated. Halteres pale, knob weakly infuscated. Legs with coxae and trochanters light yellow; remainder of legs light brown. Wings (Fig. 17) brownish yellow, prearcular and costal fields clearer yellow, stigma very pale brown; veins light brown. Venation: *Sc* unusually long, both Sc_1 and Sc_2 ending about opposite five-sixths to six-sevenths *Rs;* cell *1st* M_2 longer than any of the veins beyond it; *m-cu* longer than distal section of Cu_1, at or close to fork of *M.*

Abdominal tergites light brown, sternites and hypopygium more yellowed. Male hypopygium (Fig. 20) with the tergite, *t,* transverse, posterior border generally convex, with a deep median split that forms broad obtuse lobes provided with long yellow setae. Basistyle, *b,* with ventromesal lobe broad, apex shallowly emarginate to form two unequal lobules, the larger one with much longer setae. Dorsal dististyle, *d,* a stout straight blackened rod, the apex bent at a right angle into a long straight spine, outer surface microscopically scabrous; ventral style relatively small, its area subequal to that of the basistyle, rostral prolongation pale, with two long slender closely approximated spines, one arising from the summit of a small tubercle, second spine at its base, subequal in length but appearing shorter from its

position, both spines longer than the prolongation beyond their insertion. Gonapophysis, *g*, with mesal-apical lobe slender, gently curved to the subacute tip. Aedeagus broad, apex bilobed.

Habitat: Chile.

Holotype, ♂, Caramavida, Nahuelbuta, Arauco, altitude 1,000 meters, February 5-10, 1953 (Luis E. Peña). Paratypes, 2 ♂♂, Pichinahuel, Nahuelbuta, altitude 1,400-1,600 meters, February 12-20, 1953.

Although it is very similar in general appearance and venation to *Limonia* (*Dicranomyia*) *exercita* Alexander and *L.* (*D.*) *seposita* Alexander, the present fly is quite distinct in hypopygial structure, particularly in the position of the rostral spines of the ventral dististyle.

Limonia (Dicranomyia) microscola sp. n.

Size relatively large (wing of male to 8 mm.); general coloration yellowed, praescutum with a darkened central stripe that is more distinct in front; legs light brown; wings faintly tinged with brownish yellow, stigma slightly darker; male hypopygium with ventromesal lobe of basistyle large, dilated outwardly; ventral dististyle very large and fleshy, its rostral prolongation very small and inconspicuous, with two very short spines that are less than three times as long as thick, their tips oblique; gonapophysis with mesal-apical lobe long and slender; aedeagus long and narrow.

Male. — Length, about 6.8-7 mm.; wing, 7.5-8 mm.; antenna, about 1.2-1.3 mm. Rostrum yellow, relatively long, over one-third the remainder of head; palpi brown. Antennae with scape yellow, succeeding segments brown, outer ones brownish black; flagellar segments oval, the outer ones more elongate, exceeding their verticils. Front yellowed, anterior vertex light brown, posterior vertex dork brown, sparsely pruinose.

Pronotum brown above, sides yellowed. Mesonotum yellowed to fulvous, praescutum with a dark brown central stripe that pales behind; posterior sclerites of notum fulvous. Pleura, pleurotergite and dorsopleural membrane clearer yellow. Halteres dark brown, base of stem yellowed. Legs with coxae yellowed, fore pair slightly darker; trochanters yellow; remainder of legs light brown, outer tarsal segments darker. Wings faintly tinged with brownish yellow, stigma only slightly darker, veins brown. Venation: Sc_1 ending opposite origin of *Rs*, Sc_2 retracted, Sc alone more than ½ *m-cu*, the latter at or close to fork of

Abdominal tergites dark brown, in cases, including the type, the proximal sternites yellowed with slightly darker incisures; outer segments darkened; ventral dististyle of hypopygium obscure

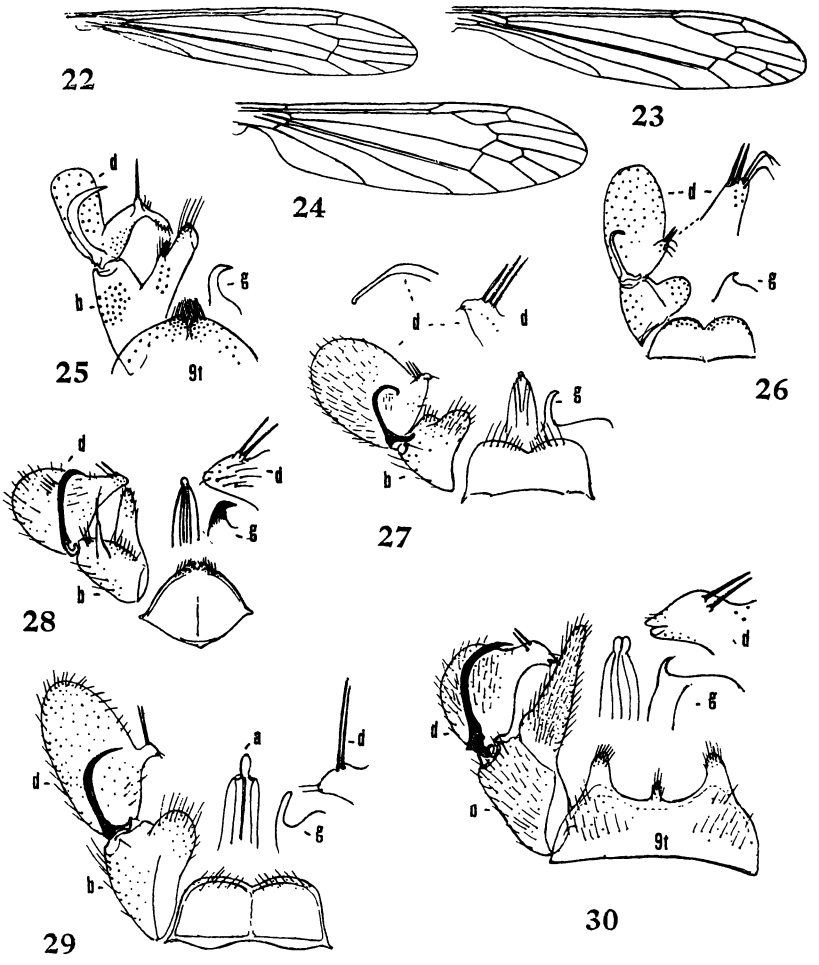

Fig. 22. *Limonia (Dicranomyia) penana* Alexander; venation. — Fig. 23. *Limonia (Dicranomyia) teinoterga,* sp. n.; venation. — Fig. 24. *Limonia (Dicranomyia) thixis,* sp. n.; venation. — Fig. 25. *Limonia (Dicranomyia) penana* Alexander; male hypopygium. — Fig. 26. *Limonia (Dicranomyia) peralta* Alexander; male hypopygium. — Fig. 27. *Limonia (Dicronomyia) subflavida* Alexander; male hypopygium. — Fig. 28. *Limonia (Dicranomyia) teinoterga,* sp. n.; male hypopygium. — Fig. 29. *Limonia (Dicranomyia) thixis,* sp. n.; male hypopygium. — Fig. 30. *Limonia (Dicranomyia) trilobifera,* sp. n.; male hypopygium. — Symbols: *a,* aedeagus; *b,* basistyle; *d.* dististyle; *g,* gonapophysis; *t,* tergite).

yellow. Male hypopygium (Fig. 21) with the tergite, *t,* transverse, posterior border gently emarginate to form broad lateral lobes that bear about 15 long dark setae; cephalic margin of tergite nearly straight. Basistyle, *b,* small, its ventromesal lobe, subequal to body of style in area, gently dilated outwardly to appear clavate, with numerous setae, the outermost long and conspicuous, basal setae very small. Dorsal dististyle, *d,* a slender rod, strongly

curved at near two-thirds the length, at apex extended into a long spine; ventral style very large and fleshy, its area nearly three times that of the total basistyle; rostral prolongation very small and inconspicuous, narrowed outwardly, the two rostral spines reduced to peglike spines, their tips obliquely truncated, outer spine smaller, its length less than three times the diameter at base, inner spine slightly longer. Gonapophysis, *g*, with mesal-apical lobe long and slender, gently curved. Aedeagus long and narrow, slightly widened beyond midlength, apical lobe single.

Habitat: Chile.

Holotype, ♂, Pucatrihue, Osorno, altitude 10-60 meters, March 12, 1955 (Luis E. Pena). Paratopotypes, 4 ♂♂, with the type.

Limonia (Dicranomyia) microscola is most readily told from the many other generally similar Neotropical species by the hypopygial structure, particularly the very small rostral spines of the ventral style which are shorter than in any other regional species presently known.

Limonia (Dicranomyia) penana Alexander

Limonia (Dicranomyia) penana Alexandeer; Jour. N. Y. Ent. Soc., 63: 114-115; 1955.

The type male was from El Cuzco, Cuzco, Peru, taken February 28, 1950, by Luis E. Peña, to whom the species was dedicated. Venation, fig. 22; male hypopygium, fig. 25.

Limonia Dicranomyia) peralta Alexander

Limonia (Dicranomyia) peralta Alexander; Ann. Mag. Nat. Hist., (11) 12: 397-398; 1945.

The type, a male, was from Cumbres de Tililac, Chimborazo, Ecuador, altitude 4,200 meters, collected April 21, 1939, by F. Martin Brown. Male hypopygium, fig. 26.

Limonia (Dicranomyia) subflavida Alexander

Limonia (Dicranomyia) subflavida Alexander; Diptera Patagonia and South Chile, 1: 99-100, fig. 186 (♂ hypopygium); 1929.

Types from Lake Gutierrez, Rio Negro Territory, Argentina, collected in November 1926 by F. W. Edwards. Further materials from Los Piedras, Magallanes, Chile, January 11, 1966, taken by O. S. Flint, Jr., include one male that differs from the types in having three rostral spines on the ventral dististyle (fig. 27).

Limonia (Dicranomyia) teinoterga sp. n.

Belongs to the *tristis* group; general coloration of head and thorax gray, praescutum and scutal lobes patterned with brown; wings very slightly tinged with brown, cell *1st* M_2 long, subequal to or exceeding the distal section of M_{1-2}; male hypopygium with tergite large, the length and width subequal; rostral prolongation of ventral dististyle stout, the two spines from small basal tubercles.

Male. — Length, about 5.5-5.8 mm; wing, 6.8-7 mm.; antenna, about 0.7 mm.

Female. — Length, about 6.5 mm.; wing, 8 mm.

Rostrum brownish black, about one-half the remainder of head; palpi black. Antennae short, black; flagellar segments oval, the outer ones longer, exceeding their verticils. Head brownish gray; anterior vertex narrow.

Pronotum brownish gray. Mesonotal praescutum gray, disk brown, scutal lobes similarly darkened, median region and posterior sclerites light gray, parascutella yellowed. Pleura brownish gray; dorsopleural membrane yellowish gray. Halteres elongate, stem white, knob infuscated. Legs with coxae brownish gray; trochanters yellow; remainder of legs light brown, outer segments darker. Wings (Fig. 23) very slightly tinged with brown, stigma pale brown; veins slightly darker brown. Venation: Sc_1 ending opposite or just beyond origin of *Rs;* cell *1st* M_2 elongate, subequal to or exceeding the distal section of M_{1-2}; *m-cu* from one-third to one-half its length before fork of *M*.

Abdominal tergites dark brown, basal sternites yellowed, subterminal segments uniformly darkened; styli of hypopygium light brown. Male hypopygium (Fig. 28) with tergite, *t,* large, unusually long, the length and width subequal; posterior border very convex, the cephalic margin triangulary convex, lateral borders more thickened, outwardly terminating in two small submedian lobes, setae concentrated on apical margin, those of the lobes shorter and more delicate. Basistyle, *b,* with ventromesal lobe pale, elongate, with numerous setae on outer half, accessory lobule very long, tipped with a few setae, one very long; mesal apical margin of style with a group of three modified setae. Dorsal dististyle, *d,* a slender blackened rod, at tip narrowed into a slender spine; ventral style in area about one-half more extensive than the basistyle, narrowed into the stout beak; two recurved spines from small basal tubercles, the spines subequal in length to the apex beyond them. Gonapophysis, *g,* with mesal-

apical lobe broad-based, apex with a short laterally directed spine. Aedeagus relatively narrow, apical lobe small.

Habitat: Colombia.

Holotype, ♂, Mount Redondo, December 5, 1956 (Juan Foerster). Allotype, ♀, December 20, 1956. Paratopotype, ♂, pinned with the allotype.

Limonia (*Dicranomyia*) *teinoterga* is quite distinct from other Neotropical members of the *tristis* group in the hypopygial structure, particularly the tergite, basistyle and ventral dististyle.

Limonia (Dicranomyia) thixis sp. n.

General coloration of thorax yellow, praescutum with a pale brown central stripe that is darker anteriorly; antennae black, scape obscure yellow; legs yellow, femoral tips slightly infuscated; wings whitened, including the prearcular field; stigma and vague clouds at end of *Rs* and along distal section of Cu_1 weakly darkened; abdominal tergites dark brown, extreme lateral borders paler; male hypopygium with rostral spines of ventral style long, approximated at bases; dorsal style with tip acute; gonapophysis with apex of mesal-apical lobe obtuse.

Male. — Length, about 8.5 mm.; wing, 9 mm.; antenna, about 1.2 mm. Rostrum testaceous yellow, tinged with green; palpi black. Antennae with scape obscure yellow, the remainder black; proximal flagellar segments short-oval, the outer ones longer, subequal to their verticils. Head brownish yellow, the narrow anterior vertex and orbits light gray pruinose.

Pronotum brownish yellow. Mesonotum yellow, the praescutum with a pale brown central stripe, broader and darker anteriorly, pale behind, becoming obsolete before the suture; posterior half of mediotergite darker. Halteres with stem yellow, knob slightly infuscated. Legs with coxae and trochanters yellow; femora yellow, tips slightly more infuscated; remainder of legs yellow, the outer three tarsal segments dark brown; claws with three teeth, the outermost largest. Wings (Fig. 24) whitened, including the prearcular field, stigma oval, pale brown; vague very pale brown seams over fork of *Rs* and distal section of Cu_1; veins brown, those in the prearcular field whitened. Venation: Sc_1 alone about one-fourth *Rs;* cell *1st* M_2 long-rectangular, subequal to distal section of M_4; *m-cu* shortly beyond fork of *M*.

Abdominal tergites dark brown, extreme lateral borders pale, sternites slightly paler brown, eighth and ninth segments more yellowed. Male hypopygium (Fig. 29) with the tergite, *t,* narrow, posterior border with very low lobes, provided with delicate pale setae; thickened margins relatively narrow, that of the nearly

truncate anterior border broader. Basistyle, *b,* with ventromesal lobe oval, with long setae. Dorsal dististyle, *d,* a curved sickle that is extended into a long acute spine; ventral style large, its area about one-half greater than that of the basistyle; rostral prolongation unusually small, apex triangular, the two unusually long black spines placed close together at near midlength of outer margin, the spines longer than the prolongation. Gonapophysis, *g,* with mesal-apical lobe obtuse at tip. Aedeagus terminating in a single point, the genital openings on either side.

Habitat: Chile.

Holotype, ♂, Pichinahuel, Nahuelbuta, Arauco, altitude 1,600 meters, February 12-20, 1953 (Luis E. Peña).

The most similar regional species is *Limonia* (*Dicranomyia*) *sanctaecruzae* (Alexander), widely distributed in southern South America and unusually variable in coloration. It differs from the present fly in the yellowed wings and in hypopygial structure, especially the much shorter rostral spines of the ventral style.

Limonia (Dicranomyia) trilobifera sp. n.

General coloration gray, praescutal disk with three confluent blackened stripes; antennae black; legs brownish black, femoral bases yellowed; wings weakly infuscated, stigma slightly darker, Sc_2 retracted, Sc_1 nearly twice R_2; male hypopygium with posterior border of tergite trilobed, ventromesal lobe of basistyle elongate.

Male. — Length, about 8 mm.; wing, 7.5 mm.; antenna, about 1.5 mm. Rostrum brown, palpi black. Antennae with scape dark brown, gray pruinose, remainder of organ black; proximal flagellar segments oval, with long verticils, outer segments proportionately longer, terminal segment slightly exceeding the penultimate. Head with front and anterior vertex gray, the latter nearly three times the diameter of scape; disk of posterior vertex more infuscated, with a central gray line.

Pronotum brownish black, sparsely pruinose. Mesonotal praescutum with disk chiefly covered by three blackened confluent stripes, surface sparsely pruinose, especially posteriorly; remaining parts of notum gray, patterned with darker, including the scutal lobes, posterior border of scutellum brown. Pleura light gray, dorsopleural membrane light brown. Halteres stout, stem yellowed, apex of the large knob infuscated. Legs with coxae brown to blackened, heavily pruinose; trochanters obscure yellow; femora brownish black, bases yellowed, remainder of legs black; claws long and nearly straight, spines grouped at base, the outer one

long and conspicuous, the others very reduced and compacted. Wings very weakly infuscated, stigma very slightly darker; prearcular field, including the veins, light yellow, remaining veins dark brown. Veins beyond general level of origin of *Rs* with strong black trichia. Venation: Sc_1 ending opposite origin of *Rs*, Sc_2 retracted, Sc_1 alone nearly twice R_2; *m-cu* at fork of *M*.

Abdomen dark brown, styli of hypopygium slightly paler. Male hypopygium (Fig. 30) with the tergite, *t*, transverse, posterior border produced into three lobes, the lateral pair stout, tipped with relatively short setae; central lobe much smaller, with black setae; setae of tergal plate long but pale and inconspicuous. Basistyle, *b*, with ventromesal lobe very long, exceeding in length the style itself, narrowed gradually to the pale obtuse tip. Dorsal dististyle, *d*, a strongly curved hook; ventral style relatively small, its area less than the total basistyle; rostral prolongation large, compressed, beak indistinctly split to form two lobes; two rostral spines, placed on proximal part of a more dilated border, not quite contiguous at their bases. Gonapophysis, *g*, broad, the mesal-apical lobe a small gently curved darkened spine. Aedeagus with base broad, narrowed outwardly to the two apical lobes.

Habitat: Chile. Holotype, ♂, La Cabana, Cautin, altitude 550 meters, March 25, 1955 (Luis E. Peña).

The male hypopygium of *Limonia* (*Dicranomyia*) *trilobifera* is quite different from that of all other regional species in the trilobed posterior margin of the tergite. In its general appearance it suggests members of the *tristis* group but is not closely related to any other Neotropical species.

Subg. **Geranomyia** Haliday

Geranomyia Haliday; Ent. Mag. (London) 1: 154; 1833; (type *unicolor* Haliday).
Limnobiorhynchus Westwood; Ann. Soc. Entomol. France 4: 683, in part; 1835; (type *brasiliensis* Westwood).
Aporosa Macquart; in Webb et Berth., Hist. Nat. d'iles Canaries, Entomol., Diptera, p. 100; 1838; (type *canariensis* Bergroth, as *maculipennis* Macquart).
Plettusa Philippi ;Verh. zool. bot Ges. Wien 15: 597; 1865; (type *virescens* Philippi).
Triphana Skuse; Proc. Linn. Soc. New South Wales (2) 4: 777; 1890, preprint 1889; type *lutulenta* Skuse).
Teiraphana Skuse; Proc. Linn. Soc. New South Wales (2) 4: 778; 1890, preprint 1889; (type *skuseana* Alexander, as *fusca* Skuse).
Monophana Edwards; as a subgenus; Trans. Linn. Soc. London 15, ser. 2, zool., p. 200; 1912; (type *immaculata* Edwards, preoccupied).
Parageranomyia Santos Abreu; Mem. R. Acad. Cien. y Artes Barcelona 18: 68; 1923; (type *Palmensis* Santos Abreu).
Pseudaporosa Alexander; Ann. Mag. Nat. Hist. (9) 13: 177; 1924; (type *venustithorax* Alexander).

The name *immaculata* Edwards, as listed under *Monophana* above (Trans. Linn. Soc. London 15, ser. 2, Zool., 200, pl. 10, fig. 4 (wing); 1912) is preoccupied by *Limonia immaculata* Meigen, 1804, and is here re-named *Limonia* (*Geranomyia*) *edwardsella*, nom. n.

The subgenus *Geranomyia* comprises an extensive group of crane flies that in its typical form is well distinguished by the elongate rostrum, a condition found elsewhere in the genus only in *Zelandoglochina* Alexander. In certain species the rostrum is shorter and it is difficult to separate such forms from species of other subgenera, particularly *Dicranomyia* Stephens.

The immature stages as known are aquatic or semiaquatic, in a few species being marine or virtually so. Particular attention is directed to *Limonia* (*Geranomyia*) *recondita* (Alexander) and its early stages, which were described by Major R. W. G. Hingston in «A Naturalist in the Guiana Forest, p. 332; 1932», as follows: «It seems to be unknown that any kind of Diptera go in for making pensile nests. But in the forest there was a crane-fly, *Geranomyia,* which suspended its pupa in a globule of jelly wrapped around the tip of a turu palm leaf. The globule was a firm gelatinous substance, rather smaller than a hazel-nut and as clear as water. Indeed, its appearance was that of a large drop of water about to fall from the end of the palm leaf. It was oval in shape, broader above and pointed below, and was wrapped completely round the thready leaf about half an inch from its extreme tip.» Later, Edwards (Ann. Mag. Nat. Hist. (10) 14: 634; 1934) repeated the above account and described the fly in question as *gelatifex* sp. n., but there seems no question but that the earlier described *Limonia* (*Geranomyia*) *recondita* (Alexander) is identical.

List of Species

aequalis (Alexander). — Argentina.
a. deplexa Alexander. — Peru, Bolivia.
amblytylos Alexander. — Jamaica.
amoenalis Alexander. — Peru.
anduzeana Alexander. — Venezuela.
anisacantha Alexander. — Jamaica.
(*annulata* Enderlein, see *enderleini* Alexander).
anthina Alexander. — Peru.
antillarum Alexander. — Cuba, Puerto Rico.
arecuna Alexander. — Brazil: Mount Roraima.
argentinensis (Alexander). — Argentina, Brazil.
assueta Alexander. — Ecuador.
austroandina Alexander. — Argentina.
avara Alexander. — Brazil.
bahiensis AAlexander). — Brazil.
banksiana Alexander. — Cuba.
beatrix Alexander. — Ecuador.
biargentata Alexander. — Paraguay, Brazil.
bicincta (Alexander). — Peru.

b. angusticincta (Alexander). — Peru.
brasiliensis (Westwood), in part. — Brazil.
brevispinula Alexander. — Mexico.
bustilloi Alexander. — El Salvador.
callinota Alexander. — Peru, Venezuela.
carunculata Alexander. — Peru.
c. manabiana Alexander. — Ecuador.
cerberus (Alexander). — Guatemala, Mexico.
cinereinota (Alexander). — British Guiana, Dominica, Puerto Rico, Jamaica, Paraguay. (includes *domingensis* Alexander).
civica Alexander. — Mexico, Jamaica.
conquisita Alexander. — Peru.
contorta Alexander. — Peru.
costaricensis (Alexander). — Costa Rica.
cubana Alexander. — Cuba.
damicoi Alexander. — Brazil.
deliciosa Alexander. — Panama, Peru.
destricta Alexander. — Ecuador, Venezuela, Peru.
devota Alexander (new name for *pulchella* Alexander, preoccupied).
diabolica Alexander. — Venezuela.
diargyria Alexander. — Peru.
disparilis Alexander. — Mexico, Peru.
(*domingensis* Alexander, see *cinereinota* Alexander).
dominicana Alexander. — Dominica.
(*enderleini* Alexander, new name for *annulata* Enderlein, preoccupied). — Costa Rica.
eurygramma Alexander. — Mexico, Panama, Ecuador.
e. stenomera Alexander. — Jamaica.
fluxa Alexander. — Panama, Mexico, Venezuela, Peru.
forsteriana Alexander. — Bolivia.
furor Alexander. — Venezuela.
gaudens (Alexander). — Argentina.
(*gelatifex* Edwards — see *recondita* Alexander).
glauca (Alexander). — Ecuador, Peru.
guatemalensis (Alexander). — Guatemala, Mexico, Costa Rica, Venezuela; southwestern United States.
guianensis Alexander. — Britsh Guiana.
heteroxipha Alexander. — Peru.
hirsutinota Alexander. — Ecuador, Peru.
immerita Alexander. — Paraguay, Brazil.
inaequispinosa Alexander. — Ecuador, Bolivia.
inaequituberculata (Alexander). — Paraguay.
infamosa Alexander. — Brazil.
inquisita Alexander. — Peru, Bolivia, Ecuador.
insignis (Loew). — Brazil.
intermedia (Walker). — includes *remingtoni* Alexander. — Jamaica, southern U. S. A.
knabiana (Alexander). — Guatemala.
lachrymalis (Alexander). — Ecuador, Mexico, Panama, Peru.
lacteitarsis (Alexander). — Colombia.
latitudinis Alexander. — Brazil.
laudanda Alexander. — Colombia, Venezuela.
lemniscata Alexander. — Paraguay.
(*leucomelania* Enderlein, as *Aporosa* — see *Toxorhina* (*Ceratocheilus*).
lichyi Alexander. — Venezuela.
lineata (Enderlein). — Colombia.

luteimana Alexander. — Ecuador, Peru.
(*lycaon* Alexander, new name for *pallidula* Alexander and *pallida* Williston, preoccupied — Lesser Antilles).
macrauchenia Alexander. — Peru.
macta Alexander. — Brazil.
marthae Alexander. — Colombia, Venezuela, Bolivia.
mexicana (Bellardi). — Mexico.
microphaea Alexander. — Dominica.
(*militaris* Alexander, new name for *viridula* Alexander, 1930, nec *viridula* Alexander, 1922).
myersiana Alexander. — Cuba, Jamaica, Puerto Rico.

neanthina Alexander. — Bolívia.
neogaudens Alexander. — Peru, Colombia.
neonomenius Alexander. — Colombia.
neoparilis Alexander. — Bolivia.
neopentheres Alexander. — Mexico.
nigripleura (Alexander). — Panama.
nugatoria Alexander. — Ecuador.
numenius (Alexander). — Panama, Ecuador.

oneris Alexander. — Peru.
opinator Alexander. — Venezuela.
opulens Alexander. — Ecuador.
orthorhabda Alexander. — Mexico.

(*pallida* Williston — see *lycaon* Alexander).
pallidapex Alexander. — Ecuador.
(*pallidula* Alexander — see *lycaon* Alexander).
parilis Alexander. — Ecuador.
pastazina Alexander. — Ecuador.
pentheres (Alexander). — Mexico.
perfecta (Alexander). — Mexico.
(*philippii* Alexander, new name for *virescens* Philippi; equals *valida* Loew).
(*pilipes* Walker, 1856 — see *Teucholabis*).
platensis (Alexander). — Argentina.
plumbeicolor Alexander. — Brazil.
plumbeipleura (Alexander). — Colombia, Ecuador, Venezuela, Panama, Antilles.
propera Alexander. — Brazil.
provocator Alexander. — Peru.
(*pulchella* Alexander — see *devota* Alexander).

rabula Alexander. — Ecuador.
recisa (Alexander). — Mexico, El Salvador, Panama, Brazil, Ecuador, Peru.
recondita (Alexander). — British Guiana, Panama, Brazil, Ecuador, Peru. (includes *gelatifex* Edwards).
refuga Alexander. — Ecuador.
relata Alexander. — Brazil.
(*remingtoni* Alexander — see *intermedia* Walker).
rostrata antillarum Alexander. — Cuba, Jamaica.
rubiginosa Alexander. — Brazil: Mount Roraima.
rufescens (Loew). — Puerto Rico.

satipoana Alexander. — Peru.
scolopax (Alexander). — Guatemala, Venezuela, Ecuador, Peru.
separata (Alexander). — Peru, Ecuador, Bolivia.
serotina (Alexander). — Argentina.
stenoleuca Alexander. — Peru.
stenophallus Alexander. — Ecuador, Venezuela, Peru.

s. tachirae Alexander. — Venezuela.
stoica Alexander. — Peru, Bolivia.
stylobtusa, sp. n. — Peru.
subgaudens Alexander. — Peru.
subinsignis Alexander. — Guatemala, Mexico, El Salvador.
subparilis Alexander. — Bolivia.
subpentheres Alexander. — Ecuador.
subrecisa Alexander. — Puerto Rico.
subserotina (Alexander). — Argentina.
subvirescens Alexander. — Cuba, Venezuela.
s. clementis Alexander. — Peru.
s. jamaicae Alexander. — Jamaica.
sumptuosa Alexander. — Peru.
sylvania Alexander. — Dominica.
tatei Alexander. — Brazil: Mount Roraima.
(*testacea* Philippi — see *valida* Loew).
tibialis (Loew). — Brazil, Jamaica, Dominica, Puerto Rico, Mexico, British Guiana, Galapagoes, Paraguay.
timens Alexander. — Venezuela.
townsendi (Alexander). — Peru.
transitoria Alexander. — Peru.
trichomera Alexander. — Mexico.
(*tristella* Alexander, new name for *tristis* Loew, preoccupied).
tristis (Loew) — see *tristella* Alexander. — Brazil.
tulumayoensis Alexander. — Peru.
tumidibasis Alexander. — Ecuador, Bolivia.
turbida (Alexander). — Mexico.
uberis Alexander. — Mexico.
umbricolor Alexander. — Ecuador, Peru.
unispinifera Alexander. — Brazil.
valida (Loew); — includes *virescens* Philippi, *testacea* Philippi, *philippii* Alexander. — Chile, Argentina.
variegata (Walker). — Brazil.
versuta Alexander. — Colombia, Mexico.
villaricensis Alexander. — Paraguay.
vindicta Alexander. — Venezuela.
v. dilucida Alexander. — Ecuador.
virescens (Loew). — Saint Thomas, Puerto Rico.
virescens Philippi, see *valida* Loew, *philippii* Alexander).
viridella (Alexander). — British Honduras.
viridula Alexander — see *militaris* Alexander. — Mexico, Jamaica).
walkeri Alexander. — Colombia, Venezuela, Brazil.
xanthoplaca (Alexander). — Peru, Ecuador.
yunquensis Alexander. — Puerto Rico.

Limonia (Geranomyia) bustilloi Alexander

Limonia (Geranomyia) bustilloi Alexander; Rev. de Entomologia, 9: 435-436; 1938

The type, a male, from San Salvador, El Salvador, collected by Juan Bustillo C. Male hypopygium, fig. 32.

Limonia (Geranomyia) macrauchenia Alexander

Limonia (Geranomyia) macrauchenia Alexander; Jour. N. Y. Ent. Soc., 63: 116-117; 1955.

The type male was taken at Chinchao, Huanuco, Peru, altitude 2,500 meters, September 13, 1947, by George Woytkowski. Male hypopygium, fig. 33.

Limonia (Geranomyia) macta Alexander

Limonia (Geranomyia) macta Alexander; Ann. Ent. Soc. America, 38: 274-275; 1945.

The type male was taken at Petropolis, Rio de Janeiro, Brazil, altitude 2,700 feet, April 9, 1940, by Thomaz Borgmeier. Male hypopygium, fig. 34.

Limonia (Geranomyia) marthae Alexander

Limonia (Geranomyia) marthae Alexander; Ann. Ent. Soc. America, 23: 726-728; 1930.

Type male from Vista Nieve, Mount Santa Marta, Colombia, altitude 5,000 feet, August 6, 1926, by F. W. Walker. Male hypopygium, fig. 35.

Limonia (Geranomyia) oneris Alexander

Limonia (Geranomyia) oneris Alexander; Jour. N. Y. Ent. Soc., 63: 117-118; 1955.

Type male from Sariapampa, Huanuco, Peru, altitude 3,600 meters, May 12, 1946, by Felix Woytkowski. Male hypopygium, fig. 37.

Limonia (Geranomyia) stylobtusa sp. n.

General coloration of mesonotal praescutum yellow, dark medially, posterior sclerites and pleura darker brown; legs brownish yellow; wings subhyaline, unpatterned except for the darker brown stigma, *Sc* long, cell M_2 open by atrophy of *m;* male hypopygium with the dorsal dististyle a slender curved sickle, its tip obtuse, ventral style very large, approximately three times the basistyle, rostral spines elongate, from unequal basal tubercles; gonapophysis long, pale, basal plate small and narrow.

Male. — Length, excluding rostrum, about 5 mm.; wing, 5.5. mm.; rostrum alone about 2.5 mm. Rostrum relatively long, nearly one-half the wing, brown. Antennae dark brown; flagellar segments suboval, exceeding their verticils, outer segments longer, the terminal about one-third longer than the penultimate. Head brown.

Pronotum obscure yellow. Mesonotal praescutum yellow, clearer on sides, median praescutal stripe poorly indicated, lateral pair slightly darker; scutum obscure yellow, mesal half of scutal lobes slightly more darkened; scutellum yellow with a brown central area; postnotum brown, the interpostnotal region slightly paler. Pleura plumbeous brown beneath, above, including the dorsopleural membrane, more yellowed. Halteres with stem yellow, knob dark brown. Legs brownish yellow, outer tarsal segments darker. Wings (Fig. 31) subhyaline, unpatterned except for the darker brown stigma; veins brown. Venation: *Sc* long, Sc_1 ending about opposite midlength of *Rs*, Sc_2 near its tip; cell M_2 open by atrophy of *m*; cell *2nd A* narrow.

Basal abdominal tergites light brown, sternites more brownish yellow, outer segments, including hypopygium, darker. Male hypopygium (Fig. 36) with the tergite, *t*, narrowly transverse, posterior border broadly emarginate, the low lobes with numerous very long setae. Basistyle, *b*, small, its total area only about one-third that of the ventral dististyle; ventromesal lobe oval, the setae delicate. Dorsal dististyle, *d*, a slender curved sickle, its tip obtuse; ventral style very large and fleshy, rostral prolongation small, with two long slender spines, one from a long basal tubercle, strongly bent at near one-third its length, the second spine subequal in length and size, straight, from a small tubercle. Gonapophysis, *g*, long, pale, the basal plate small and narrow.

Habitat: Peru. Holotype, ♂, Tingo Maria, Huanuco, April 5-8, 1963 (Luis E. Peña).

Limonia (*Geranomyia*) *stylobtusa* is very different from other regional species with unpatterned wings in the open cell M_2 of the wings and in hypopygial structure, especially the obtuse apex of the dorsal dististyle.

Limonia (Geranomyia) versuta Alexander

Limonia (Geranomyia) versuta Alexander; Ann. Ent. Soc. America, 23: 728-729; 1930.

Type male from Vista Nieve, Mount Santa Marta, Colombia, altitude 5,000 feet, August 8, 1926, by F. W. Walker. Male hypopygium, fig. 38.

Limonia (Geranomyia) yunquensis Alexander

Limonia (Geranomyia) yunquensis Alexander; Jour. N. Y. Ent. Soc., 63: 119-120; 1955.

Type male from El Yunque, Luquillo National Forest, Puerto Rico, collected November 27, 1943, by H. D. Pratt and J. Maldonado Capriles. Male hypopygium, fig. 39.

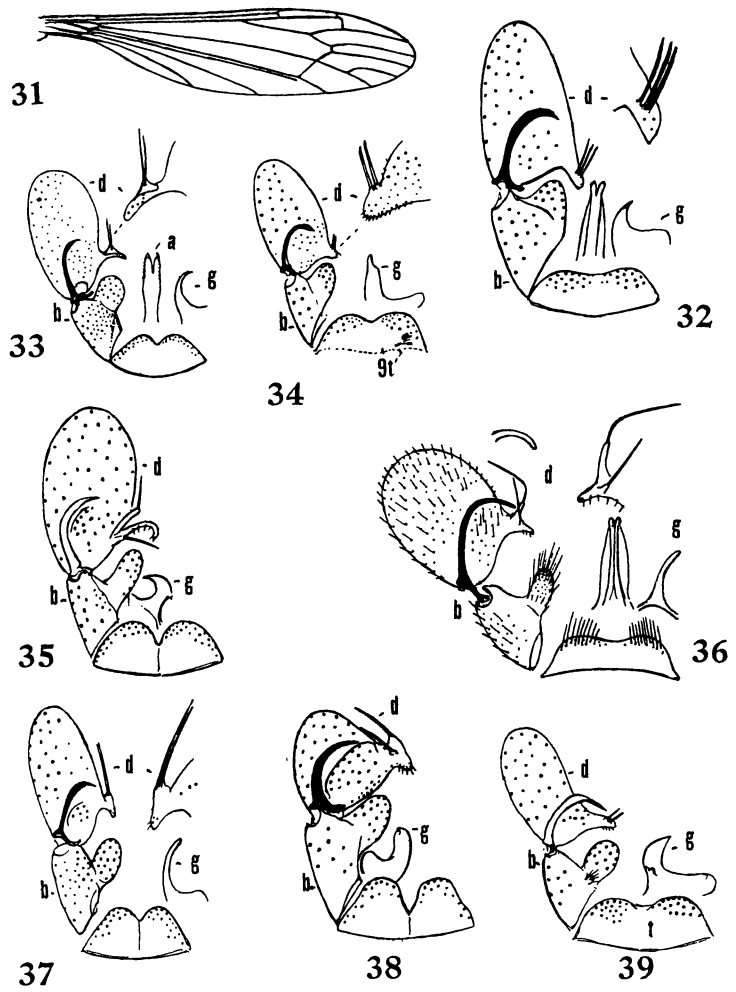

Fig. 31. *Limonia (Geranomyia) stylobtusa*, sp. n.; venation. — Fig. 32. *Limonia (Geranomyia) bustilloi* Alexander; male hypopygium. — Fig. 33. *Limonia (Geranomyia) macrauchenia* Alexander; male hypopygium. — Fig. 34. *Limonia (Geranomyia) macta* Alexander; male hypopygium. — Fig. 35. *Limonia (Geranomyia) marthae* Alexander; male hypopygium. — Fig. 36. *Limonia (Geranomyia) stylobtusa*, sp. n.; male hypopygium. — Fig. 37. *Limonia (Geranomyia) oneris* Alexander; male hypopygium. — Fig. 38. *Limonia (Geranomyia) versuta* Alexander; male hypopygium. — Fig. 39. *Limonia (Geranomyia) yunquensis* Alexander; male hypopygium. — (Symbols: *a*, aedeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *t*, tergite).

Subg. **Idioglochina** Alexander

Dicranomyia (Idioglochina) Alexandeer; Canad. Ent., 53: 207 1921.

A small subgenus of *Limonia* with representatives on islands and continents that border the Indian and Pacific oceans but not the Atlantic, as presently know. The early stages of all species that have been discovered are marine, living in the intertidal zone, as discussed in the following references and others.

Tokunaga, M., Annot. Zool. Japon., 15: 460-468, figs.; 1936.
— The same, 17: 165-169, figs.; 1938.
— The same, 18: 101-104, figs.; 1939.
— Kontyu, 14: 133-148, figs.; 1940.
Saunders, L. G., Ann. Ent. Soc. America, 21: 537-540, fig. 7; 1928.

It is possible that *Limonia halophila* Alexander, presently referred to the subgenus *Dicranomyia* may belong here since the habitat of the adult flies strongly suggests that the immature stages may be marine (Alexander, C. P., Diptera Patagonia and South Chile, 1: 92; 1929).

List of Species

ambrosiana Alexander. — Chile: San Ambrosio Island.
latibasis, sp. n. — Chile: Arica.
porteri (Alexander). — Chile: Antofagasta.

Limonia (Idioglochona) ambrosiana Alexander

Limonia (Idioglochina) ambrosiana Alexander; Bull. Brooklyn Ent. Soc., 57: 38-39; 1962.

Type male from Isla San Ambrosio, Chile, collected November 9, 1960, by Guillermo Kuschel. Venation, fig. 40; male hypopygium, fig. 47.

Limonia (Idioglochina) latibasis sp. n.

Antennae 15-segments, flagellum light brown; mesonotal praescutum yellowish brown with four virtually confluent black stripes, scutum blackened, scutellum abruptly yellow; halteres yellow, legs yellowish brown; wings weakly suffused with brown, the basal two-thirds broad.

Female. — Length, about 12 mm.; wing, 11.5 × 3.6 mm.; antenna, about 2 mm. Rostrum small, light brown; palpi black. Antennae 15-segmented; scape dark brown, remainder paler brown; flagellar segments subglobular with short stiff verticils; terminal segment small, about one-third the size of the penultimate. Head dark brown.

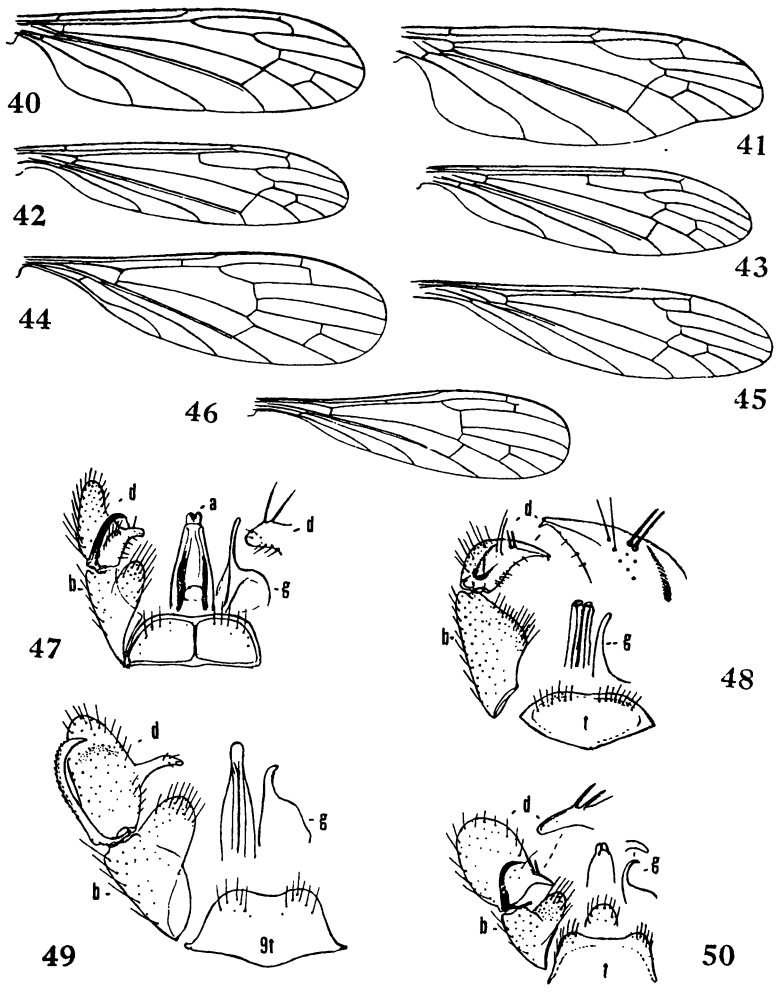

Fig. 40. *Limonia (Idioglochina) ambrosiana* Alexander; venation. — Fig. 41. *Limonia (Idioglochina) latibasis,* sp. n.; venation. — Fig. 42. *Limonia (Neoglochina) moniligera,* sp. n.; venation. — Fig. 43. *Limonia (Neolimonia) cuzcoensis,* sp. n.; venation. — Fig. 44. *Limonia (Peripheroptera) euryptera* Alexander; venation. — Fig. 45. *Limonia (Peripheroptera) lissomelania,* sp n.; venation. — Fig. 46. *Limonia Peripheroptera) thioptera* Alexander; venation. — Fig. 47. *Limonia (Idioglochina) ambrosiana* Alexander; male hypopygium. — Fig. 48. *Limonia (Neolimonia) cuzcoensis,* sp. n.; male hypopygium. — Fig. 49. *Limonia (Neoglochina) moniligera,* sp. n.; male hypopygium. — Fig. 50. *Limonia (Peripheroptera) lissomelania,* sp. n.; male hypopygium. — (Symbols: *a,* aedeagus; *b,* basistyle, *d,* dististyle; *g,* gonapophysis; *t,* tergite).

Pronotum brownish yellow, variegated with darker. Mesonotal praescutum yellowish brown with four virtually confluent black stripes, the intermediate pair sligtly more reddened before suture; scutum blackened, scutellum broad, abruptly yellow, postnotum brownish yellow. Pleura variegated yellowish brown and darker brown, propleura brown. Halteres yellowed. Legs with coxae

brown, trochanters yellow, remainder of legs brown; each claw with two strong teeth, the outer one slightly larger. Wings (Fig. 41) weakly tinged with brown, cell *Sc* and the stigma slightly darker; veins brown. Longitudinal veins beyond cord chiefly with trichia, lacking on R_3; sparse trichia on *Rs* and outer ends of both Anals. Wings very broad on basal two-thirds or opposite tips of veins *Sc* and *1st A,* narrowed outwardly, posterior border sinuous. Venation: Sc_1 ending shortly beyond origin of *Rs,* Sc_2 near its tip; *m-cu* shorter than distal section of Cu_1, placed at fork of *M;* Anal cells broad.

Abdomen brown, genital segment brownish yellow. Ovipositor horn-yellow; cerci elongate, their tips very obtuse.

Holotype, ♀, Arica, Latitude 18° 30' South, Longitude 70° 20' West, taken at light, October 12, 1952 (Luis E. Pena).

Limonia (*Idioglochina*) *latibasis* is distinguished from the other species listed by the large size, general body coloration, conformation of the antennae, and the venation.

Neoglochina, subgen. n.

Proposed for the *insularis* group, formerly placed with *Limonia,* s.s. See Rev. de Entomologia, 21: 172-173; 1950.

Mouthparts small; terminal segment of maxillary palpus shorter than the penultimate. Antennae with flagellar segments terminating in short abrupt pedicels; verticils long, in cases much exceeding the segments; terminal segment longer than the penultimate. Legs with claws slender, with a single spine before midlength. Coloration of legs variable, in cases (*insularis* and several others) uniformly darkened, in others conspicuously banded with white, in some species including the tips of the femora and tibiae, as well as the tarsi. Wings strongly suffused with brown and usually patterned with darker brown, in *felix* strikingly variegated with yellow and whitened areas. Venation. The subgenotype and several others have vein R_2 long and strongly perpendicular but several species, including *insularis,* have the united vein $Sc_2 + R_1$ bent gradually caudad to shorten or eliminate vein R_2, the free tip of Sc_2 being correspondingly long and oblique to erect in position; in *pernobilis* vein R_{1-2} is produced some distance beyond the free tip of Sc_2 and R_2 as a long spur that is provided with numerous trichia; other species, as *imperturbata* have this spur present but shorter. Vein *Sc* usually

is long to very long, in *felix* Sc_1 ending distad of the level of *r-m;* in other species, as *capnora, curraniana,* and others, *Sc* is shorter, Sc_1 ending opposite or near midlength of *Rs;* cell *1st* M_2 closed; *m-cu* at or shortly before fork of *M.* Males of some of the larger species have the wing apices obtuse and with veins R_3 and R_{4-5} deflected strongly caudad, the latter in such cases ending beyond the wing tip. Trichiation of vein *Sc* is variable, in *felix* and some others with an uninterrupted series of trichia, in certain other species with relatively few such trichia, while still other members of the subgenus entirely lack such trichia. In *esau* and *mesotrichia* numerous trichia in the stigmal region and outer wing cells. Male hypopygium with outer face of outer dististyle microscopically scabrous. Rostral prolongation of ventral style a glabrous compressed-flattened blade, without rostral spines, but with an oval or elongate pale area placed at or beyond midlength. Gonapophysis with mesal-apical lobe slender. Aedeagus with genital openings sublateral, the apex produced beyond as a single flattened or elongate blade.

Type of subgenus — *Limonia* (*Neoglochina*) *felix* Alexander. All presently known species are Neotropical. I refrain from designating *insularis* as subgenotype since it still remains unknown to me. The selected type is the largest and most attractive of all included species. It was discovered by and is dedicated to the late Felix Woytkowski (1893-1966), veteran collector of plant and insect materials in Peru.

The following species likewise belong here.

A — Species having trichia in outer cells of wing.

esau Alexander. — Ecuador, Venezuela.
mesotrichia Alexander. — Panama.

B — Species without trichia in outer cells of wing.

a — Species with the legs dark colored, unpatterned.

fumosa (Alexander). — Panama, Venezuela, British Guiana.
grossa Alexander. — Ecuador.
infucata Alexander. — Mexico.
ingen Alexander. — Southeastern Brazil.
insularis (Williston). — Lesser Antilles.
multisignata Alexander. — Southeastern Brazil.
pernobilis Alexander. — Peru.
sciasma Alexander. — Peru.

b — Species having white or yellow bands on tibiae and tarsi of legs, in cases with tips of femora white (*limbinervis, trialbocincta*).

aurigena Alexander. — Ecuador.
capnora Alexander. — Peru.

c. metae Alexander. — Colombia.
curraniana Alexander. — Panama.
imperturbata Alexander. — Guatemala.
leucoscelis Alexander. — Peru.
limbinervis Alexander. — Peru.
lutzi (Alexander). — British Guiana.
moniligera, sp. n. — Ecuador.
praeclara Alexander. — Argentina, Brazil.
trialbocincta Alexander. — Panama.

Limonia (Neoglochina) moniligera sp. n.

Mesonotal praescutum orange, darkened in front and laterally; antennal flagellum brownish black, the abrupt apical pedicels of the segments whitened, the organ appearing annulated or beadlike; legs with tips of tibiae broadly whitened, tarsi white, basitarsi chiefly dark brown; wings strongly suffused with brown, restrictedly patterned with darker brown; male hypopygium with the dorsal dististyle long and slender, shorter than the ventral style; mesal-apical lobe of gonapophysis long and slender.

M a l e. — Length, about 6 mm.; wing, 7 mm; antenna 1.3 mm. Rostrum and palpi black. Antennae with scape obscurely whitened, pedicel black, flagellum brownish black, the abrupt apical pedicels and more restricted bases of the segments white to produce an annulate or beadlike appearance; proximal flagellar segments subglobular, outer ones progressively longer and more slender, with very long verticils, terminal segment longest. Head with the broad front and anterior vertex white, posterior parts darker.

Pronotum yellowed, weakly darkened above. Mesonotal praescutum chiefly orange, weakly darkened in front and on sides, posterior sclerites dull orange. Pleura light yellow, dorsopleural region infuscated. Halteres dark brown. Legs with coxae and trochanters yellow; femora dark brown; tibiae dark brown, the tips whitened, slightly more extensive on posterior pair where nearly a fifth is included; basitarsi chiefly dark brown, tips white, on fore legs including slightly more than one-third, on posterior legs about one-half, remainder of tarsi white excepting the infuscated terminal segment; claws long and very slender, with a long spine near midlength and a smaller erect setoid spine at base. Wings (Fig. 42) strongly suffused with brown, restrictedly patterned with darker brown, including the prearcular and costal fields and narrow seams at origin of *Rs, R_2,* cord and outer end of cell *1st M_2,* wing tip slightly more saturated; veins brown. Venation: Sc_1 ending about opposite midlength of *Rs,* Sc_2 longer; free tip of Sc_2 and R_2 in transverse alignement; *m-cu* at fork of *M,* nearly twice the distal section of Cu_1.

Abdominal tergites brown, sides of the more proximal segments yellowed, sternites clear light yellow, hypopygium darkened. Male hypopygium (Fig. 49) with the tergite, *t,* transverse, gently narrowed outwardly, posterior border nearly truncate, on either side with about seven long setae. Basistyle, *b,* with ventromesal lobe larger than the ventral dististyle. Dorsal dististyle, *d,* slightly longer and more slender than in *aurigena;* ventral style with body longer than in *aurigena,* exceeding the tip of the dorsal style; sensory area of prolongation nearly apical in position, poorly evident. Gonapophysis, *g,* with mesal-apical lobe long and slender.

Habitat: Ecuador. Holotype, ♂, Libertad, southeast Tena, May 10-12, 1963 (Luis E. Peña).

The most similar species is *Limonia (Neoglochina) aurigena* Alexander, likewise from Ecuador, differing in details of coloration of the body and appendages and in slight details of the male hypopygium as described. The antennal flagellum of *aurigena* is entirely blackened, not annulated as in the present fly.

Subg. **Neolimnobia** Alexander

Dicranomyia (Neolimnobia) Alexander; Proc. Linn. Soc. New South Wales, 52: 68; 1927 (no description, mention of name only).
Dicranomyia (Neolimnobia) Alexander; Dept. Sci. & Agr. Jamaica, Ent. Bull. 4, in Gowdey, C. C., Catalogus Insectorum Jamaicensis, Part 3: 20-21; 1928.
Limonia (Neolimnobia) Alexander; Rev. de Entomologia, 21: 193-194; 1950.

Additional species since the 1950 account:

stygicornis Alexander. — Bolivia.
tricincta textrina, subsp. n. — Peru.

Limonia (Neolimnobia) tricincta textrina, subsp. n.

Female. — Length, about 13-14 mm.; wing, 15-16 mm. Generally similar to typical *tricincta* (Alexander), described from Callanga, Peru (as *Dicranomyia tricincta* Alexander, Ent. News, 24: 405; 1913). Distinguhed chiefly by the major size which holds throughout the entire series. In typical *tricincta,* males measure in length about 7-7.5 mm.; wing, 10-10.5 mm. In the present fly the females measure about 13-14 mm. in length, wing, 15-16 mm. This is the largest member of the subgenus so far discovered, exceeding in size the Brazilian *Limonia (Neolimnobia) archangelica* Alexander.

Habitat: Peru. Holotype, ♀, Carpish, Huanuco, altitude 2,800 meters, October 7, 1946 (Felix Woytkowski). Paratopotype, 5 ♀♀, October 7-18, 1946.

Subg. **Neolimonia** Alexander

Limonia (Neolimonia) Alexander; Bull. Inst. Jamaica, Sci. Ser. 14: 28-29, fig. 17 (wing), fig. 24 (♂ hypopygium); 1964.

The subgenus *Neolimonia* includes numerous species throughout Tropical America. Somewhat surprisingly the western Palaearctic *Limonia* (*Neolimonia*) *dumetorum* (Meigen), hitherto placed in the subgenus *Dicranomyia,* appears likewise to belong here.

Type of subgenus, *eiseni* (Alexander) Neotropical. The various species were included in the subgenus *Limonia* in the *Revista* 1950 report.

List of Species

amazonica (Alexander). — Amazonian Brazil.
arrogantia Alexander. — Peru.
autera Alexander. — Peru.
bimucronata Alexander. — Ecuador.
borinquensis Alexander. — Puerto Rico.
caribaea Alexander. — Cuba.
cordillerensis (Alexander). — Colombia.
cuzcoensis, sp. n. — Peru.
deceptrix Alexander. — Southeastern Brazil.
dicax Alexander. — Peru.
domballah Alexander. — Hispaniola: Dominican Republic.
eiseni (Alexander). — Guatemala, Panama, British Guiana.
euryleon Alexander. — Southeastern Brazil.
hesione Alexander. — Peru.
horrenda Alexander. — Peru.
huacapistanae Alexander. — Peru.
hyperphallus Alexander. — Ecuador.
immodica Alexander. — Southeastern Brazil.
indomita Alexander. — Southeastern Brazil.
jamaicensis Alexander. — Jamaica.
lachesis Alexander. — Ecuador, Peru.
lawlori Alexander. — Panama, Ecuador.
ludibunda Alexander. — Mexico, Panama.
lustralis Alexander. — Ecuador.
macintyrei Alexander. — Ecuador, Peru.
onoma Alexander. — Venezuela.
optabilis Alexander. — Ecuador, Peru.
pastazicola Alexander. — Ecuador.
porrecta Alexander. — Peru.
roraimae Alexander. — Brazil: Mount Roraima (Venezuela).
sanctae-martae Alexander. — Colombia, Peru.
subdomita Alexander. — Southeastern Brazil.
velasteguii Alexander. — Ecuador.

Limonia (Neolimonia) cuzcoensis sp. n.

Size small ,wing of male 6.5 mm.); pronotum and praescutum brownish black medially, sides yellow, posterior sclerites of notum brownish black; legs yellowish brown; wings whitened, restrictedly patterned with brown, *Rs* square and angulated at origin; abdominal segments bicolored, bases brownish black, posterior borders broadly yellow; male hypopygium with rostral prolongation of style narrow, its tip decurved; rostral spines two, elongate, the basal insertions contiguous; mesal-apical lobe of gonapophysis long and slender.

M a l e. — Length, about 6.5 mm.; wing, 6.5 mm.; antenna, about 1.6 mm. Rostrum and palpi brownish black. Antennae relatively long, black; flagellar segments oval to long-oval, with short apical pedicels, outer segments shorter than the very long verticils. Head brownish gray.

Pronotum obscure yellow, blackened medially. Mesonotal praescutum polished yellow with a brownish black central stripe that is widened behind, posterior sclerites of notum brownish black, including the central region of scutum, parascutella and pleurotergite, the last darkened before the halteres. Pleura yellow, patterned with brown on propleura and sternopleurite, pteropleurite uniformly yellow. Halteres with stem yellow, knob brown. Legs with coxae and trochanters yellow; remainder of legs yellowish brown to light brown, outer tarsal segments slightly darker; claws with an apressend hairlike spine at near midlength and a stout erect blackened spine near base. Wings (Fig. 43) whitened, stigma oval, brown; paler brown clouds at fork of *Sc,* origin of *Rs,* cord and outer end of cell *1st* M_2; veins brown, paler in prearcular and costal fields. Venation: Sc_1 ending about opposite two-thirds *Rs,* Sc_2 near its tip; *Rs* square and angulated near origin; *m-cu* about one-fourth its length beyond fork of *M.*

Abdominal segments bicolored, brownish black, posterior borders broadly yellow; hypopygium obscure yellow. Male hypopygium (Fig. 48) with the tergite, *t,* transverse, narrowed outwardly, posterior border very shallowly emarginate, the lobes very low. Basistyle, *b,* nearly twice as large as the dististyle, ventromesal lobe low, appressed to the style. Dististyle, *d,* oval, narrowed gradually into the rostrum, extreme tip with a small decurved point; two long spines placed close together at base of rostrum, their punctures contiguous; face of style with a narrow darkened depressed area. Gonapophysis, *g,* with mesal-

apical lobe long and slender, the narrow tip obtuse. Aedeagus long, narrow, genital tubes contiguous.

Habitat: Peru.

Holotype, ♂, Quincemil, Cuzco, November 10, 1962 (Luis E. Peña).

The majority of species now referred to the subgenus *Neolimonia* have the dorsal dististyle of the male hypopygium distinctly preserved but a few, including besides the present species, also *Limonia* (*Neolimonia*) *amazonica* (Alexander), *L.* (*N.*) *autera* Alexander, and *L.* (*N.*) *velasteguii* Alexander, lack the dorsal style, its position being indicated by a deep dark-colored longitudinal furrow on the face of the ventral style. Of the above, the present fly is closest to *velasteguii,* differing in details of coloration of the body, legs and wings, the venation, and in slight details of the hypopygium. The wing pattern is much as in *L.* (*N.*) *caribae* Alexander which has the hypopygial structure distinct.

Subg. **Peripheroptera** Schiner

Peripheroptera Schiner; Verh. zool.-bot. Ges. Wien, 16: 933; 1866; (type *nitens* Schiner).
Limonia (Peripheroptera) Alexander; Philippine Jour. Sci., 40: 242; 1929.

Peripheroptera in its essential features is a *Dicranomyia*-like modification of the genus *Limonia* that is characterized primarily by a marked enlargement of the prearcular cells of the wing, best developed in the male, where the wings are cuneiformly narrowed at bases, the apices obtusely rounded. It is difficult to separate females from those in *Dicranomyia.* All known species of the subgenus are Neotropical.

List of Species

aberrans (Schiner). — Venezuela.
angustifasciata (Alexander). — Venezuela.
arcuata (Alexander). — Peru, Ecuador.
atrosignata Alexander. — Panama.
(*austroandina* Alexander; new name for *subandina* Alexander, preoccupied).
cochabambae Alexander. — Bolivia.
croceibasis Alexander. — Peru.
cynara Alexander. — Peru, Ecuador.
dis Alexander. — Peru.
eudorae Alexander. — Peru.
euryptera Alexander. — Peru.
fulvistigma Alexander. — Peru.
fumibasalis Alexander. — Southeastern Brazil.
glochinoides (Alexander). — Venezuela.
incommoda (Osten Sacken). — Brazil.
incommodes (Alexander). — Peru.
lankesteri Alexander. — Costa Rica.
lichyella Alexander. — Venezuela.
lissomelania, sp. n. — Equador.
machupichuana Alexander. — Peru.

morgana Alexander. — Ecuador.
nearcuata Alexander. — Ecuador. Peru.
nitens (Schiner). — Colombia, type ♂, Venezuela, type ♀, Peru, Panama.
(*olivae* Alexander — see *nitens* Schiner). — Panama.
ordinaria Alexander. — Bolivia.
peramoena Alexander. — Ecuador.
perdelecta Alexander. — Ecuador.
prindlei Alexander. — Ecuador.
rediviva Alexander. — Peru.
rhoda Alexander. — Brazil.
schineri (Osten Sacken). — Brazil.
subamoena Alexander. — Peru, Bolivia.
(*subandina* Alexander — see *austroandina* Alexander). — Argentina.
teucholaboides (Alexander). — Peru.
thioptera Alexander. — Ecuador.
trimelania Alexander. — Peru.
trinigrina Alexander. — Ecuador.
vivasberthieri Alexander. — Venezuela.

Limonia (Peripheroptera) euryptera Alexander

Limonia (Peripheroptera) euryptera Alexander; Jour. N. Y. Ent. Soc., 61: 150-151; 1953.

Type male from Chinchao, Huanuco, Peru, altitude 2,500 meters, September 15, 1947, taken by Felix Woytkowski. Venation, fig. 44.

Limonia (Peripheroptera) lissomelania, sp.n.

General coloration of pronotum, mesonotal praescutum, scutal lobes and mediotergite intensely polished black, head and thoracic pleura extensively light gray; legs brownish black, femoral bases yellowed; wings subhyaline, stigma brown, Sc_1 ending some distance before origin of *Rs*, the latter arcuated, shorter than basal section of R_{4-5}, cell *1st* M_2 about as long as distal section of M_3; male hypopygium with margins of tergite thickened.

Male. — Length, about 5.8-6 mm.; wing, 6.2-6.5 mm.; antenna, about 0.9-1.0 mm. Rostrum, palpi and antennae black; flagellar segments oval, terminal one about one-third longer than the penultimate. Head with anterior vertex light gray, posterior vertex and occiput blackened, anterior vertex about three times the diameter of the scape.

Pronotum, mesonotal praescutum, scutal lobes and mediotergite intensely polished black, scutellum and central region of scutum light gray. Pleura polished black, with a major silvery gray area over the propleura, anepisternum, anterior pteropleurite and meron. Halteres with stem yellow, extreme base and the knob brown. Legs with all coxae and trochanters intensely polished black, remainder of legs chiefly polished black, femoral bases restrictedly yellow, very narrow on fore pair, more extensive on posterior legs including about the proximal sixth. Wings

(Fig. 45) subhyaline, the short-oval stigma brown; veins pale brown. Veins beyond general level of cord with trichia, with others on outer fourth of *M.* Venation: *Sc* short, Sc_1 ending a distance before origin of *Rs,* about equal to the latter, Sc_2 far retracted, free tip of Sc_2 in transverse alignment with the longer R_2; *Rs* arcuated, shorter than basal section of R_{4-5}; cell *1st* M_2 about as long as distal section of M_3; *m-cu* shortly beyond fork of *M;* cell *2nd A* long and narrow.

Abdomen brownish black, posterior borders of the intermediate segments narrowly gray pruinose; hypopygium dark brown. Male hypopygium (Fig. 50) with the tergite, *t,* transverse, posterior border generally truncate, outer angles forming low lobes with a concentration of setae, posterior and lateral margins very conspicuously thickened. Basistyle, *b,* with ventromesal lobe oval, with long delicate setae. Dorsal dististyle, *d,* a gently curved sickle that narrows into a terminal spine; ventral style about twice as extensive in area as the basistyle; rostral prolongation narrowed into a yellow glabrous blade, tip obtuse; spines two, subequal in size, placed on outer margin of prolongation near base, placed close together, gently divergent. Gonapophysis, *g,* with mesal-apical lobe long and slender, gently narrowed to the acute tip. Aedeagus terminating in two small lobes.

Habitat. Ecuador.

Holotype, ♂, Banos, Tungurahua, altitude 2,600 meters, May 6, 1939 (William Clarke-Macintyre). Paratopotype, ♂.

The most similar species is *Limonia (Peripheroptera) teucholaboides* (Alexander) which differs especially in the venation and pattern of the wings.

Limonia (Peripheroptera) thioptera Alexander

Limonia (Peripheroptera) thioptera Alexander; Ann. Ent. Soc. America, 34: 250-251; 1941.

Type male from Minza Chica, Tungurahua, Ecuador, altitude 11,375 feet, April 13, 1939, taken by F. Martin Brown. Venation, Fig. 46.

Subg. **Rhipidia** Meigen

Rhipidia Meigen; Syst. Beschr., : 153; 1818.
Limonia (Rhipidia) Alexander; Rev. de Entomologia, 21: 195-221, figs. 21-42; 1950; (type *duplicata* Doane, as *maculata* Meigen).

The detailed discussion of *Rhipidia* in the 1950 reference cited may be consulted. In the intervening period a number of

further new species have been discovered and are characterized at this time. In the basic list about 90 species were included. The new species now defined are as follows.

antrotrichia sp. n. — Ecuador.
aspilota sp. n. — Ecuador.
cermatoleuca sp. n. — Peru.
chiloeana sp. n. — Chile: Chiloe Island.
distela sp. n. — Ecuador.
cremnoptera sp. n. — Peru, Ecuador.
euryphallus sp. n. — Peru.
illuminata sp. n. — Peru.
megalopyga sp. n. — Peru.
nubilosa sp. n. — Peru.
persuffusa sp. n. — Honduras.

Limonia (Rhipidia) antrotrichia sp. n.

Size large (wing of male over 11 mm.); antennae of male with nine long-bipectinate flagellar segments; wing light yellow, heavily patterned with brown, including five major costal areas; abdominal sternites conspicuously bicolored; male hypopygium with ventromesal lobe of basistyle simple, large, before apex with a sunken pit bearing about six modified setae; lobes at base of aedeagus, each with six long setae.

M a l e. — Length, about 11 mm.; wing, 11.5 mm.; antenna, about 3.5 mm. Rostrum and palpi black. Antennae elongate, proximal three segments black, succeeding flagellar segments with base and branches brownish black, the long apical pedicels whitened (terminal segment broken); flagellar segments two to ten long-bipectinate, the longest branches about two and one-half times the segments; verticils very long and conspicuous, subequal to or exceeding the segments. Head dark gray.

Pronotum brown above, darker laterally. Mesonotal prescutum with the interspaces brownish yellow, pruinose, central stripe light brown in front, darker before the suture, vaguely divided medially by paler, lateral borders darker; scutum pale medially, lobes conspicuously darkened, sides yellowed, scutellum dark brown with a central pale line; mediotergite dark brown, sparsely pruinose, sides slightly more brightened. Pleura and pleurotergite yellowed, lined longitudinally with brownish black. Halteres yellow, base of knob weakly darkened. Legs with coxae and trochanters yellow; femora obscure brownish yellow, tips dark brown; tibiae brownish yellow; tarsi broken. Wings with the restricted ground light yellow, most evident as narrow costal interspaces, pale centers to the cells, apices of outer cells, and areas in the anal

field; costal border with five major brown clouds, much more extensive than the ground, posteriorly merging into the paler brown of the disk; comparable darker brown seams at fork of *Rs,* cord and outer end of cell *1st* M_2; veins brown, yellow in the costal interspaces. No trichia in stigma or outer wing cells. Venation: *Sc* long, Sc_1 ending about opposite two-thirds *Rs,* Sc_2 near its tip; branches of *Rs* approximated near outer ends to slightly narrow cell R_3 at margin; *m-cu* at fork of *M.*

Abdominal tergites brown, slightly darker posteriorly; sternites conspicuously bicolored, light yellow, the narrow bases and broader tips of segments brown to form rings that are narrower than the yellow areas; hypopygium dark brown. Male hypopygium (Fig. 54) with the tergite, *t,* narrowly transverse, the sides long-extended, posterior lobes low, each with about 12 long dark setae. No marked proctigeral development. Basistyle, *b,* with ventromesal lobe large, simple, gently expanded outwardly, lower face rounded, with abundant relatively short pale setae; outer margin of lobe at near three-fourths the length with a depressed-oval area that is provided with about six modified setae arranged in a compact group. Dorsal dististyle, *d,* a slender gently curved rod, its tip acute; ventral style subequal in area to the total basistyle; rostral prolongation slender, more narrowed on outer half, terminating in two very long setae that are subequal to or slightly longer than the prolongation, spines two, placed close together on face of prolongation at near one-third the length, spines about as long as the prolongation beyond their bases. Gonapophysis, *g,* with mesal-apical lobe stout, apex narrowed into a small blackened point. Aedeagus with a basal lateral lobe, presumably representing the ninth sternite, each with six long setae.

Habitat: Ecuador.

Holotype, ♂, Ambato, Hacienda Pau Carlos, altitude 3,800 meters, May 14, 1956 (Juan Foerster).

Among the approximately 100 Neotropical members of the subgenus presently known there are only five that equal the present fly in wing length. Of these, *Limonia* (*Rhipidia*) *aphrodite* Alexander has abundant trichia in the outer wing cells and stigma; *L.* (*R.*) *cytherea* Alexander and *L.* (*R.*) *stonei* Alexander, with such trichia in the stigmal region only; while the others, *L.* (*R.*) *nobilissima* Alexander and *L.* (*R.*) *phaon* Alexander, agree with the present fly in lacking such trichia, differing evidently in coloration and in details of structure. The most similar species is *phaon* which differs especially in hypopygial structure, including the lack of the modified pit or sensory area on the basistyle, as described.

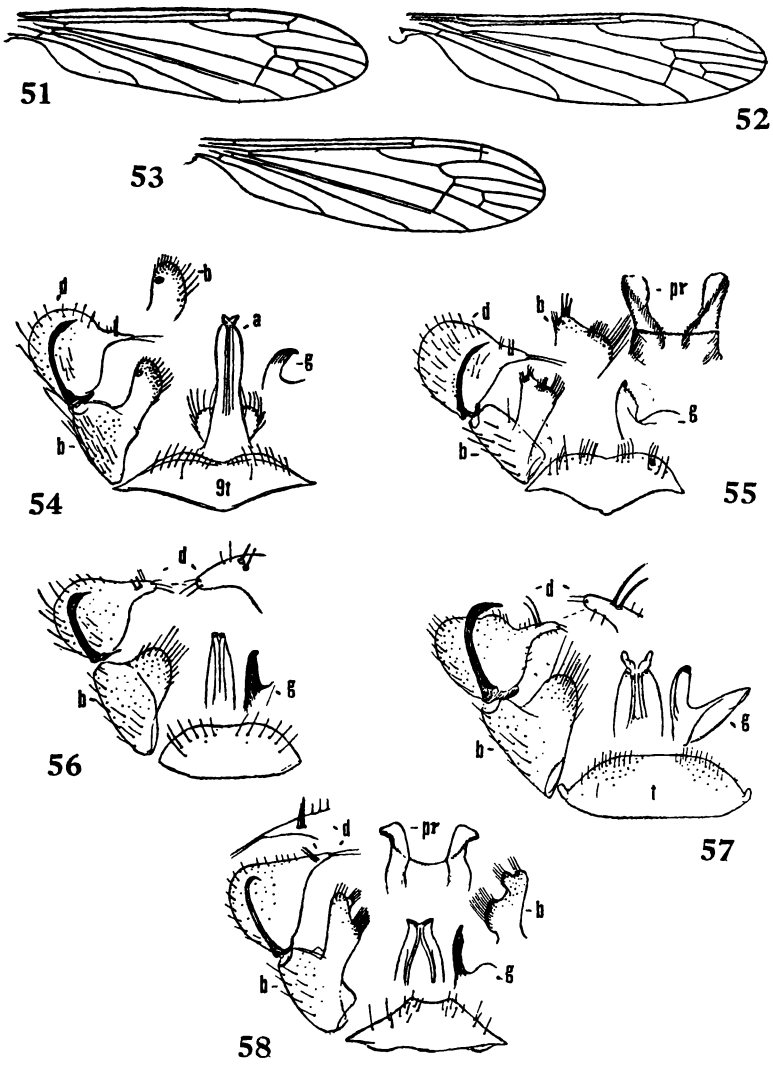

Fig. 51. *Limonia (Rhipidia) cermatoleuca*, sp. n.; venation. — Fig. 52. *Limonia (Rhipidia) chiloeana*, sp. n.; venation. — Fig. 53. *Limonia (Rhipidia) distela*, sp. n.; venation. — Fig. 54. *Limonia (Rhipidia) antrotrichia*, sp. n.; male hypopygium. — Fig. 55. *Limonia (Rhipidia) aspilota*, sp. n.; male hypopygium. — Fig. 56. *Limonia (Rhipidia) cermatoleuca*, sp. n.; male hypopygium. — Fig. 57. *Limonia (Rhipidia) chiloeana*, sp. n.; male hypopygium. — Fig. 58. *Limonia (Rhipidia) distela*, sp. n.; male hypopygium. — (Symbols: *a*, aedeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *pr*, proctiger; *t*, tergite).

Limonia (Rhipidia) aspilota sp. n.

Size small (wing of male about 5 5 mm.); mesonotum cinnamon brown, pleura yellow with a brownish black dorsolongitudinal stripe; antennae of male with seven long-bipectinate segments; halteres blackened; legs dark brown; wings uniformly light brown, the oval stigma slightly darker; male hypopygium with proctiger forming a simple darkened scaffolding, basistyle with ventromesal lobe stout, gently expanded outwardly, apex unequally bilobulate.

Male. — Length, about 5.5 mm.; wing, 5.5 mm.; antenna, about 2.5 mm. Rostrum and palpi brownish black. Antennae brownish black, pedicels of flagellar segments slightly paler; flagellar segments two to eight long-bipectinate, segment nine variable, in the type being bipectinate on one side of body, unipectinate on the other; longest branches nearly twice the segments, first flagellar segment strongly produced but not branched; terminal segment long, its outer third strongly narrowed. Head dark brown.

Pronotum black. Mesonotal praescutum, scutum and scutellum cinnamon brown, mediotergite slightly darker. Pleura yellow below, dorsally with a conspicuous brownish black longitudinal stripe from the cervical region to base of abdomen, including the ventral part of the pleurotergite. Halteres blackened, base of stem narrowly yellow. Legs with coxae and trochanters yellow, remainder dark brown. Wings uniformly tinged with light brown, only the oval stigma slightly darker brown; veins brown, with conspicuous trichia. Venation: Sc_1 ending about opposite midlength of *Rs; m-cu* shortly beyond fork of *M.*

Abdominal tergites dark brown, basal sternites light brown, outer segments, including the hypopygium, dark brown. Male hypopygium (Fig. 55) with the tergite, *t,* transverse, the lateral ends produced; posterior border gently emarginate, the low lobes with long setae. Proctiger, *pr,* with the scaffolding distinctly sclerotized and blackened, the structure relatively generallized, as figured. Basistyle, *b,* subequal in area to the ventral dististyle; ventromesal lobe stout, gently expanded outwardly, forming two unequal apical lobules, the longer one again weakly emarginate, one lobule with three strong setae, the broader apical lobule with a brush of long setae. Dorsal dististyle, *d,* a slender gently curved sickle that narrows to an acute spine; ventral style fleshy, setae relatively sparse and delicate; rostral prolongation stout, terminating in two long setae, the spines placed close together on face of prolongation at near midlength. Gonapophysis, *g,*

blackened, appearing as a dark flattened blade, its margin microscopically serrulate.

Habitat: Ecuador.

Holotype, ♂, Engano, Abitagua, Napo-Pastaza, altitude 1,200 meters, June 16, 1941 (William Clarke-Macintyre).

Among the 100 Neotropical species of *Rhipidia* so far made known only about eight have the wings unpatterned except for the more darkened stigma. Some of these have the proctiger of the male hypopygium developed into a weak darkened scaffolding as in the present fly while in most this structure is pale and unmodified. The most similar species include *Limonia* (*Rhipidia*) *eliana* Alexander (Brazil), *L.* (*R.*) *melanaria* Alexander (Peru), *L.* (*R.*) *proctigerica* Alexander (Brazil), and *L.* (*R.*) *tiresias* Alexander (Peru), which have the ventromesal lobe of the basistyle a simple obtusely rounded lobe, a common condition throughout the entire genus *Limonia*. Other small regional species that have this lobe more or less modified, as in the present fly, have the wings distinctly patterned with darker.

Limonia (Rhipidia) cermatoleuca sp. n.

Antennae entirely black, flagellar segments unipectinate, longest branch about twice the segment; mesonotum obscure yellow, conspicuously patterned with brown, pleura yellow with two longitudinal darkened stripes; halteres black; posterior tarsi chiefly yellow; wings brown, restrictedly patterned with light yellow, the costal darkenings extensive; male hypopygium with very short rostral spines.

Male. — Length, about 6 mm.; wing, 5.8 mm.; antenna, about 2.5 mm. Rostrum and palpi black. Antennae black; flagellar segments unipectinate, including all but the terminal one; branches of first and penultimate segments a little shorter than the segment; longest branches at midlength of organ, about twice the segment; terminal segment longer than the penultimate, terminal fourth narrowed. Head brown.

Pronotum brownish black medially, sides yellow. Mesonotal praescutum obscure yellow with a broad medium brown central stripe that is narrowly bordered laterally by darker; scutum broadly yellow medially, almost encircled by a brown area from the suture across each lobe to the scutellum, parascutella yellow; central part of mediotergite broadly brown, sides narrowly yellowed. Pleura yellow with two longitudinal blackened stripes, the dorsal one continued from the cervical region to base of halteres and pleurotergite, lower stripe slightly paler, extending from fore coxae across the dorsal sternopleurite to the metapleura, involving the bases of coxae. Halteres short, knob large, entirely black except the yellow base of stem. Legs with coxae

yellow, patterned with brown as described; trochanters yellow; only the posterior legs remain, femora brownish yellow, becoming infuscated outwardly; tibiae brown; basitarsi brown, tarsal segments two to four light yellow, terminal segment black. Wings (Fig. 51) chiefly brown, variegated by darker brown costal areas and restricted yellow marks; the darker pattern includes five costal areas that are much more extensive than the light yellow interspaces, the basal mark including also the prearcular field; fifth area stigmal, remainder of disk paler brown, slightly darker along cord and in centers of cells Sc_2 and R_3; the chief yellow marks additional to the costal interspaces include the wing tip in cells Sc_2 to *2nd* M_2, large areas beyond stigma and less evident yellow marks before cord, chiefly near outer ends of cells *R* and *M* but including an area in cell *1st A* at end of vein *2nd A,* and the more whitened axillary field; veins brown, yellow in the costal interspaces and axillary brightening. Venation: *Sc* long, Sc_1 ending about opposite two-thirds *Rs,* Sc_2 near its tip; *m-cu* at fork of *M.*

Abdomen with basal tergites yellowed, succeeding segments brownish black, sternites yellowed. Male hypopygium (Fig. 56) with the tergite, *t,* transverse, posterior border very shallowly emarginate, the low lobes with few setae. Basistyle, *b,* subequal in area to the ventral dististyle, ventromesal lobe very obtuse, with very long setae. Dorsal dististyle, *d,* stout, very gently curved tip abruptly narrowed into a spine; ventral style with tip of rostral prolongation obtuse, the two spines very short, on face of prolongation near base. Gonapophysis, *g,* with mesal-apical lobe darkened, straight, terminating in a small blackened knob. Aedeagus with genital tubes contiguous.

Habitat: Peru.

Holotype, ♂, Quincemil, Cuzco, August 18, 1962 (Luis E. Pena).

Various other members of the subgenus agree with the present fly in having long unipectinate flagellar segments, the antennae uniformly blackened, and with the hypopygial structure much the same, including especially *Limonia* (*Rhipidia*) *subcostata* Alexander and *L.* (*R.*) *sycophanta* Alexander. The present fly has the pale areas of the wing more reduced than in any of the related species.

Limonia (Rhipidia) chiloeana sp. n.

Size medium (wing of male 8.5 mm.); general coloration of mesonotal praescutum brownish yellow with a darker brown central stripe; flagellar segments of male strongly produced to give a short-pectinate appearance; wings whitened, conspicuously patterned with brown, including the paler brown apex, Sc_1 ending about opposite one-third *Rs;* abdominal tergites brownish yellow, posterior borders of the intermediate segments brownish black; male hypopygium with the ventromesal lobe of basistyle with very long delicate setae; ventral dististyle with rostrum straight with two approximated very gently curved spines.

Male. — Length, about 8 mm.; wing, 8.5 mm. Rostrum and palpi black, the latter exceeding the rostrum. Antennae black (outer segments broken); proximal six flagellar segments with ventral face strongly produced to present a shortpectinate appearance, the outer end of each segment narrowed into a glabrous pedicel; body of segment with three long setae on outer face beyond base, each produced lobe with two shorter setae. Head dark brown.

Cervical region and pronotum dark brown. Mesonotal praescutum brownish yellow with a darker brown central stripe, more darkened at either end, the central part opposite the pseudosutural foveae paler, extreme lateral borders of praescutum slightly darker; posterior sclerites of notum darker brown, scutellum and mediotergite slightly pruinose. Pleura above brownish gray, sternopleurite paler gray, meral region yellowed. Halteres with stem yellow, the large knob infuscated, especially at apex. Legs with coxae pale brownish yellow; trochanters yellow; femora obscure yellow, tips narrowly dark brown; tibiae brownish yellow, tarsi brown. Wings (Fig. 52) with the cells before cord whitened, the wing apex broadly pale brown; a restricted brown pattern includes more than the proximal half of cells *C* and *Sc,* a major common area at tip of *Sc* and origin of *Rs,* an the stigma brown; paler brown clouds over cord and outer end of cell *1st* M_2 and very extensively in outer ends of both Anal cells adjoining the veins, the posterior end of each cell pale; veins light brown. Macrotrichia on longitudinal veins beyond general level of origin of *Rs.* Venation: *Sc* long, Sc_1 shortly beyond one-third *Rs,* Sc_2 near its tip; *Rs* long; cell *1st* M_2 subequal in length to vein M_4; *m-cu* close to fork of *M.*

Abdominal tergites brownish yellow, posterior borders of the intermediate segments broadly brownish black, sternites more

uniformly yellowed; subterminal segments darkened, hypopygium brownish yellow. Male hypopygium (Fig. 57) with the tergite, *t*, narrowly transverse, both anterior and posterior borders nearly truncate. Basistyle, *b*, with ventromesal lobe stout, with very long delicate setae. Dorsal dististyle, *d*, nearly straight, tip abruptly narrowed into a long spine; ventral style subequal in area to the basistyle, rostral prolongation straight, with two very gently curved spines that are inserted close together at near midlength of the prolongation. Gonapophysis, *g*, with mesal-apical lobe flattened nearly straight, the short obtuse tip blackened. Aedeagus relatively broad, terminating in two narrow lobules.

Habitat: Chile.

Holotype, ♂, Chepu, Chiloe Island, February 10, 1952 (Luis E. Peña).

This is the first record of occurrence of a member of the subgenus from Chile and the most southerly presently known in the Neotropical region The subpectinate male antennae are somewhat as in *Limonia* (*Rhipidia*) *domestica* (Osten Sacken) and allied species from which it differs in the wing pattern and details of the male hypopygium.

Limonia (Rhipidia) distela sp. n.

Antennae of male with flagellar segments bipectinate; mesonotal praescutum yellow on sides, disk with three dark brown stripes; pleura yellow ventrally, above with a narrow brownish black longitudinal stripe; wings pale brown, with five darker costal areas that are more extensive than the yellow interspaces; male hypopygium with the proctiger heavily blackened, appearing as two stout rods; basistyle with ventromesal lobe unequally bilobed; rostral prolongation of ventral dististyle long and slender, the two spines short.

Male. — Length, about 6.5 mm.; wing, 5.2 mm.; antenna, about 2 mm. Rostrum and palpi brownish black. Antennae brownish black; flagellar segments two to nine each with two long branches, first segment simple, segment ten with a single branch that is slightly longer than the segment, segment eleven merely produced, terminal segment about one-third longer, narrowed on outer third; longest branches at near midlength of segment and nearly twice their length; all flagellar segments excepting the last with glabrous apical pedicels. Head dark brown.

Pronotum brown, sides blackened. Mesonotal praescutum with sides broadly yellow, disk with three narrowly separated dark brown stripes that are nearly contiguous at anterior ends, the yellowed interspaces very narrow; scutal lobes uniformly dark

brown, central area narrowly obscure yellow; scutellum and mediotergite paler brown. Pleura clear light yellow beneath, dorsally with a narrow brownish black longitudinal stripe extending from cervical region to abdomen, the dorsopleural region and pleurotergite paler yellowish brown. Halteres brownish black, base restrictedly yellow, outer half of stem with conspicuous black setae. Legs with all coxae and trochanters clear light yellow; remainder of legs light brown, the femora gradually more darkened outwardly, tips of tibiae very narrowly darker, outer tarsal segments brown. Wings (Fig. 53) with the ground pale brown, the costal third with five darker brown areas, the interspaces light yellow, the dark markings more extensive than the yellow; more whitened areas before and beyond stigma; veins dark brown, costal interspaces light yellow. Veins of outer half of wing with long black trichia. Venation: Vein *Sc* long, Sc_1 ending about opposite midlength of *Rs*, Sc_2 near its tip; R_{1-2} projecting outwardly as a spur beyond R_2 and the free tip of Sc_2; *m-cu* at fork of *M*.

Abdominal tergites brownish black, sternites light yellow, their posterior borders narrowly brownish black, outer segments and hypopygium more darkened. Male hypopygium (Fig. 58) with the tergite, *t*, narrowly transverse, sides extended; long setae on either side with smaller ones nearer the median area. Basistyle, *b*, with ventromesal lobe expanded outwardly, apex unequally bilobed, each lobe with long yellow setae. Dorsal dististyle, *d*, long and slender, narrowed gradually to the acute tip; ventral style subequal in area to the basistyle, oval, extended into the slender rostral prolongation that terminates in two very long setae; spines two, placed close together at near midlength of prolongation, the longer one nearer the lower margin. Proctiger distinctive, appearing as two stout blackened rods, their tips produced slightly laterad. Gonapophysis, *g*, with mesal-apical lobe blackened, unusually slender. Aedeagus broad.

Habitat: Ecuador.

Holotype, ♂, Libertad, 6 km southeast of Tena, Napo-Pastaza, May 10-12, 1963 (Luis E. Peña).

Limonia (*Rhipidia*) *distela* is most closely related to *L.* (*R.*) *neglecta* Alexander, of southeastern Brazil, which has the proctigeral plate much the same but differing in details of structure. Other species that are more distantly related include *L.* (*R.*) *commelina* Alexander, *L.* (*R.*) *complexa* Alexander, *L.* (*R.*) *perarmata* Alexander, *L.* (*R.*) *proctigerica* Alexander, *L.* (*R.*) *superarmata* Alexander, *L.* (*R.*) *tridigitata* Alexander, *L.* (*R.*) *vafra* Alexander, and some others, all differing in details of coloration of the body and wings and especially in all details of hypopygial structure.

Limonia (Rhipidia) eremnoptera sp. n.

General coloration of the mesonotum cinnamon brown, without distinct pattern, pleura yellow, above with a black longitudinal stripe; antennae of male with flagellar segments two to nine long-bipectinate; wings uniformly brownish black; abdominal tergites brownish, sternites yellow with the posterior borders darkened; male hypopygium with the proctiger complex, blackened; ventromesal lobe of basistyle unequally bilobed, mesal-apical lobe of gonapophysis long and slender, terminating in an acute spine.

Male. — Length, about 6.5-7 mm.; wing, 5-5.3 mm.; antenna, about 2.5-2.8 mm. Rostrum and palpi brown. Antennae of male brownish black throughout, approximately one-half the wing; flagellar segments two to nine long-bipectinate, the longest branches approximately two and one-half times the segment, in cases still longer; first flagellar segment slightly produced, with an abrupt apical pedicel; tenth flagellar segment with a rudimentary tubercle and a single long branch that is nearly twice the segment; penultimate segment simple or with a small lobe that is shorter than the basal enlargement; terminal segment simple, the apical third to fourth narrowed. Head brown.

Pronotum black. Mesonotum almost uniformly cinnamon brown, without distinct pattern. Pleura light yellow below, dorsally with a black longitudinal stripe extending from the cervical region to the abdomen, becoming paler and more diffuse before the halteres. Halteres black, base of stem very vaguely yellowed. Legs with coxae and trochanters yellow; remainder of legs dark brown, femoral bases narrowly yellowed. Wings (Fig. 59) uniformly dark brown, without pale areas, stigma slightly darker brown; veins dark brown with conspicuous macrotrichia. Venation: *Sc* long, Sc_1 ending about opposite two-thirds *Rs*, Sc_2 near its tip; in the holotype vein R_{1-2} projects beyond level of R_2 as a short spur that bears thichia; *m-cu* close to fork of *M*.

Abdominal tergites dark brown, proximal sternites yellowed, their posterior borders narrowly dark brown, the bases less evidently darkened; outer segments, including hypopygium, more uniformly dark brown to brownish black. Male hypopygium (Fig. 63) with the tergite, *t*, transverse, posterior border very shallowly emarginate, the lobes very low with few setae, approximately 10 to 12 on either side. Proctigeral armature, *pr*, blackened, large and complex in structure. Basistyle, *b*, with ventromesal lobe large, outwardly unequally bilobed, the long outer lobe slender, with short setae, in one paratype with a

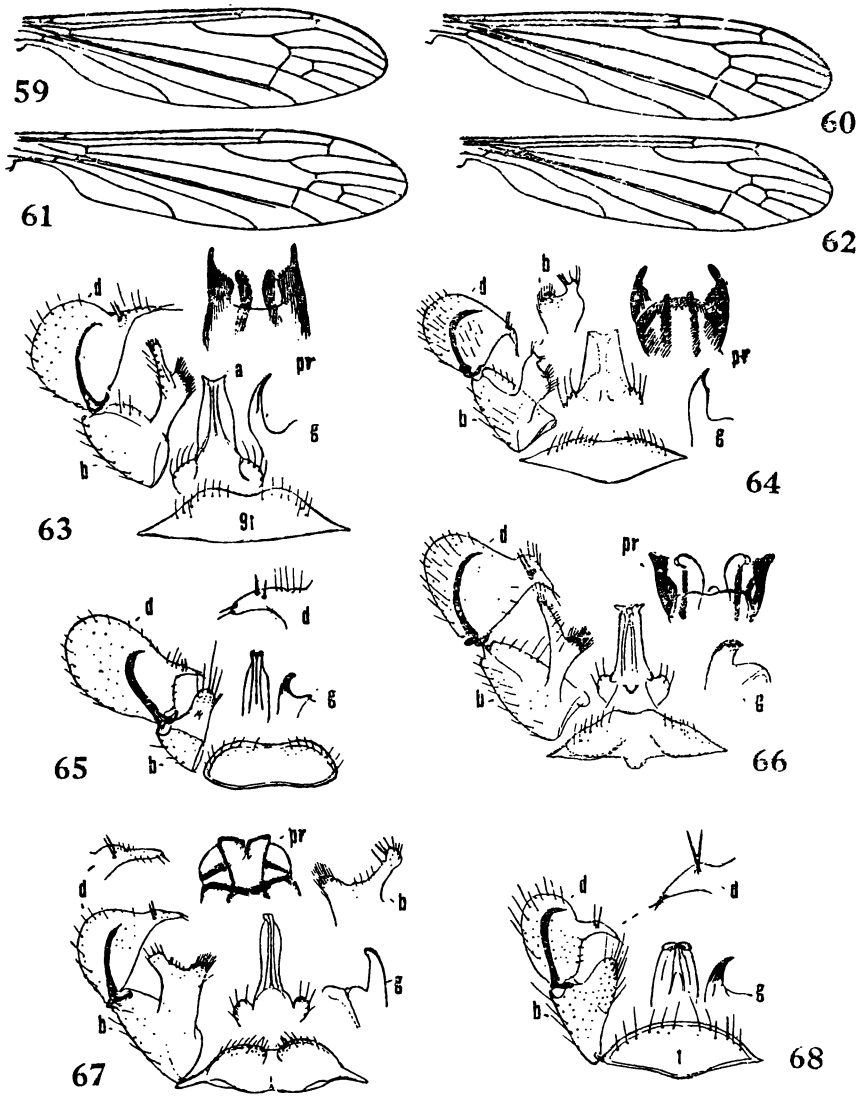

Fig. 59. *Limonia (Rhipidia) eremnoptera*, sp. n.; venation. — Fig. 60. *Limonia (Rhipidia) illuminata*, sp. n.; venation. — Fig. 61. *Limonia (Rhipidia) megalopyga*, sp. n.; venation. — Fig. 62. *Limonia (Rhipidia) persuffusa*, sp. n.; venation. — Fig. 63. *Limonia (Rhipidia) eremnoptera*, sp. n.; male hypopygium. — Fig. 64. *Limonia (Rhipidia) euryphallus*, sp. n.; male hypopygium. — Fig. 65. *Limonia (Rhipidia) megalopyga*, sp. n.; male hypopygium. — Fig. 66. *Limonia (Rhipidia) illuminata*, sp. n.; male hypopygium. — Fig. 67. *Limonia (Rhipidia) nubilosa*, sp. n.; male hypopygium. — Fig. 68. *Limonia (Rhipidia) persuffusa*, sp. n.; male hypopygium. (Symbols: *a*, aedeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *pr*, proctiger; *t*, tergite).

small subapical tubercle, second lobe low and broad based, with a brush of longer setae. Dorsal dististyle, *d*, a slender curved rod, the decurved tip acute; ventral style in area slightly exceeding the basistyle, rostral prolongation slender, tipped with two long setae, spine two, on face of prolongation near base, the lowermost sligtly longer. Gonapophysis, *g*, with mesal-apical lobe long and slender, terminating in a blackened spine with a low lateral blackened flange. Aedeagus with each basal lobe with four long setae.

Habitat: Peru, Ecuador.

Holotype, Quincemil, Cuzco, Peru, August 1962 (Luis E. Peña). Paratopotype, ♂, October 15-20, 1962. Paratype, 1 ♂, Libertad, southeast of Tena, Ecuador, May 10-12, 1963 (Luis E. Peña).

The most similar species are *Limonia* (*Rhipidia*) *illuminata*, sp. n., and *L.* (*R.*) *proctigerica* Alexander, which similarly have uniformly blackened wings and a complex development of the proctiger. Certain other species, including *L.* (*R.*) *eliana* Alexander, *L.* (*R.*) *melanaria* Alexander, *L.* (*R.*) *sprucei* Alexander, and *L.* (*R.*) *tiresias* Alexander, are similar in general appearance but lack the modified proctiger and differ in other hypopygial structures.

Limonia (Rhipidia) euryphallus sp. n.

Mesonotal praescutum with three brown stripes, lateral borders broadly yellow, posterior sclerites of notum brown, pleura with a narrow black longitudinal stripe; antennae of male with eight long-bipectinate flagellar segments; wings brown, very restrictedly patterned with yellow spots, virtually all along the costal border; abdominal tergites brown, basal sternites yellow, their posterior borders brownish black; male hypopygium with the blackened hypopygial scaffolding complex, basistyle ventromesal lobe stout, unequally bilobed; mesal-apical lobe of gonapophysis terminating in an acute blackened spine; aedeagus very short and broad, the width across base more than three-fourths the length.

Male. — Length, about 6.5 mm.; wing, 6 mm.; antenna, about 2.3 mm. Rostrum and palpi brownish black. Antennae brownish black, including the flagellar pedicels; male with flagellar segments two to nine long-bipectinate, the longest branches about two to two and one-fourth the segment; tenth segment with a single long branch that is about one-third longer than the segment; terminal segment narrowed on outer third. Head brownish gray.

Pronotum brown, sides blackened. Mesonotal praescutum with three brown stripes, the narrower lateral pair incurved at anterior end to isolate a narrow interspace, sides broadly yellow,

the margin more obscured; posterior sclerites of notum brown, median region of scutum narrowly yellow, scutellum yellow. Pleura yellow below, dorsally with a narrow black longitudinal stripe extending from the cervical region to base of abdomen. Halteres brownish black, base of stem narrowly yellowed. Legs with coxae and trochanters yellow; femora light brown, tips gradually darker brown, on fore legs including about the basal half, narrower on remaining legs; tibiae and tarsi light yellowish brown. Wings disk brown, very restrictedly variegated by yellowed costal spots, the broad interspace darker than the disk; yellow markings include six small costal areas, the last poststigmal; a small yellow spot in outer end of cell *1st A* near vein *2nd A;* veins brown. Venation: *Sc* long, Sc_1 ending about opposite two-thirds *Rs*, Sc_2 shortly removed; free tip of Sc_2 beyond R_2, the intervening vein with several trichia; *m-cu* at fork of *M*.

Abdominal tergites brown, sternites bicolored, light yellow, posterior borders brownish black, outer segments and hypopygium more uniformly darkened. Male hypopygium (Fig. 64) with tergite, *t,* narrowly transverse, the lateral ends long-extended, setae sparse and relatively short. Proctigeral armature, *pr,* heavily blackened, its structure about as shown. Basistyle, *b,* with ventromesal lobe stout, enlarged outwardly, very unequally bilobed. Dorsal dististyle, *d,* a slender gently curved sickle, terminating in a long spine; ventral style slightly exceeding the basistyle in area, rostral prolongation slender, pendant, spines two, inserted on the enlarged base. Gonapophysis, *g,* with mesal-apical lobe terminating in an acute blackened spine. Aedeagus very short and broad, the width across base more than three-fourths the length, each lateral subtending lobe with three long setae from conspicuous basal tubercles.

Habitat: Peru.

Holotype, ♂, Quincemil, Cuzco, August 1962 (Luis E. Peña).

The most similar species include *Limonia* (*Rhipidia*) *distela,* sp. n., *L.* (*R.*) *neglecta* Alexander, and *L.* (*R.*) *nubilosa,* sp. n., all with a complex hypopygial proctiger but this more simple in conformation than in the present fly. This latter is most readily told by the wing pattern and the details of hypopygial structure, including especially the proctiger, ventromesal lobe of basistyle, gonapophysis and aedeagus.

Limonia (Rhipidia) illuminata sp. n.

Allied to *eremnoptera;* mesonotal praescutum brownish yellow, the disk with three nearly confluent pale brown stripes, pleura yellow with

a broad black longitudinal stripe; antennae of male with flagellar segments two to eight each with two branches, the longest about one and one-half times the segment; wings uniformly dark brown, stigma slightly darker; male hypopygium with the proctigeral scaffolding complex; rostral prolongation of ventral dististyle stout basally, outer half slender, decurved; gonapophysis with mesal-apical lobe short and broad.

Male. — Length, about 6 mm.; wing, 5 mm.; antenna, about 2.1 mm. Rostrum and palpi black. Antennae black throughout; flagellar segments two to eight bipectinate, the longest branches from about one and one-half to one and three-fifths the segment; first and penultimate flagellar segments very slightly produced, their pedicels abrupt, segment nine with a single branch that is subequal to or slightly shorter than the segment. Head brownish gray.

Cervical region and pronotum black. Mesonotal praescutum obscure brownish yellow, darker laterally, the disk with three nearly confluent pale brown stripes, lateral pair crossing the suture to include the scutal lobes; central region of scutum and the parascutella pale brown, scutellum and mediotergite darker brown. Pleura light yellow beneath, above with a broad black longitudinal stripe, dorsal pleurotergite and dorsopleural region paler. Halteres black, extreme base of stem obscure yellow. Legs with all coxae and trochanters light yellow; remainder of legs broken. Wings (Fig. 60) uniformly dark brown, the oval stigma slightly darker brown; veins dark brown. Venation: Sc_1 ending about opposite midlength of *Rs*, Sc_2 near its tip; free tip of Sc_2 slightly before R_2 in the type, in transverse alignment in the paratype; *m-cu* at or very close to fork of *M*.

Abdominal tergites brownish black, sternites yellow, their posterior borders broadly blackened, outer segments and hypopygium more uniformly brownish black. Male hypopygium (Fig. 66) with tergite, *t*, narrowly transverse, the sides extended into slender points; posterior border shallowly emarginate. Proctiger complex. Basistyle, *b*, with ventromesal lobe unequally bilobed, the outer lobe long and narrow, basal lobe broad, with numerous long setae. Dorsal dististyle, *d*, gently curved; ventral style subequal in area to the basistyle; rostral prolongation broad based, outer half slender, decurved; spines two, subequal, placed close together at near one-third the lenghth of the prolongation. Gonapophysis, *g*, with mesal-apical lobe short and broad, terminating in a small black point. Aedeagus with basal lateral lobes each with three strong setae.

Habitat: Peru.

Holotype, ♂, Quincemil, Cuzco, August 1962 (Luis E. Peña). Paratopotype, ♂, with the type.

Limonia (Rhipidia) illuminata is generally similar to *L. (R.) eremnoptera,* sp. n., differing most evidently in the short flagellar branches, and in the details of structure of the hypopygium, particularly the ventral dististyle and gonapophysis.

Limonia (Rhipidia) megalopyga sp. n.

Allied to *leda;* mesonotal praescutum light gray, blackened medially and behind, pleura with a broad, very conspicuous black longitudinal stripe; halteres very short, black, knobs subequal in length to the stem; tibiae and tarsi yellow, posterior tarsi brighter yellow; wings with the restricted ground whitened, the dark pattern very extensive, cell *1st* M_2 relatively small; abdominal tergites blackened, sternites yellow; male hypopygium very large and fleshy, especially the ventral dististyle which is about three times as large as the basistyle, rostral spines short.

M a l e. — Length, about 7 mm.; wing, 7.8 mm.; antenna, about 2.3 mm. Rostrum and palpi brownish black. Antennae brownish black, segments 12 and 13 white; all flagellar segments with the exception of the last conspicuously pectinate, the longest branch at midlength of organ, slightly exceeding the segment; outer thirds of terminal segment strongly narrowed. Head dark brown.

Pronotum cinnamon brown, conspicuously variegated with black medially and on sides. Mesonotal praescutum chiefly brownish gray, when viewed laterally and from front appearing clear light gray, the color including a central stripe extending virtually to the suture, the posterior interspaces blackened; scutal lobes blackened, the color extended onto base of scutellum, central part of scutum and base of scutellum light gray, posterior border of the latter broadly ferruginous; mediotergite dark brown, pleurotergite blackened below, dorsally gray pruinose at base of halteres. Pleura with a broad and very conspicuous black dorsal stripe, ventral pleurites with a narrow less conspicuous darkening, lower surface yellowed. Halteres very short, black, base of stem orange, knob very large, subequal in length to the stem. Legs with coxae blackened, fore pair paler; trochanters obscure yellow; femora brown, bases slightly paler, tips darker; tibiae and basal segments of tarsi yellow, outer two segments black except on posterior legs where the tarsi are brighter yellow, with only the last blackened. Wings (Fig. 61) with the restricted ground whitened, the dark pattern very extensive, basad of cord

including the axilla and two small areas in cell *R*, the first before origin of *Rs*, extended to costa, the second area below *Rs*, with a further spot in cell *1st A* at termination of vein *2nd A;* beyond cord with whitened areas before and beyond stigma and at wing tip from cell Sc_2 through M_3; veins brown, yellow in the costal interspaces. Venation: Cell *1st* M_2 relatively small, its length nearly equal to *m-cu* which is just before the fork of *M*.

Abdominal tergites blackened, sternites abruptly yellow, hypopygium chiefly yellow, the ventral dististyle darkened. Male hypopygium (Fig. 65) with the tergite, *t*, transverse, posterior border very shallowly emarginate, margins of the low lobes thickened, on either side with about 15 setae at base and on lobes. Basistyle, *b*, only about one-third as extensive as the very large fleshy ventral dististyle, ventromesal lobe with numerous setae. Dorsal dististyle, *d*, a curved sickle, narrowed into a spine at apex; ventral style with rostral prolongation moderately long, the two short spines on face of prolongation, the basal setae very long. Gonapophysis, *g*, with mesal-apical lobe slender, tip blackened. Aedeagus relatively slender, genital openings terminal.

Habitat: Peru.

Holotype, ♂, Quincemil, Cuzco, August 18, 1962 (Luis E. Peña).

The most similar species is *Limonia* (*Rhipidia*) *leda* Alexander, which still is known only from the type female. There are conspicuous differences between the two in body coloration, especially of the thorax, and in the pattern of the legs and wings.

Limonia (Rhipidia) nubilosa sp. n.

Allied to *neglecta;* antennae of male black, with eight bipectinate flagellar segments, the longest branches about one and one-half times the segment; thoracic pleura with a narrow brownish black longitudinal stripe; wings chiefly dark brown, costal border with fice large darker areas, the yellow interspaces very restricted; male hypopygium with the proctigeral scaffolding complex, basistyle with ventromesal lobe stout, the apex unequally bilobed.

Male. — Length, about 5.5 mm.; wing, 5.5-5.6 mm.; antenna, about 1.8 mm. Rostrum and palpi black. Antennae of male black, pedicels of flagellar segments paler; segments two to nine bipectinate, the longest branches about one and one-half times the segment, first segment slightly produced, the pedicel abrupt; tenth segment with a single branch that is subequal to the segment, eleventh slightly produced, terminal segment about

one-half longer than the penultimate. Head blackened, gray pruinose.

Pronotum brownish black. Mesonotal praescutum brownish yellow, dark brown medially, sublateral stripes paler; scutal lobes and scutellum dark brown, central parte narrowly yellow, mediotergite dark brown. Pleura light yellow below, dorsally with a narrow brownish black longitudinal stripe, dorsopleural region and pleurotergite paler brown. Halteres black. Legs with coxae and trochanters yellow; remainder of legs brown, femoral bases restrictedly yellowed. Wings chiefly dark brown, costal border with five large darker areas, the yellowed interspaces very restricted, especially those before and beyond origin of *Rs*, the largest pale area before stigma; veins brown. Venation: *Sc* long, Sc_1 ending about opposite two-thirds *Rs*, Sc_2 near its tip.

Abdominal tergites brownish black, basal sternites yellow, their posterior borders broadly brownish black, outer segments, including hypopygium, more uniformly darkened. Male hypopygium (Fig. 67) with the tergite, *t*, narrowly transverse, lateral ends long-produced, lobes low. Proctigeral scaffolding, *pr*, about as figured. Basistyle, *b*, with ventromesal lobe very large and stout, apex unequally bilobed, both lobes with conspicuous setae. Dorsal dististyle, *d*, a slender gently curved rod terminating in an acute spine; ventral style smaller in area than the basistyle; rostral prolongation straight, darkened, apical setae short; spines relatively short, on face of style at near one-third the length of prolongation. Gonapophysis, *g*, with mesal-apical lobe nearly straight, blackened, the short blunt tip directed slightly laterad. Aedeagus relatively slender, subtending basal lobes oval, each with four strong marginal setae.

Habitat: Peru.

Holotype, ♂, Quincemil, Cuzco, November 9, 1962 (Luis E. Peña). Paratopotype, ♂, August 1962.

Limonia (*Rhipidia*) *nubilosa* is generally similar to species such as *L.* (*R.*) *distela*, sp. n., and *L.* (*R.*) *neglecta* Alexander, differing from these and others in the wing pattern and particularly in the hypopygial structure, including particularly the proctigeral scaffolding and the ventromesal lobe of the basistyle.

Limonia (Rhipidia) persuffusa sp. n.

General coloration of mesonotal praescutum obscure yellow, with conspicuous cinnamon brown stripes, pleura striped longitudinally with black; antennae of male with seven bipectinate segments; wings strongly darkened, with five darker costal areas, the yellow interspaces restricted;

basal abdominal segments bicolored, yellow with darker borders; male hypopygium with posterior border of tergite convex; rostral prolongation of ventral dististyle slender, tip narrowed, spines relatively long; gonapophysis with mesal-apical lobe curved to an acute tip; aedeagus broad.

Male. — Length, about 5-6 mm.; wing, 5-6 mm.; antenna, about 1.7-1.8 mm.

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

Rostrum and palpi black. Antennae of male black, apical pedicels of flagellar segments pale; flagellar segments three to nine bipectinate, basal swellings moderately large, longest branches about one-half longer than the segment (on segments six and seven); segment ten with a single branch that is slightly shorter than the segment; segment eleven slightly produced at base, terminal segment about one-half longer than the penultimate; proximal two flagellar segments enlarged, the apical pedicels abrupt. Head brown; anterior vertex narrow.

Pronotum dark brown, restrictedly variegated with obscure yellow. Mesonotal praescutum with the restricted ground obscure yellow, with a broad cinnamon brown central stripe that is slightly constricted at midlength, sublateral stripes at anterior ends directed mesad, lateral borders of praescutum weakly darkened; scutal lobes brownish yellow, encircled with darker brown; posterior sclerites of notum brown. Pleura blackened, with an obscure yellow stripe across the dorsal sternopleurite and metapleura to the posterior coxa, in cases this stripe obscured so the pleura appears more uniformly darkened. Halteres with stem pale brown, knob darker, especially at base. Legs with coxae dark brown, tips pale; trochanters yellow; remainder of legs pale brown, femoral tips vaguely darker. Wings (Fig. 62) strongly darkened, more conspicuously so along costa, forming five major areas, the light yellow interspaces in cases restricted, in other specimens larger, subequal to or exceeding the dark areas; third costal darkening at origin of *Rs,* fifth at stigma; vague yellowed areas beyond stigma and in cells on either side of cord; a pale spot in cell *1st A* at en of *2nd A;* veins brown, yellow in the costal interspaces. Venation: Sc_1 ending about opposite two-thirds *Rs,* Sc_2 near its tip; *m-cu* variable in position, at or slightly before or beyond fork of *M.*

Basal abdominal tergites bicolored, bases obscure yellow, posterior and lateral borders blackened, basal sternites more extensively yellow, their posterior borders narrowly darkened; outer segments more uniformly dark brown, hypopygium brown

to black. Male hypopygium (Fig. 68) with the tergite, *t,* transverse, short-semicircular, nearly three times as broad as long, posterior border convex, anterior margin nearly truncate; setae long but relatively sparse. Basistyle, *b,* with ventromesal lobe with long delicate setae. Dorsal dististyle, *d,* nearly straight on basal half, thence gently curved and widened, terminating in a long spine; ventral style subequal to the basistyle in area, rostral prolongation slender, tip narrowly obtuse; two relatively long spines placed close together on small basal tubercles at near midlength of prolongation. Gonapophysis, *g,* with mesal-apical lobe slender, curved to an acute point. Aedeagus broad, tip very obtuse.

Habitat: Honduras.

Holotype, ♂, Lancetilla, September 17, 1953 (ex Gordon Field). Allotopotype, ♀, December 2, 1953, pinned with three paratypes. Paratopotypes, several ♂♂, November 12 - December 10, 1953.

The most similar regional species appears to be *Limonia (Rhipidia) costalis* (Williston), described from the island of St. Vincent, Lesser Antilles. I have what I consider to be this species from the island of Dominica and it differs evidently in the coloration of the wings, nature of the antennal branching and in hypopygial structures, particularly the gonapophyses and the widely separated rostral spines of the ventral dististyle.

Subg. **Zalusa** Enderlein

Zalusa Enderlein; Zool. Anzeig., 29: 71-72, figs.; 1906.
Limonia (Zalusa) Alexander; Diptera Patagonia and South Chile, 1: 85; 1929.

The subgenus *Zalusa* still is known only from the type species, *Limonia (Zalusa) falklandica* (Enderlein), described from Port Darwin, Falkland Islands, taken March 3, 1902, and from five further specimens now in the British Museum (Natural History), presumably from Missier Channel, Patagonia, taken by the staff of the *Challenger* Expedition in January 1876, as discussed in the Alexander reference above.

It seems probable that the subgenus is a derivative of the great group *Dicranomyia* and may not be separable therefrom. The wings in both sexes are greatly reduced, being long and narrow, shaped almost like the halteres. The ovipositor is remarkably large, being about two-thirds as long as the remainder of abdomen.

Subg. **Zelandoglochina** Alexander

Dicranomyia (Zelandoglochina) Alexander; Ann. Mag. Nat. Hist., (9) 13: 449-500, 1924; (type *huttoni* Edwards).
Limonia (Zelandoglochina) Alexander; Diptera Patagonia and South Chile, 1: 71-85; 1929.

Zelandoglochina is a small subgenus of *Limonia* including about 35 species that are about evenly distributed in New Zealand and again in solthern South America, particularly in Chile. The most recent discussion of the American species is in the Alexander reference cited above.

List of Species

angelica Alexander. — Chile.
aphanta Alexander. — Chile, Argentina: Patagonia.
(*bigoti* Alexander, new name for *longicollis* Bigot, preoccupied).
fagetorum Alexander. — Argentina: Patagonia.
flabellifera Alexander. — Chile.
(*fulvithorax* Philippi, identity uncertain, probably here. — Chile).
(*longicollis* Bigot, see *bigoti* Alexander. — Chile: Tierra del Fuego).
miniata Alexander. — Chile, Argentina: Patagonia.
multiarmata Alexander. — Argentina: Patagonia.
multinodosa Alexander. — Argentina: Patagonia.
nodulifera Alexander. — Chile.
ofella Alexander. — Chile.
omissistyla Alexander. — Chile.
parvispinosa Alexander. — Chile.
pervincta Alexander. — Chile, Argentina: Patagonia.
p. percelestis Alexander. — Chile.
pilosipennis Alexander. — Chile.
setulipennis Alexander. — Chile.
tehuelche Alexander. — Argentina: Patagonia.
tenuipalpis Alexander. — Chile.
torticornis Alexander. — Chile.

Helius Lepeletier and Serville

Helius Lepeletier and Serville; Hist. nat. Crust., Arach., et Ins., 10 (livr. 100): 831; 1828; (type *longirostris* Meigen).
Megarhina Lepeletier and Serville; Hist. nat. Crust., Arach., et Ins., 10 (livr. 100): 1828; (type *longirostris* Meigen).
Rhamphidia Meigen; Syst. Beschr., 6: 281; 1830; (type *longirostris* Meigen).

A relatively extensive genus of crane flies, with representatives in all biotic regions, including also Madagascar and New Zeland. There are more species in the Neotropics than in any other region. The immature stages occur in wet to moist places, including saturated silt and muck, sandy soil, and among roots of grasses and sedges at margins of water bodies.

List of Species

acanthostyla Alexander. — Peru.
albitarsis (Osten Sacken). — Puerto Rico, Colombia.
a. fumipennis (Alexander). — Panama.
a. fuscipes AAyexander). — Panama.
albogeniculatus Alexander. — Brazil.
angustalbus Alexander. — Peru.
araucariae Alexander. — Chile.
bitergatus Alexander. — Venezuela.
capniopterus Alexander. — Brazil.
(*chalybeiventris* Loew — see *Teucholabis*).
creper Alexander. — Jamaica.
distinervis Alexander. — Panama.
fragosus Alexander. — Brazil.
hatschbachi Alexander. — Brazil.
ineptus Alexander. — Ecuador.
invariegatus Alexander. — Ecuador.
larotypa Alexander. — Paraguay, Brazil.
leucoplaca Alexander. — Peru.
lobuliferus Alexander. — Ecuador.
melanophallus Alexander. — Ecuador.
micracanthus Alexander. — Brazil.
mirabilis (Alexander). — British Guiana, Peru, Brazil.
miranda (Alexander). — Brazil.
multivolus Alexander. — Peru.
myersiellus Alexander. — Venezuela: Mount Roraima.
pallidipes Alexander. — Paraguay, Brazil.
panamensis Alexander. — Panama.
p. lateralis Alexander. — Ecuador.
parvidens Alexander. — Peru.
perpallidus Alexander. — Brazil.
pervenustus Alexander. — Costa Rica.
phasmatis Alexander. — Hispaniola: Dominican Republic.
plebeius Alexander. — Ecuador.
productellus Alexander. — Peru.
quadrifidus Alexander. — Mexico.
rectispinus Alexander. — Venezuela.
rectus Alexander. — Brazil.
regius Alexander. — Peru.
rubicundus Alexander. — Paraguay, Brazil, Bolivia.
sanguinolentus (Alexander). — Peru.
schildi Alexander. — Costa Rica.
tetracradus, sp. n. — Honduras.
uniformis (Alexander). — British Guiana, Brazil.

Helius (Helius) angustalbus Alexander

Helius angustalbus Alexander; Jour. N. Y. Ent. Soc., 61: 154-155; 1953.

Type female from Chinchao, Huanuco, Peru, altitude 2,500 meters, September 22, 1947, collected by Felix Woytkowski.

Helius (Helius) pervenustus Alexander

Helius (Helius) pervenustus Alexander; Jour. N. Y. Ent. Soc., 61: 153-154; 1953.

Type male from La Suiza, Costa Rica, taken by Pablo Schild. Venation, fig. 70; male hypopygium, figs. 73, 74.

Helius (Helius) quadrifidus Alexander

Helius (Helius) quadrifidus Alexander; Ann. Ent. Soc. America, 19: 161; 1926.

Type male from La Favorita, Chiapas, Mexico, taken June 14, 1925, by A. M. Dampf. Male hypopygium, fig. 75.

Helius (Helius) tetracradus sp. n.

Allied to *quadrifidus;* general coloration of thorax dark chestnut brown; wings weakly infuscated, veins brown, vein R_{4-5} fused with M_{1-2} at cell *1st* M_2, there being four veins appearing to issue from the cell; male hypopygium with apex of basistyle conical, provided with abundant small spinoid setae, outer dististyle small, narrow and curved on outer half, apex of gonapophysis a long spine.

Male. — Length, about 3.5 mm.; wing, 3.5 mm. Rostrum black, subequal in length to remainder of head. Antennae with scape and pedicel black (flagellum broken). Head black.

Pronotum brown. Mesonotum almost uniformly dark chestnut brown, pleura slightly more fulvous. Halteres with stem dirty white, knob infuscated. Legs with coxae and trochanters brown; femora brownish black, remainder broken. Wings (Fig. 71) weakly infuscated, stigma slightly darker, very diffuse; veins brown. Venation: Vein R_{4-5} fused with M_{1-2} so the appearance is produced of four veins issuing from cell *1st* M_2; *m-cu* beyond midlength of M_{3-4}.

Abdomen brownish black, hypopygium darker. Male hypopygium (Fig. 76) with the basistyle, *b,* stout, the apex produced beyond the point of insertion of the dististyles as a short conical lobe that is provided with abundant small spinoid setae, the major bristles sparse, not reaching the apex of lobe. Outer dististyle, *d,* a slender sclerotized rod, basal half slightly expanded, outer half gently curved to the acute tip, lower margin before apex with a microscopic point; inner style much larger, nearly straight, basal two-thirds stouter, apex paler with a few setae at tip. Gonapophysis, *g,* a curved horn, the basal half or less dilated, extended into a long slender spine. Aedeagus stout, gently curved.

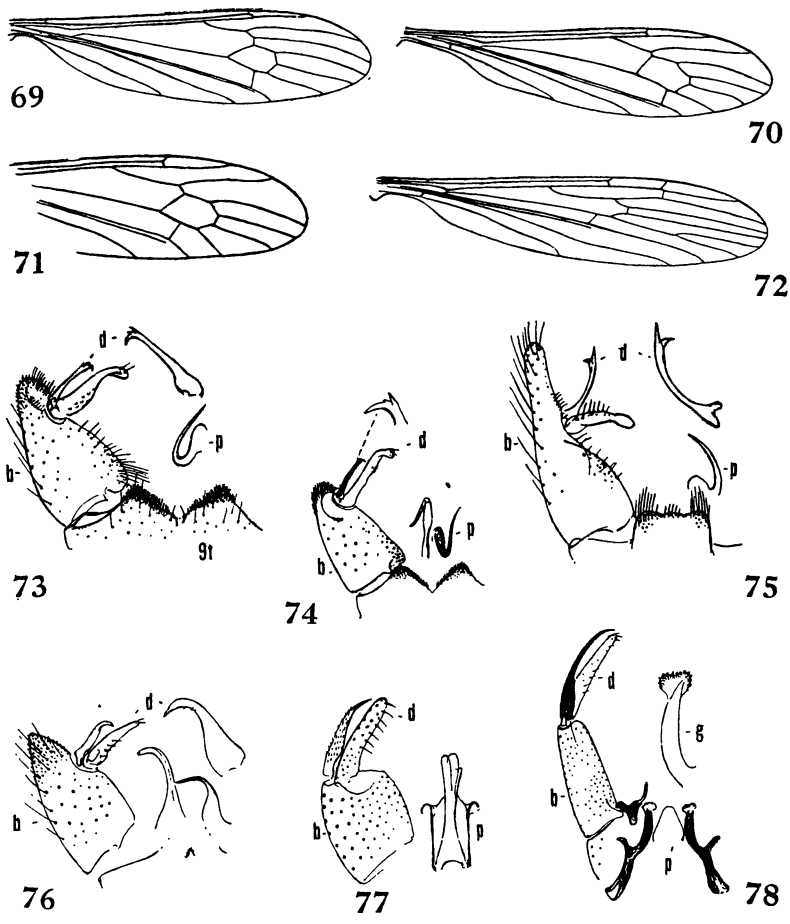

Fig. 69. *Helius (Helius) angustalbus* Alexander; venation. — Fig. 70. *Helius (Helius) pervenustus* Alexander; venation. — Fig. 71. *Helius (Helius) tetracradus,* sp. n.; venation. — Fig. 72. *Orimarga (Orimarga) speciosa* Alexander; venation. — Fig. 73. *Helius (Helius) pervenustus* Alexander; male hypopygium. — Fig. 74. *Helius (Helius) pervenustus* Alexander; male hypopygium. — Fig. 75. *Helius (Helius) quadrofidus* Alexander; male hypopygium. — Fig. 76. *Helius (Helius) tetracradus,* sp. n.; male hypopygium. — Fig. 77. *Dicranoptycha leucopoda* Alexander; male hypopygium. — Fig. 78. *Orimarga (Orimarga) speciosa* Alexander; male hypopygium. — Symbols: *b,* basistyle; *d,* dististyle; *g,* gonapophysis; *p,* phallosome; *t,* tergite).

Habitat: Honduras.

Holotype, ♂, Lancetilla, November 12, 1953 (ex Gordon Field).

Helius (*Helius*) *tetracradus* is most similar to *H.* (*H.*) *quadrifidus* Alexander and *H.* (*H.*) *pervenustus* Alexander, in having four veins issuing from cell *1st* M_2 of the wings. A comparison of these two species with the present fly is given below. Although the legs of the new species are chiefly broken it seems probable that they are uniform in color, as in *quadrifidus,* not strikingly patterned with white as in *pervenustus.*

Helius (*Helius*) *quadrifidus* has the male hypopygium (Fig. 75) with the central area of tergite, *t*, produced posteriorly, the apical margin generally truncate but appearing slightly trilobed, the slightly more evident lateral lobes with longer and more numerous setae than the central elevation. Basistyle, *b*, with the apical lobe much longer and more slender, with coarse setae to the extreme tip, lacking the microscopic spinoid setae of *tetracradus*. Dististyles shorter than the apical lobe of basistyle, outer style very slender, outer third slightly expanded, tip dividing into two spines, the lateral one shorter and stouter; inner style with several setae on outer margin of basal half.

Helius (*Helius*) *pervenustus* has the male hypopygium (Figs. 73, 74) with posterior border of tergite, *t*, with a broad V-shaped emargination, the oblique lobes blackened, provided with abundant short black setae and numerous microscopic spinoid points. Basistyle, *b*, with apical lobe very short and scooplike, shorter than the outer dististyle, inner margin with numerous long setae. Dististyles, *d*, unequal, outer style very slender; with two small denticles on outer margin before the apical spine; inner style longer, the pale tip obtuse, surface with few inconspicuous setae.

Protohelius Alexander

Protohelius Alexander; Philippine Jour. Sci., 35: 466-467; 1928; (type *issikii* Alexander).

Protohelius is know presently from six species in the Oriental and eastern Palaearctic region, with two others in Tropical America. Certain features of the venation suggest the genus *Helius* but the male hypopygium is entirely different. Nothing is known of the biology of any of the known species. Certain small widely scattered genera appear to be related, including the fossil group *Electrolabis* Alexander, known from the Baltic Amber (Upper Eocene), *Tonnoiromyia* Alexander, discussed hereafter, and *Platylimnobia* Alexander, of the southern Ethiopian region, with a few species with reduced wings, some strikingly degenerate.

cisatlanticus Alexander. — Ecuador.
venezolanus Alexander. — Venezuela.

Tonnoiromyia Alexander

Tonnoiromyia Alexander; Ann. Mag. Nat. Hist., (9) 17: 190-192, figs. 11-16; (type *tasmaniensis* Alexander).

Tonnoiromyia is known only from two speciees found in Tasmania and southeastern Australia, and a single New World species occurring in southern Argentina and Chile. Edwards who discovered the latter species, *Tonnoiromyia patagonica* Alexander, in 1926, noted that it occurred in very damp dark places, near small waterfalls or swiftly flowing water, in cases being associated with the Cylindrotomine crane fly, *Stibadocerina shilensis* Alexander, as mentioned later in this paper.

Antocha Osten Sacken

Antocha Osten Sacken; Proc. Acad. Nat. Sci. Philadelphia 1859: 219; 1859; (type *saxicola* Osten Sacken).
Antocha Alexander; The crane-flies of New York. Part II. Biology and phylogeny. Cornell Univ., Agr. Expt. Sta., Mem. 38: 799-806, pls. 20-22 (larva and pupa); 1920.

Antocha is a relatively large genus of small and medium sized crane flies, with three subgenera, of which only the typical group occurs in the New World. Species are very numerous in eastern and southeastern Asia, with fewer representatives elsewhere, being found in all biotic regions but not in New Zealand. In western North America there is a single widely distributed species, *Antocha* (*Antocha*) *monticola* Alexander, that extends into the Neotropical region, occurring as far south as Mexico, Distrito Federal.

The immature stages are virtually unique in the family in having larvae that are apneustic, lacking the normal posterior spiracles, and pupae with branched thoracic breathing horns, that vary from six to eight in different species. The early stages are entirely aquatic, as discussed in detail in 1920.

Orimarga Osten Sacken

Orimarga Osten Sacken; Mon. Dipt. North America 4: 120; 1869; (type *alpina* Zetterstedt).
Subgenus *Diotrepha* Osten Sacken; Cat. Dipt. North America, ed. 2: 219; 1878; (type *mirabilis* Osten Sacken).
Syn. *Thambeta* Williston; Man. families and genera North American Diptera, ed. 2: 32; 1896, lapsus; (type *mirabilis* Osten Sacken).

Orimarga is a genus of moderate size, with representatives in all biotic regions, including also Madagascar but not New Zealand. There are three subgenera, including two in Tropical America, one of which, *Diotrepha,* is entirely New World and virtually is restricted to the Neotropics.

The immature stages of both *Orimarga* and *Diotrepha* are known and occupy two quite different habitats. *Orimarga,* in France, is hygropetric, occurring on wet calcareous rocks where they were associated with the early stages of *Thaumastoptera.* [Vaillant, F. Sur *Orimarga hygropetrica* n. sp. (Diptère Limnobiidae Heliini). Trav. Lab. Hydrobiol. et Piscicult. Grenoble, 1949-1950: 43-47, 26 figs. - 8-19, larva; 20-26, pupa; 1950]. *Diotrepha* was found in the southeastern United States, occurring in rotten wet wood in an advanced stage of decay, the larvae feeding on the microflora, including blue-green algae and fungi (Rogers, J. S. Notes on the life history, distribution and ecology of*Diotrepha mirabilis* Osten Sacken. Ann. Ent. Soc. America, 20: 23-36, pl. 3; 1927).

List of Species

Subgenus **Orimarga** Osten Sacken

andina Alexander. — Colombia.
argenteopleura Alexander. — Mexico.
bahiana Alexander. — Brazil.
chionomera Alexander. — Brazil.
chionopus Alexander. — Ecuador.
cubensis Alexander. — Cuba.
dampfi Alexander. — Mexico.
dichrooptera Alexander. — Venezuela.
excessiva Alexander. — Venezuela.
e. chaparensis Alexander. — Bolivia.
farriana Alexander. — Jamaica.
funerula Alexander. — Peru.
lanei Alexander. — Brazil.
majuscula Alexander. — Mexico.
melampodia Alexander. — Panama.
multipunctata Alexander. — Ecuador.
neogaudens Alexander. — Brazil.
nigroapicalis Alexander. — Panama, Costa Rica.
niveitarsis Alexander. — Panama.
palliditarsis Alexander. — Peru.
parvipuncta Alexander. — Ecuador.
perpallens Alexander. — Jamaica.
punctipennis Alexander. — British Guiana.
saturnina Alexander. — Ecuador.
scabriseta Alexander. — Ecuador.
speciosa Alexander. — Peru.
subcostata Alexander. — Bolivia.
subspeciosa Alexander. — Bolivia.
subtartarus Alexander. — Mexico.
tartarus Alexander. — Mexico.
tinguana Alexander. — Brazil.
trispinigera Alexander. — Ecuador.

Subgenus **Diotrepha** Osten Sacken

acroleuca Alexander. — Jamaica.
arawak Alexander. — Jamaica.
atribasis (Alexander). — British Guiana, Surinam, Brazil, Peru.
concinna (Williston). — Lesser Antilles: St. Vincent.
elongata Alexander. — Venezuela, Bolivia.
flavicosta (Alexander). — Jamaica.
fumicosta (Alexander). — Brazil, Venezuela, Ecuador.
mirabilis (Osten Sacken). — Southeastern United States; Greater Antilles.
myersiana (Alexander). — British Guiana.
profusa Alexander. — Peru.
subconcinna Alexander. — Mexico.
syndactyla Alexander. — Ecuador.
travassosi Alexander. — Brazil, Argentina.

Orimarga (Orimarga) speciosa Alexander

Orimarga (Orimarga) speciosa Alexander; Jour, N. Y. Ent. Soc., 61: 155-156; 1953.

Type male from Chinchao, Huanuco, Peru, altitude 2,500 meters, September 22, 1947, collected by Felix Woytkowski. Venation, fig. 72; male hypopygium, fig. 78.

Dicranoptycha Osten Sacken

Dicranoptycha Osten Sacken; Proc. Acad. Nat. Sci. Philadelphia 1859: 217; 1859; (type *germana* Osten Sacken).

Dicranoptycha is a relatively small genus, found chiefly in the Holarctic and Ethiopian regions, with about one-half of the known species in Madagascar. A very few species occur in Mexico and Central America.

The immature stages of several species are known, living in soil that ranges from moist to relatively dry, usually beneath a layer of leaf mold (Alexander, C. P. Pomona College, Jour. Ent. and Zool., 11: 67-74, figs. 1-10 (larva), 11-14 (pupa); 1919. Rogers, J. S. Ecological Mon., 3: 50; 1933).

costaricensis Alexander. — Costa Rica.
harpyia Alexander. — Mexico.
leucopoda Alexander. — Guatemala.

Dicranoptycha leucopoda Alexander

Dicranoptycha leucopoda Alexander; Jour. N. Y. Ent. Soc., 61: 156-157; 1953.

Type male from El Naranjo, Chicacao, Guatemala, altitude 5,500 feet, collected July 17, 1949. Male hypopygium, fig. 77.

Tribe Pediciini

Pedicia Latreille

Pedicia Latreille; Gen. Crust. et Ins., 4: 255; 1809; (type *rivosa* Linnaeus).
Subgenus *Tricyphona* Zetterstedt; Isis (Oken's) 1837: 65; 1837; (type *immaculata* Meigen).
Syns. *Amalopis* Haliday; Inst. Brittanica, Dipt., 3, add., p. XV; 1856; (type *occulta* Meigen); includes *Olecranopelma* Enderlein).
Bophrosia Rondani; Prodr. Dipt. Italicae, 1: 183; 1856; (type *immaculata* Meigen).
Crunobia Kolenati; Wien. Entomol. Monatschr. 4: 391; 1860; (type *schineri* Kolenati).
Trifurcaria Lackschewitz; Ent. Obozr. 43: 732-733, fig. 32; 1964; (type *arctica* Lackschewitz).

The subgenus *Tricyphona,* the only representative of the genus in the Neotropical region, is one of the largest groups of crane flies, with most species occurring in the Holarctic and northern Oriental regions. A few somewhat aberrant forms occur in the southern hemisphere, including New Zealand, Australia and southern South America, a type of distribution that may be explained by spread over a former Antarctica. The immature stages of many Holarctic species are known, being found in mud and moist earth along streams or in similar wet areas.

List of Species

albicentra Alexander. — Argentina (Neuquen).
aysenensis Alexander. — Chile.
chilota (Alexander). — Chile.
crassipyga (Alexander). — Chile, Argentina: Patagonia.
guttistigma Alexander. — Chile.
penai Alexander. — Chile.
phaeostigma Alexander. — Argentina (Neuquen).
platyptera (Alexander). — Chile.
serrimarga Alexander. — Chile, Argentina (Patagonia).

The fly described as *Tricyphona pusilla* Bigot (Miss. Scient. Cap Horn, Zool., 6: 10; 1888) evidently does not belong to this genus. It was described from Tierra del Fuego and has not been recognized in recent collections. It may well be found to be a species of *Paracladura* Brunetti in the family Trichoceridae.

Dicranota Zetterstedt

Dicranota Zetterstedt; Ins. Lapponica, Dipt., p. 851; 1838; (type *bimaculata* Schummel, as *guerini* Zetterstedt).
Subgenus *Rhaphidolabis* Osten Sacken; Mon. Dipt. N. America, 4: 284-287; 1869; (type *tenuipes* Osten Sacken).

Dicranota is one of the two major genera in the Pediciini, with virtually all species Holarctic in distribution, with a few species in the Oriental region of the Old World and into the Neotropics of North America. The immature stages are found in saturated earth and mud at margins of small streams and rills.

List of Species

mexicana Alexander. — Mexico.
rostrifera Alexander. — Mexico.
tergata Alexander. — Mexico.

Subfamily Cylindrotominae

Alexander, C. P., Crane-flies of New York, Part. 2. — Cornell Univ., Agr. Expt. Sta. Mem. 38: 959-974, figs. 448-466 (immature stages of various genera); 1920.
Alexander, C. P., Diptera of Connecticut, Fasc. 1. — State Geol. & Nat. Hist. Surv. Connecticut, Bull. 64. Cylindrotominae, pp. 292-296, fig. 33; 1942 (repronted 1966).
Peus, Fritz, in Erwin Lindner, Die Fliegen der Palaearktischen Region, Lief. 169. 17, Cylindrotomidae, pp. 1-80, 83 figs.; 1952.

Stibadocerina Alexander

Stibadocerina Alexander; Diptera Patagonia and South Chile, 1: 66-67; 1929; type *chilensis* Alexander.

The only known species is the genotype, *Stibadocerina chilensis* Alexander, of South Chile. discussed earlier under the account of *Tonnoiromyia patagonica* Alexander.