

**Notes on the Tropical American Species of Tipulidae (Diptera).
 III. The Specialized Eriopterini: Rhabdomastix, Cryptolabis,
 Erioptera, Molophilus, Styringomyia, Toxorhina, and Allies.**

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(With 32 figures)

In the preceding part under this general title I have discussed the so-called primitive Eriopterine crane-flies. In the present paper the remaining genera that are commonly referred to this tribe will be considered. As indicated in the paper cited, the primary character upon which these apparently more specialized forms are defined is the enlarged mesothoracic meron, a distinction that was noted first by C r a m p t o n (Insec. Inscit. Menst., 13: 197-213, pls. 2-3; 1925). In the genera here discussed the meron is unusually large and has become detached from the middle coxa, becoming adherent to the ventral region of the mesepimeron so that the middle and hind coxae are widely separated, producing the so-called "pot-bellied" appearance characteristic of the included genera. In C r a m p t o n's paper various species were studied and his report should be consulted by all workers on this subject. The genera falling in the subtribe Eriopteraria so figured and described include the following: *Rhabdomastix* (figs. 3, 15); *Cryptolabis* (fig. 8); *Erioptera*, subgenera *Erioptera*, *Symplecta*, *Psiloconopa* and *Empeda* (figs. 1, 2, 5, 10, 11 and 12); *Ormosia* (figs. 7, 13); *Amphineurus* (figs. 6, 16), and *Molophilus* (figs. 4, 17). The subtribes Styringomyaria and Toxorhinaria were not discussed by C r a m p t o n. It may be noted that the latter's drawings include a lateral view showing all the thoracic sclerites and a ventral view depicting the prosternum and neck plates.

In various earlier reports, the genera here considered have been referred to three subtribes, the Eriopteraria, including the great bulk of the included forms; the Styringomyaria, including only *Styringomyia*; and the Toxorhinaria, including only *Toxorhina*.

The following genera and subgenera fall within the limits of this report.

Genera

Subgenera

Subtribe Eriopteraria

Rhabdomastix Skuse:*Rhabdomastix* Skuse*Sacandaga* Alexander*Cryptolabis* Osten Sacken:*Baeoura* Alexander*Procryptolabis* Alexander*Cryptolabis* O. S.*Erioptera* Meigen:*Erioptera* Meigen*Mesocyphona* Osten Sacken*Symplecta* Meigen*Trimica* Osten Sacken*Empedomorpha* Alexander*Eriopterella* Alexander*Psiloconopa* Zetterstedt*Empeda* Osten Sacken*Amphineurus* Skuse:*Amphineurus* Skuse*Rhamphoneurus* Alexander*Maietta* Alexander.*Molophilus* Curtis:*Molophilus* Curtis*Eumolophilus* Alexander*Trichomolophilus* Alexander*Tasiocera* Skuse:*Dasymolophilus* Goetghebuer

Subtribe Styringomyaria

Styringomyia Loew

Subtribe Toxorhinaria

Toxorhina Loew:*Ceratocheilus* Wesché*Toxorhina* Loew

As mentioned in the preceding report, *Lecteria* Osten Sacken will be treated under Part IV (Primitive Hexatomini) of this series of papers; *Ctenolimnophila* Alexander, with its subgenus *Campbellomyia* Alexander will be considered in Part V (Specialized Hexatomini).

Rhabdomastix Skuse

Rhabdomastix Skuse; Proc. Linn. Soc. New South Wales (2) 4: 828-829, pl. 22, fig. 15 (venation), pl. 24, fig. 57 (male hypopygium); 1890; (type *osten-sackeni* Skuse).

Subgenus *Sacandaga* Alexander

Sacandaga Alexander; Ent. News, 22: 349-352, fig. 1 (head), fig. 2 (tarsus), fig. 3 (venation); 1911; (type *flava* Alexander).

Body unusually glabrous. Tuberculate pits far forward. Antennae 16-segmented, in *Sacandaga* short, not exceeding the body in length and usually not attaining the wing root; in males of *Rhabdomastix* s. s., antennae of unusual length, from two to three times the length of body, or even longer; in the latter cases, flagellar segments very long-cylindrical, provided with

short scattered inconspicuous verticils and abundant pale setae, all of the vestiture restricted to one face of the segment or essentially so; no strong pupal or emergence bristles as in some other groups having greatly elongated antennae (Hexatomini: *Hexatoma-Eriocera*, males).

Wings generally broad, often with a conspicuous anal angle, this sometimes reduced (as in the genotype, *osten-sackeni*); veins usually glabrous, in some species (as *chilota*, *intermedia*, *plau-manni*, *synclera*, and others) with numerous trichia on veins beyond cord. Venation: *Sc* usually long, *Sc*₁ generally ending beyond two-thirds the length of *Rs*, usually much beyond; in *satipoensis*, *Sc* short, *Sc*₁ ending about opposite midlength of *Rs*; *Sc*₂ a short to moderate distance from tip of *Sc*₁, sometimes atrophied (as in the *lurida* group). *Rs* often very long and unusually straight; *R*₂ atrophied in the Neotropical species, preserved in the Holarctic forms; vein *R*₃ erect to oblique; cell *M*₁ lacking; cell 1st *M*₂ pentagonal or hexagonal, the medial veins issuing from it arched or flaring, particularly the distal section of *M*₁₋₂; *m* usually longer than the basal section of *M*₃; *m-cu* generally some distance beyond the fork of *M*; cell 2nd *A* wide. (Fig. 1, *plau-manni*, sp. n.).

Male hypopygium with the interbases appearing as slender spinelike rods that often terminate in weak spatulate blades, more rarely narrowed to the acute tips. Two dististyles, the outer one with microscopic appressed spinulae on the outer face, extending virtually to the base. (Fig. 2, *plau-manni*, sp. n.). Ovipositor with the valves, especially the cerci, long and slender, sclerotized.

The distinctions between the two subgenera are weak and the groups are maintained chiefly for convenience. In the typical condition, *Sacandaga* with its very short antennae seems very different from *Rhabdomastix*, with the greatly lengthened male organ, but the presence of a few intermediate types greatly lessens the value of this antennal character.

In distribution, the species of *Sacandaga* are chiefly Holarctic, with fewer species occurring in Tropical America and in New Zealand. *Rhabdomastix*, s. s., is essentially Australasian and Neotropical, particularly the latter, where species occur as far north as Mexico.

The immature stages as known are spent in wet earth near running water. The interrelationships existing between the Hexatomine genus *Ischnothrix* Bigot and *Rhabdomastix* are still uncertain. The following earlier quotation may be cited: "The

affinities of the Atarbaria, including *Atarba* and *Ischnothrix*, remain very puzzling and questionable. Both Edwards and I had considered *Ischnothrix* as representing a Hexatomine form, allied to *Limnophila*, but a study of the thoracic morphology now renders such an assignment improbable, the wide separation of the middle and hind coxae by the very large meron being a character of the Eriopteraria. The resemblance of certain species of *Ischnothrix* to species of *Rhabdomastix* is most noteworthy, especially in the case of certain of the species described in this report. This resemblance is so marked that the chief characters still available for the separation of the two groups lie in the presence or absence of tibial spurs and the structure of the male hypopygium. Since *Rhabdomastix* has been placed without question in the Eriopteraria, it may be that the Atarbaria find their affinities near this latter group despite the presence of tibial spurs in *Ischnothrix* and all but a few species of *Atarba*. The question of the relationships of the group was further complicated by the discovery of the immature stages of *Atarba* by Rogers (Florida Entomologist, 10: 49-55, figs. 1-7; 1927), where the indication was made that the genus *Atarba* was a member of the tribe Limoniini, closest to *Dicranoptycha*. The two genera *Ischnothrix* and *Atarba* require further critical study and analysis before their affinities can be worked out as beyond question. In the present report the genera are retained tentatively in the Hexatomini." (Alexander, Diptera of Patagonia and South Chile, 1: 167; 1929.) Since the above was written little further light has been thrown on the question. The genus *Lachocera* Philippi (1865) is believed to be akin to *Ischnothrix* and will be considered in part V of this series of papers.

List of Species

Sacandaga

- (*basalis* Alexander, see *Erioptera-Empeda*)
caparaoensis Alexander. Southeastern Brazil.
(*complicata* Alexander, see *Erioptera-Empeda*).
fumipennis Alexander. — Lesser Antilles: Dominica.
intermedia Alexander. — Patagonia, South Chile.
(*parva* Alexander, see *parvula* nom. nov.).
parvula nom. nov. — Jamaica, Hispaniola.
plaumanni, sp. n. — Southeastern Brazil.
synclera Alexander. — South Chile.

Rhabdomastix

- alticola* Alexander. — Peru.
chilota Alexander. — South Chile.
illudens Alexander. — Bolivia.

isabella Alexander. — Mexico.
longiterebrata Alexander. — Mexico.
luteola Alexander. — Peru.
mexicana Alexander. — Mexico.
peruviana Alexander. — Peru.
posticata Alexander. — South Chile.
satipoensis Alexander. — Peru.
septemtrionis Alexander. — Costa Rica.
tantilla Alexander. — Colombia.
unipuncta Alexander. — Venezuela.

It should be repeated that Edwards (Trans. Soc. Brit. Ent., 5: 112-117; 1938) placed *Rhabdomastix* among the more primitive Eriopterini, following *Gonomyia*. He believed that it served to connect the *Gonomyia* and the Eriopteraria.

Rhabdomastix (Sacandaga) parvula, nom. n.

Rhabdomastix parva (Alexander); Proc. U. S. Nat. Mus., 44: 508-509; 1913 (as *Sacandaga*), nec *Rhabdomastix parva* (Siebke); Nyt Magaz. f. Naturvidensk., 12: 178; 1863 (as *Limnobia*).

Lackschewitz 1933, Edwards 1938 and others have called attention to the fact that the long-misunderstood *Limnobia parva* Siebke is a member of this genus, necessitating the re-naming of my species.

Rhabdomastix (Sacandaga) plaumanni, sp. n.

Size relatively small (wing, male, under 5 mm.); general coloration of head and thorax dark brown, the abdomen still darker; antennae short; halteres and legs brown; wings with a very strong brownish tinge; macrotrichia on all longitudinal veins beyond cord; male hypopygium with the outer dististyle slightly dilated at outer end; inner style stout, tapering to the very narrowly obtuse apex, the whole surface with long pale setae; gonapophyses long and needle-like.

Male. — Length, about 4.5-5 mm.; wing, 4.3-4.8 mm.

Rostrum and palpi dark brown. Antennae dark brown, short; flagellar segments oval, with long conspicuous verticils, these nearly three times as long as the segments. Head dark brown.

Thorax almost uniformly dark brown, unpatterned, the pronotal scutellum and pretergites vaguely more testaceous. Halteres dark brown, the base of stem very restrictedly pale. Legs with the coxae and trochanters testaceous yellow; remainder of legs brown. Wings (Fig. 1) with a very strong brownish tinge, the prearcular and costal fields a trifle more darkened; veins

brown. Macrotrichia on all longitudinal veins beyond cord, as well as outer end of vein *1st A*. Venation: *Sc* long, *Sc*₁ ending about opposite three-fourths to four-fifths *Rs*, *Sc*₂ a short distance from its tip, *Sc*₁ alone about four times *Sc*₂; *R*₂₋₃₋₄ long and nearly straight; vein *R*₃ oblique, less than one-third *R*₂₋₃₋₄; veins issuing from cell *1st M*₂ nearly straight, not or scarcely arched; *m-cu* at near midlength of cell *1st M*₂; cell *2nd A* relatively narrow.

Abdomen brownish black, the hypopygium a trifle paler. Male hypopygium (Fig. 2) with the basistyle, *b*, long and slender. Outer dististyle, *d*, slender, the entire outer face with numerous subappressed spicules, more numerous and conspicuous at the slightly enlarged head. Inner dististyle stout, tapering to the very narrowly obtuse apex, the whole surface with long pale setae from conspicuous tubercles, not grouped into a brush, as in *caparaoensis*. Gonapophyses long and needle-like, narrowed to the very slender apical blades.

Habitat: Brazil (Santa Catharina).

Holotype, ♂, Nova Teutonia, September 26, 1944 (Fritz Plaumann). Paratopotype, ♂.

I take great pleasure in naming this very distinct fly for the collector, Mr. Fritz Plaumann, who has added vastly to our knowledge of the insect fauna of the environs of Nova Teutonia. The only related regional species having short antennae is the much larger *Rhabdomastix (Sacandaga) caparaoensis* Alexander (Brazil: Minas Geraes, São Paulo), which differs further in the venation and in the structure of the male hypopygium, especially both dististyles.

Cryptolabis Osten Sacken

Cryptolabis Osten Sacken; Proc. Acad. Nat. Sci. Philadelphia, 1859: 224; 1859; (type *paradoxa* Osten Sacken).

I recognize three subgenera, all of which occur in Tropical America, and which will be discussed in order.

Subg. *Baeoura* Alexander

Erioptera (Baeoura) Alexander; Ann. Ent. Soc. America, 17: 67; 1924; (type *nigrolatera* Alexander, South Africa).

Wings (Fig. 3) with *Sc* long, *Sc*₁ ending nearly opposite the fork of the unusually long *Rs*, the latter approximately one-half the total distance between arculus and the wing-tip or nearly twice vein *R*₄ alone; *R*₂₋₃₋₄ short, veins *R*₃ and *R*₄ gently divergent; cell *1st M*₂ closed, with *m-cu* at near midlength; cell *2nd A* broad. Veins beyond cord with macrotrichia but with none of these in the wing cells.

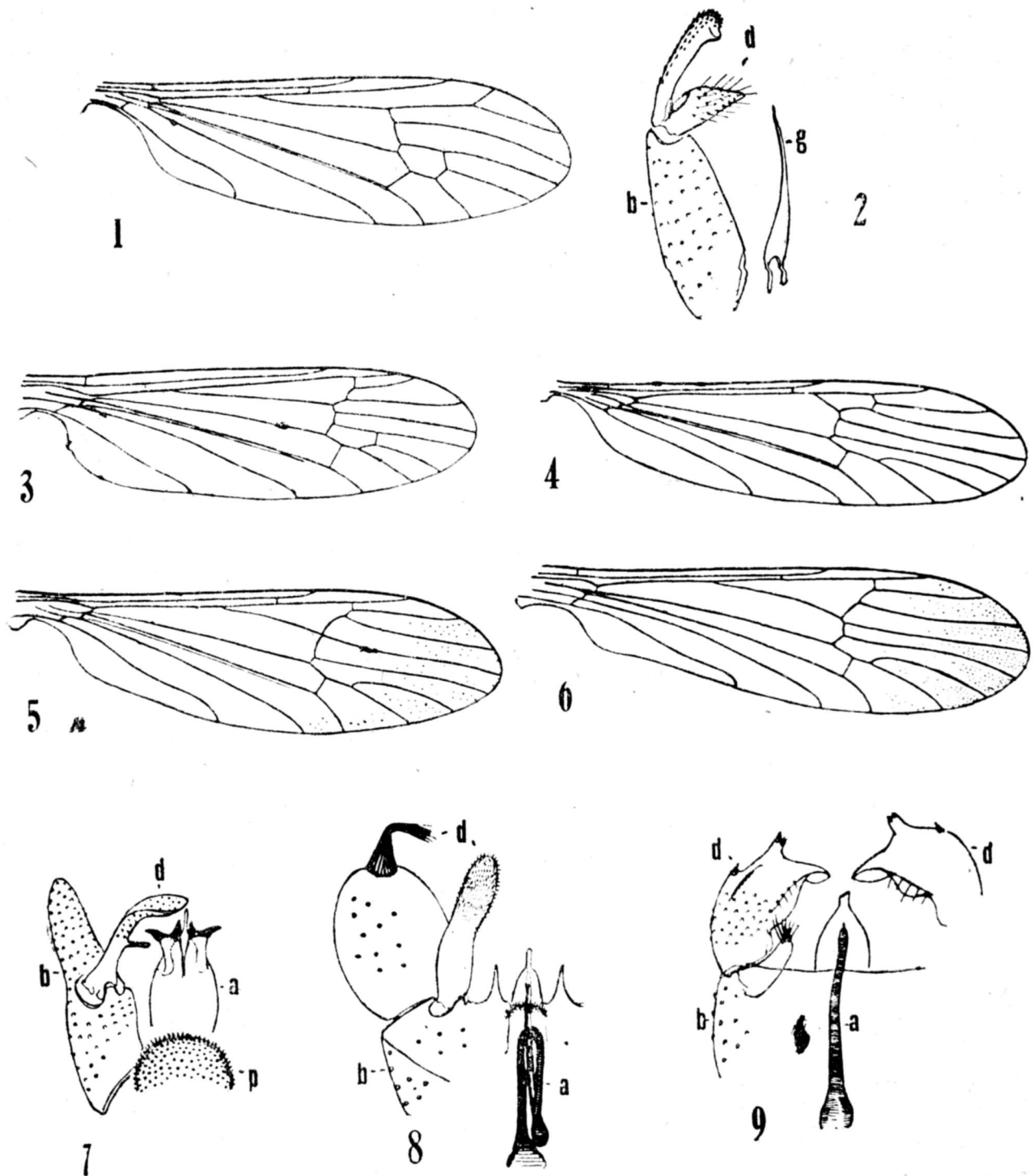


Fig. 1. *Rhabdomastix (Sacandaga) plaumanni*, sp. n.; venation. — Fig. 2. The same, male hypopygium. — Fig. 3 *Cryptolabis (Baeoura) advena* Alexander; venation. — Fig. 4. *Cryptolabis (Procryptolabis) barilochensis* Alexander; venation. — Fig. 5. *Cryptolabis (Cryptolabis) ecalcarata*, sp. n.; venation. — Fig. 6. *Cryptolabis (Cryptolabis) alticola* Alexander; venation. — Fig. 7. *Cryptolabis (Baeoura) advena* Alexander; male hypopygium. — Fig. 8. *Cryptolabis (Cryptolabis) ecalcarata*, sp. n.; male hypopygium. — Fig. 9. *Cryptolabis (Cryptolabis) vallicola*, sp. n.; male hypopygium. — (Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; p, phallosome).

Male hypopygium (Fig. 7) with the dististyle single, sub-terminal in position, placed just beyond midlength of mesal face of basistyle; style elongate, a little expanded at tip, conspicuously setiferous; lower edge at near midlength bearing a slender blackened arm. Phallosome a broad low cushion that is densely covered with spinous points. Aedeagus and apophyses completely exerted, extending caudad approximately to the outer end of the basistyle, each apophysis terminating in two blackened points. (Figs. 3, 7, *Cryptolabis (Baeoura) advena*).

Most of the known species of *Baeoura* occur in South Africa and in the Oriental Region, a few being found in Formosa and Palaearctic Eastern Asia. The single species that has been found in the New World is the one discussed and figured herewith, *Cryptolabis (Baeoura) advena* Alexander, of Chile. In some regards this species appears to be more generalized than the various Old World members of the subgenus.

Subg. *Procryptolabis* Alexander

Cryptolabis (Procryptolabis) Alexander; Ent. News, 34: 183; 1923; (type *argentinensis* Alexander).

Distinguished from the typical subgenus chiefly by the glabrous cells of the wings. The only species known are the two listed. The venation of *barilochensis* is shown (Fig. 4).

argentinensis Alexander. — Argentina (Cordoba).
barilochensis Alexander. — Patagonia.

Subg. *Cryptolabis* Osten Sacken, s. s.

The typical subgenus is the largest and best known of the three groups. The group is well distinguished both by the venation and by the structure of the male and female genitalia.

In venation, *Rs* varies in length from long to very long, in cases equal to four times R_{2-3-4} , with cell R_1 correspondingly extended basad (*alticola*, Fig. 6); the opposite extreme is found in species such as *tenuicincta* where *Rs* is straight and sub-transverse, less than twice R_{2-3-4} and only a little longer than *r-m*; *r-m* usually at or shortly before the fork of *Rs*, in cases beyond the fork on R_5 , as in *umbrosa*, *varipes* and others; R_2 often in direct transverse alignment with vein R_{2-3} ; outer branches of *Rs* tending to swing slightly cephalad at their tips; *m-cu* at or near two-thirds the length of M_{3-4} or beyond this point on vein M_4 ; the opposite extreme, as found in species such as *tenuicincta*, *varipes* and others, where vein M_3 lies on the upper fork of media, there being a short element M_{1-2-3} .

Macrotrichia of wing cells sparse (as in *tenuicincta*) to very abundant, in extreme cases (as *taciturna*, *travassosi* and others) covering the outer two-thirds of the wing and even extending back to the wing base in the axillary region.

In the living insects, the genitalia of both sexes are superficially very alike, both being very blunt and obtuse. In the male sex the best specific characters are to be found in the shape and armature of the usually single dististyle and in the

structure of the aedeagus. The dististyle may be terminal in position (as in *vallicola*, Fig. 9) or subterminal. Aedeagus heavily blackened and sclerotized, transversely striated or corrugated, in cases very stout; in several species the organ is bent back upon itself so as to appear strongly convoluted (Figs. 8, 9). In the female, both the cerci and hypovalvae are short and fleshy. When gravid, the abdomen is filled with relatively few unusually large eggs with thickened and heavily blackened chorion.

The center of distribution of the subgenus is in the American Tropics. A few species, including the genotype, *paradoxa*, range northward into the Nearctic Region as far as southern Canada. A few further species of this subgenus occur in southeastern Australia (New South Wales to Tasmania) and would seem to have reached Australasia via Antarctica. The genus seems unquestionably to be an ancient one, despite the lack of fossil evidence as known to the present date.

The immature stages of *Cryptolabis* are not definitely known but from the scanty available evidence are probably aquatic. Edwards found some very peculiar Tipulid larvae in southern Chile that were suspected as probably being *Cryptolabis* and this supposition of an aquatic habitat is borne out by the occurrence of the adult flies at or close to the margins of streams or other water bodies.

List of Species

(*Cryptolabis* s. s.)

- alticola* Alexander. — Ecuador.
atmosphora Alexander. — South Chile.
chilota Alexander. — South Chile.
diversipes Alexander. — Costa Rica.
ecalcarata, sp. n. — Costa Rica.
fuscovenosa Alexander. — Mexico.
hilaris Alexander. — Peru.
invaripes Alexander. — Costa Rica.
jovialis Alexander. — Peru.
jubilata Alexander. — Ecuador.
laddeyi Alexander. — Ecuador.
laticostata Alexander. — Ecuador.
longiradialis Alexander. — Mexico.
luteiceps Alexander. — Mexico.
luteicosta Alexander. — Panama.
luteola Alexander. — Mexico.
molophiloides Alexander. — Northern Mexico and northward in the United States.
monacantha Alexander. — Ecuador.
nebulicineta Alexander. — Venezuela.
parrai Alexander. — Mexico.
recurvata Alexander. — Ecuador.

- roundsi* Alexander. — Costa Rica.
schadei Alexander. — Southeastern Brazil.
sepulchralis Alexander. — Paraguay.
sordidipes Alexander. — Ecuador.
spatulata Alexander. — Patagonia.
taciturna Alexander. — Southeastern Brazil.
tenuicincta Alexander. — Peru.
travassosi Alexander. — Southeastern Brazil.
tropicalis Alexander. — Guatemala.
umbrosa Alexander. — Southeastern Brazil.
vallicola, sp. n. — Panama.
varipes Alexander. — Costa Rica.

Cryptolabis (Cryptolabis) ecalcarata, sp. n.

Allied to *roundsi*; mesonotum medium brown, virtually unpatterned; thoracic pleura yellow with a broad brown dorso-longitudinal stripe; *Rs* long, more than three times R_{2-3-4} ; macrotrichia of cells relatively sparse; male hypopygium with the outer dististyle rounded, with a dense pencil of setae at summit, lacking a spine on the face; phallosome slender, strongly convoluted.

Male. — Length, about 3 mm.; wing, 3.8-4 mm.

Rostrum brownish yellow; palpi brown. Antennae pale brown; verticils very long. Head yellow.

Pronotum and pretergites pale yellow. Mesonotum medium brown, virtually unpatterned, the humeral region of praescutum more yellowed; postnotum slightly darker. Pleura yellow, with a broad brown dorsolongitudinal stripe extending from the cervical region to the postnotum. Halteres pale. Legs with the coxae and trochanters yellow; femora and tibiae obscure yellow, the tips weakly darkened; outer tarsal segments passing into brown. Wings (Fig. 5) whitish subhyaline, the prearcular and costal fields a trifle more yellowed. Macrotrichia of cells relatively sparse, virtually restricted to the outer half of the cells beyond cord. Venation: *Rs* long, more than three times R_{2-3-4} , the latter nearly perpendicular at origin; *Rs* in longitudinal alignment with R_5 , *r-m* and R_{2-3-4} interstitial.

Abdomen brown, the hypopygium somewhat more brownish yellow. Male hypopygium (Fig. 8) having the general structure of *roundsi*, that is, with two dististyles and a slender, strongly convoluted aedeagus, the two species differing in all details. Outer dististyle, *d*, a pale rounded or circular structure, with a dense brush or pencil of setae at summit, but without a spine, as in *roundsi*. Inner dististyle an elongate foot-shaped lobe or

cushion that is densely setuliferous. Region of tergite terminating in two separate pale points, between which lies a small setiferous cushion.

Habitat: Costa Rica.

Holotype, ♂, Higuito, San Mateo (Pablo Schild); United States National Museum. Paratopotypes, 2, apparently both ♂♂.

In the original description of *Cryptolabis (Cryptolabis) roundsi* Alexander (Rev. de Entomol., 10: 630-631; 1939) I had interpreted the outer dististyle, as described above, as being the basistyle but it now seems certain that there are two dististyles or profound lobes of the same. In such an interpretation, the very small basistyle is closely consolidated or fused with the tergite.

Cryptolabis (Cryptolabis) vallicola, sp. n.

General coloration of thoracic notum dark brown, the pleura brown, with a blackened spot on the anepisternum; wings with a strong blackish tinge; *Rs* long, nearly four times R_{2-3-4} ; *m-cu* at near midlength of M_{3-4} ; male hypopygium with the dististyle terminal, large and broad, the apical margin produced and variously armed; surface of style near base with numerous setae, some very long and strong; aedeagus straight and slender.

Male. — Length, about 3.5 mm.; wing, 4.1 mm.

Rostrum brown; palpi black. Antennae with the scape and pedicel black; flagellum broken. Head brown, opaque.

Pretergites testaceous yellow. Mesonotum almost uniformly dark brown, without pattern. Dorsopleural region pale, the remainder of pleura brown, with a blackened spot on the anepisternum. Halteres with stem dusky, its base and the knob pale yellow. Legs with the coxae and trochanters yellow; remainder of legs broken. Wings with a strong blackish tinge, the prearcular field more whitened; veins and macrotrichia darker brown. Cells of wing beyond cord with relatively numerous macrotrichia, more abundant in the outer ends of the cells, extending basad to one-fifth or one-sixth the length of the outer radial cells or virtually to the cord. Venation: *Rs* elongate, gently sinuous, nearly four times R_{2-3-4} ; *Rs* in direct longitudinal alignment with vein R_5 , the basal section of the latter short to very short; *m-cu* at midlength of vein M_{3-4} ; vein *2nd A* gently sinuous.

Abdomen brownish black, the dististyles of the male hypopygium brownish yellow. Male hypopygium (Fig. 9) with the dististyle, *d*, terminal, large and broad, the lower outer angle produced into a flattened scoop; upper outer angle with a stouter lobe that bears two strong setae (the tips of these latter are

broken and their length cannot be stated); dorsal margin of style with a single small strong spine; surface of style, especially the basal third, with numerous strong setae, directed outward, some of these bristles very long. Apex of basistyle produced mesad into a strong lobe that terminates in about eight strong setae. Aedeagus, *a*, straight and relatively slender.

Habitat: Panama.

Holotype, ♂, El Valle, altitude 1800 feet, January 1947 (N. L. H. Krauss).

The present fly is quite distinct from the other described regional forms, especially in the very different structure of the male hypopygium, particularly the dististyle. In its general appearance the species is most like *Cryptolabis* (*Cryptolabis*) *taciturna* but is entirely distinct.

Erioptera Meigen

- Polymeda* Meigen; Nouv. Class. Mouches, p. 14; 1800; (nom. nud., no type).
Erioptera Meigen; Illiger's Mag. für Insektenk., 2: 262; 1803; (type *grisea* Blanchard; see note under *Molophilus*).
Chemalida Rondani; Prodromus Dipterologiae Italicae, 1: 180; 1856 (type *tacnionota* Meigen).
Ilisophila Rondani; Prodromus, 1: 180; 1856 (type *lutea* Meigen).
Limnoea Rondani; Prodromus, 1: 181; 1856 (type *flavescens* Linnaeus); (indicated as being preoccupied by *Limnaea* Poli, 1791).
Limnoica Rondani; Prodromus, 4 (Corrigenda): 11; 1861 (new name for *Limnoea*).

A few notes concerning the above synonymy. Osten Sacken (Mon. Dipt. N. America, 4: 12; 1869) discusses the Rondani genera and designates the types, following Rondani. Later (Berlin. Ent. Zeitsch., 31: 230-233; 1887) he further discusses the Rondani names and in some instances indicates a type different from the earlier view. Concerning *Erioptera*, s. s., Coquillett (1910) had designated *lutea* Meigen as type. Much earlier, Curtis (1835) had designated *flavescens* Linnaeus as type but since this was not one of the species included by Meigen the designation is untenable. The designation of *grisea* as type, as above indicated, will be discussed later under the genus *Molophilus*. As regards *Ilisophila*, the original designation was *lutea*; in 1887 Osten Sacken attempted to associate the name with the subgenus *Empeda* Osten Sacken.

As indicated at the beginning of the present report, eight of the subgenera into which *Erioptera* has been divided have been recorded from Tropical America. These eight groups will be discussed in order.

Subg. *Erioptera* Meigen, s. s.

The typical subgenus is best developed in the Holarctic Region though with somewhat numerous representatives in

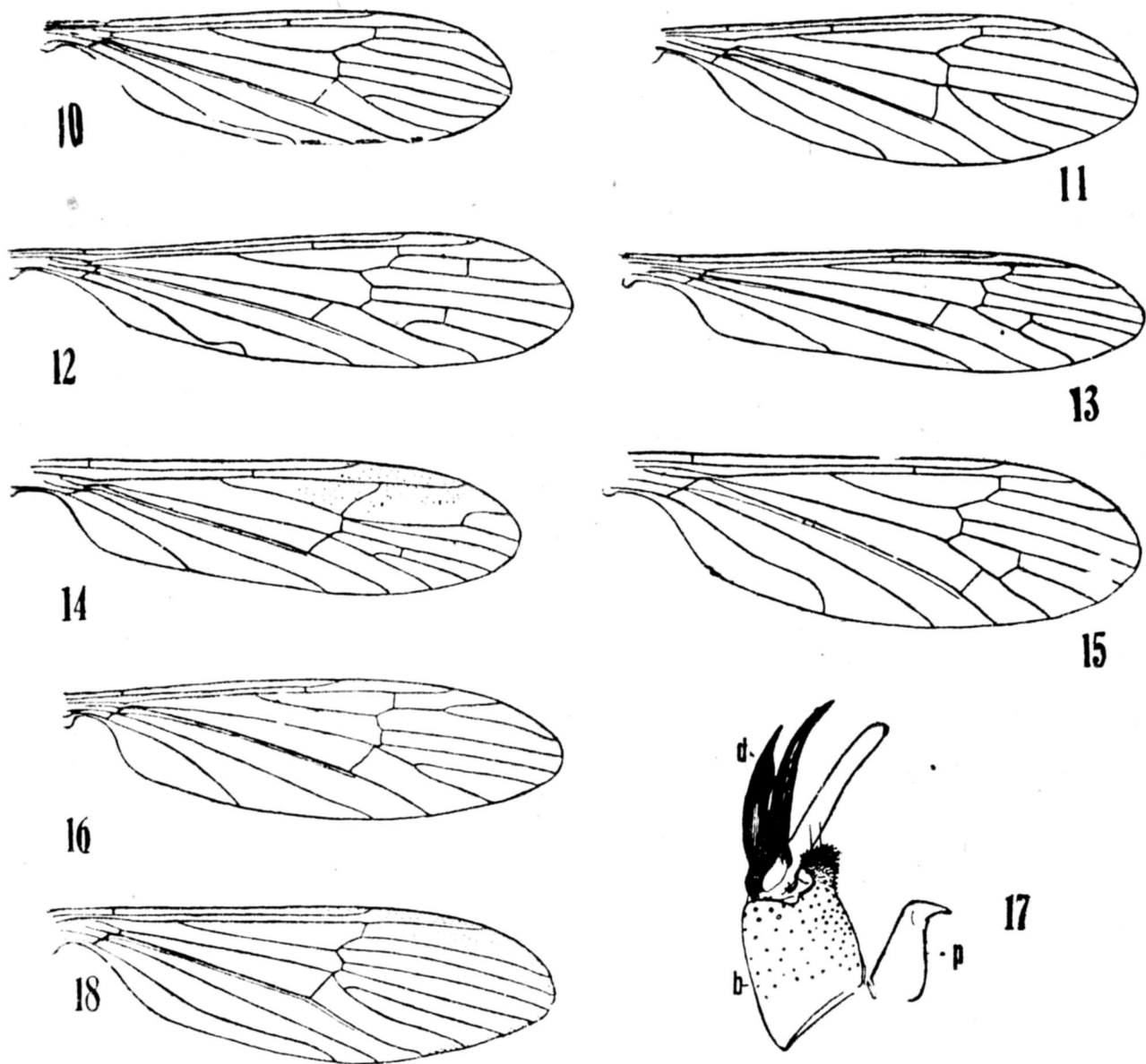


Fig. 10. *Erioptera (Erioptera) andina* Alexander; venation. — Fig. 11. *Erioptera (Mesocyphona) fuscodiscalis* Alexander; venation. — Fig. 12. *Erioptera (Symplecta) colombiana* Alexander; venation. — Fig. 13. *Erioptera (Trimicra) pilipes andensis* (Alexander); venation. — Fig. 14. *Erioptera (Empedomorpha) apacheana* Alexander; venation, ♂. — Fig. 15. *Erioptera (Eriopterella) jaffueli* Alexander; venation. — Fig. 16. *Erioptera (Empeda) ochricauda* Alexander; venation. — Fig. 17. *Erioptera (Empeda) austronymphica* Alexander; male hypopygium. — Fig. 18. *Amphineurus (Amphineurus) extraordinarius* Alexander; venation. — (Symbols: *b*, basistyle; *d*, dististyles; *p*, phallosome).

Tropical America. Elsewhere a relatively few forms occur in the Ethiopian, Oriental and Australasian Regions, in the last named with a few species in the higher mountains of New Guinea. Other Australasian species formerly assigned to this subgenus seem to fall in other groups, particularly in *Meterioptera* Alexander. The typical subgenus is best defined by having cell M_2 of the wings open by the atrophy of *m* and with vein 2nd A strongly sinuous. (Fig. 10, *andina*). There is no fusion of the basal segments of the flagellum as in *Meterioptera*.

List of Species

- andina* Alexander. — Colombia.
annulipes Williston. — Lesser Antilles.
apicalba Alexander. — British Guiana; Amazonian Brazil.

celestis Alexander. — Venezuela, Ecuador.

cladophora Alexander. — Brazil.

cladophoroides Alexander. — Argentina.

dampfi Alexander. — Mexico.

laetipleura Alexander. — Mexico.

lunigera Alexander. — South Chile.

micromyia Alexander. — Amazonian Brazil; Peru.

multiannulata Alexander. — Southeastern Brazil.

polydonta Alexander. — Peru.

polytricha Alexander. — Ecuador.

quadricincta Alexander. — Mexico.

quinquecincta Alexander. — Colombia.

susurra Alexander. — Peru.

urania Alexander. — Ecuador.

It may be noted that various Neotropical species centering about *annulipes* are referred to the typical subgenus because of the venation, that is, cell M_2 open by the atrophy of m , instead of the atrophy of the basal section on vein M_3 , as is the case in the subgenus *Mesocyphona*. It should be noted however that the basic structure of the male hypopygium in this group is not unlike that in *Mesocyphona* and it may well be that all of the members of this group of flies are more properly placed in *Mesocyphona*.

Subg. *Mesocyphona* Osten Sacken

Erioptera (*Mesocyphona*) Osten Sacken; Mon. Dipt. N. America, 4: 152; 1869; (type *caloptera* Say).

This subgenus was proposed for the chiefly Nearctic *caloptera* Say (*caliptera* Say) and *parva* Osten Sacken. Besides a few further Nearctic species, there are rather numerous Tropical American forms, as shown by the accompanying list. The subgenus is one of the commonest and most characteristic groups throughout Tropical America, with the exception of Chile. The various species occur chiefly at low altitudes but some species reach elevations of 8000 feet or more in mountainous areas, particularly Mexico. In the mountains of western North America, various further species range to altitudes of 8000 feet or higher. Whether there are any further species that are strictly con-subgeneric remains in question. The Oriental species so placed by Brunetti certainly fall elsewhere. The strict subgeneric position of the North African *transmarina* Bergroth is similarly questionable although it may be found to belong here.

The subgenus is close to typical *Erioptera*, differing chiefly in the shorter and less sinuous vein 2nd A and in having cell M_2 open by the atrophy of the basal section of vein M_3 . (Fig.

11, *fuscodiscalis*). In most species the wing cells are glabrous but in a few (*costalis* and allies) there are a few scattered macrotrichia in some of the cells beyond the cord.

The immature stages of all groups of *Erioptera*, as known, are found in wet earth or mud, usually near water.

List of Species

- aglaia* Alexander. — Southeastern Brazil.
apicinigra Alexander. — Mexico.
bicinctipes Alexander. — Eastern Brazil.
caloptera Say. — Antilles and southward; Nearctic.
c. subevanescens Alexander. — Ecuador.
costalis Alexander. — Cuba, Guatemala, Mexico.
cynthia Alexander. — Ecuador.
diffusa Alexander. — Amazonian Brazil.
eiseni Alexander. — Mexico, Guatemala, Colombia, Peru (southwestern U. S.).
euphrosyne Alexander. — Southeastern Brazil.
factiosa Alexander. — Ecuador; Peru.
femoranigra Alexander. — Mexico; Costa Rica.
fuscivena Alexander. — Southeastern Brazil, Paraguay, Argentina.
fuscodiscalis Alexander. — Mexico.
gulosa Alexander. — Peru.
histrion Alexander. — Ecuador; Peru.
immaculata Alexander. — Mexico, Guatemala, Nicaragua.
inornatipes Alexander. — Mexico.
intercepta Alexander. — Surinam.
invariegata Alexander. — Ecuador, Peru.
iquitosensis Alexander. — Amazonian Peru.
knabi Alexander. — Mexico (northward in U. S.).
leonensis Alexander. — Mexico.
leucopasta Alexander. — Mexico.
modica Alexander. — Mexico.
parva Osten Sacken. — Ecuador and northward; (Nearctic).
p. brasiliensis Alexander. — Eastern Brazil.
portoricensis Alexander. — Puerto Rico.
quadrifurcata Alexander. — Mexico, Salvador, Venezuela, Ecuador.
saturata Alexander. — Mexico.
splendida Alexander. — Mexico, Guatemala (northward).
subdulcis Alexander. — Cuba.
surinamensis Alexander. — Surinam.
tantilla Alexander. — Cuba (southeastern U. S.).
thalia Alexander. — Southeastern Brazil.
triangularis Alexander. — Southeastern Brazil.
troglogyta Edwards. — Trinidad.
turrialbae Alexander. — Costa Rica.
venustipes Alexander. — Mexico.
whitei Alexander. — Guatemala.
withycombei Alexander. — Trinidad.

Subg. *Symplecta* Meigen

Helobia Lepeletier & Serville; Encycl. Meth., Ins., 10: 585; 1828 (preocc. *Helobia* Stephens, 1827); (type *punctipennis* Meigen).

Symplecta Meigen; Syst. Besch., 6: 282; 1830; (type *hybrida* Meigen).

Idioneura Philippi; Verh. zool.-bot. Ges. Wien, 15: 615; 1865; (type *macroptera* Philippi).

Symplectomorpha Mik; Wien. Ent. Zeitg., 5: 318; 1886; (type *stictica* Meigen).

The subgenus *Symplecta* includes only a few species, chiefly Nearctic, with approximately four species in the Palaearctic and nearly the same in the New World, including those listed below for Tropical America. These latter occur along the Andean chain, as far south as Chile. It should be noted that one species, *hybrida* Meigen (*punctipennis* Meigen) has a vast range over the Palaearctic Region, whereas in the New World it is replaced by an allied but evidently distinct species, *cana* (Walker).

The chief characters for defining the subgenus are venational, including the strongly bisinuous vein 2nd A and, in all local species, the presence of a supernumerary crossvein in cell R_3 of the wings (Fig. 12, *colombiana*). The immature stages of the species as known (*hybrida*, *cana*, *macroptera argentina*) are spent in moist earth near water.

- List of Species

cana (Walker). — Mexico, Guatemala (Nearctic).

colombiana Alexander. — Colombia.

c. microptera Alexander. — Ecuador.

(*hybrida* Meigen, American records, see *cana*).

macroptera (Philippi). — Chile.

m. argentina Alexander. — Argentina.

Subg. *Trimicra* Osten Sacken

Trimicra Osten Sacken; Proc. Acad. Nat. Sci. Philadelphia 1861: 290; (type *anomala* Osten Sacken).

Characters very much as in *Erioptera*, s. s., the group having been based primarily on the relatively small size of the three outer antennal segments, and on the closed cell 1st M_2 of the wings. There are scarcely any points of difference to warrant even subgeneric ranking. Legs with very conspicuous erect or suberect setae, in some of the larger males these being unusually long and conspicuous. Wings (Fig. 13, *pilipes andensis*) with Sc long, Sc_1 ending approximately opposite R_2 , Sc_2 far from its tip, Sc_1 alone being approximately as long as or longer than the distal section of vein M_{1-2} ; Rs long and nearly straight, with the trichia long and conspicuous, more so than on the veins beyond the cord; cell 1st M_2 closed in New

World species; *m-cu* oblique, variable in position, before the fork of *M*; Anal veins divergent. Male hypopygium with the basistyle short and stout; dististyles two, apical in position, the outer terminating in a blackened spinous point, with a smaller denticle on the lower margin back from the tip; inner style subequal in length, obtuse to truncated at tip. Gonapophyses appearing as simple blackened curved spines, much shorter than the aedeagus.

A very surprising range in size, especially among the males, may be found even within a small series from a single place and date and evidently representing only one form. As an average, the males are larger than the corresponding females.

The distribution of *Trimicra* is very puzzling. There are apparently only two or three valid species but one of these, *pilipes* (Fabricius), has a vast range throughout the world, occurring on all the continents and likewise on some of the most remote islands. There are slight differences in venation, particularly in the length and course of vein *2nd A*, and likewise minor distinctions in the structure of the male hypopygium but it is exceedingly difficult to define subspecies. Until more is known I am placing certain of the more well-marked forms as races. How the species *pilipes* attained its present almost unparalleled range remains very much in question. The immature stages occur in wet earth near water bodies and it does not seem probable that the species could have been spread by commerce, such as by the whaling vessels of early days that undoubtedly touched at some of the subantarctic islands where the subgenus has been found.

List of Subspecies

pilipes andensis (Alexander). — Peru; Argentina.

p. anomala (Osten Sacken). — Mexico; Nearctic.

p. apoecila (Philippi). — Chile.

p. obscurata (Blanchard). — Chile.

p. reciproca (Walker). — Argentina.

p. trichopus (Philippi). — Chile.

Some of the above, particularly those listed from Chile, will undoubtedly prove to be synonyms.

Subg. *E m p e d o m o r p h a* Alexander

Empedomorpha Alexander; Proc. Acad. Nat. Sci. Philadelphia 1916: 507-508, fig. 40; 1916; (type *empedoides* Alexander).

A group that includes only two known species, one within our faunal limits. I am placing it as a subgenus of *Erioptera* chiefly because of the somewhat evident relationships with *Trimicra*. In both groups a surprising difference in size of male

specimens is found, as discussed under *Trimicra*. Very striking is the sexual dimorphism, evidenced by the greatly dilated hairy stigma of the male, with an accompanying distortion of the venation in the radial field of the wing. (Fig. 14, *apacheana*). The wings and venation in the female are quite normal and ordinary. The basic plan of structure of the male hypopygium is the same in the two known species. The two dististyles are terminal in position; inner gonapophyses appear as slender rods, each bearing a blackened lateral spine.

Erioptera (Empedomorpha) apacheana Alexander occurs in northern Mexico (Nuevo Leon); the second species is more widely distributed over the arid and semi-arid regions of the western United States. The distinctions between the subgenotype, *empedoides* (Alexander, 1916) and *apacheana* Alexander, 1946, have been described and figured by the writer (Amer. Midl. Nat., 35: 527-529, figs. 25, 26; 1946).

Subg. *Eriopterella* Alexander

Erioptera (Eriopterella) Alexander; Diptera of Patagonia and South Chile, 1: 196-197; 1929; (type *jaffueli* Alexander).

The subgenus is much as in *Erioptera*, differing especially in the venation. *Rs* of moderate length, angulate at origin; cell *1st M₂* closed; *m-cu* at near two-thirds the length of the long cell *1st M₂*, the distal section of *Cu₁* only about one-half longer than *m-cu*; vein *2nd A* only moderately long, gently sinuous, cell *1st A* at margin about three times cell *Cu*. (Fig. 15, *jaffueli*).

Male hypopygium with the ninth tergite extended caudad into a median triangular lobe that terminates in a slender point. Basistyles relatively stout. Outer dististyle a pale flattened blade, on its outer margin near midlength with a nearly hyaline fingerlike lobe that is tipped with a long seta, with a second seta on inner face. Inner dististyle a long slender chitinized rod, near its base on outer face with a much smaller and more slender branch. Aedeagus elongate.

The only known species is *Erioptera (Eriopterella) jaffueli* Alexander, of Chile (Fig. 15).

Subg. *Psiloconopa* Zetterstedt

Psiloconopa Zetterstedt; Ins. Lapponica, Dipt., p. 847; 1838; (type *meigenii* Zetterstedt).
Ilisia Rondani; Prodr. Dipterologiae Italicae, 1: 182; 1856; (type *maculata* Meigen).
Trichosticha Schiner; Wien. Ent. Monats., 7: 221; 1863; (type *maculata* Meigen).
Erioptera (Acyphona) Osten Sacken; Mon. Dipt. N. Amer., 4: 151; 1869; (type *venusta* Osten Sacken).
Erioptera (Hoplolabis) Osten Sacken; Mon. Dipt. N. Amer., 4: 152; 1869; (type *armata* Osten Sacken).

Kowarzia Thalhammer; Fauna Regni Hungarici, Dipt., p. 19; 1899; (preoccupied by *Kowarzia* Mik, 1881); (type *grata* Loew).

The subgenus *Psiloconopa*, including *Ilisia* and *Hoplolabis* as above, is very characteristic of the Holarctic Region, with numerous species in both the Nearctic and Palaearctic Regions. Species that are very closely allied to the European *maculata* Meigen occur in the mountains of Central Africa and in the Austromalayan Region as far east as the mountains of New Guinea.

Psiloconopa, as now broadened by the inclusion of *Ilisia*, is still very close to the typical subgenus, particularly in those species that have cell M_2 of the wings open by the atrophy of *m*. Such species are distinguished chiefly by the short and nearly straight vein 2nd A. Many of the species have cell 1st M_2 closed (*maculata* group; *venusta* group; *areolata* group; *meigenii* group, and others) but several have it open. Many species that center about *maculata*, *venusta*, and *melampodia* have the wings handsomely patterned, often crossbanded or with ocelli-form markings. It should be noted that in this subgenus, the male hypopygium may be normal (*Psiloconopa* s. s.) or partially inverted (*Ilisia* s. s.).

A single species, *Erioptera (Psiloconopa) winthemi* Alexander, was described as being from Brazil, collected by Winthem, in the old collection of the Vienna Museum. This fly much resembles the *E. (P.) cinctipennis* Alexander, of western North America, or *E. (P.) melampodia* Loew, of Europe, and since no other representative of the subgenus has been taken in Brazil or in the entire Neotropics, it would seem that there is a distinct possibility of erroneous labelling.

Subg. *Empeda* Osten Sacken

Platytoma Lioy; Atti dell'Istitut Veneto, (3) 9: 226; 1863; (preoccupied by *Platytoma* Dejean, 1833; nom. nud.).

Empeda Osten Sacken; Mon. Dipt. N. Amer., 4: 183; 1869; (type *stigmatica* Osten Sacken).

Empeda is one of the larger and more characteristic groups of small crane-flies in Tropical America, particularly in mountainous sections. It is readily told from the other groups by the relative shortness of cell R_3 of the wings and the correspondingly lengthened vein R_{3-4} . In addition, the various species have the thoracic pleura almost bare and have a somewhat characteristic structure of the male hypopygium. (Fig. 17, *austronymphica*). The venation of the different species shows a

considerable range in the length of vein Sc and especially the position of Sc_2 . In most species this latter lies far distad so Sc_1 is very short, as compared with the other subgeneric groups, but there is a marked difference in various species in this subgenus. (Fig. 16, *ochricauda*).

Edwards (Trans. Soc. British Ent., 5: 117-119; 1938) has placed *Empeda* as a subgenus of *Cheilotrichia* Rossi but I prefer to consider all of these groups as representing subgenera of the major genus *Erioptera* Meigen.

The subgenus *Empeda* is widely distributed throughout the major regions of the world, being somewhat more abundant in species in the Mexican subregion. A few species, including the subgenotype, *stigmatica*, occur in the Nearctic Region while others occur as far south as northern Argentina. No species has been found in Chile. In the Old World the subgenus is well represented throughout the Palaearctic, with fewer species in the Ethiopian and Oriental Regions. In Australasia, species occur in New Guinea and a very isolated form in northern New Zealand, but as known to date no species are found in Australia. The group was represented by abundant species in the Baltic Amber (Lower Oligocene) and it should be noted that the basic structure of the male hypopygium was identical even at that remote date, at least 30,000,000 years ago. (See Alexander, Crane-flies of the Baltic Amber, Diptera; Bernstein-Forschungen, Heft 2: 105-111, figs. 138-146; 1931).

List of Species

- abitaguai* Alexander. — Ecuador.
- alticola* Alexander. — Mexico.
- austronymphica* Alexander. — Peru.
- basalis* (Alexander). — Northern Argentina.
- boliviana* Alexander. — Bolivia.
- coangustata* Alexander. — Ecuador.
- complicata* (Alexander). — Northern Argentina.
- curta* Alexander. — Mexico.
- deludens* Alexander. — Mexico.
- destituta* Alexander. — Peru.
- divaricata* Alexander. — Mexico.
- instrenua* Alexander. — Peru.
- longifurcata* Alexander. — Ecuador.
- longisquama* Alexander. — Southeastern Brazil.
- mayanymphica* Alexander. — Mexico.
- nigrolineata* (Enderlein). — Mexico, Guatemala, Costa Rica.
- nymphica* Alexander. — Jamaica.
- ochricauda* Alexander. — Mexico.
- oresitropa* Alexander. — Mexico.
- percupida* Alexander. — Peru.

- pubescens* Alexander. — Guatemala.
stygia Alexander. — Mexico, Costa Rica, Peru.
sutrina Alexander. — Panama.
tridentata Alexander. — Mexico.
unidentata Alexander. — Mexico.

Amphineurus Skuse

Amphineurus Skuse; Proc. Linn. Soc. New South Wales, (2) 4: 800; 1890; (type *umbraticus* Alexander).

Amphineurus is closely allied to the North Temperate genus *Ormosia* Rondani. Both groups have the wing membrane densely hairy and show still other points of resemblance yet seem to be generically distinct. The chief peculiarity of the venation in the typical subgenus is the unusual depth of cell M_3 which is usually, though not always, sessile, sometimes so broadly so as to produce a short element M_{1-2-3} ; vein R_{2-3-4} is distinct in the typical forms, in *extraordinarius* (Fig. 18) being shorter so cell R_3 is short-petiolate; *m-cu* lies at or before the fork of M ; vein *2nd A* is moderately sinuous. In *castroensis*, cell *1st M₂* is closed.

Relatively numerous species occur in the Chilean subregion, elsewhere the genus being restricted to Australia and New Zealand. In the last-named subregion there are two somewhat peculiar and isolated subgeneric groups, *Nesormosia* Alexander and *Nothormosia* Alexander, the latter with rather numerous species. Members of the typical subgenus occur in Australia, New Zealand and in Chile. Most of the species in the latter country fall in the subgenus *Rhamphoneurus* Alexander (Diptera of Patagonia and South Chile, 1: 186-187, figs. 90, 223, *nothofagetorum*; fig. 224, *glabristylatus*; fig. 225, *sanus*; 1929), having most of the characters of the typical subgenus but with the rostrum elongate, as long as the head or even longer.

The still unknown *Erioptera* ? *longipes* Philippi, of South Chile, may belong to this genus but there are some points in the venation that do not agree with those in any of the more recently discovered species (as cell M somewhat longer than cell R , indicating that *m-cu* lies beyond the fork of M ; cell M_2 open by the atrophy of the basal section of M_3 ; cell *2nd M₂* petiolate). As indicated by me in the paper above cited, most of Philippi's types, including that of the present fly, seem to have been destroyed or mislaid and the identity of several critical species remains in question and may never be settled.

Nothing is known concerning the immature stages of *Amphi-*

neurus but the larval habitat is presumably in wet earth or organic mud, as is the case in the allied North Temperate genus *Ormosia* Rondani.

List of Species

Amphineurus, s. s.

castroensis Alexander. — South Chile.

extraordinarius Alexander. — South Chile.

Rhamphoneurus Alexander (type *nothofagetorum* Alexander).

fuscifusus Alexander. — South Chile.

glabristylatus Alexander. — South Chile.

nothofagetorum Alexander. — South Chile, Patagonia.

sanus Alexander. — South Chile.

Maietta Alexander

Maietta Alexander; Diptera of Patagonia and South Chile, 1: 184-185, fig. 104 (venation); fig. 233 (male hypopygium); fig. 234 (ovipositor); 1929; (type *squamigera* Alexander).

A single very peculiar fly, *Maietta squamigera* Alexander, of South Chile, is included in this genus.

The chief venational peculiarities lie in the long arcuate basally directed vein R_2 and in the presence of only two medial veins. The legs and wings are provided with abundant scales, those of the latter being greatly flattened and longitudinally striate. The male hypopygium is peculiar, having the basistyles short and stout; two dististyles, the outer one a broad flattened pale lobe, the inner style a slender arcuated blackened rod, its tip narrowed into an acute black spine. Ovipositor likewise peculiar, the cerci appearing as compressed, nearly circular fleshy blades, the hypovalvae more elongate.

Molophilus Curtis

Molophilus Curtis; British Entomology, 10: 444; 1833; (type *brevipennis* Curtis = *ater* Meigen).

Archimolophilus Enderlein; Skottsberg's Nat. Hist. Juan Fernandez and Easter Isl., Zool. 3: 669; 1940; (type *selkirkianus* Enderlein).

A very large and characteristic group of small crane-flies, particularly well represented in Tropical America, especially at medium altitudes in mountainous sections. Three subgenera are represented in this area and will be discussed in proper order.

Dr. Alan Stone (Ann. Ent. Soc. America, 34: 407; 1941) has called attention to the fact that the name *Molophilus* Curtis, 1833, is unavailable and will fall as a synonym of *Erioptera*

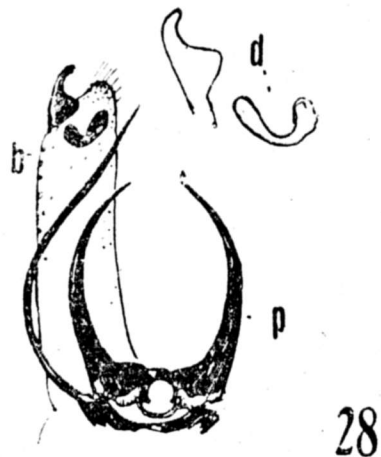
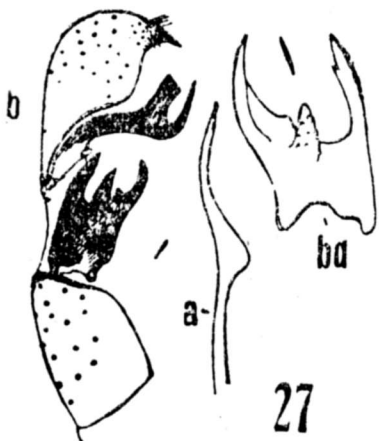
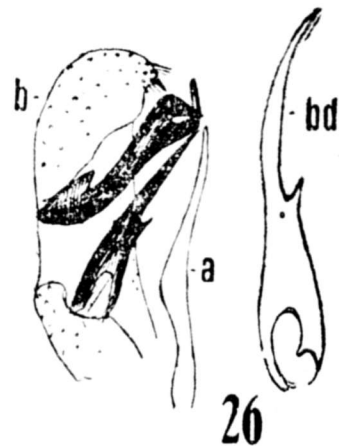
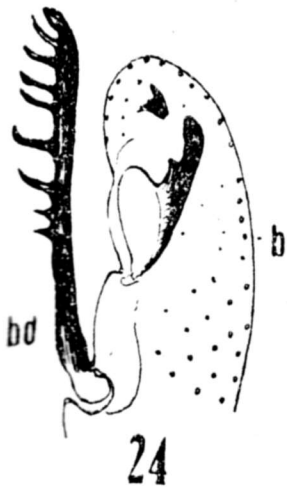
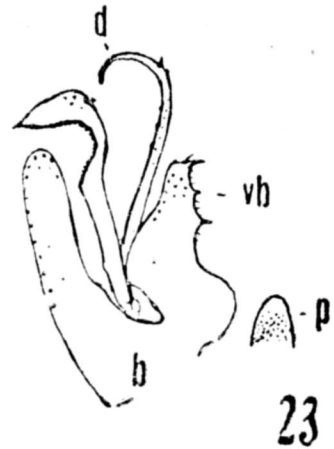
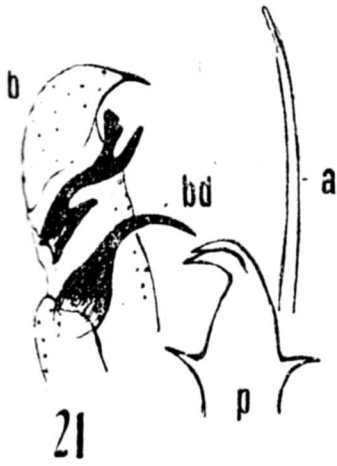
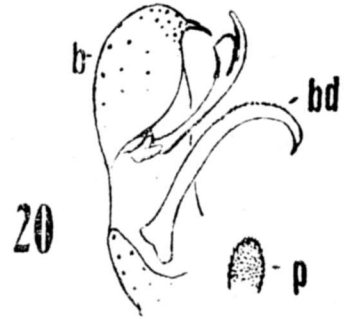
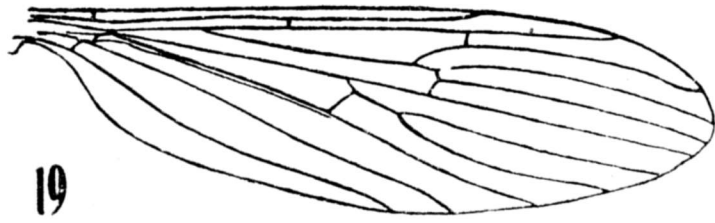


Fig. 19. *Molophilus (Molophilus) persinuosus* Alexander; venation. — Fig. 20. *Molophilus (Molophilus) bierigi* Alexander; male hypopygium. — Fig. 21. *Molophilus (Molophilus) cautus*, sp. n.; male hypopygium. — Fig. 22. *Molophilus (Molophilus) monostylus* Alexander; male hypopygium. — Fig. 23. *Molophilus (Molophilus) pacifer* Alexander; male hypopygium. — Fig. 24. *Molophilus (Molophilus) pectinatus* Alexander; male hypopygium. — Fig. 25. *Molophilus (Molophilus) raptor*, sp. n.; male hypopygium. — Fig. 26. *Molophilus (Molophilus) subiratus*, sp. n.; male hypopygium. — Fig. 27. *Molophilus (Molophilus) tridigitatus*, sp. n.; male hypopygium. — Fig. 28. *Molophilus (Trichomolophilus) tentator*, sp. n.; male hypopygium. — (Symbols: a, aedeagus; b, basistyle; bd, basal dististyle; d, dististyle; vb, ventral lobe of basistyle; p, phallosome).

Meigen, 1803 (*Polymeda* Meigen, 1800). Curtis clearly defined the genus and designated the type. However, in 1849 Blanchard had chosen as type of *Erioptera* Meigen the species *Erioptera grisea* Meigen and by mere chance this happens to be the only one of the originally included species of *Erioptera* that falls in *Molophilus*. This choice of type of *Erioptera* has brought about a most regrettable situation. The genus *Molophilus*, as here retained, is one of the largest in the Tipulidae, with more than 400 known species and has been recognized and unquestioned for more than a century. For these reasons it would seem advisable to retain it and perhaps the name could be conserved by requesting a suspension of the rules of the International Code on behalf of *Molophilus*.

The venation of the genus is characteristic (Fig. 19, *per-sinuosus*). Both R_{2-3} and R_{4-5} are present as distinct elements so that cell R_3 is sessile instead of petiolate, as in most other Eriopteraria. This feature alone virtually suffices to distinguish the genus. In addition, M is in direct longitudinal alignment with M_{1-2} , vein M_{3-4} leaving M at a strong angle; cell M_3 is deep to very deep, its petiole (M_{3-4}) correspondingly shortened; Anal veins commonly convergent. Wing-cells glabrous in the local species.

Male hypopygium (various species figured, Figs. 20-27, inclusive) inverted, twisted to a full 180° so the tergite occupies a ventral position. The ventral lobe of the basistyle of the hypopygium in the so-called *plagiatus* group is produced into a sclerotized point or beak of various shapes. Commonly there are two dististyles, an outer bifid one and a more proximal one that has been called the *basal dististyle*. This latter structure provides the most important taxonomic characters for the separation of the numerous species in the group. A median basal plate, the so-called *phallosomic plate* seems to represent the fused gonapophyses in this genus. The two chief groups of species in our fauna were described and figured by the writer (Ann. Mag. Nat. Hist., (9) 19: 16-17; (9) 19: 177; (0) 20: 33; 1927). Besides the two chief groups, the *plagiatus* and *gracilis-ruficollis* groups, there is one further isolated one, the so-called *monostylus* group (Fig. 22, *monostylus*) including a single known species.

As indicated by the accompanying list, *Molophilus* is unusually well-distributed throughout Tropical America, particularly at medium to high altitudes (2000-10,000 feet). Elsewhere in the world the *plagiatus* group includes many species

in Australia and New Zealand, with fewer scattered species in outlying satellite islands, as New Caledonia and New Guinea. The numerous species in the New World apparently have attained their present distribution via the Antarctic land connection, most of the species being Neotropical but with about eight further species extending northward into the Nearctic Region. It should be noted that species of this group seem to be lacking in the Palaearctic Region. The *gracilis* group centers in Australia, with many further representatives throughout the Palaearctic Region, including many in Europe. In Tropical America there are relatively few known species, most numerous in the Chilean Subregion, and evidently these too have been derived from the Australasian center via Antarctica.

The immature stages of *Molophilus*, as known, live in wet earth, often near streams.

List of Species

- anerasta* Alexander. — Panama.
- appressus* Alexander. — Patagonia.
- araucanus* Alexander. — South Chile.
- armatistylus* Alexander. — South Chile, Patagonia.
- ascendens* Alexander. — Southeastern Brazil.
- bellicosus* Alexander. — Argentina, Chile.
- bellona* Alexander. — Mexico.
- bicaudatus* Alexander. — Patagonia.
- bidigitatus* Alexander. — Southeastern Brazil.
- bierigi*, sp. n. — Costa Rica.
- brevilobatus* Alexander. — South Chile.
- breviramus* Alexander. — Patagonia.
- brevispinosus* Alexander. — South Chile, Patagonia.
- brownianus* Alexander. — Ecuador.
- bruchi* Alexander. — Argentina.
- caenosus* Alexander. — Southeastern Brazil.
- calceatus* Alexander. — South Chile.
- capricornis* Alexander. — Colombia.
- catamarcensis* Alexander. — Argentina.
- cautus*, sp. n. — Southeastern Brazil.
- cervus* Alexander. — Patagonia.
- chiriquensis* Alexander. — Panama.
- cladocerus* Alexander. — Argentina.
- clavigerus* Alexander. — Patagonia.
- colossus* Alexander. — South Chile, Patagonia.
- conscriptus* Alexander. — Colombia.
- debilior* Alexander. — Ecuador.
- debilistylus* Alexander. — Southeastern Brazil.
- diceros* Alexander. — Chile.
- dido* Alexander. — Venezuela.
- dirhabda* Alexander. — Southeastern Brazil.
- dirus* Alexander. — Peru.
- drepanucha* Alexander. — South Chile, Patagonia.

- ductilis* Alexander. — Mexico.
emarginatus Alexander. — Southeastern Brazil.
facinus Alexander. — Venezuela.
fagetorum Alexander. — Patagonia.
falx Alexander. — Mexico.
flavidus Alexander. — Chile, Patagonia.
flexilistylus Alexander. — Colombia.
fuscoleuralis Alexander. — Mexico.
gargantua Alexander. — Peru.
gomesi Alexander. — Southeastern Brazil.
grus Alexander. — Peru.
guatemalensis Alexander. — Guatemala.
gymnocladus Alexander. — Chile.
haagi Alexander. — Mexico.
honestus Alexander. — Argentina.
hyperarmatus Alexander. — Chile.
hystrix Alexander. — Southeastern Brazil.
illectus Alexander. — Panama.
inarmatus Alexander. — Chile.
incognitus Alexander. — Mexico.
inflexibilis Alexander. — Patagonia.
integristylus Alexander. — Southeastern Brazil.
lanei Alexander. — Southeastern Brazil.
laterospinosus Alexander. — Patagonia.
lauri Alexander. — Southeastern Brazil.
lerionis Alexander. — Southeastern Brazil.
lictor Alexander. — Colombia.
luxuriosus Alexander. — Colombia.
marthae Alexander. — Colombia.
miraculus Alexander. — Mexico.
monostylus Alexander. — Chile.
obediens Alexander. — Mexico.
orion Alexander. — Costa Rica.
othello Alexander. — Peru.
pacifer Alexander. — Costa Rica.
paganus Alexander. — Peru.
pala Alexander. — Peru.
pallatangensis Alexander. — Ecuador.
pallidus (Philippi). — Chile (genus dubia)
panchrestus Alexander. — Peru.
paraguayensis Alexander. — Paraguay.
paucispinosus Alexander. — Mexico.
pectinatus Alexander. — Chile.
penicillatus Alexander. — Peru.
pennatus Alexander. — Mexico.
perdebilis Alexander. — Peru.
perfidus Alexander. — Argentina, Chile.
perseus Alexander. — Colombia.
persinuosus Alexander. — Peru.
phallosomicus Alexander. — Southeastern Brazil.
piger Alexander. — Peru.
pirioni Alexander. — Patagonia, Chile.
p. omissus Alexander. — Patagonia, Chile.
platyphallus Alexander. — Ecuador.
pretiosus Alexander. — South Chile.
procax Alexander. — Mexico.

- pulvinus* Alexander. — Peru.
pustulatus Alexander. — Mexico.
quadristylus Alexander. — Brazil.
raptor, sp. n. — Southeastern Brazil.
remiger Alexander. — Brazil.
retrorsus Alexander. — Mexico.
richardsi Alexander. — Patagonia, Chile.
rubidithorax Alexander. — Argentina, Chile.
sagax Alexander. — Mexico.
sagittarius Alexander. — Peru.
scabricornis Alexander. — Southeastern Brazil.
schultzei Alexander. — Mexico.
selkirkianus (Enderlein). — Chile: Juan Fernandez.
serrulatus Alexander. — Chile.
severus Alexander. — Mexico.
shannoninus Alexander. — Argentina.
sicarius Alexander. — Peru.
s. partitus Alexander. — Peru.
stenopterus Alexander. — Chile.
stylifer Alexander. — Argentina.
subappressus Alexander. — South Chile.
subfalcatus Alexander. — Venezuela.
subiratus, sp. n. — Southeastern Brazil.
sublictor Alexander. — Costa Rica.
subsagax Alexander. — Mexico.
substylifer Alexander. — Argentina.
subtenebricosus Alexander. — Colombia.
talamancensis, sp. n. — Costa Rica.
taurus Alexander. — South Chile.
telerhabda Alexander. — Mexico.
tenebricosus Alexander. — Colombia.
ternarius Alexander. — Patagonia.
tetracanthus Alexander. — Patagonia.
titan Alexander. — South Chile.
tridigitatus, sp. n. — Southeastern Brazil.
triparcus Alexander. — Southeastern Brazil.
tucumanus Alexander. — Argentina.
uniformis (Blanchard). — Chile.
walkeri Alexander. — Colombia.

Subg. *Eumolophilus* Alexander

Molophilus (*Eumolophilus*) Alexander; Proc. Acad. Nat. Sci. Philadelphia, 1921: 72; 1921; (type *thaumastopodus* Alexander). 4

Characters as in *Molophilus*, s. s. Tibiae and basitarsi of hind legs in both sexes adorned with conspicuous erect fringes of long dark hairs that give to the legs a fanlike or oarlike appearance. Male hypopygium with the phallosomic plate lyriform.

The species included in this group bear a most remarkable resemblance to mosquitoes of the genus *Sabethes*.

List of Species

- angustior* Alexander. — Southeastern Brazil.
pennipes Alexander. — Amazonian Brazil.
sabethoides Edwards. — Southern Brazil: Mato Grosso.
thaumastopodus Alexander. — Amazonian Brazil.

Subg. *Trichomolophilus* Alexander

Molophilus (*Trichomolophilus*) Alexander; Ann. Ent. Soc. America, 29: 768; 1936; (type *multisetosus* Alexander).

Characters much as in *Eumolophilus*. Wing-cells with numerous macrotrichia. Venation: Cell R_3 short-petiolate by the presence of a short element R_{2-3-4} ; R_2 subequal to R_{2-3} ; fork of M symmetrical, the basal deflection of M_{1-2} not in direct longitudinal alignment with M , as in *Molophilus* and *Eumolophilus*; cell 1st M_2 closed. Legs with conspicuous erect setae forming conspicuous paddles, best developed on the posterior tibiae, as in *Eumolophilus*. Fore femora and tibiae very short, taken together shorter than the basitarsi. Male hypopygium with four basal elements, the inner pair, at least, pertaining to the phallosome. See Revista de Entomologia, 13: 437, fig. 20 (*celator*, ♂ hypopygium), fig. 21 (*multisetosus*, ♂ hypopygium). The hypopygium of *tentator*, sp. n., Fig. 28.

List of Species

- celator* Alexander. — Southeastern Brazil.
multisetosus Alexander. — Southeastern Brazil.
tentator, sp. n. — Southeastern Brazil.

Molophilus (*Molophilus*) *bierigi*, sp. n.

Belongs to the *plagiatus* group; allied to *anerasta*; general coloration dark brown, the humeral region of the praescutum brightened; antennae (male) elongate, nodulose; halteres obscure yellow; legs brownish black; wings with a strong blackish tinge, R_{2-3} long, about two and one-half times R_{4-5} ; male hypopygium with the beak of the basistyle slender, blackened; basal dististyle a strong simple blackened rod, evenly curved, the apex narrowed into a strong more decurved spine; outer margin of style with microscopic serrulations; phallosomic plate oval, with delicate setulae.

Male. — Length, about 4 mm.; wing, 4.5 mm.; antenna, about 2 mm.

Rostrum and palpi black. Antennae (male) elongate, as shown by the measurements, black throughout; flagellar segments

more or less fusiform, with glabrous apical necks, the dilated basal two-thirds with whorls of very long verticils. Head brownish gray.

Pronotum and pretergites chiefly light yellow. Mesonotum and pleura almost uniformly dark brown, the humeral triangles obscure brownish yellow. Halteres obscure yellow. Legs with the coxae and trochanters yellow; remainder of legs brownish black. Wings with a strong blackish tinge, the veins and trichia even darker. Venation: R_2 lying far beyond the level of $r-m$, R_{2-3} about two and one-half times R_{4-5} ; $m-cu$ sinuous, about one-half the petiole of cell M_3 ; vein $2nd A$ long and sinuous, ending about opposite midlength the petiole of cell M_3 .

Abdomen brownish black throughout. Male hypopygium (Fig. 20) with the beak of the basistyle, b , slender, blackened. Outer dististyle with the arms unequal, the longer one more slender. Basal dististyle, bd , distinctive, appearing as a strong simple blackened rod, evenly curved, the apex more blackened and rather abruptly narrowed into a slightly decurved spine; outer margin of style on distal half with microscopic serrulations. Phallosomic plate oval, with delicate setulae. Aedeagus long and relatively slender.

Habitat: Costa Rica.

Holotype, ♂, San Pedro de Montes de Oca, March 18, 1941 (Alexander Bierig). Paratopotypes, ♀ ♀.

I am very pleased to name this fly for the collector, Mr. Alexander Bierig, coleopterist and Federal Entomologist. Among the various species of somewhat similar general appearance and having elongate nodulose antennae in the male, including *Molophilus (Molophilus) anerasta* Alexander, *M. (M.) falcatus* Alexander, *M. (M.) subfalcatus* Alexander, *M. (M.) tenebricosus* Alexander, and *M. (M.) subtenebricosus* Alexander, the present fly is most similar to *anerasta*, differing in the structure of the male hypopygium and in other details.

Molophilus (Molophilus) cautus, sp. n.

Belongs to the *plagiatus* group; general coloration brownish gray, the humeral region of praescutum more brightened; antennae short; halteres strongly infuscated; legs brownish black; wings dusky, the veins and trichia dark; vein R_2 lying some distance before level of $r-m$; male hypopygium with the basal dististyle a heavily blackened curved rod; phallosomic structure a blackened plate that is divided at near midlength into two arms that extend into points; sides of plate near base bearing a conspicuous erect spine.

Male. — Length, about 2.8-3 mm.; wing, 3.4-3.8 mm.; antenna, about 0.7-0.8 mm.

Female. — Length, about 3.8-4 mm.; wing, 4-4.3 mm.

Rostrum and palpi black. Antennae with the scape and pedicel black, flagellum brownish yellow to pale brown; antennae short; flagellar segments oval with long verticils. Head brownish gray.

Mesonotum brownish gray, the humeral region of praescutum conspicuously yellow; interspaces obscure brownish yellow; pleura brownish gray. In some individuals, the praescutal pattern and yellow humeral areas are much more conspicuous than in others. Halteres strongly infuscated, the base of stem yellow. Legs with the coxae and trochanters testaceous brown; remainder of legs dark brown to brownish black. Wings dusky, the veins and macrotrichia darker to give a blackish appearance to the wings. Venation: R_2 lying some distance before level of $r-m$, vein R_{4-5} thus unusually long; $m-cu$ oblique, approximately one-half the petiole of cell M_3 or longer; vein $2nd\ A$ relatively short, ending about opposite the caudal end of $m-cu$.

Abdomen, including hypopygium, dark brown. Ovipositor and genital shield yellowish brown. Male hypopygium (Fig. 21) with the beak of the basistyle long and slender, black. Outer dististyle heavily blackened, unequally bifid at apex, the outer arm broad, the inner one slender and spinelike. Basal dististyle, bd , a heavily blackened curved rod, broad at base, narrowed to the acute tip, before apex with two or three setigerous punctures. Phallosome, p , a blackened plate that divides at near midlength into two flattened arms extending into acute points; on side of plate before the fork with a conspicuous erect spine. Aedeagus slender.

Habitat: Southeastern Brazil.

Holotype, ♂, Ferraz Vasconcelos, São Paulo, August 1946 (John Lane). Allotopotype, ♀. Paratopotypes, 2 ♂ ♀; paratypes, Angra dos Reis, Rio de Janeiro, altitude 50 meters, July 9, 1946 (Lauro Travassos Filho); ♂, Boracea, São Paulo, altitude 900 meters, April 13, 1942 (d'Almeida, Travassos Filho); ♂, Campos do Jordão, São Paulo, altitude 1600 meters, December 1945 (John Lane).

The present fly requires no comparison with other regional species, being quite distinct in the structure of the male hypopygium, especially the phallosome. Other somewhat similar species having this structure

modified from the normal type, as *Molophilus (Molophilus) phallosomicus* Alexander, *M. (M.) scabricornis* Alexander, and others, are not closely allied.

Molophilus (Molophilus) monostylus Alexander

Molophilus monostylus Alexander; Ent. News, 39: 182; 1928.

The type was from Concepcion, Chile, October 13, 1927 (Jaffuel & Pirion). Male hypopygium (Fig. 22). Basistyle, *b*, produced at apex into a small darkened lobe that bears two long delicate setae. A single dististyle, *d*, subapical in position, on outer half of basistyle; dististyle unequally trifid, consisting of a stout base that divides into three arms, a long darkened outer spine, a still longer central arm with the tip obtuse, and a short spikelike inner spine that is only about one-third as long as the outer. Aedeagus long and slender, somewhat dilated before the tip.

Molophilus (Molophilus) pacifer Alexander

Molophilus (Molophilus) pacifer Alexander; Journ. N. Y. Ent. Soc., 55 (in press).

The type was from Higuito, San Mateo, Costa Rica, collected by Pablo Schild. The male hypopygium was described in detail in the original definition but had not been figured. Fig. 23.

Molophilus (Molophilus) pectinatus Alexander

Molophilus pectinatus Alexander; Rev. Chilena Hist. Nat., 31: 220-221; 1927.

The types were from the valley of Marga-Marga, Chile, September 14-19, 1927 (Jaffuel & Pirion). The rather remarkable male hypopygium had not previously been figured (Fig. 24). Beak of the basistyle, *b*, short and unusually stout, blackened, the lower margin microscopically serrulate or roughened. Outer dististyle of distinctive shape, nearly simple, with a small accessory tooth at near midlength. Basal dististyle, *bd*, a long straight rod, with about ten erect blackened pectinations, all secund or on a single face, producing a comblike appearance; terminal two branches broader and flatter; intermediate series longest, bent slightly outward near tips; basal two branches shorter and more spinelike.

Molophilus (Molophilus) raptor, sp. n.

Belongs to the *plagiatus* group; mesonotum light brown, the pleura darker brownish gray; antennae (male) moderately long; halteres yellow; legs light brownish yellow, the outer tarsal

segments darkened; wings brownish yellow; male hypopygium with the basal dististyle a strong straight rod that narrows into a very long apical spine; surface of style with abundant spinous points and tubercles over most of the surface, those of the lower face longest, subappressed.

Male. — Length, about 4.5 mm.; wing, 5 mm.

Rostrum dark brown; palpi black. Antennae (male) of moderate length; flagellar segments oval, with conspicuous verticils. Head brownish gray.

Thoracic notum almost uniformly light brown, without evident pattern; praescutal setae black. Pleura darker brownish gray. Halteres yellow. Legs with the coxae and trochanters yellow; remainder of legs light brownish yellow, the outer tarsal segments brownish black; no modified ring or glandular area on fore tibia. Wings with a brownish yellow tinge, the prearcular and costal regions clearer yellow; veins yellow, macrotrichia darker. Venation: R_2 lying immediately beyond the level of $r-m$; $m-cu$ about four-fifths as long as the petiole of cell M_3 ; vein 2nd A ending about opposite the cephalic end of $m-cu$.

Abdomen slightly darker brown than the mesonotum; hypopygium obscure yellow. Male hypopygium (Fig. 25) with the beak of the basistyle, b , moderately stout, blackened, the surrounding portion darkened. Outer dististyle unequally bifid at apex. Basal dististyle distinctive, appearing as a strong straight rod that narrows into a very long slender apical spine; surface or style with abundant subappressed black spines of various sizes, those of the lower or inner face longest, of the outer face very reduced; no setae, as in *lanei*. Phallosomic plate small, glabrous, apparently terminating in two slightly separated points. Aedeagus, a , elongate, sinuous.

Habitat: Brazil (São Paulo).

Holotype, ♂, Campos do Jordão, altitude 1600 meters, December 1945 (John Lane).

The most similar regional species is *Molophilus (Molophilus) lanei* Alexander, which differs conspicuously in the structure of the male hypopygium, especially the basal dististyle, with its conspicuous fringe of elongate setae.

Molophilus (Molophilus) subiratus, sp. n.

Belongs to the *plagiatus* group; anterior region of mesonotum brown, the posterior sclerites uniformly darker brown; pleura dark brown; antennae short; halteres uniformly pale yellow; legs obscure yellow, the outer tarsal segments brown; wings brownish

yellow; male hypopygium with the basal dististyle a long blackened rod, virtually straight, narrowed very gradually into an acute spine, at near midlength bearing a small acute thorn but with no basal spine.

Male. — Length, about 3.5 mm.; wing, 4 mm.; antenna, about 1.2 mm.

Rostrum and palpi black. Antennae relatively short; scape and pedicel obscure yellow, flagellum brown; flagellar segments long-oval, with a dense pale pubescence, additional to the long single unilaterally arranged verticils. Head brown.

Pronotum dark in front, the scutellum, pretergites and humeral triangle of the praescutum pale yellow; remainder of mesonotum brown, the posterior sclerites still darker brown, with no brightening on either the scutum or the scutellum. Pleura dark brown. Halteres uniformly pale yellow. Legs with the coxae and trochanters yellow, the fore coxae a trifle darker; remainder of legs obscure yellow, the outer tarsal segments brown. Wings with a brownish yellow suffusion, the prearcular and costal fields clearer yellow; veins dark yellow; macrotrichia pale brown. Venation: R_2 about in transverse alignment with $r-m$; $m-cu$ about four-fifths the petiole of cell M_3 ; vein 2nd A ending about opposite the cephalic end of $m-cu$.

Abdomen dark brown, including the hypopygium, the eighth segment paler. Male hypopygium (Fig. 26) with the beak of the basistyle, b , stout and densely setiferous proximally, the apex very slender. Outer dististyle blackened, bifid at apex, the two arms very dissimilar, the outer one flattened, bent strongly laterad into a point, the inner arm a slender rod. Basal dististyle, bd , a long blackened rod, virtually straight, narrowed very gradually into an acute spine, at near midlength bearing a small acute thorn; no basal spine; surface of style virtually glabrous, with a single puncture about opposite the spine. Aedeagus, a , dilated at about midlength.

Habitat: Southeastern Brazil (Santa Catharina).

Holotype, ♂, Nova Teutonia, September 21, 1944 (Fritz Plaumann).

Although superficially much like *Molophilus (Molophilus) tridigitatus*, sp. n., the present fly is undoubtedly closer to *M. (M.) emarginatus* Alexander, from which it differs in the structure of the male hypopygium, especially of the basal dististyle, as described.

Molophilus (Molophilus) talamancensis, sp. n.

Belongs to the *plagiatus* group; size relatively large (wing, male, 5.8 mm.); antennae short; general coloration dark gray, the pretergal region of the thorax light yellow; antennae and legs brownish black to black; halteres brownish yellow; male hypopygium with the basal dististyle a strong simple blackened horn, strongly dilated at base, very gradually narrowed to the unusually long apical spine; phallosomic plate glabrous.

Male. — Length, about 5 mm.; wing, 5.8 mm.; antenna, about 1.5 mm.

Rostrum and palpi black. Antennae (male) black throughout, relatively short; flagellar segments oval to long-oval, with a delicate white pubescence and long unilaterally distributed verticils, the latter exceeding twice the length of the segments. Head black, brownish gray pruinose.

Pronotum obscure orange, more or less pruinose; pretergites and lateral ends of pronotum light yellow. Mesonotum and pleura dark gray; dorsopleural region restrictedly paler. Halteres obscure brownish yellow. Legs with the coxae and trochanters yellowish brown to brown, the fore coxae somewhat darker; remainder of legs brownish black. Wings with a strong grayish tinge, the prearcular and costal fields slightly more yellowed; stigma brown, small, at and beyond the end of vein *Sc*; veins brown, more yellowish brown in the brightened fields. Venation: R_2 lying a little distad of *r-m*; *m-cu* sinuous, nearly two-thirds as long as the petiole of cell M_3 ; vein *2nd A* strongly sinuous, ending a short distance beyond the outer end of *m-cu*.

Abdomen, including hypopygium, dark brown. Male hypopygium with the beak of basistyle relatively deep, with a slight protuberance on outer margin before the acute distal portion; surface of style surrounding the beak with a concentration of long yellow setae. Outer dististyle with the outer arm slightly expanded, the inner one more acute. Basal dististyle a strong simple blackened horn, strongly dilated at base, very gradually narrowed to the unusually long apical spine; surface with small scattered punctures. Phallosomic plate oval, glabrous.

Habitat: Costa Rica.

Holotype, ♂, El Muerte, Cordillera Talamanca, altitude 10,500 feet, May 20, 1946 (F. Martin Brown).

Despite the short antennae of the male sex, the present fly is most similar to species such as *Molophilus (Molophilus) falx* Alexander, *M. (M.) subfalcatu*s Alexander, *M. (M.) tenebricosus* Alexander, *M. (M.)*

subtenebricosus Alexander, and others, these having the male antennae elongate and with the vestiture of the same distinct. The details of the hypopygium in the present fly are likewise distinct.

Molophilus (Molophilus) tridigitatus, sp. n.

Belongs to the *piagiatus* group; mesonotum chiefly medium brown, the pleura almost uniformly dark brown; antennae short; halteres pale yellow; wings with a yellowish tinge; male hypopygium with the basal dististyle a massive blackened structure that divides at apex into three principal arms or points.

Male. — Length, about 4 mm.; wing, 4.4 mm.

Female. — Length, about 4.5 mm.; wing, 4.3 mm.

Rostrum and palpi black. Antennae relatively short, if bent backward extending to shortly beyond the wing-root; scape and pedicel yellow, flagellum brown; flagellar segments long-oval, with elongate verticils and an erect white pubescence. Head obscure orange.

Pronotum above, pretergites and humeral region of praescutum very pale yellow; remainder of mesonotum medium brown, the praescutum vaguely trivittate with this color; median region of scutum and the posterior border or scutellum obscure yellow; postnotum dark brown, the suture between mediotergite and pleurotergite yellow. Pleura almost uniformly dark brown; in male with a paler spot on mesepimeron; sternum paler. Halteres uniformly pale yellow. Legs with coxae yellow, the fore pair a trifle darker; trochanters yellow; remainder of legs yellow, the outer tarsal segments more infuscated. Wings with a yellowish tinge, the prearcular and costal fields somewhat clearer yellow; veins obscure yellow, macrotrichia very pale brown. Venation: R_2 lying shortly beyond the level of *r-m*; petiole of cell M_3 about one-fifth longer than *m-cu*; vein 2nd A long, ending about opposite one-third the length of the petiole of cell M_3 .

Abdomen dark brown; hypopygium brownish yellow. Male hypopygium (Fig. 27) with the beak of basistyle, *b*, stout, proximal portion setiferous, the outer half slender. Outer dististyle unequally bifid at apex, the outer arm truncated at tip, the inner one slender. Basal dististyle, *bd*, distinctive, appearing as a massive blackened structure that divides at apex into three principal arms or points, the outermost microscopically roughened on outer face; intermediate spine with scattered setiferous punctures. Phallosomic structure a bilobed setiferous pale cushion. Aedeagus, *a*, strongly dilated beyond midlength.

Habitat: Southeastern Brazil (Santa Catharina).

Holotype, ♂, Nova Teutonia, September 21, 1944 (Fritz Plaumann). Allotopotype, ♀, pinned with type.

The only regional species so far described that are at all similar to the present fly are *Molophilus (Molophilus) bidigitatus* Alexander and *M. (M.) triparcus* Alexander, which have the details of the male hypopygium, especially of the basal dististyle, quite distinct.

Molophilus (Trichomolophilus) tentator, sp. n.

General coloration of thorax black, sparsely pruinose, the praescutum with three conspicuous black stripes; antennae (male) relatively short; legs with very conspicuous hair fringes, especially on the femora, tibiae and fore basitarsi, the last elongate; male hypopygium with the basistyle slender; both phallosomic rods unusually long, especially the lateral pair.

Male. — Length, about 4 mm.; wing, 4.6 mm.

Rostrum and palpi black. Antennae with scape and pedicel black; basal flagellar segments dark brown; antennae broken beyond the fifth segment but evidently short, the basal three flagellar segments short-cylindrical, with long verticils. Head dark brown, with scattered black bristles and appressed procumbent white setae on posterior portion.

Pronotum dark brown, the scutellum obscure yellow. Mesonotum black, sparsely pruinose; praescutum with three conspicuous black stripes on a dark gray ground, median stripe narrow, on cephalic fourth of sclerite bordered on either side by lighter gray; interspaces with a few long and conspicuous erect black setae and appressed whitish ones. Pleura and pleurotergite black, sparsely pruinose; dorsopleural region more buffy. Halteres broken. Legs with the coxae dark brown; trochanters obscure yellow; remainder of legs with conspicuous hair fringes or brushes, most conspicuous on the femora, tibiae and fore basitarsi; ground color of legs yellow, the terminal tarsal segments black; setae black, conspicuous, especially on posterior tibiae; fore basitarsi longer than the tibiae or the remainder of tarsal segments combined; middle and hind basitarsi much shorter, about one-third the tibia. Wings with the ground light brown or yellowish brown, the surface obscured by abundant dark-colored setae over the entire membrane; veins light brown or yellowish brown. Venation: R_{2-3-4} preserved as a short element that is subequal in length to the basal section of R_5 or $r-m$; R_{2-3} longer, nearly erect, so all elements of the anterior cord

are in approximate transverse alignment; cell *1st M*₂ apparently closed; *m-cu* at fork of *M*; vein *2nd A* relatively short, ending some distance before the level of *m-cu*.

Abdomen black, the hypopygium paler, brownish yellow. Male hypopygium (Fig. 28) with the basistyle, *b*, very long and slender, both dististyles, *d*, apical, narrow, the more basal one strongly arcuate, its outer end an oval club. Both sets of phallosomic rods, *p*, unusually long, the lateral pair (possibly a basal dististyle, from its position) unusually long and very slender, gently sinuous, extending caudad to opposite the level of the outer dististyle.

Habitat: Southeastern Brazil (Rio de Janeiro).

Holotype, a fragmentary ♂, mostly on a slide, Sitio Bonfim, Nova Friburgo, Serra dos Orgãos, altitude 1000 meters, November 8, 1945 (Petr Wygodzinsky); resting on a leaf, in appearance much like a spider. Later, some further paratypic males were received.

The present fly differs from the two previously described members of the subgenus *Trichomolophilus*, *celator* Alexander and *multisetosus* Alexander, in the details of coloration and, especially, in the structure of the male hypopygium. In this latter respect, it is closest to *celator* but here the basistyles and the outer phallosomic rods are longer and more slender. The hair fringes on the legs appear to be longer and more conspicuous than in the other species but this may not represent a true condition. Our knowledge of species of this subgenus is still very insufficient.

Tasiocera Skuse

Tasiocera Skuse; Proc. Linn. Soc. New South Wales (2) 4: 815; 1890; (type *tenuicornis* Skuse).

Subg. *Dasymolophilus* Goetghebuer

Molophilus (*Dasymolophilus*) Goetghebuer; Bull. Soc. Ent. Belgique, 2: 132, fig.; 1920; (type *murina* Meigen).

A single species, *brevicornis* Alexander, occurs in the Chilean subregion. Elsewhere the few known members are Holarctic, evenly distributed over the entire area, with species in Europe; China, Japan and Formosa; western United States; eastern United States.

The genus is distinguished by the venation and by the presence of scattered macrotrichia in the outer wing cells. It should be noted that this latter character of hairy wings is not entirely diagnostic there being a few species of *Molophilus* that have even more abundant trichia in the cells. The fundamental

plan of the male hypopygium, that is, a single dististyle present, is of generic value but here again there are species of *Molophilus* that have such a character. These include *Molophilus (Molophilus) monostylus* Alexander, discussed earlier (Fig. 22), as well as various species in New Guinea.

Styringomyia Loew

Styringomyia Loew; Dipt. Beitr., 1: 6; 1845; (type *venusta* Loew).

Styringia Berendt; Die im Bernstein befindlichen organischen Resten der Vorwelt, 1: 57; 1845; (no type).

Idiophlebia Grünberg; Zool. Anzeig., 26: 524-528, figs.; 1903; (type *didyma*, as *pallida* Grünberg).

Pycnocrepis Enderlein; Zool. Jahrb., 32, pt. 1: 65, figs.; 1912; (type *annulipes* Enderlein).

Mesomyites Cockerell; Proc. U. S. Nat. Mus., 52: 377, fig.; 1917; (type *concinna* Cockerell).

A very isolated group that had earlier (Alexander, Cornell Univ. Mem. 38: 957-959; 1920) been considered as representing a tribe, the Styringomyini. More recently it had been placed as a subtribe, the Styringomyaria, as in the present paper.

The included species are small midge-like flies of very characteristic appearance. When resting, they lie close to the surface, with the fore and middle legs extended straight ahead, the posterior pair directed backward. Body and legs with scattered strong setae, in certain species the bristles even more flattened and modified, with a definite chaetotaxy. Wings with Sc short, Sc_1 ending opposite the origin of R_s or nearly so; vein R_2 lacking; R_{1-2} ending only a short distance beyond the origin of R_s , there being an unusually wide space on costa between the tips of veins R_{1-2} and R_4 and especially between R_4 and R_5 , with vein R_3 interpreted as being atrophied; element R_{2-3-4} very short to lacking, in the latter case with R_4 arising at the fork of R_s , as figured; R_4 oblique to nearly transverse, in our species approximately one-third the length of R_s ; R_s in longitudinal alignment with R_5 ; cell 1st M_2 elongate, m reduced or entirely lost, in the latter case the basal section of M_3 very long, comprising the entire outer end of cell 1st M_2 ; in cases, veins M_{1-2} and M_3 are extensively fused beyond cell 1st M_2 , forming a short to long element M_{1-2-3} ; $m-cu$ approximately its own length or more beyond the fork of M ; vein 2nd A simple in our species, angulated and spurred near its tip in various Palaeotropical forms. (Fig. 29, *mystica*). Osten Sacken earlier (Mon. Dipt. N. Amer., 4: 103; 1869) had noted that certain features of the venation, particularly of the radial field,

are very much as in *Toxorhina*, next considered, but it should be noted that all other features of the venation, as well as the body structure, are entirely different in the two groups. Male hypopygium with the entire organ inverted to 180° so the tergite occupies the ventral position, the sternite the dorsal one. There is a single dististyle that becomes vastly modified and complex in various Palaeotropical species. Ovipositor with the valves short and blunt.

In America, the relatively few species occur from Central America to southern Brazil and Bolivia, chiefly at low and moderate altitudes. In the Old World at least 80 species are known, wide-spread throughout the tropical and subtropical lands. There is an abundance of forms in the Ethiopian and Oriental Regions, with fewer species in the southern Palaearctic and into

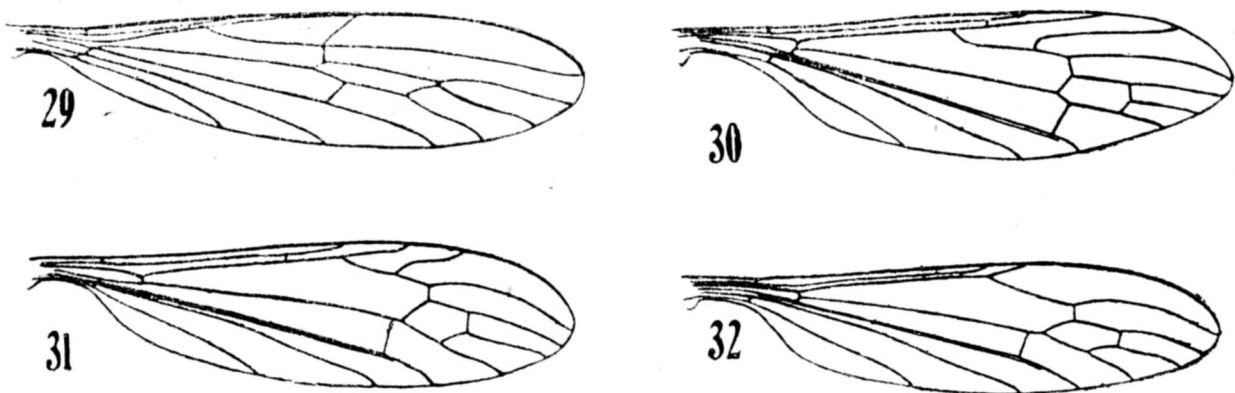


Fig. 29. *Styringomyia mystica* Alexander; venation. — Fig. 30. *Toxorhina (Ceratocheilus) leucostena* Alexander; venation. — Fig. 31. *Toxorhina (Ceratocheilus) superstes* Alexander; venation. — Fig. 32. *Toxorhina (Toxorhina) trilobata* Alexander; venation.

the Australasian Region. One species occurs as far north as eastern Siberia where there is a noteworthy northern extension of the Oriental biota. Another species (*didyma* Grimshaw) is very widespread over many of the Pacific islands, as far north as Hawaii. It is of interest to note that this genus was found fossil in Baltic Amber (Lower Oligocene) and in copal many years before the first living species were described. Despite the fact that so relatively few species occur in America, as compared with their distribution in the tropics of the Old World, the very generalized structure of the male hypopygium of our forms may indicate that the group had an American origin.

The immature stages occur in decaying organic matter, such as banana fibre, rotting palm trees, and the like (Alexander, Cornell Univ. Mem. 38: 959; 1920; Edwards, Ann. Mag. Nat. Hist., (9) 13: 267-269; 1924).

List of Species

- americana* Alexander. — British Honduras, Costa Rica, Colombia, Venezuela, British Guiana, Surinam, Ecuador.
dorsolineata Alexander. — Ecuador.
mystica Alexander. — Peru.
paulista Alexander. — Southeastern Brazil.
simplex Alexander. — British Guiana, Peru.

The fly recorded by me from the Bolivian Chaco, collected by Lindner (Konowia, 12: 46; 1933) and determined as being *americana* must be held in question until more material of the species can be secured.

Toxorhina Loew

- Limnobiorhynchus* Westwood; Ann. Soc. Ent. France, 4: 683, in part; 1835; (type *brasiliensis* Westwood).
Toxorhina Loew; Linnaea Entomol., 5: 400; 1851; (type *fragilis* Loew).
Toxorhina Osten Sacken; Mon. Dipt. N. America, 4: 109-114; 1869; (emendation of last).
Neoceratocheilus Wesché; Journ. Linn. Soc. Zool., 30: 1910; (type *grahami* Wesché).

Subgenus *Ceratocheilus* Wesché

- Ceratocheilus* Wesché; Journ. Linn. Soc., Zool., 30: 358; 1910; (type *winn-sampsoni* Wesché).
Styringomyia (*Neostyringomyia*) Alexander; Can. Ent., 44: 85; 1912; (type *cornigera* Speiser).
Conithorax Brunetti; Rec. Indian Mus., 15: 298; 1918; (type *latifrons* Brunetti).

Mr. J. Aspinall Turner collected three small crane-flies at Bahia, Brazil, that were later described by Westwood as *Limnobiorhynchus brasiliensis* (Ann. Soc. Ent. France, 4: 683; 1835) and thereby set the stage for the most controversial synonymy in the Tipulidae. It was later found that the two males of this supposed single species actually belong to the genus *Limonia* Meigen, subgenus *Geranomyia* Haliday, 1833, whereas the single female was a member of the genus *Toxorhina*, as here considered.

The problem is unique in the family in that two entirely distinct crane-flies were given a single name and it has become necessary to attempt to decide whether the law of priority, in this case, decision of generic position, can apply. If there is priority in such a case, it would seem that Osten Sacken (1869, see references at end of this discussion) had settled the matter when he discarded the genus *Limnobiorhynchus* on the argument that the male sex had earlier been described as *Limonia* (*Geranomyia*) Haliday and that at least this part of the name fell into the synonymy of the latter group. In 1881 Westwood reviewed the case and admitted that the male

sex of his supposed genus fell in the synonymy of *Geranomyia* and thereupon attempted to restrict the name to the female sex, or *Toxorhina*, as here treated. In the very detailed discussions of the pros and cons of the case, as cited below, there are to be found all possible opinions, some students of the family siding with Westwood and recognizing the name *Limnobioryhnchus*, while still others considered that the matter would be most readily settled by discarding the name *Limnobioryhnchus* and adopting the term *Toxorhina*. On the basis of first selection of names by Osten Sacken I believe that the case will be most fairly adjusted by following his suggestion and discarding the name *Limnobioryhnchus* as being a composite and having no status. In 1910, Coquillett selected the *Geranomyia (brasiliensis)* as the type of *Limnobioryhnchus*, thereby confirming the above synonymy. Since there were two very distinct flies standing under the same specific name *brasiliensis* Westwood, 1835, Brunetti (Rec. Indian Mus., 15: 298; 1918, and 17: 229; 1920) held that the female could not bear the same specific name as the male and re-named the fly of this sex as *Toxorhina westwoodi*. I can see no possible justification for such a step.

Further complicating the general problem between 1910 and 1920, several students of the Tipulidae, as Bergroth, Brunetti and Enderlein, added to the confusion by maintaining that the genus *Aporosa* Macquart, 1838 (now and earlier placed in the synonymy of *Limonia: Geranomyia*) was actually the prior name for what we had been calling *Elephantomyia* Osten Sacken. The mistake was soon recognized but not before considerable literature had appeared to further complicate the subject. All in all the confusion in names in *Elephantomyia* and *Toxorhina* is the most involved in the literature of the entire family.

Detailed discussions concerning the nomenclatorial problem in *Toxorhina* may be found in the following papers:

- Loew, H., Linnaea Entomologia, 5: 400; 1851.
- Schiner, J., Reise Navarra, Diptera, p. 33; 1868.
- Osten Sacken, C. R., Mon. Diptera N. America, 4: 106-114; 1869.
- Westwood, J. O., Trans. Ent. Soc. London, 1881: 373-374; 1881.
- Bergroth, E., Ann. Mag. Nat. Hist., (8) 11: 580; 1918.
- Brunetti, E., Rec. Indian Mus., 15: 300-304; 1918.
- Alexander, C. P., Proc. Acad. Nat. Sci. Philadelphia 1921: 90; 1921.
- Alexander, C. P., Bernstein-Forschungen, 2: 87-88; 1931.

The genus *Toxorhina* is extremely well defined, not only by the elongate rostrum but by the greatly lengthened cervical

region, with the anterior part of the mesonotal praescutum jutting forward over the base of the latter. The rostrum in many species exceeds in length the entire body or wing, bearing the reduced mouthparts at the tip. The genus *Elephantomyia* Osten Sacken (Part V of this series of papers) has this same general type of rostrum but I do not consider that the two groups are closely allied. The antennae of *Toxorhina* are peculiar, in the male 12-segmented, with several basal segments united into a truncate-conical fusion-segment, the flagellar articles, excepting the last two, glabrous, the outer pair with very long and conspicuous verticils. In the female the antennae are apparently 14 or 15 segmented, with the outer four or five articles provided with elongate verticils. The venation, as further defined below, is very reduced, particularly in the typical subgenus where a single branch of *Rs* reaches the margin. In *Ceratocheilus* the anterior branch of *Rs* is preserved and, in the Tropical American species, is longitudinal or oblique in position. In the subgenus *Eutoxorhina* Alexander (*simplex* Alexander; Australasian Region, Fiji), the venation shows the greatest reduction in any known Tipulid, with both the anterior branch of *Rs* and vein M_3 atrophied so only eight veins reach the wing margin. In *Toxorhina*, s. s., (Fig. 32, *trilobata*) there are nine branches; in *Ceratocheilus* (Fig. 30, *leucostena*; Fig. 31, *superstes*) ten such branches.

The venation of *Toxorhina*, s. s., has *Sc* short, Sc_1 ending opposite or just beyond the origin of *Rs*, Sc_2 a short distance from the tip of Sc_1 and usually before the origin of *Rs*; R_{1-2} beyond *Rs* short to very short, ending about opposite one-third the length of *Rs*; all branches of *Rs* excepting R_5 atrophied, the latter vein ending close to the wing tip, cell R_2 at margin thus very wide. Cell 1st M_2 closed or, in cases, open by the atrophy of *m*; in *distalis* cell 1st M_2 is very long and *r-m* lies far distad so *Rs* is longer than R_5 ; *m-cu* usually close to the fork of *M*, in *distalis* some distance beyond, in other species a little before the fork. Vein 1st *A* on basal third or more lying parallel and very close to *Cu*, thence diverging to the margin; in dry specimens an appearance is given of a basal fusion of *Cu* and 1st *A* but this is not the case. Anterior arculus preserved; interanal crossveins lying opposite or just before the level of *h* and far before the level of arculus. (Fig. 32, *trilobata*). Macrotrichia of veins usually lacking or very reduced; in *viola-*

ceipennis, *Rs* and the veins beyond cord with very long and abundant trichia.

The venation of *Ceratocheilus* is much as in *Toxorhina*, s. s., but more generalized, distinguished by the retention of the anterior branch of *Rs*; in *americana* this is a little longer than *Rs*, oblique in position. In various other Neotropical species, the anterior branch of *Rs* is long and extends generally parallel to the posterior one so it is much longer than *Rs*. (Fig. 30, *leucostena*). In such species, vein *Sc* is longer than usual and *Sc*₂ lies some distance beyond the origin of *Rs*. In these latter species, the apparent approximation of veins *Cu* and *1st A* at their bases is not or scarcely shown and the venation of this field is virtually as in other Tipulidae (as in *chiapasensis*). Similarly the posterior prearcular crossveins, including the interanal, lie much closer to arculus.

Male hypopygium of peculiar structure. Basistyle with or without an apical spine. Dististyle single, of various shapes, providing good specific characters. Aedeagus deeply to profoundly bifid (as in *stenophallus*), in the usual cases more or less resembling a tuning fork. Ovipositor with the cerci long and slender, gently upcurved to the acute tips; hypovalvae shorter and more compressed.

One of the most peculiar and diagnostic characters of the entire subtribe is found in the profoundly bifid setae that clothe the legs. Nothing similar to this is found elsewhere in the Tipulidae so far as known to me.

Toxorhina, s. s., has a wide distribution in the Americas, with two species in the eastern Nearctic, at least one of which occurs as far north as Canada. Various species are common and wide-spread in the American Tropics, including the Bahamas and Antilles. Elsewhere in the world a relatively few forms occur in the Ethiopian and Oriental Regions, with other members occurring at least as far east as New Guinea. *Ceratocheilus* has a somewhat different range, the few American species being strictly tropical. There are relatively few species in the Ethiopian and Oriental Regions. In Australasia the range is more extensive than in the case of the typical subgenus, with species in eastern Australia, including Tasmania, in New Caledonia, and in New Zealand.

The immature stages have not been described.

List of Species

Toxorhina

- atripes* Alexander. — Colombia.
brasiliensis (Westwood). — Brazil.
centralis Alexander. — Mexico, Guatemala, British Guiana, Brazil.
curvata Alexander. — Ecuador.
distalis Alexander. — Bahamas.
domingensis Alexander. — Cuba, Hispaniola.
flavida Alexander. — Brazil.
fragilis Loew. — Puerto Rico.
 (*fumipennis* Alexander, see *infumipennis* Alexander).
infumipennis Alexander. — Lesser Antilles: Dominica.
longicollis Pierre. — Venezuela.
mendoza Alexander. — Southeastern Brazil.
meridionalis Alexander. — Brazil.
nigrivena Alexander. — Costa Rica.
pergracilis Alexander. — Peru.
polycantha Alexander. — Venezuela.
stenophallus Alexander. — Venezuela, Brazil.
trilobata Alexander. — Mexico.
violaceipennis Alexander. — Cuba.
 (*westwoodi* Brunetti, name proposed for *brasiliensis* Westwood).

Ceratocheilus

- americana* (Alexander). — Costa Rica, Colombia, Peru, Brazil.
atritarsis Alexander. — Ecuador.
chiapasensis Alexander. — Mexico.
leucomelanopus (Enderlein). — Colombia.
leucostena Alexander. — Surinam.
maculipennis Alexander. — Southeastern Brazil.
niveitarsis Alexander. — Panama, Colombia.
prolongata Alexander. — Southeastern Brazil.
superstes Alexander. — Peru.