Notes on the Tropical American Species of Tipulidae (Diptera). II. The Primitive Eriopterini: Sigmatomera, Trentepohlia, Gnophomyia, Neognophomyia, Gonomyia, and Allies.

By Charles P. Alexander,
University of Massachusetts, Department of Entomology, Amherst, Massachusetts.

(With 31 figures)

In the present report I am discussing briefly the various Tropical American genera that are considered as falling within the limits of the more generalized Eriopterini, as delimited by the reduced mesothoracic meron. This important character contrasts with the apparently more specialized one of an enlarged meron, producing a so-called "pot-bellied" effect, as found in the higher Eriopterini. In this latter series of genera the meron has become detached from the middle coxa and is adherent to the ventral region of the mesepimeron, resulting in a wide separation of the middle and hind legs. In the genera here discussed the meron is much smaller and the middle and hind coxae are much more approximated. The very significant paper by Crampton (Insec. Inscit. Menst., 13: 197-213, pls. 2-3; 1925) is basic for any work on this tribe of the Tipulidae. In this study Crampton has described and figured the thoracic pleurites and sternites of one of the genera *(Neolimnophila)* considered in the present report, as well as that of *Teucholabis,* discussed in the preceding paper under this general title. It should be emphasized that *Teucholabis* is likewise a member of these more primitive Eriopterini. Edwards (1938) has included *Rhabdomastix* Skuse in this section of the Eriopterini but to this procedure I cannot agree and the genus will be considered in Part III of this series of papers where the more specialized genera of the Eriopterini will be discussed.

The exact position in tribes of the genera here treated, together with *Teucholabis,* may be held in question and these may perhaps be transferred to the tribe Hexatomini, despite the loss of tibial spurs. In such a case, the tribal name would be restricted to the above-mentioned "pot-bellied" series to be discussed in the next paper. For the present, at least, I prefer to adhere to the adopted treatment, a course followed by Edwards (1938) and by the writer in all recent taxonomic papers on the Tipulidae. On the basis of presence or absence of tibial spurs, I am treating *Lecteria* Osten Sacken as being

Hexatomine and this genus, with its subgenus *Psaronius* Enderlein, will be discussed later in this series of papers. The reasons for considering *Neolimnophila* in the primitive Eriopterini have been given later in the discussion of that genus.

The following genera and subgenera fall in this section.

Genera	Subgenera
Neolimnophila Alexander	
Philippiana Alexander	
Sigmatomera Osten Sacken:	*Austrolimnobia* Alexander
	Eufurina Alexander
	Sigmatomera Osten Sacken
Trentepohlia Bigot:	*Neomongoma* Alexander
	Promongoma Alexander
	Mongoma Westwood
	Paramongoma Brunetti
Gnophomyia Osten Sacken:	*Eugnophomyia* subgen. n.
	Gnophomyia Osten Sacken
Quechuamyia Alexander	
Aymaramyia Alexander	
Gymnastes Brunetti:	*Paragymnastes* Alexander
Jivaromyia Alexander	
Neognophomyia Alexander	
Gonomyia Meigen:	*Progonomyia* Alexander
	Gonomyina Alexander
	Idiocera Dale
	Euptilostena Alexander
	Gonomyia Meigen
	Lipophleps Bergroth
	Paralipophleps subgen. n.
	Neolipophleps subgen. n.
Aphrophila Edwards	
Lipsothrix Loew	
Teucholabis Osten Sacken (as considered in Part I)	

Neolimnophila Alexander

Limnophila (Neolimnophila) Alexander; Proc. California Acad. Sci. (4) 10: 37-38; 1920.

A small genus of essentially Holarctic crane-flies, with a single species in the Peruvian Andes. *Neolimnophila andicola* Alexander (Fig. 1): Peru (Ayacucho), 3,000-4,100 meters.

In *Neolimnophila* the fore tibiae are unspurred but the presence of large spurs on the middle and hind tibiae of the genotype and other species renders the position of this genus in tribes somewhat questionable. From the somewhat obvious relationship with *Cladura* Osten Sacken, *Crypteria* Bergroth and *Chionea* Dalman, all of which lack tibial spurs, the group (Cladura) has been placed among the generalized Eriopterini. The

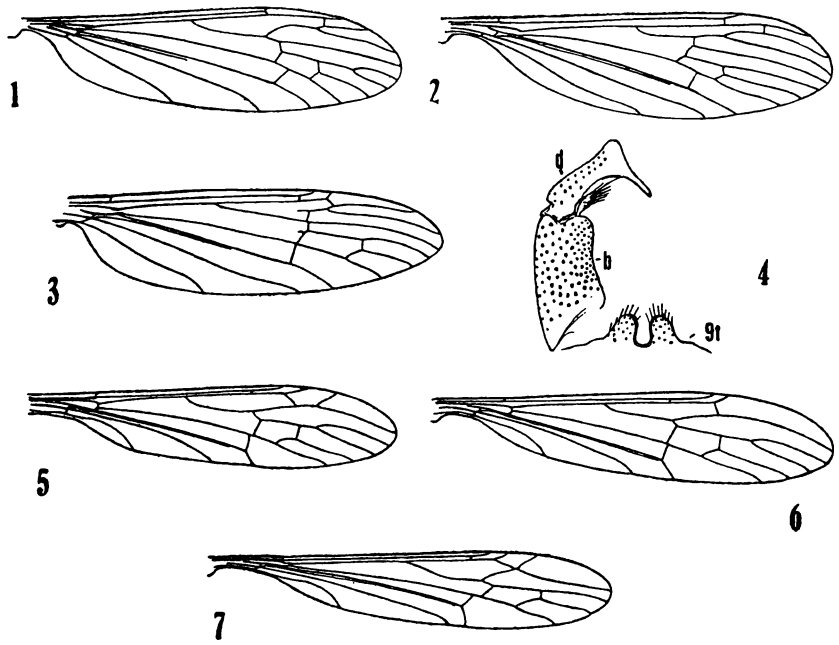

Fig. 1. *Neolimnophila andicola* Alexander; venation. — Fig. 2. *Philippiana egregia* Alexander; venation. — Fig. 3. *Sigmatomera (Sigmatomera) flavipennis* Osten Sacken; venation. — Fig. 4. *Sigmatomera (Sigmatomera) angustirostris*, sp. n.; male hypopygium. (Symbols: *b*, basistyle; *d*, dististyles; *t*, tergite). — Fig. 5. *Trentepohlia (Neomongoma) fuscoterminalis* Alexander; venation. — Fig. 6. *Trentepohlia (Promongoma) mirabilis* Alexander; venation. — Fig. 7. *Trentepohlia (Paramongoma) petulans* Alexander; venation.

case of *Lecteria* Osten Sacken, mentioned earlier, is somewhat comparable.

Soot-Ryen (1928) has proposed the genus *Crypteriella* for a fly from Arctic Siberia, basing the group on the false assumption that *Neolimnophila* had spurs on all tibiae. The species *Crypteriella sverdrupi* Soot-Ryen is based on a single female that appears to be a synonym of *Neolimnophila placida* (Meigen) (*hyalipennis* Zetterstedt).

Philippiana Alexander

Philippiana Alexander; Dipt. Patagonia and South Chile, 1: 175-177, figs. 97, 216-218; 1929.

A peculiar genus represented by a species in southern Patagonia and Chile, with one further doubtfully assigned form.

egregia Alexander (genotype). — Chile, Patagonia.

? *pilosipes* Alexander. — Southern Chile.

The affinities of *Philippiana* appear to lie with the tribe Cladurini, especially *Cladura* Osten Sacken, *Chionea* Dalman

and some other autumnal and winter crane-flies of the Holarctic Region. The wing of *egregia* is shown (Fig. 2). A full characterization, with figures, was provided at the time of defining the genus.

Sigmatomera Osten Sacken

Sigmatomera Osten Sacken; Mon. Dipt. N. America, 4: 137; 1869. Besides the typical subgenus, there are two further subgenera:
Austrolimnobia Alexander; Rec. South Australian Mus., 2: 239; 1922. Syn. *Astelobia* Edwards; Trans. New Zealand Inst., 54: 297-298; 1923 (described as *Gnophomyia*, subgenus *Astelobia*).
Eufurina Alexander; Journ. N. Y. Ent. Soc., 54: 307; 1946 (new name for *Furina* Jaennicke, 1867, *nec Furina* Dumeril, 1853).

The species of *Sigmatomera* and *Eufurina* are restricted to the American Tropics, ranging from Mexico to Paraguay and southern Brazil in the case of the former. *Austrolimnobia* is best known from Chile and southeastern Brazil but has one representative as far north as Mexico, and also with further species in Australia and New Zealand. For a discussion of the typical subgenus, including the biology, see Alexander, C. P., Encycl. Entomol., Diptera, 5: 155-162, 8 figs.; 1930; for a discussion of *Austrolimnobia* (as *Astelobia*), see Alexander, C. P., Dipt. Patagonia and South Chile, 1: 178-179, figs. 89, 219; 1929.

The wing of *flavipennis* is shown (Fig. 3).

List of Species.

Austrolimnobia

bullocki (Alexander). — South Chile.
magnifica (Alexander). — Mexico.
maiae (Alexander). — South Chile.
plaumanniana Alexander. — Southeastern Brazil.
woytkowskiana Alexander. — Peru.

Eufurina

rufithorax (Wiedemann). — Brazil.

Sigmatomera

aequinoctialis Alexander. — Ecuador.
amazonica Westwood. — Amazonian Brazil.
angustirostris, sp. n. — Southeastern Brazil.
apicalis Alexander. — British Guiana.
flavipennis Osten Sacken (genotype). — Mexico.
geijskeana Alexander. — Surinam.
occulta Alexander. — Paraguay.
pictipennis Alexander. — Southeastern Brazil.
seguyi Alexander. — Costa Rica.
shannoniana Alexander. — Eastern Brazil.

Sigmatomera (Sigmatomera) angustirostris, sp. n.

Very similar in its general appearance to *occulta* Alexander, differing especially in the details of structure of the male hypopygium. Ninth tergite (Fig. 4) with the rounded intermediate lobes small, separated by a deep rectangular notch; in *occulta,* the lobes larger, the notch much more extensive. Dististyle, *d,* with the beak long and slender, without a conspicuous lateral flange, as in *occulta.*

Habitat: Southeastern Brazil.

Holotype, ♂, Nova Teutonia, Santa Catharina, December 13, 1938 (Plaumann). Paratopotype, ♂, February 26, 1937 (Plaumann). Types in Alexander Collection.

Trentepohlia Bigot

Trentepohlia Bigot; Ann. Soc. Entomol. France, (3) 2: 456, 473; 1854.
Besides the typical subgenus, which is Palaeotropical, four additional subgenera occur in Tropical America:
Neomongoma Alexander; Journ. N. Y. Ent. Soc., 27: 140; 1919 (described as *Trentepohlia,* subgenus *Neomongoma*).
Promongoma Alexander; Ann. Mag. Nat. Hist., (11) 1: 353, fig. 8; 1938 (described as *Trentepohlia,* subgenus *Promongoma*).
Mongoma Westwood; Trans. Ent. Soc. London 1881: 364, pl. 17, fig. 1; (1881).
Paramongoma Brunetti; Rec. Indian Mus., 6: 295; 1911. Syn. *Mongomella* Enderlein; Zool. Jahrb., Syst., 32: 61; 1912.

The subgenera *Neomongoma* and *Promongoma* are restricted to Tropical America. The occurrence of a single species of *Mongoma* in Tropical America is especially noteworthy and difficult of explanation. In the Palaeotropics, the subgenus is vastly developed, occurring in the Ethiopian, Oriental and Australasian Regions, with various species on certain of the Pacific Islands, including Fiji and Samoa. In America, all species of *Paramongoma,* the dominant subgenus, are tropical, the most northerly species occurring in Puerto Rico, Jamaica and Mexico, the most southerly in northern Argentina. In the Old World, much fewer species occur in Africa and in the Oriental and Australasian Regions.

The immature stages of certain of the Old World species occur in decaying plant matter. Some of the American species (as *bromeliadicola, leucoxena*) live in the detritus gathered in the leaf axils of bromeliads, a habitat that may be far more common than has been determined to the present time (see Picado, C., Les broméliacées epiphytes, Bull. Soc. Zool. Paris, 37: 356-357, text-figs. 50, 51, pl. 13, figs. 1, 2, 4; 1912; *T. (P.) bromeliadicola).*

defined, see Alexander, C. P., Ann. Mag. Nat. Hist., (11) 1: 354; 1938. It should be noted that the complete atrophy of vein R_3 in *Promongoma* is similarly a character of the Palaeotropical subgenera *Anchimongoma* Brunetti and *Plesiomongoma* Brunetti.

The wing figures include *Trentepohlia (Neomongoma) fuscoterminalis* (Fig. 5), *T. (Promongoma) mirabilis* (Fig. 6) and *T. (Paramongoma) petulans* (Fig. 7).

List of Species.

Neomongoma

disjuncta (Alexander). — Southeastern Brazil.
fuscoterminalis Alexander. — Southeastern Brazil.
mesonotalis Alexander. — Southeastern Brazil.
sordidipennis Alexander. — Southeastern Brazil.
suberecta Alexander. — Ecuador.
zernyi Alexander. — Amazonian Brazil.

Promongoma

mirabilis Alexander. — Ecuador.

Mongoma

errans Alexander. — Ecuador.

Paramongoma

amatrix Alexander. — Southeastern Brazil.
bromeliadicola (Alexander). — Costa Rica.
calliope Alexander. — Peru.
chiriquiana Alexander. — Panama.
concumbens Alexander. — Southeastern Brazil.
cubitalis Alexander. — Southeastern Brazil.
disparilis Alexander. — Peru.
ditzleri Alexander. — Venezuela.
dominicana, sp. n. — Puerto Rico, Dominica.
extensa (Alexander). — Panama, British Guiana, Brazil.
faustina Alexander. — Southeastern Brazil.
femorata Alexander. — Amazonian Brazil.
flavella Alexander. — Amazonian Brazil.
fuscipes (Alexander). — Amazonian Brazil.
geniculata (Alexander). — British Guiana, Amazonian Brazil.
laudabilis Alexander. — Peru.
leucoxena (Alexander). — Mexico.
longifusa (Alexander). — Amazonian Brazil, Ecuador, Peru.
manca (Williston). — Lesser Antilles: St. Vincent.
metatarsata (Alexander). — Southeastern Brazil.
niveitarsis (Alexander). — Puerto Rico, Jamaica.
pallida (Williston). — Lesser Antilles; Brazil.
pallipes (Alexander). — British Guiana, Amazonian Brazil.
petulans Alexander. — Southeastern Brazil.
roraimicola Alexander. — Venezuela.
sororcula (Alexander). — Panama.
subleucoxena Alexander. — Mexico.
tucumana Alexander. — Argentina.

Trentepohlia (Paramongoma) dominicana, sp. n.

General coloration of mesonotum reddish yellow, the praescutum with a capillary brown vitta on cephalic half; rostrum yellow; halteres weakly infuscated; legs brownish black, the tarsi paling to light yellow; wings subhyaline, vaguely patterned with pale brown, including the tip and seams over the cord and along vein *Cu;* stigma dark brown, oval; vein *2nd A* strongly and evenly arched, the cell wide; abdominal tergites buffy yellow, the caudal borders of the segments narrowly ringed with pale brown.

Male. — Length, about 7-8 mm.; wing, 6-7 mm.; hind leg, femur, 11 mm.; tibia, 11.5 mm.; tarsus, 10.5 mm.

Rostrum obscure yellow; palpi brown. Antennae black; flagellar segments subcylindrical. Head brownish gray; anterior vertex very narrow, reduced to a linear strip that is only about as wide as a single row of ommatidia.

Pronotum and mesonotum almost uniformly reddish yellow, virtually unpatterned; praescutum with indications of a capillary brown vitta on cephalic half; scutal lobes very weakly darkened; central region of scutum and the scutellum more whitish pruinose; postnotum slightly infuscated. Pleura and pleurotergite chiefly pale yellow. Halteres weakly infuscated, especially the knobs. Legs with the coxae and trochanters yellow, the fore coxae a trifle more darkened; remainder of legs brownish black, the tarsi paling to light yellow, the color involving all the segments; legs, especially the hind pair, very long (see measurements). Wings subhyaline, vaguely patterned with pale brown, including the tip and vague washes over the cord and in cell *M* adjoining vein *Cu*; stigma dark brown, oval and more nearly vertical in position than in *manca;* prearcular field and costal region a trifle more yellowed; veins dark brown, those in the brightened portions slightly more yellowed. Venation: *Rs* somewhat longer and more arcuated than in *manca*; distance on margin between Cu_1 and *1st A* subequal in extent to *m;* vein *2nd A* strongly and evenly arched, not subangulate as in *manca,* the cell correspondingly wide.

Abdominal tergites buffy yellow, the caudal borders of the segments narrowly ringed with pale brown; sternites clear yellow; hypopygium obscure testaceous or buffy.

Habitat: Antilles.

Holotype, ♂, La Chaudiere, Hempstead River, Dominica, British West Indies, May 15, 1940 (Walter H. Hodge). Paratype, ♂, El Yunque, Puerto Rico, altitude 2600 feet, in sierra palm forest, May 25, 1945 (Harry D. Pratt). Types in Alexander Collection.

The most similar species is *Trentepohlia (Paramongoma) manca* (Williston), of St. Vincent, of which I possess a paratype male received through exchange with Edwards (windward side of island, altitude 1000 feet, H. H. Smith). In this latter the details of coloration are different, including the yellow halteres and uniform abdominal segments. The wings are more nearly hyaline, with the stigma pale brown, nearly circular in outline and with the venational details different, including the more angulated vein *2nd A*, with the cell correspondingly narrow.

Gnophomyia Osten Sacken

Gnophomyia Osten Sacken; Proc. Acad. Nat. Sci. Philadelphia 1859: 223.

The typical subgenus (type, *tristissima* Osten Sacken; Nearctic) is widespread throughout Tropical America, from Mexico to Chile, including the Greater Antilles. Elsewhere in the World there are relatively few species in the Holarctic and Oriental Regions. The genus *Gnophomyia* has long served as a receptacle for flies having the same general appearance but actually belonging to distinct genera. Thus various species of *Aphrophila* Edwards in New Zealand were originally assigned to *Gnophomyia* both by Edwards and myself. In similar manner, New Zealand species of the subgenus *Campbellomyia* Alexander of the genus *Ctenolimnophila* Alexander (Hexatomini) were so placed. Various species of *Neognophomyia* were originally described as members of *Gnophomyia* before the two genera were finally separated. The true position of the South African *Gnophomyia capicola* Alexander mey be held in question until the male sex can be studied. Further notes on other Tropical American species erroneously assigned to *Gnophomyia* are given at the end of the lists of species. At this time I am isolating a characteristic group of American *Gnophomyia* under the new name of *Eugnophomyia* (type, *luctuosa* Osten Sacken).

The characters of the typical subgenus have been given in full by Edwards (Trans. Soc. British Ent., 5, pt. 1: 104; 1938) and need not be repeated here.

Eugnophomyia, subgen. nov.

Faint traces of tuberculate pits at extreme cephalic border of praescutum. Macrotrichia in outer wing cells, sometimes reduced in number but usually very abundant. Male hypopygium with the

basistyle produced far beyond the point of insertion of the dististyles.

Type of subgenus: *Gnophomyia (Eugnophomyia) luctuosa* Osten Sacken (Eastern Nearctic).

Besides the subgenotype, the southwestern Nearctic *G. (E.) apache* Alexander belongs here, as also the following Neotropical species.

azrael Alexander. — Peru.
curraniana Alexander. — Panama.
darlingtoni Alexander. — Cuba.
flagrans Alexander. — Costa Rica.
funebris Alexander. — Eastern Brazil.
funerea Alexander. — Southeastern Brazil.
leucoplaca Alexander. — Amazonian Brazil.
melancholica Alexander. — Paraguay.
pammela Alexander. — Paraguay.
posticata Alexander. — Costa Rica.
tempestiva Alexander. — Peru.
vivas-berthieri Alexander. — Venezuela.

The subgenotype, *luctuosa,* is nearly restricted to the Austral zones of the southeastern United States. In Tropical America, the true home of the subgenus, species occur from Cuba and Central America southward to southeastern Brazil and Paraguay. The South African species that center about *elegans* (Wiedemann) may be found to be consubgeneric without too great distortion of the subgeneric characters (some of the species lack macrotrichia in the wing cells; for key, see Alexander, C. P., Rev. Zool. Bot Africaine, 19: 356-358; 1930).

Based on the structure of the male hypopygium, this subgenus seems closer to *Aymaramyia* Alexander, discussed later, and it seems possible that it may later be transferred to *Aymaramyia* despite the glabrous wings and venational differences of the latter.

Gnophomyia s. s.

The various American species listed below seem to be correctly placed in the restricted subgenus *Gnophomyia,* although a few are still insufficiently known, while others (as *arcuata* and allies; *teleneura*) are more isolated. Based on the fundamental structure of the male hypopygium, definite relationships are shown with the genus *Quechuamyia* Alexander, discussed latter.

acricula Alexander. — Colombia.
apicularis Alexander. — Costa Rica.
arcuata Alexander. — British Guiana.
argutula Alexander. — Ecuador.
axillaris Alexander. — Peru.
banksiana Alexander. — Panama.

bulbibasis Alexander. — Ecuador.
caloptera Osten Sacken. — Brazil.
chilota Alexander. — Chile.
coxitalis Alexander. — Ecuador.
diazi Alexander. — Puerto Rico, Nevis.
dictena Alexander. — Ecuador.
digitiformis Alexander. — Venezuela.
distifurcula Alexander. — Peru.
duplex Alexander. — Ecuador.
emarginata Alexander. — Panama.
(fascipennis Osten Sacken, see *osten-sackeni).*
ferruginea Williston. — Mexico.
fessa Alexander. — Venezuela, Ecuador.
flebilis Alexander. — Ecuador.
fuscocostalis Alexander. — Venezuela.
justa Alexander. — Southeastern Brazil.
justoides Alexander. — Southeastern Brazil.
kertesziana Alexander. — Peru.
lachrymosa Alexander. — Panama.
lata Alexander. — Peru.
laticincta Alexander. — Panama.
longiterebra Alexander. — Peru.
longitergata Alexander. — Peru.
maestitia Alexander. — Peru.
magica Alexander. — British Guiana.
molinae Alexander. — Ecuador.
monophaea Alexander. — Mexico.
nectarea Alexander. — Ecuador.
nigrina (Wiedemann). — Brazil.
nimbifera Alexander. — Peru.
osten-sackeni Skuse. — Brazil.
oxymera Alexander. — Peru.
pallidapex Alexander. — Southeastern Brazil.
perlata Alexander. — Ecuador.
permagica, sp. n. — Peru.
podacantha Alexander. — Costa Rica.
porteri Alexander. — Ecuador.
propatula Alexander. — Costa Rica.
pulvinaris Alexander. — Costa Rica.
regnatrix Alexander. — Peru.
rubicundula Alexander. — Peru.
spinibasis Alexander. — Peru.
stenophallus Alexander. — Venezuela.
stupens Walker. — Mexico.
stylacuta, sp. n. — Costa Rica.
subapicularis Alexander. — Costa Rica.
subhyalina Alexander. — Pnaama, Brazil.
subobliterata Alexander. — Mexico.
teleneura Alexander. — Ecuador.
triceps, sp. n. — Costa Rica.
tuber Alexander. — Ecuador.
tungurahuana Alexander. — Ecuador.
vilis Alexander. — Colombia.
vitripennis Alexander. — Ecuador.

The venation of *pallidapex* is shown (Fig. 8).

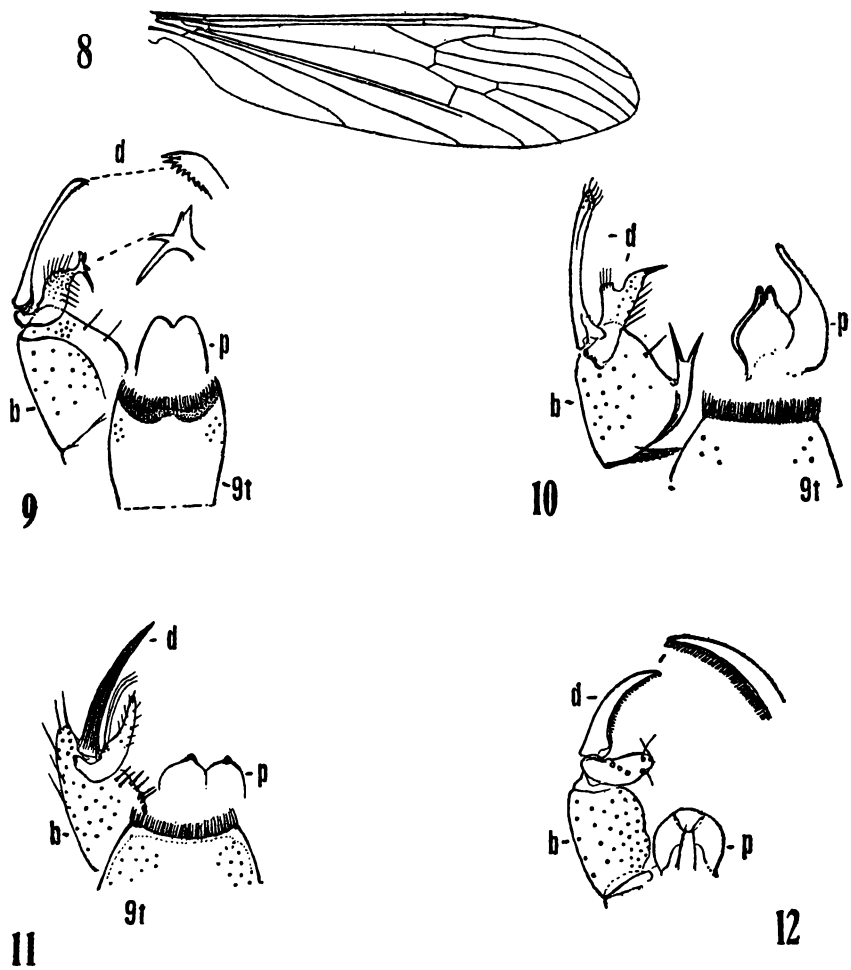

Fig. 8. *Gnophomyia (Gnophomyia) pallidapex* Alexander; venation. — Fig. 9. *Gnophomyia (Gnophomyia) triceps*, sp. n.; male hypopygium. — Fig. 10. *Gnophomyia (Gnophomyia) permagica*, sp. n.; male hypopygium. — Fig. 11. *Gnophomyia (Gnophomyia) stylacuta*, sp. n.; male hypopygium. — Fig. 12. *Gnophomyia (Gnophomyia) diazi* Alexander; male hypopygium. — (Symbols: *b*, basistyle; *d*, dististyles; *p*, phallosome; *t*, tergite).

The following notes on certain species are appended.

Gnophomyia luctuosa Osten Sacken. The reference to "Guatemala" (Alexander, C. P., Proc. U. S. Nat. Mus., 44: 522; 1913) was based on a single female specimen and is presumably erroneous. The species should be dropped from the Neotropical list until confirmed.

Gnophomyia magnifica Alexander (1913) is a *Sigmatomera*.

Gnophomyia olssoni Alexander (1919) is a *Shannonomyia*.

Gnophomyia osten-sackeni Skuse. A re-naming of *fascipennis* Osten Sacken, 1887, *nec fascipennis* Thomson, 1869.

Gnophomyia stupens Walker. Osten Sacken (1886, 1887) merely assumed that this species belonged to the present genus. The assignment is followed but requires confirmation.

Gnophomyia (Gnophomyia) permagica, sp. n.

Allied to *magica;* general coloration of body and appendages black, only the anterior lateral pretergites restrictedly bright yellow; wings with the ground weakly darkened, the cells basad of cord clearer; prearcular region and a very broad area at cord darker brown; R_{2-3-4} short and only slightly arcuated; *m-cu* about its own length beyond the fork of *M;* male hypopygium with the apex of tergite truncated or nearly so, fringed with about 80 dark-colored setae in an unbroken row; basistyle on proximal end of mesal face bearing a strong arm that terminates in two powerful black spines; outer dististyle nearly straight, at apex with about ten delicate setae; inner dististyle more or less bilobed, the outer lobe extended into a long straight spine.

Male. — Length, about 5.5 mm.; wing, 5 mm.; antenna, about 2.2 mm.

Female. — Length, about 6.5 mm.; wing, 6.2 mm.

Rostrum and palpi black. Antennae black throughout, relatively long; flagellar segments elongate, the verticils exceeding the segments, conspicuous. Head black.

Thorax uniformly black, sparsely pruinose, the restricted anterior lateral pretergites opposite the humeral region bright yellow. Halteres black. Legs black, the coxae sparsely pruinose. Wings with the cells basad of cord very faintly darkened, paler than those beyond the cord; prearcular region and a very broad and conspicuous area at the cord much darker brown, the latter ending behind at *Cu;* cells *C* and *Sc* less conspicuously darkened; veins brownish black. Venation: compared with *magica*, R_{2-3-4} shorter and less arcuated, less than twice R_{2-3}; cells R_3 and R_4 shorter; cell *1st* M_2 smaller, less than vein M_4; *m-cu* its own length beyond the fork of *M*.

Abdomen, including hypopygium, black. Ovipositor with the genital shield polished black, the cerci a little paler, stout, strongly upcurved to the acute tips. Male hypopygium (Fig. 10) with the tergite, *9t,* broad, very gradually narrowed outwardly, the caudal border truncate or very slightly concave, with a continuous fringe

of long slender black setae, the entire series being of about the same length and thickness; the rows are at least double, making it difficult to count the total number but apparently about 80 in number. Basistyle, *b*, on mesal face at proximal end with a strong arm that terminates in two powerful black spines, the outer one longer; remainder of basistyle with several setae, one on mesal face at midlength stouter. Outer dististyle a slender nearly straight rod, at apex with about ten tubercles, each tipped with a delicate seta. Inner dististyle of distinctive shape, as shown, the outer portion slightly bilobed by a rounded notch; outer lobe extended into a long straight spine. Phallosome, *p*, with the gonapophyses paired, appearing as broadly flattened dark-colored plates, the apex narrowed to an obtuse knob; aedeagus yellow, a little longer than the apophyses.

Habitat: Peru.

Holotype, ♂, Iquitos, March-April 1931 (R. C. Shannon). Allotopotype, ♀. Types in Alexander Collection.

The species that is most similar to the present fly in its general appearance is *Gnophomyia (Gnophomyia) magica* Alexander, which is still known only from the female sex. This differs in the venation, as described above, and is evidently a distinct fly. The male sex, when discovered, will undoubtedly provide in its hypopygium even stronger characters for the separation of the two flies.

Gnophomyia (Gnophomyia) stylacuta, sp. n.

Allied to *maestitia;* general coloration of body and appendages black; male hypopygium with the caudal margin of tergite very shallowly emarginate, with an unbroken fringe of about 70 spinous setae; mesal face of basistyle with about six strong black spinous setae; outer dististyle a glabrous, nearly straight rod, the tip acute; inner style gradually narrowed outwardly, the tip subacute.

Male. — Length, about 5 mm.; wing, 5 mm.; antenna, about 2.1 mm.

Rostrum and palpi black. Antennae black throughout, relatively long, more so than in *triceps*; flagellar segments elongate, slightly narrowed at either end; longest verticils about equal to the segments. Head dull black; anterior vertex broad; eyes protuberant.

Thorax black, the pronotal scutellar lobes light yellow; dorsopleural region narrowly buffy yellow; thoracic pleura pruinose, metapleura somewhat paler. Legs and halteres black throughout. Wings with a brownish tinge, cell *R* and most of

M paler; stigma long and narrow, darker brown; a brown seam in cell *M* along vein *Cu,* becoming obsolete at near three-fourths the length of the vein; veins brownish black. Venation: *Rs* in alignment with R_5; R_{2-3-4} similarly in alignment with R_{2-3}; *m-cu* at midlength of cell *1st* M_2.

Abdomen black throughout. Male hypopygium (Fig. 11) with the caudal margin of the tergite, *9t,* very shallowly emarginate, the lateral angles a very little produced; an unbroken fringe of about 70 black spinous setae, all generally equal in size and length. Basistyle, *b,* slightly produced beyond the level of the point of insertion of the dististyles; mesal face with six strong black spinous setae. Outer dististyle, *d,* appearing as a glabrous nearly straight rod, narrowed very gradually to the acute tip; inner dististyle subacute at apex, with scattered setae, including three of very unusual length on outer face near base. Gonapophyses, *g,* appearing as two separate lobes, each terminating in a blackened knob.

Habitat: Costa Rica.

Holotype, ♂, Turrialba, November 1922 (Pablo Schild); Alexander Collection, through kindness of Dr. A. L. Melander.

From other generally similar regional species, including *Gnophomyia (Gnophomyia) coxitalis* Alexander and *G. (G.) podacantha* Alexander, the present fly differs conspicuously in the structure of the male hypopygium.

Gnophomyia (Gnophomyia) triceps, sp. n.

Allied to *spinibasis;* general coloration black, the lateral ends of the pronotal scutellum and the narrow dorsopleural region yellow; antennae, halteres and legs black; wings with a strong and uniform brown tinge, the linear stigma darker brown; *m-cu* oblique, at near midlength of cell *1st* M_2; male hypopygium with the caudal border of tergite concave, with probably at least 100 strong spinous setae arranged in several rows, the posterior border of the row sinuous; basistyle unarmed; outer dististyle unusually slender, terminating in two or three spines, the dorsal edge back from the spine with a series of four or five retrorse teeth; inner dististyle terminating in a group of three or four spinous points.

Male. — Length, about 4.8-5 mm.; wing, 4.5-5 mm.; antenna, about 2-2.1 mm.

Rostrum and palpi black. Antennae black throughout, relatively elongate; flagellar segments long-subcylindrical, the longest

verticils of the more proximal ones very slightly exceeding the segments. Head dull black; anterior vertex broad.

Rostrum and palpi black. Antennae black throughout, relatively elongate; flagellar segments long-subcylindrical, the longest verticils of the more proximal ones very slightly exceeding the segments. Head dull black; anterior vertex broad.

Pronotum brown, the lateral ends of the scutellum abruptly light yellow. Mesonotum dull black. Pleura black, more pruinose behind; dorsopleural region narrowly yellow. Halteres black. Legs black, coxae sparsely pruinose. Wings with a rather strong uniform dusky tinge, the linear stigma darker brown; veins brown. Venation: Sc_1 ending opposite fork of R_{2-3-4}, Sc_2 about opposite the fork of *Rs;* R_{2-3-4} a little shorter than R_{2-3}; R_{1-2} and R_{2-3} subequal; *r-m* about twice the basal section of R_5; veins R_3, R_4 and R_5 extending generally parallel to one another throughout their course; *m-cu oblique,* at near midlength of cell *1st* M_2, the latter a little longer than M_4.

Abdominal tergites, with the hypopygium, black, the sternites more brownish black. Male hypopygium (Fig. 9) with the tergite, *9t,* longer than broad, the caudal border concave, with probably at least 100 black spinous setae, arranged in several rows, at the midline with the posterior border of the row sinuous. Basistyle, *b,* unarmed. Outer dististyle, *d,* unusually slender, appearing as a nearly straight rod, a little expanded at outer end, terminating in two or three spines, the dorsal edge back from the spine with a series of four or five retrorse teeth that become gradually smaller and finally obsolete. Inner dististyle shorter, the base a compact oval structure, provided with long coarse setae, at tip narrowed into a neck that terminates in three or four spinous points, the decurved axial one longer. Phallosome, *p,* conspicuously notched at tip.

Habitat: Costa Rica.

Holotype, ♂, La Suiza de Turrialba, August (Pablo Schild); Melander Collection. Paratopotypes, ♂ ♂

Gnophomyia (Gnophomyia) triceps is most similar to *G. (G.) spinibasis* Alexander and *G. (G.) distifurcula* Alexander, differing especially in all details of structure of the male hypopygium, especially the ninth tergite and both dististyles.

Gnophomyia (Gnophomyia) diazi Alexander

Gnophomyia (Gnophomyia) diazi Alexander; Journ. Agr. Univ. Puerto Rico, 21: 184; 1937.

One male from the island of Nevis, taken on the south side of Mount Nevis, altitude 1000 feet, June 3, 1937 (Chester Roys); University of Michigan, through Rogers.

Originally described from the Luquillo Mountains, Puerto Rico. The male hypopygium (Fig. 12) has the outer dististyle, *d,* a gently curved blade with the entire inner or concave margin bearing a dense fringe or comb of relatively long spinous setae.

Quechuamyia Alexander

Quechuamyia Alexander; Rev. de Entomologia, 14: 495-497, figs. 6-9 (wings and venation, ♂ ♀), fig. 11 (♂ hypopygium); 1943.

The strange fly described as *Quechuamyia phantasma* Alexander (Ecuador: El Oro) is still known only from the type series of specimens and is the only known species of the genus. Despite the surprising dimorphism of the sexes, as shown by the venation and wing shape, the fundamental structure of the male hypopygium shows that the group is closely allied to *Gnophomyia* Osten Sacken.

Aymaramyia Alexander

Aymaramyia Alexander; Ann. Mag. Nat. Hist., (11) 10: 236-239, figs. 3, 4 (venation, ♂ hypopygium); 1943.

Known only from the type species, *Aymaramyia dubia* Alexander (Peru: Ayacucho). As indicated under the discussion of the subgenus *Eugnophomyia,* genus *Gnophomyia,* earlier in this report, there is an evident relationship between these two groups of flies. The venation is shown (Fig. 13).

Gymnastes Brunetti

Gymnastes Brunetti; Rec. Indian Mus., 6: 281, fig.; 1911.

Subgenus *Paragymnastes* Alexander

Paragymnastes Alexander; Proc. Linn. Soc. New South Wales, 47: 583; 1922.

The only known American species is *Gymnastes (Paragymnastes) perexquisita* Alexander, of southeastern Brazil (Minas Gerais, São Paulo, Santa Catharina). The genus is represented by numerous species in the Oriental and Australasian Regions, with fewer forms in the Ethiopian and south portions of the Eastern Palaearctic Regions. There can be no question of the generic reference of the present fly and its occurrence in the New World

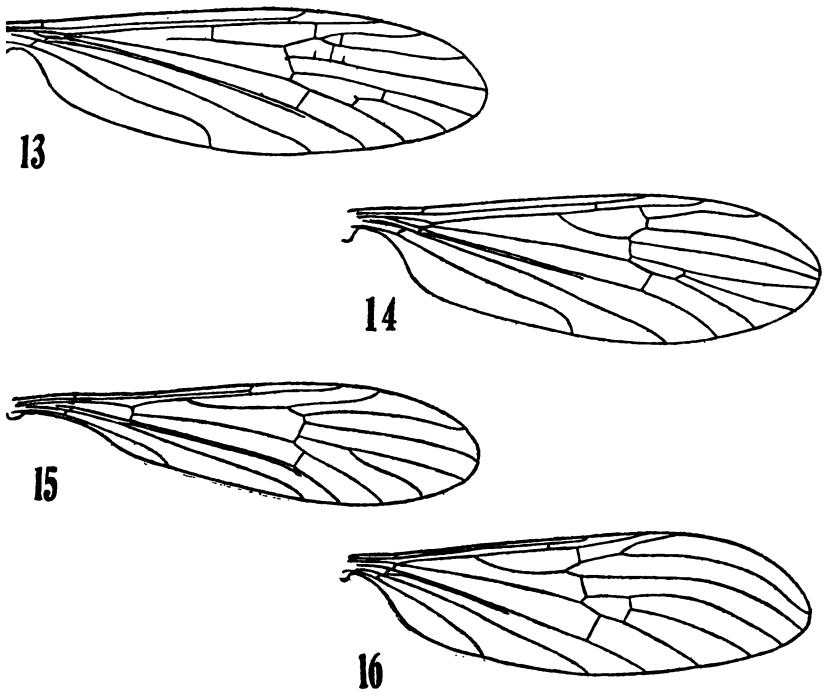

Fig. 13. *Aymaramyia dubia* Alexander; venation. — Fig. 14. *Gymnastes (Paragymnastes) perexquisita* Alexander; venation. — Fig. 15. *Jivaromyia problematica* Alexander; venation. — Fig. 16. *Neognophomyia schildi* Alexander; venation.

provides a problem in distribution (compare also *Trentepohlia,* subgenus *Mongoma; Styringomyia; Protothelius,* etc.). The venation is shown (Fig. 14).

Jivaromyia Alexander

Jivaromyia Alexander; Rev. de Entomologia, 14: 493-495, figs. 5, 10 (venation, ♂ hypopygium); 1943.

The very peculiar fly described as *Jivaromyia problematica* Alexander (Ecuador: El Oro) still remains the only known species of what seems evidently to be an isolated group of crane-flies. The characters have been detailed in the original reference. The venation is shown (Fig. 15).

Neognophomyia Alexander

Gnophomyia (Neognophomyia) Alexander; Ann. Ent. Soc. America, 19: 391-392; 1926.

The genus includes about a score of strictly Tropical American crane-flies, occurring at low and medium altitudes from Central America to southeastern Brazil and Paraguay. The Oriental and

eastern Palaearctic genus *Dasymallomyia* Brunetti has the fundamental plan of structure of the male hypopygium quite different from the present group and the resemblance shown by the venation does not seem to imply a close relationship.

The most peculiar feature of the venation is found in the great discrepancy in length between veins R_3 and R_{4-5}, the latter being very long and bent strongly caudad, ending at or very close to the wing tip (see Fig. 16, *Neognophomyia schildi*). As a result, cell R_3 at margin is disproportionately widened. Only in *paprzyckiana* is vein R_3 more lengthened so cells R_2 and R_3 at margin are more nearly equal in extent. The so-called "tergal spines" of the male hypopygium are very peculiar and provide excellent characters in the various species. The most primitive condition of these spines is found in *hirsuta* and *immaculipennis* where they are unusually small and inconspicuous.

List of Species.

bisecta (Alexander). — Amazonian Brazil.
bisetosa Alexander. — Peru.
citripes Alexander. — Peru.
cochlearis Alexander. — Ecuador.
colombicola Alexander. — Colombia.
consociata Alexander. — Ecuador.
heliconiae Alexander. — Panama.
hirsuta (Alexander); genotype. — Southeastern Brazil.
hostica Alexander. — Peru.
immaculipennis Alexander. — Southeastern Brazil, Paraguay.
interrupta Alexander. — Ecuador.
latifascia Alexander. — Peru.
monophora Alexander. — Venezuela.
panamensis Alexander. — Panama.
paprzyckiana Alexander. — Peru.
pervicax (Alexander). — Peru.
productissima Alexander. — Costa Rica.
scapha Alexander. — Ecuador.
schildi Alexander. — Costa Rica.
sparsiseta Alexander. — Peru.
spectralis Alexander. — Ecuador.
trinitatis Alexander. — Trinidad.

Neognophomyia productissima Alexander

Costa Rica: La Caya, near San Jose, altitude 1150 meters, August-September 1946, abundant (Enrique Schmidt).

Neognophomyia schildi Alexander

Costa Rica: La Suiza de Turrialba, April 1922; March 1924; September 1925; March, June, August 1926 (Pablo Schild); in Melander Collection.

Gonomyia Meigen

Gonomyia Meigen; Syst. Beschr. Eur. Dipt., 1: 146; 1818.

A vast aggregation of small crane-flies, including hundreds of species, distributed in about a dozen subgeneric groups. Certain of these so-called subgenera may well be found to represent valid generic groups, such a disposition being suggested by the fundamental plan of structure of the male hypopygium and the venation, especially the condition of the arculus. *Progonomyia, Idiocera* and *Gonomyina* are examples of groups that require further critical analysis.

The genus is world-wide in distribution, including species in all major regions and subregions of the world, including many of the more remote Pacific Islands (Hawaii, Marquesas, Society Islands, Samoa, Fiji). In the Tropical American fauna I recognize the following subgenera:

Progonomyia Alexander
Gonomyina Alexander
Idiocera Dale
Euptilostena Alexander
Gonomyia Meigen
Lipophleps Bergroth
Paralipophleps, subgen. n.
Neolipophleps, subgen. n.

Progonomyia Alexander

Gonomyia (Gonomyella) Alexander; Ann. South African Mus., 1917: 152; 1917 (preoccupied).
Gonomyia (Progonomyia) Alexander; Cornell Univ., Mem. 38: 938; 1921.

Venation: Vein *Sc* long, usually ending opposite or beyond midlength of *Rs*, Sc_2 some distance from its tip; vein R_2 retained; cell M_2 open by the atrophy of basal section of vein M_3; *m-cu* at or very close to fork of *M;* anterior arculus preserved. *Gonomyia (Progonomyia) destricta* Alexander (Fig. 17).

Virtually all of the known species are Tropical American, with three species, including the subgenotype, *slossonae* Alexander, in the southern Nearctic Region. A few additional species that seem to be consubgeneric occur in South Africa.

List of Species.

acanthias Alexander. — Peru.
acrissima Alexander. — Ecuador.
altivolans Alexander. — Peru.
argentinensis Alexander. — Argentina.
atroapicata Alexander. — Mexico.
balzapambae Alexander. — Ecuador.
bifasciolata Alexander. — Cuba, Mexico, Panama.

catamarcensis Alexander. — Argentina.
compacta Alexander. — Venezuela.
destricta Alexander. — Southeastern Brazil.
dolorosa Alexander. — Brazil.
eriopteroides Alexander. — Paraguay.
forceps Alexander. — Peru.
histrionica Alexander. — Peru.
hyperplatys Alexander. — Ecuador.
maesta Alexander. — Argentina.
ominosa Alexander. — Paraguay.
paraensis Alexander. — Eastern Brazil.
paramoensis Alexander. — Venezuela.
patruelis Alexander. — Mexico.
peruviana Alexander. — Peru.
(platymera Alexander, see *platymerella)*
platymerella, nom. n. (for *platymera*). — Peru.
pleurolineata Alexander. — Argentina.
quinqueplagiata Alexander. — Southeastern Brazil, Argentina.
saturata Alexander. — Southeastern Brazil.
saxicola Alexander. — Argentina.
serena Alexander. — "South America" — Winthem.
slossonae Alexander; subgenotype. — Southeastern United States, Greater Antilles, Mexico.
subcostata Alexander. — Panama.
subsaturata Alexander. — Brazil.
synchroa Alexander. — Patagonia.
synchroa setosivena Alexander. — Chile.
tesselata Alexander. — Peru.
thiosema Alexander. — Argentina.
velutina Alexander. — Peru.
weiseri Alexander. — Argentina.

Gonomyina Alexander

Gonomyia (Gonomyina) Alexander; Almeida Commemorative Vol., No. 1: 5-6; 1946.

Venation: *Sc* long; R_2 lacking; vein R_3 chiefly atrophied, at most only the base represented by a spur, in *persimilis* entirely atrophied; cell *1st* M_2 closed; *m-cu* beyond the fork of *M;* anterior arculus preserved.

All of the known species are Tropical American and, as determined to the present, all from Brazil.

durabilis Alexander; subgenotype. — Southeastern Brazil.
parishi (Alexander). — Eastern Brazil.
persimilis (Alexander). — Eastern Brazil.
runa, sp. n. — Southeastern Brazil.

Gonomyia (Gonomyina) runa, sp. n.

General coloration of anterior portion of mesonotum brown, the posterior sclerites more brownish yellow; antennae relatively long, if bent backward extending about to the wing-root; knobs of halteres dark brown; wings with a pale grayish tinge;; *Sc* long,

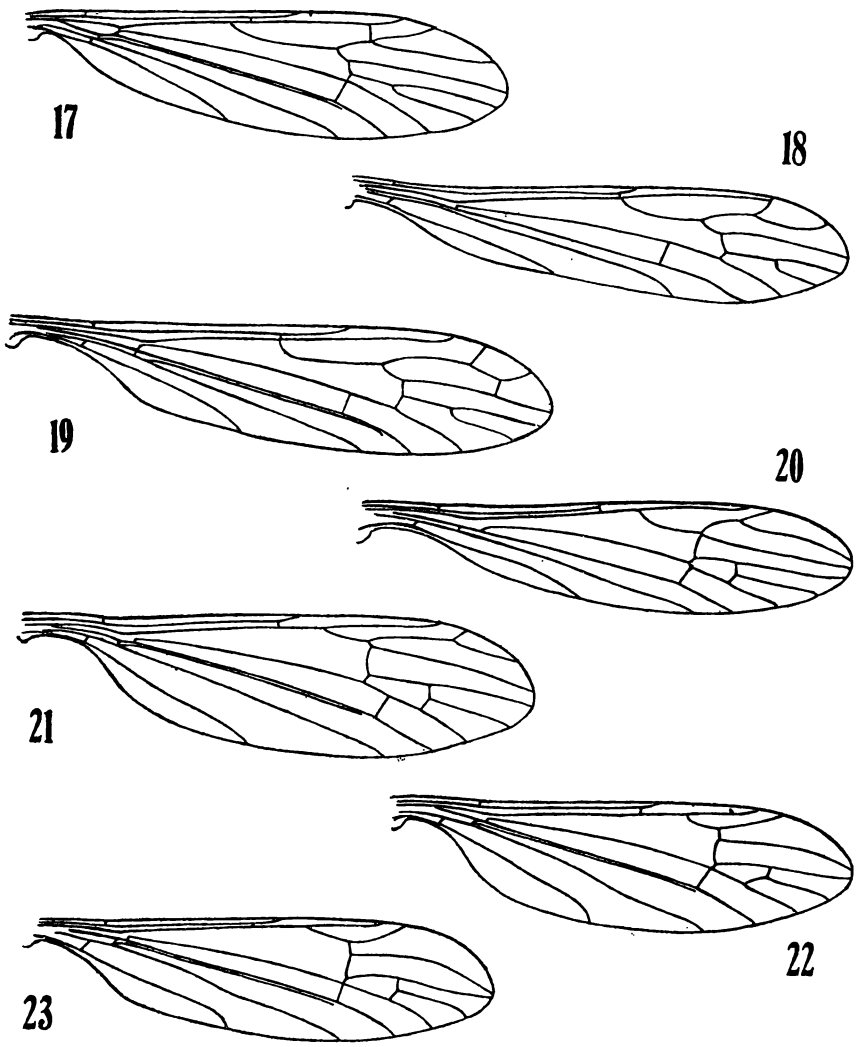

Fig. 17. *Gonomyia (Progonomyia) destricta* Alexander; venation. — Fig. 18. *Gonomyia (Idiocera) hoogstraali* Alexander; venation. — Fig. 19. *Gonomyia (Euptilostena) dampfiana* Alexander; venation. — Fig. 20. *Gonomyia (Gonomyia) subbrevicula,* sp. n.; venation. — Fig. 21. *Gonomyia (Gonomyia) birama* Alexander; venation. — Fig. 22. *Gonomyia (Lipophleps) hoffmaniana,* sp. n.; venation. — Fig. 23. *Gonomyia (Paralipophleps) pleuralis* (Williston); venation.

Sc_1 ending about opposite three-fifths the length of *Rs;* cell *1st* M_2 nearly as long as distal section of vein M_{1-2}; male hypopygium with the inner dististyle having the point long and slender, subapical in position; aedeagus very long, especially the subhyaline apical portion, at the outer bend with a spinous point.

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

Rostrum and palpi brown. Antennae relatively long, if bent backward extending approximately to the wing-root; scape and pedicel brownish yellow, flagellum brownish black; flagellar segments long subcylindrical, with long verticils. Head gray; anterior vertex broad.

Pronotum testaceous yellow. Mesonotum anteriorly medium brown, the praescutum with three confluent darker brown stripes; posterior sclerites of notum more brownish yellow. Pleura medium brown. Halteres short, stem yellow, knob dark brown. Legs with the fore and middle coxae light brown. posterior coxae yellow; trochanters yellow; remainder of legs medium brown, the outer tarsal segments darker brown. Wings with a weak grayish tinge, the prearcular and costal fields pale yellow; stigma not indicated; veins pale brown, even paler in the yellow fields. Venation: *Sc* long, Sc_1 ending about opposite three-fifths *Rs*, Sc_2 not clearly evident; *Rs* long, a little exceeding vein R_4; tip of vein R_3 atrophied or virtually so, lying very close to the tip of vein R_{1-2}; cell *1st* M_2 closed, nearly as long as the distal section of vein M_{1-2}; *m-cu* about one-third its length beyond the fork of *M*.

Abdominal tergites brown; sternites and hypopygium yellow. Male hypopygium (Fig. 24) with the apical lobe of basistyle, *b*, short and stout. Outer dististyle, *d*, with the arms very unequal, the inner one widened basally. Inner dististyle with the point subapical, long and slender, gently curved. Aedeagus, *a*, with an acute spinous point on margin at the second bend, the very long apex entirely subhyaline.

Habitat: Brazil.

Holotype, ♂, Nova Teutonia, Santa Catharina, October 26, 1944 (Fritz Plaumann); Alexander Collection.

The present fly is most similar to the subgenotype, *durabilis*, differing most evidently in the structure of the male hypopygium. I am interpreting the smallest dististyle as being the intermediate one of the three.

Idiocera Dale

Limnobia (Idiocera) Dale; Ann. Mag. Nat. Hist., 8: 431, 433; 1842.
Ptilostena Bergroth; Ann. Mag. Nat. Hist., (8) 11: 575-576, figs.; 1913.
Pseudogonomyia Santos Abreu; Mem. Real Acad. Cien. Art. Barcelona, 18, No. 4: 107-108, figs.; 1923.

Venation: Vein *Sc* variable in length, in its shortest condition ending opposite the origin of *Rs*, in other species much longer; cell R_3 small, its petiole correspondingly lengthened; vein R_2 atrophied; no supernumerary crossveins; cell M_2 open by the atrophy of basal section of M_3; *m-cu* at least its own length before

the fork of *M*; anterior arculus weakly preserved or evidently lacking. In several species, veins R_{1-2} and R_3 are contiguous or confluent at the margin, closing cell R_1. *Gonomyia (Idiocera) hoogstraali* Alexander (Fig. 18).

There are relatively numerous species in the Holarctic Region, with fewer in the Ethiopian, Oriental and Australasian Regions. In Tropical America found only in the extreme northern portions and evidently derived from the Nearctic fauna.

angustissima Alexander. — Cuba.
hoogstraali Alexander. — Mexico.

Euptilostena Alexander

Euptilostena Alexander (name omitted in text through a typographical error); Philippine Journ. Sci., 66: 126-127; 1938.

Venation: As in *Idiocera,* differing in the possession of a supernumerary crossvein in cell R_4, connecting veins R_4 and R_5; in *polingi* with a series of from 10 to 12 supernumeraries in cell *C;* anterior arculus apparently lacking or very weakly preserved.

Gonomyia (Euptilostena) dampfiana Alexander (Fig. 19)

Male hypopygium of peculiar structure, in some regards strongly suggesting the condition in the genus *Molophilus* (compare *dampfiana* and the *ruficollis* subgroup of *Molophilus*).

Besides the two species occurring in the extreme northern part of Tropical America, a very few others occur in the Palaearctic, Nearctic and Oriental Regions.

dampfiana Alexander. — Mexico.
polingi Alexander. — Southeastern United States, Mexico.

Gonomyia Meigen

Gonomyia Meigen; Syst. Beschr. Eur. Dipt., 1: 146; 1818.
Goniomyia Osten Sacken; Mon. Dipt. North America, 4: 176.

Venation: Sc_1 usually ending opposite, slightly before or a short distance beyond origin of *Rs,* the shortest condition being found in species such as *brevicula, brevissima,* etc.; in a few forms, *Sc* is longer, extending to about opposite midlength of *Rs;* cell R_3 present and usually relatively large (as compared with its condition in some species of the subgenus *Lipophleps,* q. v.); cell *1st* M_2 is closed or open by the atrophy of basal section of M_3; *m-cu* opposite or beyond the fork of *M,* in cases at midlength of cell *1st* M_2; anterior arculus lacking. *Gonomyia (Gonomyia)*

subbrevicula, sp. n. (Fig. 20); *G. (G.) birama* Alexander (Fig. 21).

A vast aggregation of species, most numerous in the Holarctic and Neotropical Regions, with fewer forms in the Ethiopian, Oriental and Australasian Regions.

List of Species.

aequalis Alexander. — Guatemala.
andicola Alexander. — Colombia.
anduzei Alexander. — Venezuela.
anserina Alexander. — Peru.
appendiculata Alexander. — Peru.
aspera Alexander. — Peru.
bifurciper Alexander. — Costa Rica.
bifurcula Alexander. — Mexico.
birama Alexander. — Peru.
brevicula Alexander. — Cuba.
brevissima Alexander. — Cuba.
catamarcae Alexander. — Argentina.
chiapasensis Alexander. — Mexico.
connivens Alexander. — Mexico.
crinita Alexander. — Ecuador, Peru.
debilis Alexander. — Mexico.
delicata Alexander. — Guatemala.
efficiens Alexander. — Peru.
expansa Alexander. — Mexico.
flavibarsis Alexander. — Western United States, Mexico.
gemula Alexander. — Southeastern Brazil.
guerreroensis Alexander. — Mexico.
illicis Alexander. — Argentina.
jejuna Alexander. — Peru.
juarezi Alexander. — Mexico.
megarhopala Alexander. — Mexico.
methodica Alexander. — Colombia.
mexicana Alexander. — Mexico.
microserrata Alexander. — Mexico.
multispicata Alexander. — Mexico.
ostentator Alexander. — Mexico.
platymerina Alexander. — Ecuador.
quaesita Alexander. — Mexico.
queribunda Alexander. — Peru.
remigera Alexander. — Mexico.
remota Alexander. — Salvador.
remota obtusistyla Alexander. — Panama.
salmani Alexander. — Salvador.
serpentina Alexander. — Southeastern Brazil.
stellata Alexander. — Mexico.
subbrevicula, sp. n. — Puerto Rico.
subremota Alexander. — Mexico.
triaculeata Alexander. — Mexico.
(tuberculata Alexander, see *flavibasis)*
unicolor Alexander. — Mexico, Guatemala, Salvador.

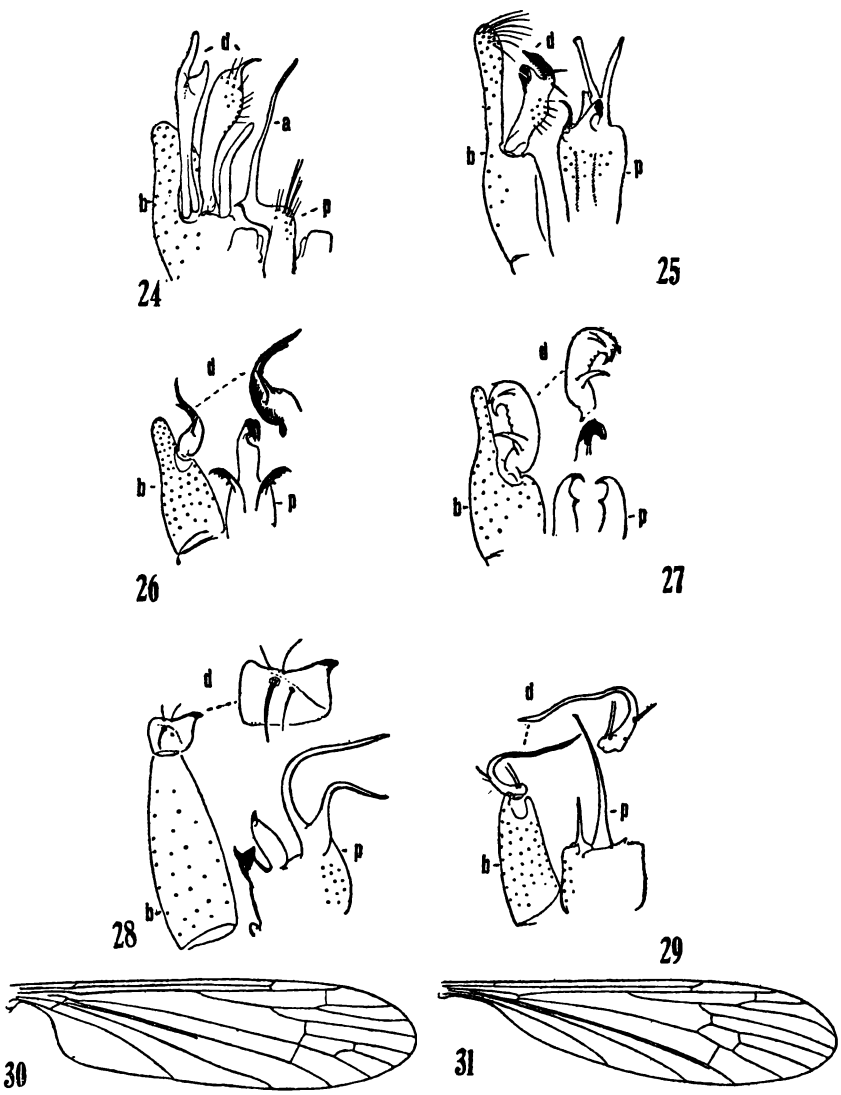

Fig. 24. *Gonomyia (Gonomyina) runa,* sp. n.; male hypopygium. — Fig. 25. *Gonomyia (Lipophleps) pedica,* sp. n.; male hypopygium. — Fig. 26. *Gonomyia (Lipophleps) nestor,* sp. n.; male hypopygium. — Fig. 27. *Gonomyia (Lipophleps) basispinosa* Alexander; male hypopygium. — Fig. 28. *Gonomyia (Lipophleps) puella* (Williston); male hypopygium). — Fig. 29. *Gonomyia (Lipophleps) hoffmaniana,* sp. n.; male hypopygium. — Fig. 30. *Aphrophila carbonaria* Alexander; venation. — Fig. 31. *Lipsothrix neotropica* Alexander; venation. — (Symbols: *a,* aedeagus; *b,* basistyle; *d,* dististyle; *p,* phallosome).

Gonomyia (Gonomyia) subbrevicula, sp. n.

Allied to *brevicula;* general coloration of mesonotum dark brown, the lateral portions of the praescutum yellow; scutellum darkened; pleura with two narrow dark brown longitudinal stripes;

halteres dusky; legs brownish black; wings with a faint brownish tinge, the stigma slightly darker; R_{2-3-4} strongly arcuated; abdominal tergites dark brown, the posterior-lateral angles of the intermediate segments with small yellow triangles.

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

Rostrum and palpi black. Antennae with the basal two segments yellow; flagellum broken. Head brownish gray; eyes large, reducing the anterior vertex to a narrow strip that is less than the diameter of the scape.

Pronotum yellow, weakly darkened medially above; pretergites pale yellow. Mesonotum dark brown, the humeral and lateral portions of the praescutum yellow; median region of scutum testaceous yellow; scutellum darkened; postnotum obscure yellow, the posterior border brownish black. Pleura yellow, with two narrow but conspicuous dark brown longitudinal stripes, the first extending from the propleura across the dorsal pleurites to the posterior portion of the mediotergite and the abdomen; ventral stripe occupying the ventral sternopleurite, extreme bases of mid and hind coxae, and part of the meron. Halteres dusky. Legs with the coxae yellow, the bases of the middle and hind pairs darkened, as described; trochanters obscure yellow; remainder of legs brownish black. Wings (Fig. 20) with a faint brownish tinge, the stigma slightly darker, the prearcular and costal fields more whitened; veins browns, somewhat paler in the costal field. Venation: *Sc* relatively short, Sc_1 ending before origin of *Rs* a distance about one-half the length of the latter vein, Sc_2 at extreme tip of *Sc*; R_{2-3-4} shorter and more strongly arcuated than in *brevicula*; *r-m* very close to the fork of *Rs*.

Abdominal tergites dark brown, the extreme postero-lateral borders of the intermediate segments with small yellow triangles; sternites uniformly obscure yellow; genital shield obscure brownish yellow.

Habitat: Puerto Rico.

Holotype, ♀, El Semil, altitude 1700 feet, May 10, 1940 (William A. Hoffman); Alexander Collection.

The present fly is closest to the Cuban *Gonomyia (Gonomyia) brevicula* Alexander, differing in slight details of body coloration and in the venation, especially the very strongly arcuated R_{2-3-4}.

Lipophleps Bergroth

Leiponeura Skuse; Proc. Linn. Soc. New South Wales, (2) 4: 795; 1890; (preoccupied).
Lipophleps Bergroth; Psyche, 22: 55; 1915.

Venation: In all species of the *manca* group, only two branches of *Rs* reach the margin, the missing one being R_3, with R_4 and R_5 persistent; in the *sulphurella* group (not Neotropical), vein and cell R_3 persist but the cell is small and evidently in process of being lost. *Sc* short to very short, usually ending far before origin of *Rs,* in cases to shortly beyond this point; cell *1st* M_2 closed (in the local fauna); *m-cu* at or close to fork of *M;* anterior arculus lacking. *Gonomyia (Lipophleps) hoffmaniana,* sp. n. (Fig. 22).

Male hypopygium often complex in structure, including both the dististyle and phallosome. Several species that center about *orthomera* have the basistyle produced beyond the point of insertion of the dististyle as a strong spine or sclerotized rod, while many others have a comparable fleshy lobe, sometimes of unusual length. Numerous species, as *arajuno, bifiligera* and many others, have the dististyle simple, pale and fleshy; still others have this modified into a strong spine or curved hook. In a few species, the dististyles of the two sides are asymmetrical. In similar manner the armature of the phallosome may be symmetrical, as in *basi-spinosa* and other allied forms, or entirely asymmetrical, with none of the elements paired. The outer margin of the tergite is variously armed with a fringe or comb of spinous setae.

All of the numerous American species of *Lipophleps,* as now restricted, are referred to a single group that I have called the *manca* group from its first described species, *manca* Osten Sacken (Eastern Nearctic). The Old World species of the subgenus are very numerous in the Ethiopian, Oriental, Eastern Palaearctic and Australasian Regions, including many of the remote Pacific Islands. Most of these latter forms have not been critically assigned to groups of species and many of them may evidently be safely referred to the *manca* group, as here discussed. The subgenotype, *gracilis* (Skuse) is Australian. It should be noted here that two very characteristic American groups have been referred to two new subgenera, discussed later: *Paralipophleps* (*pleuralis* group) and *Neolipophleps* (*cinerea* group).

List of Species.

The *manca* group

adunca Alexander. — Argentina.
anduzeana Alexander. — Venezuela.
arajuno Alexander. — Ecuador.
basispinosa Alexander. — Southeastern Brazil.
batesi Alexander. — Panama.
bicornuta Alexander. — Puerto Rico.
bifiligera Alexander. — Puerto Rico.
bispinosa Alexander. — Peru.
borburatana Alexander. — Venezuela.
bruchi Alexander. — Argentina.
calverti Alexander. — Costa Rica.
calverti pleurostriata Alexander (see *calverti pleurotaeniata*)
calverti pleurotaeniata Alexander. — Costa Rica.
cantareirae Alexander. — Southeastern Brazil.
carrerai Alexander. — Southeastern Brazil.
cervaria Alexander. — Colombia.
clavifera Alexander. — Peru.
crepuscula Alexander. — Peru, Paraguay.
ctenophora Alexander. — Peru, Bolivia.
cubana Alexander. — Cuba.
cultrata Alexander. — Ecuador.
diacanthophora Alexander. — Peru.
dotata Alexander. — Peru.
duurvoorti Alexander. — Surinam.
extensa Alexander. — Panama, British Guiana, Trinidad.
gillottae Alexander. — Costa Rica.
haploa Alexander. — Mexico.
haploides Alexander. — Mexico, Costa Rica.
hoffmaniana, sp. n. — Puerto Rico.
impedita Alexander. — Mexico.
inermis Alexander. — British Guiana, Brazil, Peru.
juquiana Alexander. — Southeastern Brazil.
leonura Alexander. — Ecuador.
lustralis Alexander. — Costa Rica.
macintyrei Alexander. — Ecuador.
macswaini Alexander. — Costa Rica, Panama.
maya Alexander. — Mexico.
misera Alexander. — Argentina.
mythica Alexander. — Peru.
nestor, sp. n. — Southeastern Brazil.
orthomera Alexander. — Puerto Rico.
orthomeroides Alexander. — Mexico.
parinermis Alexander. — Venezuela.
pedica, sp. n. — Southeastern Brazil.
petronis Alexander. — Southeastern Brazil.
philomela Alexander. — Peru.
phoroctenia Alexander. — Peru.
pilosispina Alexander. — Southeastern Brazil.
producta Alexander. — Puerto Rico, Antigua, Mexico, Ecuador.
projecta Alexander. — Ecuador, Peru.
prolixistylus Alexander. — Mexico, British Honduras.
prolongata Alexander. — Venezuela, Ecuador.

puella (Williston). — Lesser Antilles (St. Vincent).
puer Alexander. — Southeastern United States, Mexico, British Guiana, Ecuador, Peru.
pyensoni Alexander. — Amazonian Brazil.
ramus Alexander. — Ecuador.
reyesi Alexander. — Mexico.
sana Alexander. — Paraguay.
sandersi Alexander. — Cuba.
scelerata Alexander. — Peru.
scimitar Alexander. — British Guiana.
secespita Alexander. — Southeastern Brazil.
senaria Alexander. — Peru.
spicata Alexander. — Peru.
subinermis Alexander. — Mexico.
subscimitar Alexander. — Peru.
subterminalis Alexander. — Cuba, Puerto Rico.
subtribulator Alexander. — Peru.
tergofimbriata Alexander. — British Guiana.
tribulator Alexander. — Peru.
trionyx Alexander. — Southeastern Brazil.
vindex Alexander. — Venezuela.

It may be observed that various species of this subgenus and the two later described have been assigned to certain entirely unrelated genera by different authors. This confusion was brought about by unfamiliarity with critical genera. Some of the instances are reference to *Limonia (Dicranomyia)* by Coquillett (*curvivena* Coquillett, a synonym of *manca* Osten Sacken) and by Doane *(cinerea); Elliptera* by Johnson (*alexanderi* Johnson), and *Atarba* by Williston (*puella* Williston, *pleuralis* Williston).

Gonomyia (Lipophleps) hoffmaniana, sp. n.

Belongs to the *manca* group; general coloration gray; thoracic pleura gray, striped longitudinally with yellow; legs brownish black; wings with a faint brownish tinge, the prearcular and costal portions more whitened; stigma only a trifle darker than the ground; *Sc* relatively short; male hypopygium with the dististyle single, apical in position, appearing as a very long, sinuous rod with a single fasciculate seta on its basal portion; phallosome bearing a long apical spine and a shorter straight one near its base.

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

Rostrum and palpi black. Antennae black throughout; flagellar verticils of male elongate. Head gray; eyes very large.

Pronotum yellow above, infuscated on sides. Anterior lateral

pretergites very obscure yellow. Mesonotum dark gray, the scutellum scarcely brightened except on ventral margin. Pleura dark gray with a conspicuous longitudinal obscure yellow stripe, pleurotergite similarly obscure yellow. Halteres obscure yellow. Legs with the coxae and trochanters testaceous brown; remainder of legs brownish black. Wings (Fig. 22) with a faint brownish tinge, the prearcular and costal portions more whitened; stigma oval, a trifle darker than the ground; veins pale brown, more yellowish brown in the brightened areas. Venation: *Sc* relatively short, Sc_1 ending a distance before the origin of *Rs* that is only a little less than the total length of the latter, Sc_2 a short distance from its tip; *m-cu* just before the fork of *M*.

Abdominal tergites variegated yellow and pale brown, the latter color including the broad apices of the segments; sternites more extensively yellow, the darkened borders narrower; outer segments more extensively darkened; hypopygium extensively yellow, the cephalic ends of the basistyles darkened. Male hypopygium (Fig. 29) with the dististyle, *d*, single, apical in position, appearing as a very long sinuous rod from a slightly dilated base, the apical half blackened; a single strong fasciculate seta on face of expanded portion; apex of style acute, before tip with microscopic setulae. Phallosome, *p*, consisting of a pale subquadrate mass that terminates in a long, gently curved spine, with a further small straight spine near its base.

Habitat: Puerto Rico.

Holotype, ♂, El Semil, altitude 1700 feet, May 7, 1940 (William A. Hoffman); Alexander Collection.

I take pleasure in dedicating this distinct fly to the late Dr. William Albert Hoffman (1894-1943) to whom I am indebted for numerous Tipulidae from Puerto Rico. Superficially the male hypopygium is most like that of *Gonomyia (Lipophleps) producta* Alexander and *G. (L.) prolixistylus* Alexander, both of which have the dististyle similarly very long and slender but subapical in position, the outer angle of the basistyle being produced into a long pale lobe. Both of these species have the fasciculate bristle placed on a separate lobe or inner style and not on the spine itself, as in the present fly. Furthermore, the apical lobes of the phallosome in these two species are paired, not asymmetrical as in *hoffmaniana*.

Gonomyia (Lipophleps) puella (Williston)

Atarba puella Williston; Trans. Ent. Soc. London, 1896: 288-289, fig. 60; 1896.

Described from the island of St. Vincent, Lesser Antilles, where it was collected by the late Mr. Herbert H. Smith and has apparently never been re-discovered. I am greatly indebted to Dr. Curran for the privilege of studying one of Williston's cotypes. The fly has long proved a stumbling block among the now numerous Neotropical members of the subgenus.

Male hypopygium (Fig. 28) with the basistyle, *b,* long and slender. Dististyle, *d,* simple, terminal in position, transverse, the inner apical angle produced into a short blackened point. Phallosome, *p,* large and complex, asymmetrical, bearing two long slender spines and two additional short blackened points, as shown. The longest of the spines is evidently the one figured by Williston in his diagram of the hypopygium of this fly (l. c., fig. 60a).

Among the described species this is closest to *Gonomyia (Lipophleps) crepuscula* Alexander and *G. (L.) ctenophora* Alexander, both of Amazonian Peru, differing conspicuously in the structure of the dististyle and phallosome.

Gonomyia (Lipophleps) nestor, sp. n.

Male. — Length, about 3.2 mm.; wing, 3.7 mm.

Characters as in *basispinosa* Alexander, differing in the structure of the male hypopygium (Fig. 26), as follows:

Dististyle, *d,* with the basal third enlarged and bearing an acute black spine, the outer two-thirds slender and gently sinuous, with a small lateral spinous point at near two-thirds the length of style. Phallosome, *p,* symmetrical, the lateral apophysis with its apex prolonged, blackened, the margin microscopically toothed; inner apophyses paired, the small blackened heads with decurved points.

In *basispinosa* (Fig. 27), the dististyle, *d,* is much stouter and differently armed, beyond the basal spine being more enlarged and strongly curved at tip, with two or three points at and near apex, additional to the subterminal one. Phallosome, *p,* with the lateral apophyses quite different in outline, provided with only two darkened points.

Habitat: Brazil.

Holotype, ♂, Sumaré, São Paulo, altitude 800 meters, December 21, 1940 (Messias Carrera); Alexander Collection, through Carrera.

Gonomyia (Lipophleps) pedica, sp. n.

Belongs to the *manca* group; pleura with a poorly indicated silvery stripe; vein *Sc* ending about opposite origin of *Rs;* male hypopygium with the outer lobe of basistyle very long, nearly twice the dististyle, at apex with unusually long setae; dististyle terminating in two blackened points, between which lies a paler, more obtuse blade; phallosome asymmetrical, terminating in two elongate pale points and two short blackened structures, one a slender sinuous spine.

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

Rostrum yellowish brown; palpi black. Antennae black throughout, elongate, the flagellar segments long-cylindrical, with an abundant long erect pubescence, additional to the sparse scattered verticils. Head dark gray.

Pronotum and pretergites yellow. Mesonotum almost uniformly medium brown, the median region of scutum and the narrow posterior border of the scutellum obscure yellow. Pleura dark reddish brown, with a poorly indicated more silvery longitudinal stripe across the more ventral sclerites. Halteres with stem obscure yellow, knob dark brown. Legs with the coxae pale brown; trochanters testaceous yellow; remainder of legs brown, the femora somewhat darker. Wings with a faint grayish tinge, the prearcular and costal fields more whitened; stigmal area very diffuse, slightly darker than the ground; veins brown. Venation: Sc_1 ending about opposite origin of *Rs,* Sc_2 a slight distance from its tip, Sc_1 alone more than one-half *r-m; Rs* weakly angulated at origin; *m-cu* shortly before the fork of *M.*

Abdomen above brown, the sternites and hypopygium more brownish yellow. Male hypopygium (Fig. 28) with the outer lobe of basistyle, *b,* very long, nearly twice as long as the dististyle, more swollen outwardly and provided with very long conspicuous setae. Dististyle, *d,* about as figured, terminating in two blackened points, of which the outermost is longest, its lower margin with a fringe of delicate setae; between these two points a more obtuse paler blade. Phallosome, *p,* with two long slender elements, one

pointed at tip, and with two short blackened structures, one a slender sinuous spine.

Habitat: Brazil.

Holotype, ♂, Campo Bello, Rio de Janeiro, February 22, 1939 (J. F. Zikán); Alexander Collection.

This species is allied to *Gonomyia (Lipophleps) petronis* Alexander, *G. (L.) pilosispina* Alexander, *G. (L.) secespita* Alexander, and *G. (L.) trionyx* Alexander, all of which have the asymmetrical phallosome of approximately similar structure but all showing important differences in the conformation of the dististyle.

Paralipophleps, subgen. n.

Characters as in *Lipophleps,* differing especially in certain basic differences in structure of the male hypopygium. Basistyle produced into an outer fleshy lobe and one or more blackened spines or spinous points, including two such in the subgenotype and some others; a single dististyle. Phallosome distinctive, usually symmetrical, provided with an elongate outer pair of spines and usually with a shorter, more basal, often recurved plate that terminates in a pair of small spines or points, these latter very weak in species such as *amazona, bifida* and others, longer in *pleuralis, spinistyla* and others.

The venation of the subgenotype, *pleuralis,* is shown (Fig. 23).

Type of subgenus: *Gonomyia (Paralipophleps) pleuralis* (Williston).

As known, members of the subgenus are found only in the New World and are chiefly Neotropical in distribution, being one of the most characteristic groups of Tropical American crane-flies. They have a rather uniform general appearance but are very conspicuous by the handsomely striped brown and yellow thoracic pleura and the dark brown stigma of the wings. Like some species in the subgenus *Lipophleps* and others, the antennae of the male sex have verticils of most unusual length.

List of Species.

amazona Alexander. — Amazonian Brazil, Ecuador, Peru.
bifida Alexander. — Mexico.
gladiator Alexander. — Panama.
guayaquilensis Alexander. — Ecuador.
heteromera Alexander. — Peru.

latistyla Alexander. — Mexico, British Honduras.
lemniscata Alexander. — Colombia, Venezuela, Brazil.
micracantha Alexander. — Ecuador.
micromera Alexander. — Southeastern Brazil.
(naiguatana Alexander, see *lemniscata)*
peracuta Alexander. — Mexico.
peracuta conifera Alexander. — Costa Rica, Panama.
pleuralis (Williston). — Southeastern United States, through Antilles to Peru, southeastern Brazil.
spinistyla Alexander. — Mexico, Brazil.

Neolipophleps, subgen. n.

Characters as in *Lipophleps*, differing especially in the structure of the male hypopygium. Wings with cell M_2 open by atrophy of basal section of vein M_3, closed in *condensa;* anterior arculus broken. Male hypopygium with the dististyles, or profound branches of the same, three or even four in number, all terminal in position; intermediate style longest, appearing as a blackened spine or arm of various forms; innermost style fleshy or provided with a blackened spine; outermost style in cases lacking, usually present as a very slender spine, in cases this stouter. Phallosome usually consisting of a bilobed cushion and very weak and inconspicuous sclerotized points, including the aedeagus.

Type of subgenus: *Gonomyia (Neolipophleps) cinerea* (Doane).

As in the case of *Paralipophleps,* the distribution of the members of the present subgenus is solely American and chiefly Tropical. A very few species are Nearctic, including besides the subgenotype, *cinerea* (Doane) of the western United States, also *alexanderi* (Johnson) of the eastern United States. As in the case of *Paralipophleps,* members of this group are common and are eminently characteristic of the smaller crane-flies of Tropical America. The different species have the legs conspicuously patterned with white and are noteworthy in that the fore legs are differently colored from the remaining pairs. Similarly the costal border of the wings is usually broadly whitened and very conspicuous.

List of Species.

acuminata Alexander. — Ecuador, Peru, Argentina.
aequidens Alexander. — Mexico, Costa Rica.
aequispinosa Alexander. — Paraguay.
condensa Alexander. — Southeastern Brazil.
extenuata Alexander. — Southeastern Brazil.
falcifer Alexander. — Peru.

glabrispina Alexander. — Argentina.
helophila Alexander. — Southwestern United States, through Mexico and Central America to Peru.
machaeria Alexander. — Peru.
monacantha Alexander. — Puerto Rico.
monacantha platymera Alexander. — Cuba.
neofalcifer Alexander. — Venezuela.
rastriformis Alexander. — Mexico.
schadeana Alexander. — Brazil, Paraguay.
strigilis Alexander. — Mexico.
subfalcifer Alexander. — Paraguay.
trispinosa Alexander. — Argentina.

Aphrophila Edwards

Gnophomyia (Aphrophila) Edwards; Trans. New Zealand Inst., 54: 297; 1923.

There are eight described species in New Zealand and nearly as many more in Chile. In their general habits, the adult flies are very like the net-winged midges, Blepharoceridae, with which they are sometimes associated in nature. The adults are found close to the margins of mountain streams, often resting on the faces of boulders that are wet with spray, whence the generic name. This generic group, together with the primitive Blepharocerid genus *Edwardsina* Alexander, provides unusually strong evidence of a former Antarctic landbridge interconnecting Australia, New Zealand and southern South America. The venation of *carbonaria* is shown (Fig. 30).

List of Species.

aurantiaca Alexander. — Chile.
carbonaria Alexander. — Chile.
chilena Alexander. — Chile.
coronata Alexander. — Chile.
multidentata Alexander. — Chile.
viridinervis Alexander. — Chile.

The insufficiently known *Limnophila ? pallens* Philippi may well be a species of *Aphrophila* but will probably remain unrecognized unless the type material can be re-located.

Lipsothrix Loew

Lipsothrix Loew; Beschr. Eur. Dipt., 3: 69; 1873.
Electrolabis Alexander; Crane-flies of the Baltic Amber, Bernstein-Forschungen, Heft 2: 58, figs. 68, 70; 1931.

A relatively small and exceptionally distinct genus, the majority of the species being Holarctic in distribution, with a marked concentration of forms in the Himalayan area. A single

species occurs in Tropical America, *Lipsothrix neotropica* Alexander, of northern Panama (Fig. 31). This is the most southerly representative in the New World, there being three others in western North America and one further species in the eastern Nearctic Region.

The strict position in tribes of this genus remains much in question. There appear to be features both of venation and structure of the male hypopygium that point strongly to the genus *Protohelius* Alexander (Philippine Journ. Sci., 35: 466-467, figs. 5, 18; 1928) which is considered to be Limoniine and will be discussed in Part VIII of the present series of papers.

The immature stages of *Lipsothrix sylvia* (Alexander), of eastern North America were discovered in 1946 by Professor James Speed Rogers, Director of the Museum of Zoology of the University of Michigan. Through the most noteworthy efforts and studies of Professor Rogers on the biology and ecology of the Tipulidae our knowledge of the immature stages of this family, as regards the genera of Eastern North America, is virtually complete, with scarcely any important gaps remaining.