

## NEW OR LITTLE-KNOWN TIPULIDÆ FROM THE PHILIPPINES (DIPTERA), XIV<sup>1</sup>

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### THREE PLATES

The crane flies described in this report are all from Mindanao, where they were taken in Surigao Province by Mr. A. C. Duyag, and in Davao district by Mr. C. F. Clagg. The collections made by Mr. Duyag are rich in species that were not found by Mr. Clagg in his intensive collecting in the La Lun Mountains and on Mount Apo. I am very greatly indebted to the collectors, and to Mr. Richard C. McGregor, for the continued interest in making known the rich tipulid fauna of the Philippines. The types are preserved in my collection.

### TIPULINÆ

DOLICHOPEZA (NESOPEZA) ABDITA sp. nov. Plate 1, fig. 1; Plate 2, fig. 23.

General coloration dark brown; antennæ black, the basal portion of the first segment obscure yellow; legs dark brown, the outer tarsal segments white; wings with a strong blackish suffusion; Rs long; cell 2d A wide.

*Male*.—Length, about 10 millimeters; wing, 12.

Frontal prolongation of head obscure yellow; palpi black. Antennæ of moderate length, if bent backward extending about to base of abdomen; basal portion of scape yellow, the remainder of antennæ black; flagellar segments subcylindrical, with numerous coarse verticils. Head brown; anterior vertex broad.

Mesonotum chiefly brown, the præscutum indistinctly striped with darker, including a narrow median vitta that is bordered on either side by reddish; posterior sclerites of mesonotum dark brown, sparsely pruinose. Pleura obscure brownish yellow. Halteres elongate, dusky. Legs with the coxæ and trochanters obscure yellow; femora, tibiæ, and proximal ends of basitarsi dark brown, the remainder of tarsi white; on posterior tarsi,

<sup>1</sup> Contribution from the entomological laboratory, Massachusetts State College.

the entire segment is whitened. Wings (Plate 1, fig. 1) with a strong dusky tinge, cells C and Sc, together with a seam along Cu, somewhat darker brown; stigma brown; small whitish obliterative areas before the stigma and across the basal section of  $M_{1+2}$ ; veins dark brown. Venation: Rs long, exceeding  $R_{2+3}$ ; forks of medial field relatively short; cell 2d A wide.

Abdominal tergites and hypopygium brownish black, the sternites brownish yellow. Male hypopygium (Plate 2, fig. 23) with the caudal margin of tergite, 9t, transverse, with small obtuse lateral teeth and more acute submedian denticles. Outer dististyle, *od*, a broad flattened lobe, the apex subtruncate. Inner dististyle, *id*, very broad, produced into a slender apical beak, the margins heavily blackened.

MINDANAO, Davao district, Mount Apo, Baroring River, altitude 7,000 feet, November 9, 1930 (*Clagg*); holotype, male; allotype, female.

Because of the unusual length of Rs, the present species disagrees with all similar forms in the Philippine fauna. By my key to the species of this region,<sup>2</sup> the fly runs out at couplet 5, disagreeing with both included groups in the elongate Rs, in conjunction with the unmarked wings. In this fauna, it is closest to *hightensis* Alexander (couplet 13) in the wide cell 2d A and the distribution of white color on the legs, being well distinguished by the darkened wings, elongate Rs, and structure of the male hypopygium.

**DOLICHOPEZA (NESOPEZA) INORNATIPES** sp. nov. Plate 1, fig. 2; Plate 2, fig. 24.

Belongs to the *cuneata* group, *cinctitarsis* subgroup; mesonotum light brown to yellowish brown; legs black, the usual white areas much reduced in amount to almost obliterated; abdomen bicolorous; male hypopygium with the elongate tergite profoundly bifid, the mesal-apical angle of each lobe further produced into a glabrous straplike appendage.

*Male*.—Length, about 10 to 11 millimeters; wing, 10 to 11.

*Female*.—Length, about 11.5 to 12 millimeters; wing, 12 to 13.

Frontal prolongation of head yellow; basal segment of palpi pale, the remainder dark brown. Antennæ with the scape and pedicel brown, the flagellum black; flagellar segments black, with short verticils; antennæ (male) relatively long, if bent backward extending to the wing root or shortly beyond. Head light brown.

<sup>2</sup> Philip. Journ. Sci. 47 (1932) 169.

Mesonotum light brown to yellowish brown, the præscutum with a narrow darker median vitta. Pleura light yellowish brown to yellow. Halteres dark brown. Legs with the coxæ, trochanters, and narrow femoral bases obscure yellow; remainder of legs black, almost unvariegated, there being only a small amount of white on extreme base of tibia, and more obscurely on the outer tarsal segments; posterior legs with the proximal ends of basitarsi restrictedly dirty white. A few specimens of the large series show an increased amount of white on the legs. Wings (Plate 1, fig. 2) with a brownish tinge, cell Sc and the oval stigma darker brown; in cases, a narrow darkened seam on anterior cord; veins dark brown. Venation: As in the *cuneata* group, cell 2d A very narrow.

Abdomen bicolorous, the segments black at the incisures, obscure yellow medially, the dark color involving both the base and apex of the individual segments. Male hypopygium (Plate 2, fig. 24) with the tergite, 9t, long and narrow, highly arched as in the subgroup, with a deep median incision; mesal-apical angle of each lobe further produced into a slenderer, entirely glabrous, straplike portion; a narrow, elevated, blackened ridge, or carina, on ventral face near base of each tergal lobe. Ninth sternite, 9s, broad, the caudal margin broadly and evenly emarginate.

MINDANAO, Davao district, Mount Apo (*Clagg*); holotype, male; allotype, female, altitude 7,000 feet; November 8, 1930; paratypes, 20 of both sexes, altitude 6,000 to 7,000 feet, November 8 to 10, 1930.

By my key to the Philippine species of *Dolichopeza*,<sup>3</sup> the present species runs to *annulitarsis* Alexander (Luzon), differing in the longer antennæ, almost uniformly blackened legs, and the more-elongate glabrous appendage on each lobe of the tergite. The amount of white on the legs is here more reduced than in any other Philippine species of the subgenus *Nesopeza*.

**DOLICHOPEZA (NESOPEZA) BICORNIGERA** sp. nov. Plate 2, fig. 25.

Belongs to the *cuneata* group and subgroup; male hypopygium with the lateral angles prolonged into flattened acute horns, the median region emarginate, unarmed.

*Male*.—Length, about 11 to 11.5 millimeters; wing, 12 to 13.

*Female*.—Length, 12 to 13 millimeters; wing, about 12 to 12.5.

Frontal prolongation of head brown; palpi dark brown. Antennæ (male) dark brown, the basal two segments paler; rela-

<sup>3</sup> Loc. cit.

tively elongate, if bent backward extending to some distance beyond the wing root; verticils numerous but short. Head brown, paler in front.

Mesonotum relatively dark brown, almost unvariegated. Pleura testaceous yellow. Halteres elongate, dark brown. Legs with the coxæ and trochanters testaceous yellow; femora black; tibiæ black, the extreme base whitened; tarsi white, the central portion of basitarsi extensively blackened. Wings as in the *cuneata* group; stigma dark brown; a narrow and vague brown cloud on anterior cord; veins brown. Venation as in the group.

Abdomen bicolorous, the incisures blackened, the central portion of the individual segments more yellowish; outer segments more uniformly blackened; hypopygium obscure yellow. Male hypopygium (Plate 2, fig. 25) with the tergite, 9t, produced into conspicuous lateral flattened horns, their tips acute; median region of tergite pale, emarginate, provided with abundant yellow setæ but otherwise unarmed. Ninth sternite, 9s, with the apex weakly emarginate, the median area membranous, the lobes densely provided with setæ, those along margin at apex short and spinose, those of the lobes very long and slender, more or less decussate across the median area.

MINDANAO, Davao district, Mount Apo, Sibulan River, altitude 2,000 feet, October 8, 1930 (*Clagg*); holotype, male; allotype, female; paratypes, 18 of both sexes.

*Dolichopeza* (*Nesopeza*) *bicornigera* is very different from all other described species in the peculiar structure of the male hypopygium, especially of the ninth tergite. By my key to the Philippine species of this genus,<sup>4</sup> the species runs out at couplet 17 by this same peculiarity of structure. This fly will presumably be found to be a low-altitude species in the mountains of the western shore of Davao Gulf.

**DOLICHOPEZA (NESOPEZA) RIDIBUNDA sp. nov. Plate 2, fig. 26.**

Belongs to the *cuneata* group and subgroup; mesonotum brown, without distinct markings; legs black, the tarsi conspicuously variegated with snowy white; male hypopygium with the tergite acutely toothed; ninth sternite with a deep V-shaped median notch.

*Male*.—Length, about 10 millimeters; wing, 11 to 11.5.

*Female*.—Length, about 12.5 millimeters; wing, 13.

<sup>4</sup>Loc. cit.

Frontal prolongation of head brownish yellow, darker brown medially; palpi brownish black. Antennæ with the scape and pedicel light brown, the flagellum darker; antennæ (male) relatively long, if bent backward extending approximately to root of halteres; flagellar segments elongate, with short verticils; terminal segment very small. Head brown.

Mesonotum brown, without distinct markings. Pleura brownish yellow dorsally, more testaceous yellow on ventral portion. Halteres black. Legs with the coxæ and trochanters brownish yellow to yellow; femora yellow basally, passing into dark brown; tibiæ brownish black, the extreme base whitened; basitarsi mostly blackened, with about the proximal and apical fifth or sixth snowy white; remainder of tarsi white, the outer segments a trifle darkened. Wings with a faint brownish tinge, cell Sc a little darkened; stigma oval, dark brown; vague indications of a narrow brown seam on anterior cord; veins dark brown. Venation as in the group.

Abdomen ringed with black and obscure yellow, the latter color occupying the central portion of the individual segments, the dark becoming more extensive on the outer segments; hypopygium chiefly obscure yellow. Male hypopygium (Plate 2, fig. 26) with the tergite, 9t, relatively small, the caudal margin acutely toothed; lateral tooth slender, acute, glabrous, separated by a narrow U-shaped notch from a median plate that bears smaller acute lateral teeth and a small median denticle that is formed by the outward production of a ventral carina; surface of median plate and disk of tergite with abundant setæ. Caudal margin of ninth sternite, 9s, with a deep V-shaped median notch, the base of which is filled with membrane, the lobes obtusely rounded and provided with long delicate setæ.

MINDANAO, Davao district, Mount Apo, Baroring River, altitude 7,000 feet, November 9, 1930 (*Clagg*); holotype, male; allotype, female; paratype, male.

By my key to the Philippine species of *Dolichopeza*,<sup>5</sup> the present species runs out at couplet 18, disagreeing with both included species, *angustaxillaris* Alexander (Luzon) and *bagobo* Alexander (Mindanao), by the acute toothing of the ninth tergite and the deep median splitting of the ninth sternite. The nature of the toothing of the tergite is rather more like that of the Bornean *cuneata* Edwards, but still quite different.

\* Loc. cit.

## LIMONIINÆ

## LIMONIINI

LIMONIA (LIMONIA) MONILIS sp. nov. Plate 1, fig. 3.

*Male*.—Length, about 5 millimeters; wing, 6; antenna, about 2.3.

Closely allied to *Limonia* (*Limonia*) *multinodulosa* Alexander (Luzon), differing chiefly in the structure and coloration of the antennæ.

Antennæ slightly more elongate than in *multinodulosa*, the individual segments more elongate, especially the terminal segment; basal enlargement of segments black, the apical pedicels abruptly pure white, with only the extreme apex blackened; in *multinodulosa*, the base and pedicel of all segments are uniformly dark brown. Mesonotal præscutum without indications of lateral dark stripes. Wings (Plate 1, fig. 3) with Rs and  $R_{2+3}$  more elongate; distal section of  $M_{1+2}$  sinuous. Abdomen dark brown, the sternites paler. Male hypopygium very much as in *multinodulosa*.

MINDANAO, Davao district, Calian, La Lun Mountains, altitude 5,500 feet, January 1, 1931 (*Clagg*); holotype, male.

LIMONIA (LIMONIA) THETICA sp. nov. Plate 1, fig. 4; Plate 2, fig. 27.

General coloration of mesonotum reddish brown; pleura yellow, with a broad black dorsal stripe; antennæ relatively short, the flagellar segments without pedicels; legs brown, the tarsi and broad tips of all tibiæ white; wings with a brown tinge, the oval stigma darker brown;  $Sc_1$  ending about opposite two-thirds the length of Rs; male hypopygium with the basistyle slender, the lobe basal in position.

*Male*.—Length, about 3.3 millimeters; wing, 3.5.

Rostrum and palpi black. Antennæ black throughout; relatively short, the flagellar segments oval, with truncated ends but no pedicels; terminal segment a little longer than the penultimate, narrowed at apex. Head dark gray.

Mesonotal præscutum reddish brown, the posterior sclerites, including the median region of scutum and the scutellum, darker brown. Pleura yellow ventrally, the dorsal portion chiefly covered by a blackish longitudinal stripe, broadest anteriorly, narrower behind, passing beneath the root of the halteres to the abdomen. Halteres with blackened knobs, the stem somewhat paler. Legs with the fore coxæ darkened, remaining coxæ and all trochanters yellow; femora yellow basally, passing

to brown before midlength; tibiæ brown, the tips broadly white on all legs, the amount subequal; tarsi white; claws slender, simple or nearly so. Wings (Plate 1, fig. 4) with a brownish tinge, the oval stigma darker brown; veins dark brown. Costal fringe and macrotrichia of veins relatively long and conspicuous. Venation:  $Sc_1$  ending about opposite two-thirds the length of  $R_s$ ,  $Sc_2$  not far from its tip;  $R_s$  long, gently arcuated; free tip of  $Sc_2$  and  $R_2$  in transverse alignment; m-cu shortly before fork of  $M$ ; cell 2d A narrow.

Abdomen dark brown, including the hypopygium. Male hypopygium (Plate 2, fig. 27) with the tergite, 9*t*, long, narrowed outwardly, the apex shallowly bilobed by a small median notch. Basistyles, *b*, elongate, the ventromesal lobe rounded, basal in position. Dorsal dististyle, *dd*, a chitinized hook, slightly expanded before the acute tip. Ventral dististyle, *vd*, a small oval lobe, set with several long coarse setæ; rostral prolongation slender, terminating in a pale spine; no rostral spines are apparent in the unique type. Gonapophyses, *g*, dusky, the mesal-apical lobe obtuse at apex.

MINDANAO, Surigao Province, Mainit, March 4, 1931 (*Duyag*); holotype, male.

*Limonia* (*Limonia*) *thetica* is the fourth Philippine species of the subgenus to be described in which not only the tarsi but the tips of at least the posterior tibiæ are snowy white. It differs from *L. (L.) monilis* sp. nov. and *L. (L.) multinodulosa* Alexander in the short, nonpedicellate antennæ, and in having the tips of all tibiæ whitened. Its closest ally is *L. (L.) latiflava* Alexander (Luzon), which is still known only from the female sex. The latter species has the tarsi and tibial tips more yellowish,  $Sc$  much longer, ending just before the fork of the long  $R_s$ , and cell 2d A wider.

LIMONIA (LIMONIA) SEMANTICA sp. nov. Plate 1, fig. 5; Plate 2, fig. 28.

General coloration of mesonotum reddish brown; pleura variegated with darker; antennæ (male) elongate, moniliform; all tarsi white, the proximal ends of basitarsi restrictedly darkened; halteres pale, the knobs yellow, ringed with darker at base; wings faintly tinged with brown, the oval stigma a trifle darker; male hypopygium with two rostral spines on ventral dististyle; gonapophyses entirely pale, the mesal apical angle a curved pale spine.

*Male*.—Length, about 3 millimeters; wing, 3.6.

Rostrum small, dark-colored; palpi pale. Antennæ (male) moniliform, the pedicels paler brown than the brownish black enlargements; basal enlargements oval to cylindrical, not at all triangular in outline, provided with long erect setæ and sparse, unilaterally arranged verticils, the latter only a trifle longer than the more-delicate setæ; apical pedicels a little shorter than the bases, becoming still shorter on the outer segments; terminal segment elongate, narrowed at apex. Head blackish.

Mesonotal præscutum reddish brown, the posterior sclerites of mesonotum somewhat darker; præscutum produced cephalad over pronotum. Pleura obscure yellow, variegated with dark brown on anepisternum and on dorsal sclerites. Halteres yellow, the base of the knob narrowly ringed with darker. Legs with the fore coxæ slightly darkened; remaining coxæ and all trochanters more yellowish; femora dark brown, the bases yellowish; tibiæ dark brown; tarsi of all legs chiefly white, the proximal ends of basitarsi infuscated, most extensively so on the fore legs, narrowest on hind legs. Wings (Plate 1, fig. 5) with a faint brown tinge, the oval stigma a trifle darker brown; veins dark. Venation:  $Sc_1$  ending just beyond midlength of  $R_s$ ,  $Sc_2$  close to its tip; free tip of  $Sc_2$  and  $R_2$  both pale and in approximate transverse alignment; m-cu nearly half its length beyond the fork of  $M$ ; vein  $Cu_2$  widely separated from  $Cu_1$ .

Abdomen brown, the sternites paler. Male hypopygium (Plate 2, fig. 28) with the tergite,  $9t$ , transverse, the caudal margin not emarginate. Basistyle,  $b$ , relatively small, the mesal lobe divided into two lobules. Dorsal dististyle,  $dd$ , a curved chitinized rod, the apex suddenly narrowed to an acute spine. Ventral dististyle,  $vd$ , small, fleshy; rostral prolongation long and slender, terminating in a single elongate seta; rostral spines basal in position, two in number, placed close together. Gonapophyses,  $g$ , entirely pale, the mesal apical angle a gently curved pale spine.

MINDANAO, Surigao Province, Mainit, March 4, 1931 (*Duyag*); holotype, male.

*Limonia* (*Limonia*) *semantica* is very distinct from the other described Philippine species of the subgenus having white tarsi. The closest allies seem to be *L. (L.) candidella* Alexander and *L. (L.) subalbitarsis* Alexander, which differ conspicuously in the coloration of the body, the large size, and the structure of the antennæ and male hypopygia. The peculiar lobing of the mesal face of the basistyle of the present species is suggested



by *subalbitarsis*, but the relationship between the two species does not seem to be close.

**LIMONIA (LIMONIA) TRIGONELLA** sp. nov. Plate 1, fig. 6.

Closely allied to *trigonia*, differing most conspicuously in the very small size.

*Female*.—Length, about 4.5 millimeters; wing, 5.2.

Rostrum, palpi, and antennæ black. Head black, the anterior vertex silvery.

Mesonotum dark brown, the præscutum with four more-reddish brown stripes. Pleura dark brown. Halteres black. Legs with the coxæ and trochanters ochereous yellow; femora dark brown; tibiæ and tarsi more-brownish yellow. Wings (Plate 1, fig. 6) with a brownish tinge, heavily patterned with dark brown, including five or six major costal areas, and conspicuous seams along cord and outer end of cell 1st  $M_2$ ; areas in center of cell  $R_2$  and at end of vein  $R_3$  confluent behind, forming a Y-shaped figure, its stem crossing cells  $R_4$ ,  $R_5$ , 2d  $M_2$ , and  $M_3$ ; large areas at arculus and at ends of anal veins; costal areas at origin of  $R_s$ , end of  $Sc$  and at  $R_{1+2}$  very large and only narrowly separated by whitish areas; dark markings of wing conspicuously bordered by whitish.

Abdomen brownish black, the genital segments paler.

MINDANAO, Surigao Province, Mount Cantugas, March 18, 1931 (*Duyag*); holotype, female.

*Limonia (Limonia) trigonella* much resembles a tiny specimen of *L. (L.) claggi* Alexander or *L. (L.) trigonia* (Edwards), differing most evidently in the very small size. The male is still unknown and will very probably be found to yield distinct hypopygial characters.

**LIMONIA (LIBNOTES) ASTUTA** sp. nov. Plate 1, fig. 7.

General coloration of mesonotum brown, the lateral portions obscure yellow; wings with a restricted brown pattern; cells  $C$  and  $Sc$  above the origin of  $R_s$  undarkened; cell 1st  $M_2$  shorter than any of the veins issuing from it; vein 2d  $A$  strongly arched.

*Female*.—Length, about 6 millimeters; wing, 7.5.

Rostrum and palpi brownish black. Antennæ brownish black throughout; flagellar segments oval, with short apical necks; verticils short, the longest unilaterally arranged. Head dark gray; anterior vertex reduced to a linear strip that is about as wide as the outer row of ommatidia.

Pronotum dark brown medially, paler laterally. Mesonotum obscure brownish yellow, the median area occupied by a broad dark brown stripe, widened behind by the confluence of the reduced lateral stripes; posterior sclerites of mesonotum dark brown, sparsely pruinose. Pleura more or less darkened, slightly pruinose, the ventral sclerites more yellowish. Halteres dark brown. Legs with the coxæ and trochanters yellow, the fore coxæ more infuscated; femora obscure yellow, passing into dark brown toward tips; tibiæ brown; tarsi broken. Wings (Plate 1, fig. 7) with a pale yellow tinge, cells C and Sc clearer yellow; a restricted dark brown pattern, arranged as follows: A darkening at arculus and in bases of cells R and M; a conspicuous oval seam at end of Sc; stigmal, over the free tip of Sc<sub>2</sub>; cord and outer end of cell 1st M<sub>2</sub>; R<sub>2</sub>; a marginal seam in outer radial field; narrow brown seams on veins R<sub>2+3</sub> and Cu; veins brown, pale yellow in the flavous costal areas. Macrotrichia of veins long and conspicuous. Venation: Sc<sub>1</sub> ending about opposite r-m, Sc<sub>2</sub> at its tip; free tip of Sc<sub>2</sub> more than its own length before R<sub>2</sub>; veins beyond cell 1st M<sub>2</sub> elongate; m-cu before midlength of cell 1st M<sub>2</sub>; vein 2d A short.

Abdominal tergites bicolorous, the bases of the individual segments brown, the apices conspicuously yellow; sternites more uniformly yellow, the subterminal segments more darkened. Ovipositor with the cerci shorter than the hypovalvæ, notched at tips; bases of hypovalvæ conspicuously blackened.

MINDANAO, Davao district, Mount Apo, Sibulan River, altitude 7,000 to 8,000 feet, September 21, 1930 (*Clagg*); holotype, female.

*Limonia (Libnotes) astuta* is most closely allied to *L. (L.) banahaoensis* Alexander (Luzon), differing in the body coloration, wing pattern, and venation. The restricted dark pattern of the wings does not include any portion of cells C or Sc above the origin of Rs.

**LIMONIA (LIBNOTES) QUADRIPLAGIATA** sp. nov. Plate 1, fig. 8; Plate 2, fig. 29.

General coloration of mesonotum dark brown, the præscutum with three more-reddish brown stripes; pleura chiefly dark brown; femora brownish yellow, passing into brown outwardly, the tip narrowly pale yellow; wings light yellow, the costal margin with four conspicuous brown areas; male hypopygium with the outer dististyle and gonapophyses heavily blackened.

*Male*.—Length, about 8 millimeters; wing, 9.

Rostrum and palpi brownish black. Antennæ with the basal two segments black; flagellum broken. Head gray; anterior

vertex reduced to a narrow strip that is only a trifle wider than the outer row of ommatidia.

Pronotum black. Mesonotal præscutum dark brown, the three stripes more reddish brown, the median one so indicated only in front; scutal lobes conspicuously darkened; median region of scutum and the scutellum more testaceous yellow; postnotal mediotergite dark brown. Pleura chiefly dark brown, vaguely marked with restricted areas of yellowish. Halteres infuscated, the base of stem narrowly yellow; stem conspicuously fringed with long setæ. Legs with the coxæ and trochanters yellow; femora brownish yellow, darkened outwardly, the tips narrowly and abruptly yellow; tibiæ and tarsi brownish yellow, the outer tarsal segments darkened. Wings (Plate 1, fig. 8) light yellow, the costal region clearer yellow; four large and conspicuous brown costal areas, the first above the arculus, the others at origin of Rs, tip of Sc, and tip of  $R_{1+2}$ ; cord and outer end of cell 1st  $M_2$  narrowly seamed with brown; wing margin narrowly and vaguely darkened, especially in the axillary region. Venation: Sc long,  $Sc_1$  ending about opposite m-cu,  $Sc_2$  at its tip; basal section of  $R_{4+5}$  very short, subequal to r-m; free tip of  $Sc_2$  and  $R_2$  in transverse alignment; cell 1st  $M_2$  long and narrow, m-cu at near midlength; vein 2d A beyond base gently converging toward 1st A, thence strongly diverging to margin.

Abdomen bicolorous, dark brown, the caudal margins of the individual segments conspicuously yellow; hypopygium more yellowish. Male hypopygium (Plate 2, fig. 29) with the tergite, 9t, deeply emarginate medially, each lobe obtusely rounded. Dorsal dististyle, *dd*, a powerful, slightly curved, blackened rod. Ventral dististyle, *vd*, a small suboval lobe, its mesal face produced into two lobules, as figured. Gonapophyses, *g*, with the mesal apical region produced into a powerful blackened beak.

MINDANAO, Davao district, Mount Apo, Baroring River, altitude 6,000 feet, November 10, 1930 (*Clagg*); holotype, male.

By existing keys to the subgenus *Libnotes*, the present species runs to *L. (L.) longinervis* (Brunetti), from the Indian Himalayas. It is distinguished by the darker coloration of the body, and the different wing coloration and pattern, together with details of venation, as the much longer vein Sc and cell 1st  $M_2$ .

**LIMONIA (LIBNOTES) HENRICI** sp. nov. Plate 1, fig. 9.

Head and thorax, with all appendages, black; wings strongly suffused with brown, the costal region more blackened; abdomen red, the basal tergite and genital segments of both sexes black.

*Male*.—Length, about 9 millimeters; wing, 10.

*Female*.—Length, about 12 millimeters; wing, 12.

Head, including appendages, black.

Entire thorax, including halteres and legs, black. Wings (Plate 1, fig. 9) with a very strong brown tinge, the prearcular region, cells C and Sc, and the stigma blackish; veins brown to dark brown. Venation: Sc long, Sc<sub>1</sub> ending nearly opposite m-cu, Sc<sub>2</sub> at its tip; Rs oblique, nearly straight to weakly sinuous; free tip of Sc<sub>2</sub> far before R<sub>2</sub>, the distance longer than m-cu; m-cu at near midlength of cell 1st M<sub>2</sub>; vein 2d A long, at base converging toward 1st A.

Abdomen with the basal tergite and genital segments of both sexes black, the intermediate region bright red, the lateral line narrowly blackened in male; hypopygium black; valves of ovipositor horn-colored.

MINDANAO, Davao district, Mount Apo, Galog River, altitude 6,000 feet (*Clagg*); holotype, male, October 27, 1930; allotype, female, November 6, 1930.

*Limonia* (*Libnotes*) *henrici* is named in honor of Mr. J. Henry Clagg, father of the collector of the types. It belongs to the *semperi* group of the subgenus, differing notably from the other included species in having the head and thorax intense black, instead of orange.

LIMONIA (ALEXANDRIARIA) NATHALINÆ sp. nov. Plate 1, fig. 10; Plate 2, fig. 30.

General coloration of mesonotum polished black, including the præscutal shield; pleura yellow, the anepisternum and pteropleurite black, the pleurotergite gray; wings tinged with brown, the prearcular region more yellowish.

*Male*.—Length, about 4.5 millimeters; wing, 5.

Rostrum and palpi black. Antennæ black throughout; flagellar segments short-oval, the terminal segment not elongated. Head black, the broad anterior vertex and narrow posterior orbits silvery.

Pronotum black, paler laterally. Mesonotal præscutum almost covered by a polished black shield, only the humeral triangles obscure yellow; scutal lobes polished black; median region of scutum and the scutellum testaceous-yellow; postnotal mediotergite black, more or less pruinose. Pleura obscure yellow, the anepisternum and pteropleurite polished black, the pleurotergite heavily gray pruinose. Halteres with the stem pale, the knobs dark brown. Legs with the coxæ and trochan-

ters yellow; femora yellow, the tips narrowly infuscated; tibiæ and tarsi brownish black. Wings (Plate 1, fig. 10) tinged with brownish, the prearcular region more yellowish; stigma very pale brown. Venation:  $Sc_1$  ending far before origin of Rs, the distance about one-half longer than Rs;  $Sc_1$  long; Rs short, a little more than one-half the basal section of  $R_{4+5}$ .

Abdomen dark brown, the ventral dististyle of the hypopygium paler. Male hypopygium (Plate 2, fig. 30) with the caudal margin of the tergite, 9t, very deeply notched, the lateral angles produced into slender lobes that are tipped with long black setæ. Ventral dististyle, *vd*, larger than in *argyrata*, the rostral spines somewhat longer, exceeding the prolongation in length.

MINDANAO, Davao district, Calian, La Lun Mountains, altitude 5,500 feet, December 29, 1930 (*Clagg*); holotype, male.

*Limonia* (*Alexandriaria*) *nathalinæ* is named in honor of Mrs. Nathalin Clagg, mother of the collector, Mr. Charles F. Clagg, whose various trips to Mount Apo have added greatly to our knowledge of the distribution of Tipulidæ in Mindanao. It is most closely allied to *L. (A.) argyrata* Alexander (Formosa, Luzon) differing in the blackened mesonotum, the extensive black areas on the thoracic pleura, and details of structure of the male hypopygium, as the narrower lateral lobes of the tergite and the longer spines of the rostral prolongation of the ventral dististyle.

**LIMONIA (ALEXANDRIARIA) TECTA** sp. nov. Plate 1, fig. 11; Plate 3, fig. 31.

General coloration yellow, the mesonotal præscutum with a single median black stripe that widens out at the suture, being evidently formed by the confluence of the short laterals with the usual median area; femora obscure yellow, the tips narrowly dark brown; wings subhyaline, the stigma dark brown, clearly defined;  $Sc_1$  very long, exceeding the distal section of  $M_{1+2}$ ; Rs shorter than the basal section of  $R_{4+5}$ .

*Male*.—Length, about 3.5 millimeters; wing, 4.5.

*Female*.—Length, about 3.5 millimeters; wing, 4.2.

Rostrum obscure yellow; palpi brownish black. Antennæ brownish black throughout; flagellar segments oval, the terminal segment elongate. Head light brown.

Mesonotal præscutum obscure yellow, the median area with a single black stripe that widens at the suture; a small median area of yellow behind this stripe on præscutum; scutal lobes

brownish black, the median region yellow; scutellum and post-notal mediotergite chiefly darkened. Pleura light yellow. Halteres yellow, the knobs dark brown. Legs with the coxæ and trochanters yellow; femora obscure yellow, the tips narrowly dark brown; tibiæ brown, the tarsi paling to yellow. Wings (Plate 1, fig. 11) subhyaline, the stigma dark brown, clearly defined; veins brownish black. Venation:  $Sc_1$  ending some distance before origin of Rs, the distance on costa being longer than Rs alone;  $Sc_1$  very long, exceeding the distal section of  $M_{1+2}$ ; Rs shorter than the basal section of  $R_{4+5}$ ; cell 2d A relatively narrow, the outer end pointed.

Abdominal tergites dark brown, the sternites paler, the more proximal sternites with their bases darkened. Male hypopygium (Plate 3, fig. 31) with the tergite, 9t, transverse, the caudal margin very gently emarginate. Ventral dististyle, *vd*, a large fleshy lobe, the rostral prolongation bearing a stout powerful spine that is evidently formed by the fusion or very close approximation of two spines.

MINDANAO, Davao district, Mount Apo, Galog River, altitude 6,000 feet (*Clagg*); holotype, female, September 26, 1930; allotype, male, September 9, 1930.

*Limonia* (*Alexandriaria*) *tecta* differs from the somewhat similar *L. (A.) argyrata* Alexander (Formosa, Luzon) and *L. (A.) nathalinæ* sp. nov. in the pattern of the head and thorax, the dark brown, clearly defined stigma, and, especially, the structure of the male hypopygium, notably the feebly emarginate tergite. *Limonia (A.) brevissima* Alexander (Luzon) has a similarly darkened stigmal area, but is very different in the unusually short, transverse Rs. The present species has  $Sc_1$  longer than any other regional species of the subgenus.

**HELIUS (HELIUS) COSTOSETOSUS** sp. nov. Plate 1, fig. 12; Plate 3, fig. 32.

General coloration dark brown; legs black, the tarsi paling to brownish yellow; wings grayish subhyaline, cells C and Sc more yellowish; a conspicuous erect costal fringe; cell 1st  $M_2$  small, with m-cu at near midlength.

*Male*.—Length, about 5.5 to 5.7 millimeters; wing, 6 to 6.2.

*Female*.—Length, about 6 to 6.5 millimeters; wing, 5.5 to 5.8.

Rostrum dark brown, a little longer than the remainder of head; palpi brownish black. Antennæ dark brown throughout; flagellar segments oval, clothed with a dense erect pubescence and short verticils. Head brownish gray.

Mesonotum chiefly dark brown, the humeral region somewhat brighter. Pleura chiefly dark brown, the ventral sternopleurite a little brightened. Halteres brownish black, the base of the stem narrowly pale. Legs with the coxæ brownish yellow; trochanters obscure yellow; femora yellow at base, the remainder passing to black; tibiæ black; tarsi chiefly brownish yellow, the outer segments brightening to yellow. Wings (Plate 1, fig. 12) grayish subhyaline, cells C and Sc more yellowish; stigma elongate, pale brown; veins dark brown. Costal margin of both sexes, but more especially of the male, with a long erect fringe of setæ. Venation: Sc<sub>1</sub> ending nearly opposite the fork of Rs, Sc<sub>2</sub> at its tip; anterior branch of Rs sinuous, on distal third running close to vein R<sub>1+2</sub>, the two elements relatively close together at margin; m subequal to the second section of M<sub>1+2</sub> or the basal section of M<sub>3</sub>; m-cu near or beyond midlength of cell 1st M<sub>2</sub>.

Abdominal tergites dark brown, the basal sternites yellowish, the outer segments more darkened; hypopygium light brown. Male hypopygium (Plate 3, fig. 32) with the basistyle, *b*, relatively slender. Outer dististyle, *od*, a nearly straight rod, the apex more blackened and weakly bidentate. Inner dististyle, *id*, with the basal two-thirds more enlarged, provided with coarse erect setæ, the distal third narrowed to a flattened bladeliike portion that is provided with small delicate punctures. Ædeagus, *a*, long, forming a weak coil.

MINDANAO, Surigao Province, Mount Diuata, April 10 to 17, 1931 (*Duyag*); holotype, male; allotype, female; numerous paratypes of both sexes.

By my key to the Philippine species of *Helius*,<sup>6</sup> the present species runs to couplet 10, where it disagrees with all species in the venation, notably the shape of cell 1st M<sub>2</sub> and the position of m-cu at near midlength of the cell. The long conspicuous costal fringe likewise distinguishes the fly from other forms found in the Islands. From the somewhat similar *H. (H.) costofimbriatus* Alexander (Riukiu Islands), the present fly is readily told by the details of venation, as the position of m-cu.

**HELIUS (HELIUS) DEVINCTUS** sp. nov. Plate 1, fig. 13; Plate 3, fig. 33.

General coloration dark brown; antennæ (male) elongate, if bent backward extending nearly to base of abdomen; legs black, the tarsi paling to brownish yellow; wings with a faint brown tinge, cells C and Sc, with the stigma, darker brown; costal

<sup>6</sup> Philip. Journ. Sci. 47 (1932) 184.

fringe short and inconspicuous; m-cu at near midlength of cell 1st  $M_2$ ; male hypopygium with a hairy lobe on mesal face of basistyle at or beyond midlength.

*Male*.—Length, about 4 to 4.5 millimeters; wing, 4.5 to 5.

Rostrum brownish black, somewhat longer than the remainder of head; palpi black. Antennæ brownish black, in male of a somewhat unusual length for a member of this genus of flies, if bent backward extending nearly to base of abdomen; flagellar segments cylindrical, clothed with a dense erect pubescence. Head black.

Mesonotum chiefly dark brown, the præscutum vaguely lined with paler, especially near suture; scutellum obscure yellow, darkened medially at base. Pleura conspicuously dark brown on dorsal portion, the ventral sclerites and pteropleurite a little paler. Halteres brownish black. Legs with the coxæ and trochanters yellow to brownish yellow, the fore coxæ somewhat darker; remainder of legs black, the outer tarsal segments paling to brownish yellow. Wings (Plate 1, fig. 13) with a faint brown tinge, cells C and Sc, together with the stigma, darker brown; veins dark brown. Costal fringe short and inconspicuous. Venation: Anterior branch of Rs strongly arcuated at origin, on distal two-thirds extending generally parallel to  $R_{1+2}$ ; m-cu at or beyond midlength of cell 1st  $M_2$ , in approximate transverse alignment with r-m.

Abdominal tergites dark brown, the sternites more reddish brown, the caudal margins of the intermediate segments a trifle darkened; hypopygium yellowish brown. Male hypopygium (Plate 3, fig. 33) with the basistyle, *b*, relatively slender, the mesal face on distal half with a conspicuous hairy lobe. Outer dististyle, *od*, a very slender, nearly straight rod, the apex entire or nearly so. Gonapophyses, *g*, appearing as very slender curved spines from a dilated base.

MINDANAO, Surigao Province, Mainit, March 21 to 27, 1931 (*Duyag*); holotype, male; allotype, female; paratypes, several of both sexes; Mount Cantugas, March 19, 1931 (*Duyag*); paratypes, several of both sexes.

*Helius* (*Helius*) *devinctus* is generally similar to *H. (H.) costosetosus* sp. nov., differing most evidently in the elongate antennæ of the male, short costal fringe in both sexes, and the very different structure of the male hypopygium. By my key to the Philippine species of *Helius*,<sup>7</sup> this fly runs to exactly the

<sup>7</sup> Loc. cit.



same place as does *costosetosus*, differing from the various included species in the same characters. The presence of the hairy lobe on the basistyle of the male hypopygium suggests the condition found in the Formosan *H. (H.) tenuistylus* Alexander and allied species, but the present fly is very different in venation and in details of structure of the hypopygium.

## HEXATOMINI

*ULA AURITARSIS* sp. nov. Plate 1, fig. 14.

General coloration dark brown, including the knobs of halteres; legs brown, the tarsi and narrow tips of the middle and hind tibiæ light yellow; wings strongly infuscated; cell 1st  $M_2$  very small.

*Male*.—Length, about 6 millimeters; wing, 7.

*Female*.—Length, about 7 millimeters; wing, 7.

Rostrum and palpi black. Antennæ with the scape and pedicel dark brown, the flagellum black; flagellar segments long-oval. Head dark gray.

Pronotum brownish gray. Mesonotum dark brown, the humeral region of præscutum obscure yellow; median region of scutum and the scutellum obscure brownish yellow, the latter slightly infuscated along caudal margin. Pleura chiefly dark brown, the pteropleurite, ventral sternopleurite, and meral region more yellowish. Halteres obscure yellow, the knobs dark brown. Legs with the coxæ and trochanters obscure yellow; femora brownish yellow, the tips passing to darker brown; tibiæ pale brown, the tips of middle and hind tibiæ narrowly light yellow; tarsi light yellow, the proximal ends of fore basitarsi infuscated. Wings (Plate 1, fig. 14) with a strong brown tinge, the stigma darker; wing base slightly yellowish; veins dark brown. Macrotrichia of cells very abundant beyond cord, in cell M continued basad as a central line of trichia, and along caudal margin of wing as a marginal series in both anal cells. Venation: Cell 1st  $M_2$  very small.

Abdominal tergites dark brown, the sternites more yellowish, subterminal segments ringed with dark brown; hypopygium obscure yellow.

MINDANAO, Davao district, Calian, La Lun Mountains, altitude 5,500 feet, at trap lantern, January 1, 1931 (*Clagg*); holotype, male; allotype, female.

*Ula auritarsis* is readily told from *U. mindanica* by the characters given in the accompanying key to the Philippine species of *Ula*.

*Key to the Philippine species of Ula.*

1. Legs, including the tarsi, dark brown..... *U. mindanica* Alexander.  
Legs dark brown, the tarsi abruptly light yellow.

*U. auritarsis* sp. nov.

**LIMNOPHILA (LIMNOPHILA) PETULANS** sp. nov. Plate 1, fig. 15; Plate 3, fig. 34.

Antennæ with the scape and pedicel brownish black, the flagellum yellow; general coloration of thorax brownish black; knobs of halteres dark brown; legs yellow, the femora with a very vague darker subterminal ring; wings with the ground color pale yellow, with a heavy brown, much broken, ocellate pattern; abdomen, including the hypopygium, dark brown.

*Male*.—Length, about 5 millimeters; wing, 5.8.

Rostrum and palpi dark brown. Antennæ short; scape and pedicel brownish black, the flagellum pale yellow, the outer segments a trifle darker. Head brownish gray; anterior vertex broad.

Mesonotal præscutum brown, more blackish laterally; posterior sclerites of mesonotum brownish black, sparsely pruinose. Pleura brownish black. Halteres dusky, the knobs dark brown. Legs with the coxæ and trochanters dark brown; femora yellow, with a narrow, vaguely darker ring before the tip; tibiæ and tarsi yellow; the segments with long conspicuous yellow setæ. Wings (Plate 1, fig. 15) with the ground color pale yellowish, very heavily patterned with brown, this pattern arranged chiefly as much broken ocelli, centering about the origin of Rs, the cord, outer end of cell 1st  $M_2$ , and the center of the radial field; in addition, all cells of wing with additional spots and dots of brown, those in the costal cell appearing as narrow transverse lines. Costal fringe relatively short. Wing widest just beyond the termination of vein 2d A. Venation:  $Sc_1$  ending opposite fork of Rs,  $Sc_2$  at its tip;  $R_2$  subequal to  $R_{1+2}$ ; veins  $R_3$  and  $R_4$  diverging strongly at margin, cell  $R_3$  correspondingly widened; m-cu at near one-third the length of cell 1st  $M_2$ ; vein 2d A ending just basad of the widest part of wing.

Abdominal tergites dark brown, sparsely yellow pollinose; sternites with the central portion obscure yellow, bordered on all sides with darker; hypopygium brownish black. Male hypopygium (Plate 3, fig. 34) with the outer dististyle, *od*, a simple rod, curved at apex to an acute point, the outer fourth or fifth with microscopic setulæ. Inner dististyle, *id*, broad. Gonapophyses, *g*, appearing as long, paddlelike blades.

MINDANAO, Davao district, Mount Apo, Poraka River, altitude 6,500 feet, September 8, 1930 (*Clagg*); holotype, male.

*Limnophila* (*Limnophila*) *petulans* is most nearly allied to *L. (L.) murudensis* Edwards (Borneo), differing especially in the uniformly darker body coloration, the dark brown knobs of the halteres, the uniformly yellow tibiæ and tarsi, more-broken ocellate wing pattern, and blackened hypopygium.

#### Genus PILARIA Sintenis

##### Subgenus EUPILARIA novum

Generally similar to *Pilaria*, s. s., differing especially in the venation of the radial field of the wing. Tuberculate pits and pseudosutural foveæ present but pale. Antennæ with basal flagellar segments short and crowded, the outer segments with long conspicuous verticils. Wings with the anterior branch of Rs short, about one-third the posterior branch, cell  $R_3$  at margin being some five times as wide as cell  $R_2$ ; cell  $M_1$  lacking.

Type of the subgenus, *Pilaria phænosoma* Alexander (Oriental Region).

Besides the type, *Pilaria auranticolor* sp. nov. and *P. leucopeza* Alexander belong to this group. The three known species are found only in the Philippines, but the group will very probably be found to have a much wider range in the Oriental Region.

PILARIA (EUPILARIA) AURANTICOLOR sp. nov. Plate 1, fig. 16; Plate 3, fig. 35.

General coloration fiery orange; antennæ black, the scape brownish yellow; all tarsi brown; wings strongly tinged with fulvous; abdomen orange; male hypopygium with the outer dististyle slender, weakly bidentate at apex; each gonapophysis terminating in two conspicuous spines.

*Male*.—Length, about 8 millimeters; wing, 8.2.

Head deep orange. Antennæ with the scape brownish yellow, the remainder, including the pedicel, black.

Thorax fiery orange, the scutal lobes and scutellum weakly pruinose. Halteres yellow, the knobs dark brown. Legs with the coxæ and trochanters yellow; femora obscure yellow, the tips narrowly infuscated; tibiæ and tarsi brown. Wings (Plate 1, fig. 16) with a strong fulvous tinge, much brighter than in *phænosoma*; prearcular and costal regions more yellowish; stigma small, a little darker than the ground color.

Abdomen fiery orange, including the hypopygium. Male hypopygium (Plate 3, fig. 35) with the tergite, 9t, only slightly produced medially, the central portion irregularly notched, as shown, the lobules formed being densely set with microscopic setulæ. Outer dististyle, od, slender, gently curved near apex,

the tip weakly bidentate. Gonapophyses, *g*, slender, each terminating in two spines.

MINDANAO, Surigao Province, Mainit, March 4, 1931 (*Duyag*); holotype, male.

*Pilaria* (*Eupilaria*) *auranticolor* is closely related to *P. (E.) phænosoma* Alexander (Luzon), differing most evidently and decisively in the structure of the male hypopygium, especially the conformation of the tergal margin, the slender outer dististyle, and the conspicuous spinous gonapophyses.

#### ERIOPTERINI

GONOMYIA (LIOPHLEPS) SAGITTIFERA sp. nov. Plate 1, fig. 17; Plate 3, fig. 36.

Belongs to the *skusei* group; general coloration dark brown; antennæ brownish black throughout; pleura striped longitudinally with whitish; knobs of halteres obscure yellow; legs brownish black; wings brownish gray, the stigma ill-defined; Sc long, Sc<sub>1</sub> ending about opposite one-third the length of Rs; male hypopygium with the outer dististyle a very long, slender, blackened hook.

*Male*.—Length, about 3.4 to 3.5 millimeters; wing, 4.2 to 4.3.

Rostrum brown; palpi brownish black. Antennæ brownish black throughout, relatively elongate for a member of this group; flagellar segments long-cylindrical, clothed with numerous erect setæ. Head brownish black.

Pronotum pale yellowish white. Mesonotal præscutum dark brown, sparsely pruinose with gray, the extreme lateral margin yellow; pseudosutural foveæ polished, dark colored; median region of scutum obscure yellow, darker behind; scutellum light yellow; postnotal mediotergite brownish gray, the extreme anterolateral portions yellow. Pleura dark brown, sparsely pruinose, with a broad longitudinal whitish stripe occupying the ventral pleurites; sclerites surrounding the wing root obscure yellow. Halteres dusky, the knobs yellow. Legs with the coxæ obscure brownish yellow; trochanters obscure yellow; remainder of legs brownish black. Wings (Plate 1, fig. 17) with a faint brownish gray suffusion, the stigmal region weakly darker; veins dark brown. Venation: Sc long, Sc<sub>1</sub> ending about opposite one-third the length of Rs, Sc<sub>2</sub> some distance from its tip; cell 1st M<sub>2</sub> closed; m-cu near fork of M.

Abdominal tergites dark brown, the sternites obscure yellow; hypopygium obscure yellow. Male hypopygium (Plate 3, fig. 36) with the basistyle, *b*, terminating in two fleshy lobes. Outer dististyle, *od*, a very long, slender, blackened hook that is curved

to the acute point. Inner dististyle a straight to slightly arcuated pale club, the apex of the style slightly dilated and bearing a stout fasciculate seta at inner apical angle. Phallosome, *p*, a massive flattened structure, the ædeagus elongate.

MINDANAO, Davao district, Mount Apo, Sibulan River, altitude 7,000 to 8,000 feet, September 21, 1930 (*Clagg*); holotype, male; paratypes, two males.

*Gonomyia* (*Lipophleps*) *sagittifera* is very distinct from *G. (L.) acanthophallus* Alexander (Mindanao) and *G. (L.) longiradialis* Alexander (Luzon), the most nearly allied regional species of the group, in the large, powerfully constructed male hypopygium.

GYMNASTES (PARAGYMNASTES) HYLÆA sp. nov. Plate 1, fig. 18; Plate 3, fig. 37.

General coloration of mesonotal præscutum brownish yellow, with three nearly confluent shiny black stripes; head yellow; femora black, with a narrow yellow subterminal ring; wings whitish subhyaline, crossbanded with dark brown, including a narrow band at level of origin of Rs, one at cord and the broad apex; cell R<sub>2</sub> very small, strongly narrowed to closed at outer end.

*Male*.—Length, about 5.5 millimeters; wing, 5.2.

Rostrum and palpi black. Antennæ with the scape and pedicel obscure yellow; flagellum black; flagellar segments short-oval, with elongate, unilaterally arranged verticils; outer segments more elongate. Head obscure yellow.

Pronotum obscure yellow. Mesonotal præscutum brownish yellow, largely covered by three nearly confluent shiny black stripes; lateral margin of præscutum behind the pseudosutural foveæ more obscurely darkened; posterior sclerites of mesonotum chiefly blackened. Pleura dull black, the ventral sternopleurite more reddish brown. Halteres blackened, the apices of the knobs obscure yellow. Legs with the coxæ blackened; trochanters brownish yellow; femora obscure yellow at base, blackened outwardly, with a narrow yellow subterminal ring at nearly three times its width from apex; tibiæ and tarsi blackened. Wings (Plate 1, fig. 18) whitish subhyaline, heavily patterned with dark brown, arranged chiefly as three transverse bands, the basal one at level of origin of Rs narrow and nearly parallel-sided; second band at cord, widest near costa; apical area broadest; cells C and Sc darkened; an isolated brown area covering outer end of cell 1st M<sub>2</sub>; vein Cu and axilla weakly seamed with brown. Costal fringe conspicuous. Venation:

Cell  $R_2$  reduced to a tiny triangle by the approximation of veins  $R_{1+2}$  and  $R_3$ .

Abdominal tergites black, the caudal margins of the segments restrictedly pale; sternites similar, the yellow incisures somewhat more extensive in area. Male hypopygium (Plate 3, fig. 37) with the dististyle,  $d$ , a simple, obtusely rounded plate.  $\text{\AA}$ edeagus,  $a$ , an elongate compressed blade.

MINDANAO, Surigao Province, Mainit, March 4, 1931 (*Duyag*); holotype, male.

*Gymnastes* (*Paragymnastes*) *hylæa* is most nearly allied to *G. (P.) pictipennis* Edwards (Siam) in the general pattern of the legs and wings, and the venation, especially the much-reduced cell  $R_2$ . It differs in the variegated coloration of the thorax and abdomen, the wing pattern, especially the narrow basal fascia, and the structure of the male hypopygium, especially of the dististyle.

I have here restricted the subgeneric term *Gymnastes* to include only the species having cell  $R_2$  entirely obliterated by the fusion of veins  $R_2$ ,  $R_3$ , and  $R_{1+2}$ . The more-numerous species of the genus having cell  $R_2$  present are placed in the modified subgenus *Paragymnastes* Alexander, which has hitherto included only species from the Australasian Region. The distinctions between the two groups are admittedly very weak but parallel corresponding distinctions found in the closely allied genera *Teucholabis* Osten Sacken (with *Paratropesa* Schiner) and *Gonomyia* Meigen (with *Lipophleps* Bergroth and *Ptilostenodes* Alexander). *Gymnastes* seems distinct from *Teucholabis* in the scaly covering of the legs and in the manner in which cell  $R_2$  has been lost by the approximation and fusion back from the margin of the veins that inclose it.

**TEUCHOLABIS (TEUCHOLABIS) RUTILANS** sp. nov. Plate 1, fig. 19; Plate 3, fig. 38.

General coloration of thorax polished reddish orange; head black, sparsely pruinose; antennæ black throughout; halteres black; legs black, the femora with a conspicuous yellow ring on apical half; wings with slightly more than the basal half whitish, the distal portion and costal region dark brown;  $Sc$  long; cell 1st  $M_2$  closed; abdomen black.

*Male*.—Length, about 7.5 millimeters; wing, 7.5.

Rostrum and palpi black. Antennæ black throughout; basal flagellar segments globular, the smaller outer segments passing into oval; verticils of moderate length, exceeding the segments. Head black, sparsely pruinose, especially on anterior vertex.

Pronotum, mesonotum, and pleura polished reddish orange, the meral region blackened. Halteres short, brownish black. Legs with the fore and middle coxæ reddish orange, the posterior coxæ and trochanters black; femora black, with a conspicuous yellow ring beyond midlength; tibiæ and tarsi black; legs stout and conspicuously hairy. Wings (Plate 1, fig. 19) with the costal region and approximate distal half of wing dark brown, the proximal portions whitish; the darkened areas include the prearcular region, cells C and Sc, the radial field except the proximal ends of cells R<sub>1</sub>, R<sub>4</sub>, and R<sub>5</sub>, and a linear streak in center of cell R<sub>2</sub>; distal third of cell 1st M<sub>2</sub> and outer three-fourths of cell M<sub>4</sub> darkened; veins dark. Venation: Sc long, Sc<sub>1</sub> ending at near two-thirds the length of Rs, Sc<sub>2</sub> at near midlength of origin of Rs and tip of Sc<sub>1</sub>; veins R<sub>4</sub> and R<sub>5</sub> long and extending generally parallel to one another; cell 1st M<sub>2</sub> closed; m-cu less than its length beyond fork of M.

Abdomen, including hypopygium, black. Male hypopygium (Plate 3, fig. 38) with the outer apical angle of basistyle, *b*, produced into a slender black spine. Dististyle, *d*, as shown, the outer apical angle produced into a slender lobe that bears two setæ.

MINDANAO, Davao district, Mount Apo, Sibulan River, altitude 2,000 feet, October 11, 1930 (*Clagg*); holotype, male.

*Teucholabis* (*Teucholabis*) *rutilans* is very different from the remaining species of the genus in the Philippines. It is somewhat similar in general features to *T. (T.) plecioides* de Meijere (Java), differing especially in the pattern of the legs and wings. The known Philippine species of the genus may be separated by the following key:

*Key to the Philippine species of Teucholabis.*

1. Cell 1st M<sub>2</sub> open by atrophy of basal section of M<sub>3</sub>..... 2.  
     Cell 1st M<sub>2</sub> closed ..... 3.
2. Cell 2d M<sub>2</sub> relatively shallow, shorter than its petiole. (Luzon.)  
     *T. (T.) confluenta* Alexander.  
     Cell 2d M<sub>2</sub> deep, about one-half longer than its petiole. (Mindanao.)  
     *T. (T.) confluentoides* Alexander.
3. Wings pale yellow, the narrow apex and a crossband at cord pale brown;  
     costal fringe (male) long and conspicuous. (Luzon.)  
     *T. (T.) quinquemaculata* Alexander.  
     Wings either uniformly darkened (*majuscula*) or else dimidiate, the  
     basal half whitish, the distal portion darkened (*rutilans*); costal  
     fringe short in both sexes..... 4.
4. Legs uniformly blackened; wings uniformly suffused with yellowish  
     brown. (Mindanao.) ..... *T. (T.) majuscula* Alexander.

Legs black, the femora with a conspicuous yellow ring on distal half; wings dimidiate, whitish, the distal half or a little less darkened. (Mindanao.) ..... *T. (T.) rutilans* sp. nov.

TAIWANINA MINDANICA sp. nov. Plate 1, fig. 20.

General coloration dark brown; pronotum obscure yellow; a silvery white longitudinal stripe on thoracic pleura; halteres yellow, the knobs blackened; femora black, the bases yellowish, most extensively so on posterior legs; wings cream-yellow, with a handsome brown pattern, arranged more or less reticulately; distal section of Cu<sub>1</sub> short, about one-half m-cu; abdominal sternites two to six, inclusive, with paired whitish spots at base.

*Male*.—Length, about 6.5 millimeters; wing, 6.4.

Rostrum nearly as long as remainder of head, black, the mouth parts much reduced to virtually lacking. Antennæ with the scape and pedicel black, the flagellum brownish yellow, passing into darker brown outwardly; fusion segment elongate, involving about seven or eight segments, the outer flagellar segments with their sutures lacking or nearly so, delimited chiefly by constrictions and the arrangement of the long conspicuous verticils; terminal segment slender, linear. Eyes very large, with coarse ommatidia; vertex reduced to a narrow strip; eyes broadly contiguous beneath. Head dark brownish gray.

Pronotum obscure yellow, with a brown lateral spot. Mesonotal præscutum strongly produced over the pronotum, as in the genus, dark brown, narrowly bordered in front with yellow, the brown passing into brownish black laterally, forming an abrupt contrast with the yellow border; posterior sclerites of notum dark brown. Pleura black, with a broad silvery white longitudinal stripe extending from the propleura, passing beneath the root of the halteres; dorsopleural membrane pale yellow, variegated with brownish black. Halteres pale yellow, the knobs blackened. Legs with the coxæ and trochanters brownish black; bases of femora narrowly yellow, passing into black, the amount of yellow most extensive on the posterior legs where more than the basal half is included; tibiæ yellow, the base and apex narrowly whitened; basitarsi yellow, narrowly dark brown at proximal end; remainder of tarsi yellow. Wings (Plate 1, fig. 20) with the ground color cream-yellow, handsomely patterned with dark brown and grayish brown, the darkened areas more or less reticulate; large areas at origin of Rs and stigma, with narrow seams along cord and outer end of cell 1st M<sub>2</sub>, connected with a reticulate area in center of outer radial field;



bases of cells R and M restrictedly darkened; a dusky wash in bases of cells M and Cu; dark marginal clouds at near mid-width of anal cells; veins black, C, Sc, and R light yellow. Venation: Much as in *pandoxa*, differing in certain details; Rs spurred at origin; distal section of Cu<sub>1</sub> very short, about one-half m-cu and diverging strongly from it; anal veins bent strongly to margin.

Abdomen black; sternites two to six, inclusive, with conspicuous paired whitish spots at base; hypopygium black.

MINDANAO, Davao district, Mount Apo, Baroring River, altitude 7,000 feet, November 8, 1930 (*Clagg*); holotype, male.

The discovery of a second species of *Taiwanina* is of much interest. The type and only previously known species is *T. pandoxa* Alexander (Formosa). In characters the present species conforms very closely to the genotype and so adds little to our knowledge of the exact position of the group. The fusion segment of the antennæ is even more profound than in *pandoxa*, and the sutures between the remaining flagellar segments are scarcely indicated. The short rostrum, with greatly reduced mouth parts, the anteriorly produced præscutum, and the venation are all much as in the genotype. In the structure of the head, as the rostrum and antennæ, and of the thorax, as the produced præscutum and the extensive sternopleurite, the resemblance to *Toxorhina* is well indicated. I cannot but feel that the group is closer to *Toxorhina* than to the *Heliaria*, despite the simple setæ of the legs and the general structure of the male hypopygium, the latter being similar in general features to members of the *Heliaria*. *Taiwanina mindanica* is readily told from *T. pandoxa* by the diversified wing pattern and the very short distal section of vein Cu<sub>1</sub>.

TRENTEPOHLIA (MONGOMA) PERSIMILIS sp. nov.

*Male*.—Length, 8 to 9 millimeters; wing, 7.5 to 8.

*Female*.—Length, 8.5 to 9 millimeters; wing, 8.

Very similar to *T. (M.) brevifusa* Alexander (Luzon), differing chiefly in the longer legs and darker coloration of the body. Mesonotum uniformly dark brown, the ventral pleurites paler. Setæ of body longer and more conspicuous, including the two groups on the sternopleurite and the series on the præscutal interspaces. Apical fusion of veins Cu<sub>1</sub> and 1st A very slight to almost lacking.

MINDANAO, Surigao Province, Mainit (*Duyag*); holotype, male, March 22, 1931; allotype, female, March 25, 1931; para-

topotype, 1 male, with allotype; paratypes, males and females, Mount Cantugas, March 17, 1931; males and females, Diuata Mountains, April 10, 1931.

**TRENTEPOHLIA (MONGOMA) ALBOTERMINALIS** sp. nov. Plate 1, fig. 21.

General coloration of mesonotum dark brown; head black, with median carina on vertex; legs dark brown, the tarsi and tips of all tibiæ white; wings grayish subhyaline; inner end of cell  $M_3$  lying far proximad of cells  $R_5$  or  $2d\ M_2$ .

*Male*.—Length, 5.5 to 6 millimeters; wing, 5 to 6.

Rostrum yellowish brown. Antennæ brownish black throughout. Head black, the vertex with a median carina.

Mesonotum dark brown, the præscutum paler laterally. Pleura obscure yellow, the dorsal portions darker. Halteres short, dusky, the extreme base of stem yellow. Legs with the coxæ and trochanters obscure yellow; femora and tibiæ dark brown, the tips of the latter abruptly white, the amount subequal on all legs and including about the outer tenth of the segment; tarsi white; fore femora on basal portion with a few erect stout setæ. Wings (Plate 1, fig. 21) grayish subhyaline, the costal region narrowly darker; veins brown. Venation: Cell  $R_3$  large; inner end of cell  $M_3$  lying far proximad of either  $R_5$  or  $2d\ M_2$ ; apical fusion of veins  $Cu_1$  and  $1st\ A$  slight.

Abdomen, including hypopygium, dark brown.

MINDANAO, Surigao Province, Mainit (*Duyag*); holotype, male, March 24, 1931; paratype, male, March 23, 1931.

*Trentepohlia (Mongoma) alboterminalis* is readily told from the other described regional species of the subgenus *Mongoma* by the conspicuous whitened tips of all tibiæ. By my latest key to the Philippine species of *Trentepohlia*,<sup>8</sup> the present species runs to *T. (M.) pennipes* (Osten Sacken), a very different species with feathered mid-tibiæ.

**TRENTEPOHLIA (ANCHIMONGOMA) BEATA** sp. nov. Plate 1, fig. 22.

General coloration brownish black; legs brownish black, the tarsi chiefly snowy white; wings with more than the cephalic half strongly suffused with blackish, the posterior portions more grayish.

*Male*.—Length, about 6 millimeters; wing, 5 to 5.5.

*Female*.—Length, 6 to 6.5 millimeters; wing, 5 to 5.5.

Rostrum and palpi black. Antennæ black throughout, relatively elongate in male, if bent backward extending about to

<sup>8</sup> Philip. Journ. Sci. 43 (1930) 297–298.

base of abdomen; flagellar segments cylindrical, with verticils shorter than the segments. Head black.

Mesonotum almost uniformly dark brown. Pleura dark brown dorsally, the ventral pleurites more yellowish. Halteres black, the base of stem restrictedly pale. Legs with the coxæ and trochanters yellowish brown; femoral bases pale, the remainder dark brown; tibiæ entirely brownish black; tarsi snowy white, with nearly the proximal half (fore legs) to third (posterior legs) brownish black. Wings (Plate 1, fig. 22) with a strong blackish suffusion on more than the cephalic half, the posterior portion, including cells  $R_5$  to 2d A, more grayish; veins dark brown. Venation:  $Sc_1$  ending opposite or shortly before proximal end of  $R_2$ ;  $Sc_2$  shortly before fork of  $Rs$ .

Abdominal tergites, including hypopygium, black; basal sternites obscure yellow.

MINDANAO, Surigao Province, Diuata Mountains, April 10, 1931 (*Duyag*); holotype, male; Mount Cantugas, March 19, 1931 (*Duyag*); allotype, female; paratypes, several of both sexes, with the types.

*Trentepohlia* (*Anchिमongoma*) *beata* is very distinct from the only other Philippine species of the subgenus, *T. (A.) apoicola* Alexander, in the pattern of the legs, with no white on the femoral tips of tibial bases. The species is more nearly allied to the subgenotype, *T. (A.) simplex* (Brunetti), of India, differing conspicuously in the coloration of the wings and legs.

## ILLUSTRATIONS

[Legend: *a*, aedeagus; *b*, basistyle; *dd*, dorsal dististyle; *g*, gonapophysis; *id*, inner dististyle; *od*, outer dististyle; *p*, phallosome; *s*, 9th sternite; *t*, 9th tergite; *vd*, ventral dististyle.]

### PLATE 1

- FIG. 1. *Dolichopeza* (*Nesopeza*) *abdit*a sp. nov., wing.  
 2. *Dolichopeza* (*Nesopeza*) *inornatipes* sp. nov., wing.  
 3. *Limonia* (*Limonia*) *monilis* sp. nov., wing.  
 4. *Limonia* (*Limonia*) *thetica* sp. nov., wing.  
 5. *Limonia* (*Limonia*) *semantica* sp. nov., wing.  
 6. *Limonia* (*Limonia*) *trigonella* sp. nov., wing.  
 7. *Limonia* (*Libnotes*) *astuta* sp. nov., wing.  
 8. *Limonia* (*Libnotes*) *quadriplagiata* sp. nov., wing.  
 9. *Limonia* (*Libnotes*) *henrici* sp. nov., wing.  
 10. *Limonia* (*Alexandriaria*) *nathalinæ* sp. nov., wing.  
 11. *Limonia* (*Alexandriaria*) *tecta* sp. nov., wing.  
 12. *Helius* (*Helius*) *costosetosus* sp. nov., wing.  
 13. *Helius* (*Helius*) *devinctus* sp. nov., wing.  
 14. *Ula* *auritarsis* sp. nov., wing.  
 15. *Limnophila* (*Limnophila*) *petulans* sp. nov., wing.  
 16. *Pilaria* (*Eupilaria*) *auranticolor* sp. nov., wing.  
 17. *Gonomyia* (*Lipophleps*) *sagittifera* sp. nov., wing.  
 18. *Gymnastes* (*Paragymnastes*) *hylæa* sp. nov., wing.  
 19. *Teucholabis* (*Teucholabis*) *rutilans* sp. nov., wing.  
 20. *Taiwanina* *mindanica* sp. nov., wing.  
 21. *Trentepohlia* (*Mongoma*) *alboterminalis* sp. nov., wing.  
 22. *Trentepohlia* (*Anchimongoma*) *beata* sp. nov., wing.

### PLATE 2

- FIG. 23. *Dolichopeza* (*Nesopeza*) *abdit*a sp. nov., male hypopygium.  
 24. *Dolichopeza* (*Nesopeza*) *inornatipes* sp. nov., male hypopygium, details.  
 25. *Dolichopeza* (*Nesopeza*) *bicornigera* sp. nov., male hypopygium, details.  
 26. *Dolichopeza* (*Nesopeza*) *ridibunda* sp. nov., male hypopygium, details.  
 27. *Limonia* (*Limonia*) *thetica* sp. nov., male hypopygium.  
 28. *Limonia* (*Limonia*) *semantica* sp. nov., male hypopygium.  
 29. *Limonia* (*Libnotes*) *quadriplagiata* sp. nov., male hypopygium.  
 30. *Limonia* (*Alexandriaria*) *nathalinæ* sp. nov., male hypopygium.

### PLATE 3

- FIG. 31. *Limonia* (*Alexandriaria*) *tecta* sp. nov., male hypopygium.  
 32. *Helius* (*Helius*) *costosetosus* sp. nov., male hypopygium.  
 33. *Helius* (*Helius*) *devinctus* sp. nov., male hypopygium.  
 34. *Limnophila* (*Limnophila*) *petulans* sp. nov., male hypopygium.  
 35. *Pilaria* (*Eupilaria*) *auranticolor* sp. nov., male hypopygium.  
 36. *Gonomyia* (*Lipophleps*) *sagittifera* sp. nov., male hypopygium.  
 37. *Gymnastes* (*Paragymnastes*) *hylæa* sp. nov., male hypopygium.  
 38. *Teucholabis* (*Teucholabis*) *rutilans* sp. nov., male hypopygium.

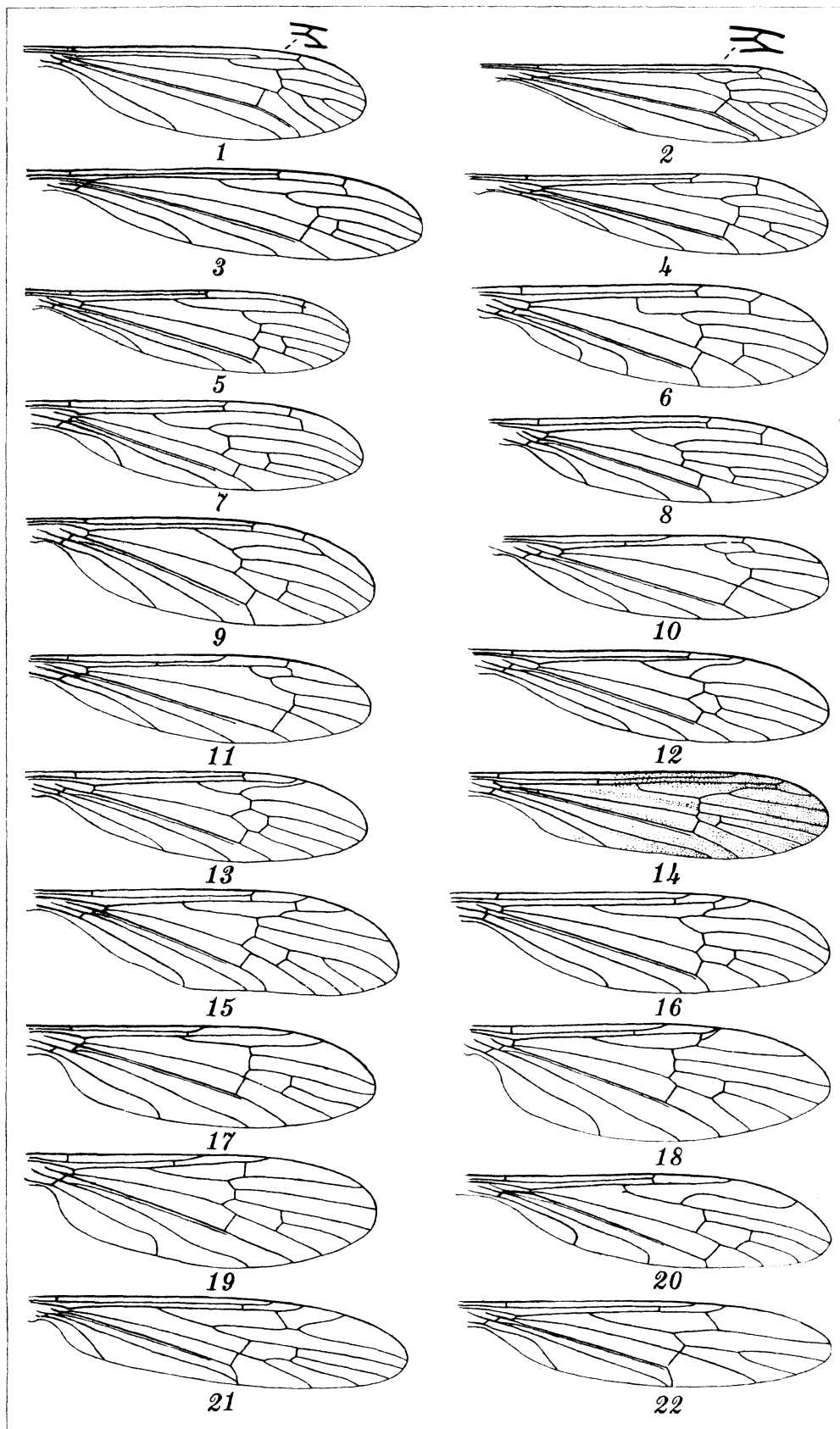


PLATE 1.

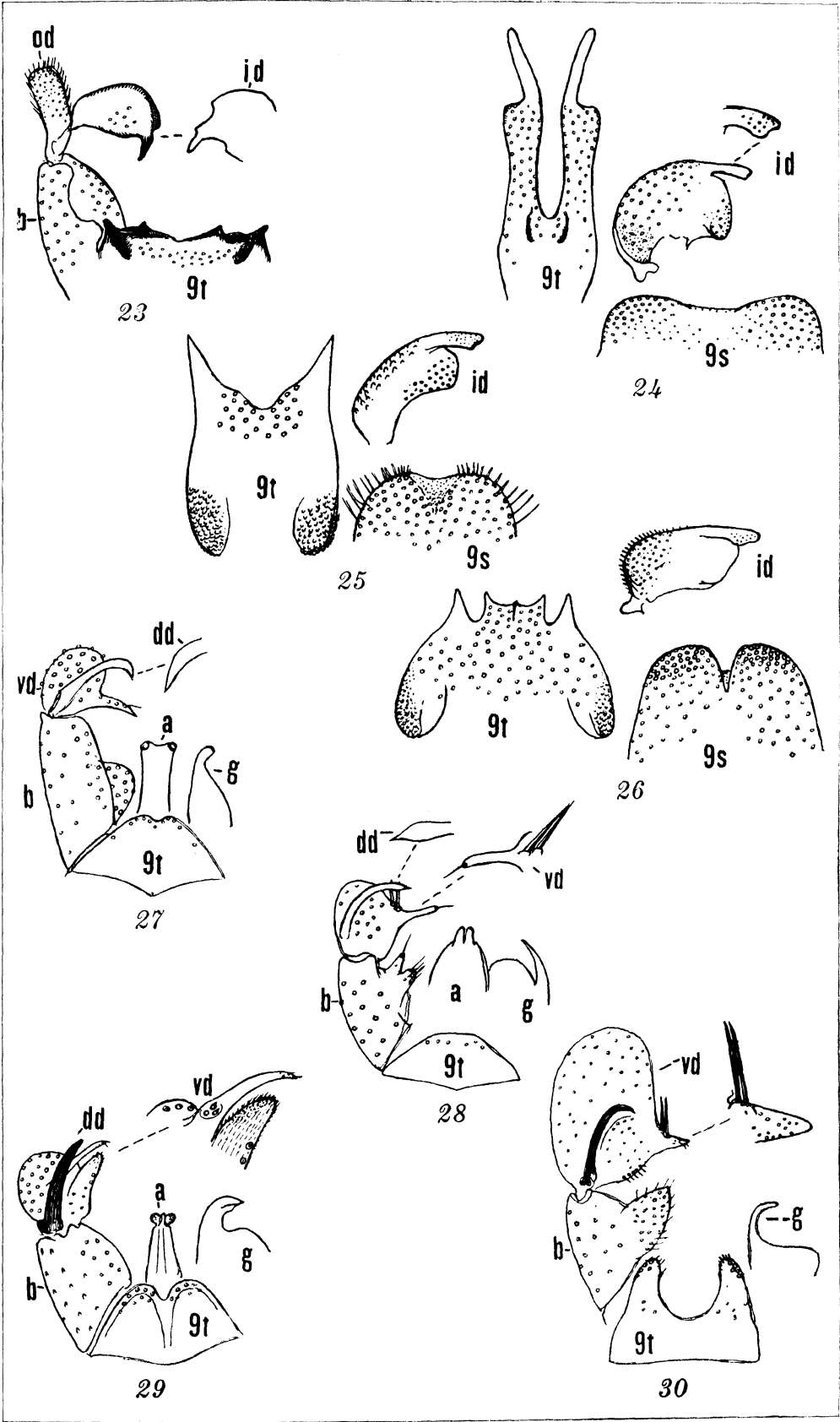


PLATE 2.

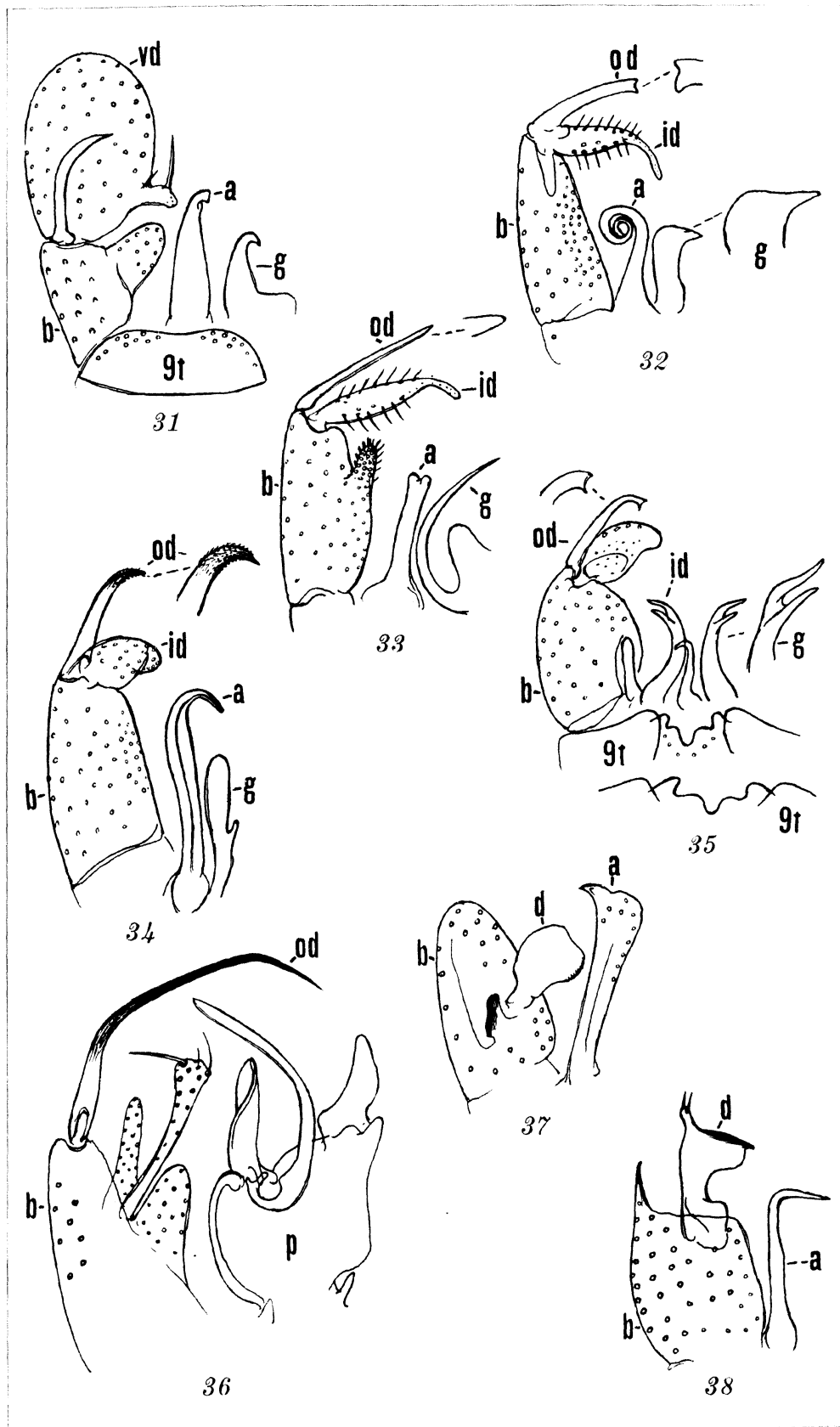


PLATE 3.