NEW OR LITTLE-KNOWN TIPULIDÆ FROM THE PHILIPPINES (DIPTERA), XVI[1]

By CHARLES P. ALEXANDER

Of Amherst, Massachusetts

FOUR PLATES

The present continuation of this series of papers on the tipulid fauna of the Philippines is based on extensive collections made in Tayabas Province, Luzon, by Francisco Rivera, and in Davao district, Mindanao, by Charles F. Clagg. I am very deeply indebted to the collectors of the material, and to Richard C. McGregor, for continued interest in the crane flies of this rich faunal area and for the privilege of retaining in my collection the types of the novelties herein described. Keys to the Philippine species of *Tipula, Epiphragma, Limnophila,* and *Pilaria* are provided.

TIPULINÆ

Genus TIPULA Linnæus

Tipula LINNÆUS, Syst. Nat. ed. 10 (1758) 585.

The known Philippine species of *Tipula* fall within the limits of two well-defined subgenera, *Indotipula* Edwards and *Tipulodina* Enderlein. *Indotipula*[2] is well-represented in the Oriental Region, with fewer species in the adjoining portions of the eastern Palæarctic and Australasian Regions. The subgenus is strongly represented in the Philippines. Previous references made by the present writer to the subgenus *Acutipula* Alexander[3] should be referred to *Indotipula.*

A few characters additional to those given in the original definition by Edwards may be stated. Antennæ 12-segmented, the twelfth segment a mere button; verticils very long; flagellar segments sometimes binodose (*sulaica, angustilobata*). Male hypopygium with the tergite entirely distinct from the sternite-basistyle. Basistyle separated from the sternite by an in-

[1] Contribution from the entomological laboratory, Massachusetts State College.

[2] Ann. & Mag. Nat. Hist. X 8 (1931) 81.

[3] Philip. Journ. Sci. 45 (1931) 263.

complete suture. Most of the species known to the writer (*manobo* sp. nov. is an exception) have a series of from six to twenty flattened setæ in a single linear row near the outer margin of the inner dististyle. Most of the species have cell M_1 petiolate, as usual in the genus, but a few (*latilobata, manobo, riverai*) have the cell sessile.

The Japanese and Chinese species *okinawensis* Alexander, *suensoni* Alexander, and *yamata* Alexander are likewise correctly placed in *Indotipula*. Species in the typical subgenus *Tipula* having similar paired submedian lobes on the ninth tergite differ in having the tergite and sternite-basistyle fused into a continuous ring.

The subgenus *Tipulodina* [4] is well represented in the Philippines by several closely allied species that are most readily separated by details of coloration and structure of the antennæ and male hypopygium. I follow Edwards [5] in placing *Tipulodina* as a subgenus of *Tipula*. The adult flies present few or no decisive characters of generic value, but the nature of the pronotal breathing horns of the pupa in *Tipulodina* indicates that we are here dealing with an isolated group that may require still further consideration as to its strict position when the species are better known. This subgenus is one of the most characteristic in the Oriental Region, with a few additional forms invading the eastern Palæarctic and Ethiopian Regions. The veins of the wing beyond the cord in *Tipulodina* are not entirely devoid of macrotrichia, but veins R_{2+3}, R_{4+5}, and at least the basal portion of R_3 are provided in most species with a nearly complete series of such setæ, the greatest reduction in number being found in species such as *pedata* Wiedemann where only vein R_{4+5} possesses such trichia. In some species, as *mckeani* Cockerell, vein M_1 likewise has macrotrichia throughout its entire length.

The Philippine species of *Tipula* may be separated by means of the accompanying key, which is based in large part on characters of the male sex.

Key to the Philippine species of Tipula Linnæus.

1. Fore tibiæ without spurs; middle tibiæ without, or with but a single spur; legs unvariegated with white; wing tip clear or, if darkened (*fuscoangustata*), the pattern continuous with the stigmal area. (Subgenus *Indotipula* Edwards.) 2.

[4] Zoöl. Jahrb. 32 pt. 1 (1912) 30–32.
[5] Ann. & Mag. Nat. Hist. X 8 (1931) 76.

Fore tibiæ with one spur; middle tibiæ with two spurs; legs, in almost all regional species, conspicuously variegated with snowy-white rings (lacking in *deprivata*); wing tip darkened, the area separated from the stigmal darkening. (Subgenus *Tipulodina* Enderlein.) ..... 8.

2. Cell M_1 deep, sessile or nearly so (*riverai* group) ..... 3.
   Cell M_1 normal, its petiole subequal to m ..... 5.
3. Male hypopygium with the lateral lobes of the ninth tergite narrow, separated from one another by a broad U-shaped notch ..... 4.
   Male hypopygium with the lateral lobes of the ninth tergite broad, separated from one another only by a narrow linear notch. (Mindanao.) ..... *latilobata* sp. nov.
4. Male hypopygium with the median region of the tergal notch produced into a blunt rounded lobe. (Luzon.) ..... *riverai* Alexander.
   Male hypopygium without lobe at base of tergal notch. (Mindanao.) *manobo* sp. nov.
5. Wings with cells C and Sc dark brown, this coloration continued around margin to wing apex; a conspicuous dark cloud on anterior cord. (Luzon.) ..... *fuscoangustata* Alexander.
   Wings without darkening in outer end of radial cells or on anterior cord ..... 6.
6. Antennæ short, the basal flagellar segments bicolorous, yellow, with the enlargements blackened. (Luzon.) ..... *ubensis* sp. nov.
   Antennal flagellum uniformly blackened ..... 7.
7. Flagellar segments (male) binodose, each segment with a conspicuous distal protuberance, in addition to the basal enlargement. (Mindanao.) ..... *angustilobata* sp. nov.
   Flagellar segments (male) simple, without distal protuberance. (Luzon.) ..... *ifugao* sp. nov.
8. Wings with a dark spot in cell M at near midlength, more extensive in female and then including also cell R ..... 9.
   Wings without such a darkened area ..... 11.
9. Basitarsi black, with a clearly defined white ring at near midlength. (Luzon.) ..... *cagayanensis* (Alexander).
   Tarsi, including all basitarsi, at most with a nearly obsolete whitish area ..... 10.
10. Tibiæ and tarsi entirely blackened. (Mindanao.) *deprivata* sp. nov.
    Tibiæ and tarsi with obscure whitish areas that are poorly delimited, most distinct in female. (Luzon.) ..... *succinipennis* (Alexander).
11. Legs with basitarsi black, in cases narrowly tipped with white ..... 12.
    Legs with basitarsi black, each with a white ring at near midlength. 13.
12. Wings hyaline, iridescent; Rs relatively long, subequal to R_{2+3}, leaving an extensive clear area between it and stigma. (Luzon.) *luzonica* (Alexander).
    Wings tinged with yellowish; Rs very short, about two-thirds R_{2+3}, practically bordering the inner end of stigma. (Luzon.) *pampangensis* (Alexander).
13. Wings hyaline; mid-basitarsi with white ring; cell 1st M_2 of wings broad, the basal section of vein M^{1+2} more than one-half the second section. (Luzon.) ..... *tabuanensis* (Alexander).

Wings with a faint yellowish tinge; mid-basitarsi with the white ring either entirely lacking or barely indicated; cell 1st M_2 of wings narrow, the basal section of M_{1+2} less than one-half the second section. (Luzon.) ..... *varitarsis* sp. nov.

The species of *Tipula* in the Philippines, with references to the part of the Philippine series of papers where recorded from the Archipelago, are as follows:

Tipula (*Indotipula*) *angustilobata* sp. nov.; this report.
Tipula (*Indotipula*) *fuscoangustata* Alexander; ALEXANDER, Philippines VI, Philip. Journ. Sci. 41 (1930) 293–294.
Tipula (*Indotipula*) *ifugao* sp. nov.; this report.
Tipula (*Indotipula*) *latilobata* sp. nov.; this report.
Tipula (*Indotipula*) *manobo* sp. nov.; this report.
Tipula (*Indotipula*) *riverai* Alexander; ALEXANDER, Philippines, IV, Philip. Journ. Sci. 33 (1927) 292–293.
Tipula (*Indotipula*) *ubensis* sp. nov.; this report.
Tipula (*Tipulodina*) *cagayanensis* (Alexander); ALEXANDER, Philippines, VII, Philip. Journ. Sci. 43 (1930) 280–281; also, this report.
Tipula (*Tipulodina*) *deprivata* sp. nov.; this report.
Tipula (*Tipulodina*) *luzonica* (Alexander); ALEXANDER, Philippines, II, Philip. Journ. Sci. 27 (1925) 79–81.
Tipula (*Tipulodina*) *pampangensis* (Alexander); ALEXANDER, Philippines, VIII, Philip. Journ. Sci. 45 (1931) 265–266.
Tipula (*Tipulodina*) *succinipennis* (Alexander); ALEXANDER, Philippines, VII, Philip. Journ. Sci. 43 (1930) 279–280.
Tipula (*Tipulodina*) *tabuanensis* (Alexander); ALEXANDER, Philippines, VII, Philip. Journ. Sci. 43 (1930) 277–278.
Tipula (*Tipulodina*) *varitarsis* sp. nov.; this report.

Philippine references to *Tipula* (*Tipulodina*) *cinctipes* de Meijere by Bezzi and to *T.* (*T.*) *pedata* Wiedemann by Osten Sacken, presumably, refer to some one or other of the above-listed species.

TIPULA (INDOTIPULA) LATILOBATA sp. nov. Plate 1, fig. 1; Plate 2, figs. 23, 24.

Belongs to the *riverai* group; mesonotum chiefly yellow, the vague præscutal stripes slightly more orange; flagellar segments with very long verticils; wings grayish subhyaline, cell Sc infuscated, cell C a little less darkened; cell M_1 sessile or nearly so; male hypopygium with the lobes of the ninth tergite very broad, separated from one another only by a linear notch.

Male.—Length, about 14 to 15 millimeters; wing, 15 to 17.5.

Female.—Length, about 20 to 22 millimeters; wing, 18 to 19.

Frontal prolongation of head short, obscure yellow; nasus distinct; palpi obscure yellow. Antennæ 12-segmented; scape and pedicel pale yellow, flagellum black; flagellar segments with long verticils; flagellar segments relatively long and only feebly

incised beyond basal enlargement, the apical portion subsinuous (Plate 2, fig. 23); terminal segment very small, about equal in size to the basal enlargement of the other segments. Head above obscure yellow, infuscated medially on vertex.

Mesonotum chiefly yellow, the præscutum with vague indications of more orange stripes. Pleura yellow, immaculate, or with somewhat more orange areas on ventral sternopleurite. Halteres infuscated, the base of stem narrowly paler. Legs with the coxæ and trochanters pale yellow; femora obscure yellow, the tips narrowly blackened; tibiæ brownish yellow, the tips gradually passing into black; tarsi black. Wings (Plate 1, fig. 1) grayish subhyaline, cell Sc infuscated, cell C slightly less darkened; stigma dark brown; very narrow and vague darkenings at wing tip and on anterior cord; veins black. Venation: Cell M_1 very deep, narrowly sessile to very short petiolate.

Abdominal tergites chiefly blackened, including the hypopygium, the basal tergite yellow; basal sternites yellowish. Male hypopygium relatively large, lengthened dorsoventrally, as frequent in the subgenus; tergal region large, extended ventrad, separated from the sternite by an incomplete suture; eighth sternite produced ventrad into a prowlike structure. Median region of tergite (Plate 2, fig. 24, 9*t*) produced into two broad, flattened lobes that are separated from one another only by a linear notch, the apices of the lobes subtruncate to obliquely truncate, densely set with small black spicules. Dististyles (Plate 2, fig. 24, *d*) united at base to an unusual degree, the outer style, *od*, bearing a small glabrous triangular lobule near base; inner style, *id*, of nearly equal size and conformation, short and obtuse, with from seven to nine flattened setæ along outer margin. Notch of ninth sternite with a depressed flattened pale lobe on median line.

MINDANAO, Davao district, Mount Apo (*Clagg*); holotype, male, altitude 6,000 feet, Mainit River, November 15, 1930; allotype, female, altitude 6,500 feet, Mainit River, September 14, 1930; paratypes, altitude 6,000 feet, September 3 and 4, October 12, and November 5, 1930; altitude 6,500 feet, September 5 to 10, 1930; altitude 8,000 feet, September 16, 1930.

The sessile or subsessile cell M_1 of the wings suffices to separate this fly from all allied regional species, excepting *manobo* sp. nov. and *riverai* Alexander, which are readily distinguished by means of the hypopygial characters listed in the key.

TIPULA (INDOTIPULA) MANOBO sp. nov. Plate 2, fig. 25.

Belongs to the *riverai* group; size small (wing, male, 14 millimeters); mesonotum yellow to yellowish orange; legs black; wings grayish subhyaline, cell Sc and the stigma dark brown; male hypopygium with the tergite produced into two lobes that are separated by a broad U-shaped notch; outer dististyle with two weak denticles on inner margin; no flattened setæ arranged in a single definite row on outer margin of inner dististyle.

Male.—Length, about 12 millimeters; wing, 14.

Frontal prolongation of head yellowish brown; nasus conspicuous; palpi pale brown. Antennæ with the scape and pedicel yellow to brownish yellow; flagellum black, the extreme base of the first segment pale; flagellar segments simple, the verticils exceeding the segments. Head yellowish brown to brown, with a faintly indicated median brown vitta.

Mesonotum yellow, the præscutum with scarcely defined orange-yellow stripes. Pleura orange-yellow. Halteres pale, the knobs dark brown. Legs with the coxæ and trochanters yellow; remainder of legs black, the femoral bases restrictedly paler. Wings grayish subhyaline, cell Sc and stigma dark brown; veins brownish black. Venation: Cell M_1 sessile.

Basal abdominal tergites orange-yellow, the outer segments, including the hypopygium, black; in some cases, the lateral margins of the intermediate tergites are conspicuously darkened; basal sternites obscure yellow. Male hypopygium with the caudal margin of tergite (Plate 2, fig. 25, 9*t*) bearing two lobes that are separated by a broad U-shaped notch, the lobes blackened and microscopically spiculose at apex; viewed from above, these lobes appear relatively narrow, viewed laterally they are much higher. Outer dististyle (Plate 2, fig. 25, *od*) flattened, strongly narrowed on distal third, more strongly and abruptly so in the holotype than in the paratype figured; outer margin with coarse spinous setæ, arranged in groups of twos or threes, the inner margin with two obtuse denticulate lobules. Inner dististyle (Plate 2, fig. 25, *id*) relatively short and broad, the posterior and outer margin with numerous coarse setæ but these neither flattened nor arranged in a linear marginal series, as is the case in many other species of the subgenus.

MINDANAO, Davao district, Mount Apo (*Clagg*); holotype, male, altitude 7,000 feet, Seliban River, September 11, 1930; paratopotype, male, with type; paratype, male, altitude 6,000 feet, Galog River, October 22, 1930.

Tipula (*Indotipula*) *manobo* is named from one of the native tribes inhabiting the environs of Mount Apo. The nearest described ally seems to be *T.* (*I.*) *riverai* Alexander (Luzon), which is most readily separated by the genitalic characters given in the key.

TIPULA (INDOTIPULA) UBENSIS sp. nov. Plate 2, fig. 26.

Belongs to the *walkeri* group; general coloration of mesonotal præscutum olive-brown, the lateral margins broadly buffy yellow; antennæ short, bicolorous; wings with a strong brown tinge, cells C and Sc more saturated brown; Rs about one-half longer than R_{2+3}; male hypopygium with the lobes of the tergite broad, obliquely truncated, nearly contiguous on median line.

Male.—Length, about 12 millimeters; wing, 13.

Female.—Length, about 17 millimeters; wing, 14.

Frontal prolongation of head light brown, the lateral portions darker brown; nasus long and conspicuous; palpi pale, the terminal segment black. Antennæ (male) relatively short, if bent backward ending before the wing root; scape and pedicel brownish yellow; basal flagellar segments bicolorous, the enlargement black, the remainder light yellow; color of fifth and succeeding flagellar segments more uniformly darkened; flagellar segments simple. Head dark brown, more grayish on front and on anterior vertex, behind with a capillary darkened median vitta.

Mesonotal præscutum with the disk almost covered by three nearly confluent olive-brown stripes, the posterior interspaces being very narrow and restricted; lateral margins of sclerite abruptly and broadly buffy yellow; scutum pale, the lobes largely covered by pale brown areas; scutellum and postnotum pale brown, the latter variegated on sides by yellow. Pleura buffy yellow, variegated with brown on anterior anepisternum, ventral sternopleurite, and ventral meron. Halteres yellow, the knobs infuscated. Legs with the coxæ pale buffy, the fore and middle coxæ more infuscated; trochanters yellow; femora yellow, the tips narrowly dark brown; tibiæ and tarsi yellow, the terminal tarsal segments darkened. Wings with a strong brown tinge, the base and cubital region more yellowish, cells C and Sc, with the stigma, more saturated brown; veins light brown. Macrotrichia on veins R_3, R_{4+5}, and M_1. Venation: Rs relatively long, about one-half to two-thirds longer than R_{2+3}; petiole of cell M_1 subequal to or longer than m.

Abdominal tergites obscure yellow, margined laterally and caudally with brown, the outer segments more uniformly darkened; sternites more uniformly yellow. Male hypopygium with the tergite (Plate 2, fig. 26, 9*t*) very extensive, the lobes broad, obliquely truncated, set with sparse blackened spicules and coarse setæ; lobes separated on midline only by a linear notch. Outer dististyle (Plate 2, fig. 26, *od*) broad, narrowed at apex into a slender portion; caudal margin of style before point of narrowing with numerous setæ that are longer than elsewhere on surface. Inner dististyle (Plate 2, fig. 26, *id*) broad, the flattened setæ along outer margin about twelve in number.

LUZON, Laguna Province, Ube (*Rivera*); holotype, male; paratypes, 2 males; Tayabas Province, Lucban, altitude, 1,400 feet, January 24, 1931 (*Rivera*); allotype, female.

Tipula (*Indotipula*) *ubensis* is very different from the remaining Philippine species of the subgenus, the short, bicolorous antennæ and structure of the male hypopygium, readily sufficing to define the species. It is more similar and allied to the Japanese and Chinese members of the subgenus that center about *T.* (*I.*) *yamata* Alexander.

TIPULA (INDOTIPULA) IFUGAO sp. nov. Plate 2, fig. 27.

Belongs to the *walkeri* group; antennal flagellum black throughout; petiole of cell M_1 exceeding one-half m; male hypopygium with two obtuse blackened lobes that are separated from one another by a V-shaped notch; inner dististyle complex in structure.

Male—Length, about 13 millimeters; wings, 14.5.

Frontal prolongation of head light ocherous; nasus very long; palpi pale, the terminal segment darker. Antennæ with the scape and pedicel yellow, flagellum black; flagellar segments unusually long, simple, the verticils exceeding the segments. Head gray, the front and occiput more yellowish; a capillary blackish median line.

Mesonotum brownish ocherous, the præscutal stripes only poorly defined. Pleura light yellow, scarcely variegated with darker. Halteres pale, the knobs infuscated. Legs with the coxæ and trochanters pale yellow; femora yellowish brown to light brown, their tips darkened; remainder of legs passing into black. Wings subhyaline, cell C faintly darkened, cell Sc and stigma dark brown; veins brownish black. Venation: Rs subequal to R_{2+3}; petiole of cell M_1 exceeding one-half m.

Basal abdominal tergites yellow, the outer segments more infuscated, their extreme caudal margins pale; sternites more

yellowish. Male hypopygium with the tergite produced into two cylindrical blackened lobes that are separated only by a narrow V-shaped notch, their tips obtuse. Outer dististyle (Plate 2, fig. 27, *od*) gradually narrowed outwardly, with numerous, chiefly marginal setæ. Inner dististyle, *id*, a complex structure, as shown (Plate 2, fig. 27), the outer portion bearing a slender blackened spine.

LUZON, Mountain Province, Ifugao Subprovince, Hungduan, April 5, 1930 (*Rivera*); holotype, male.

The specific name, *ifugao*, is that of a tribe of mountain people of northern Luzon. The species is quite distinct from the other regional species of *Indotipula* in the structure of the ninth tergite and inner dististyle of the male hypopygium.

TIPULA (INDOTIPULA) ANGUSTILOBATA sp. nov. Plate 1, fig. 2; Plate 2, figs. 28, 29.

Belongs to the *sulaica* group; size large (wing, male, over 17 millimeters); antennal flagellum black, the segments conspicuously binodose, the basal enlargement with very long verticils; wings with a strong brownish yellow tinge; cell M_1 with its petiole subequal to m; male hypopygium with the two lobes of the tergite blackened, narrowed outwardly into slender spiculose points, the surface of the lobes with abundant coarse setæ.

Male.—Length, about 16 to 17 millimeters; wing, 18 to 20.

Frontal prolongation of head yellow above, darkened laterally; nasus long and conspicuous; basal three segments of palpi obscure yellow, the terminal segment a trifle darker. Antennæ (Plate 2, fig. 28) with the scape, pedicel, and base of first flagellar segment yellow; remainder of organ black, 12-segmented; flagellar segments beyond the first conspicuously binodose, as in *sulaica;* verticils very long and conspicuous. Head brownish gray, the median area and spots caudad of the antennal fossæ more blackened.

Mesonotal præscutum buffy, almost covered by four, dark fulvous-brown stripes, these in cases narrowly bordered by still darker brown; scutal lobes obscure yellow, each with two dark fulvous-brown areas; scutellum yellowish testaceous, with a faint brown median vitta; postnotum yellowish brown. Pleura yellow, vaguely variegated on anepisternum, ventral sternopleurite and meron with more reddish brown. Halteres brown, the base of stem restrictedly paler. Legs with the coxæ and trochanters yellow; femora brownish yellow, the tips narrowly dark brown; tibiæ brown, the tips narrowly blackened; tarsi black. Wings (Plate 1, fig. 2) with a strong brownish yellow tinge, cell Sc

more brownish, cell C more yellowish; stigma yellowish brown; veins dark brown. Venation: Cell M_1 with the petiole variable in length, from about three-fourths to longer than m.

Abdominal tergites dark brown, the outer segments passing into black, the basal tergite more reddish brown; caudal and lateral margins of segments narrowly pale; basal sternites reddish brown, the outer segments more blackened. Male hypopygium with the tergite (Plate 2, fig. 29, 9*t*) bearing two triangular blackened lobes on either side of midline, these narrowed into slender points that are tipped with weak blunt spinules; surface of lobes with numerous coarse setæ. Outer dististyle (Plate 2, fig. 29, *od*) elongate, gradually widened outwardly, the posterior margin with numerous setæ. Inner dististyle (Plate 2, fig. 29, *id*) with about twenty flattened setæ in a row along outer margin.

MINDANAO, Davao district, Mount Apo (*Clagg*); holotype, male, altitude 7,000 feet, Baroring River, November 9, 1930; paratopotypes, 2 males, November 8 and 9, 1930; paratypes, 1 male, altitude 6,500 feet, Seliban River, September 11, 1930; 1 male, Taloon trail, Santa Cruz Mountain, altitude 3,000 to 5,000 feet, September 13, 1930; 1 male, La Lun Mountains, altitude 5,500 feet, January 2, 1931.

Tipula (*Indotipula*) *angustilobata* is most nearly allied to *T.* (*I.*) *sulaica* (Walker) Edwards, which is known to me only by the brief note and figure by Edwards.[6] If this species was actually described by Walker, it has been overlooked by all recent cataloguers of the Oriental Diptera (Kertész, Brunetti, Pierre); if not described, the name should be credited to Edwards on the basis of the above reference. The Walker type was from Sula Island, east of Celebes, while the material considered by Edwards as being conspecific was from Borneo. Edwards compares *sulaica* with *T.* (*I.*) *gedehicola* Alexander (Java), indicating the approximate similarity of the male hypopygium. The fly above described has a very different hypopygium, shown most evidently in the narrowly pointed lobes of the ninth tergite and the distinct conformation of both dististyles. The fly is one of the largest species of the subgenus so far made known. The peculiar binodose flagellar segments are much as in *sulaica* and may well occur in other still undiscovered species in the Malayan Islands.

[6] Sarawak Mus. Journ. 3 (1926) 277, pl. 10, fig. 46.

TIPULA (TIPULODINA) CAGAYANENSIS (Alexander).

Tipulodina cagayanensis ALEXANDER, Philip. Journ. Sci. 43 (1930) 280–282.

The types were from Mount Tabuan, Cagayan Province, Luzon. A male and a female were taken by Rivera at Lucban, Tayabas Province, Luzon, January 23 to 26, 1931. The antennæ of the male sex are notably shorter than in *luzonica* (Alexander). The darkened area in the basal cells of wing is restricted to cell M in the male, while being much larger and including both cells R and M in the female.

TIPULA (TIPULODINA) VARITARSIS sp. nov. Plate 1, fig. 3; Plate 2, fig. 30.

Male.—Length, about 13 to 14 millimeters; wing, 14.5 to 17.

Most similar to *T.* (*T.*) *tabuanensis* (Alexander), differing in the details of coloration and venation. Palpi dark, the second segment, base of third and distal half of fourth pale. Antennæ (male) elongate, if bent backward extending about to base of second abdominal segment; flagellar segments black, the extreme incisures pale. Middle legs with the basitarsi entirely blackened or with only vague suggestions of a pale annulus. Wings (Plate 1, fig. 3) with a pale yellow tinge; dark pattern much as in *tabuanensis* but the seams along cord and veins of outer medial field more extensive and continuous. Venation: Rs longer and cell 1st M_2 narrower than in *tabuanensis*, the first section of vein M_{1+2} being about two-fifths the second section; in *tabuanensis* this element is about three-fifths the second. Abdomen with the blackened subterminal rings even, not produced cephalad medially, as is the case in some of the other species of the subgenus. Male hypopygium (Plate 2, fig. 30) with the outer dististyle, *od*, blackened only at extreme apex, the remainder densely setiferous, especially a dense fringe along outer margin.

LUZON, Tayabas Province, Lucban (*Rivera*); holotype, male, January 26, 1931; paratypes, 3 males, January 25 and 26, 1931.

TIPULA (TIPULODINA) DEPRIVATA sp. nov. Plate 1, fig. 4.

Female.—Length, about 25 millimeters; wing, 20.

Closely allied to *T.* (*T.*) *succinipennis*, differing as follows: Palpi with terminal segment entirely pale. Mesonotal præscutum with the ground color yellow, the four usual stripes olive-brown, but little distinct against the ground, their margins a little darker; postnotal mediotergite almost covered by a dark brown central portion. Legs (only a middle leg remains) with

the femora yellow, the tips conspicuously blackened, without subterminal brightening; tibiæ and tarsi dark brown to brownish black, with no indication of paler annuli. Wings (Plate 1, fig. 4) with the ground color much paler yellow than in *succinipennis* but still not of the iridescent hyaline clearness of other Philippine species; dark area in cells R and M including both cells; cell Sc, cord, outer end of cell 1st M_2, veins of outer medial field and wing tip in radial field brown; stigma relatively large, its cephalic-proximal portion lying above vein $Sc_2 + R_1$ pale yellow. Trichiation of veins as in *succinipennis*, being found on R_{4+5} and basal half of R_3. Venation: Rs subequal to R_{2+3}; cell R_3 at margin more extensive than cell R_2; outer medial and cubital cells deep. Abdominal tergites chiefly dark brown, the basal rings buffy; lateral margins grayish brown; an interrupted brownish black dorsomedian vitta.

MINDANAO, Davao district, Mount Apo, Sibulan River, altitude 5,000 to 6,000 feet, October 20, 1930 (*Clagg*); holotype, female.

The present fly is most nearly allied to *T.* (*T.*) *succinipennis* (Alexander) among the described Philippine species, differing in the pattern of the mesonotum and in the entirely unbanded legs. The yellow tinting of the wings is intermediate in degree between that of the amber-colored wings of *succinipennis* and the usual crystal-clear wings of the commoner Philippine species. The fly is likewise allied to *T.* (*T.*) *albiprivata* Edwards (Borneo), which differs in the distinct coloration of the thorax, together with the nearly hyaline ground color of the wings, with a slightly different pattern.

LIMONIINÆ

LIMONIINI

LIMONIA (LIMONIA) CAPELLA sp. nov. Plate 1, fig. 5; Plate 2, fig. 31.

Belongs to the *albitarsis* group; general coloration of mesonotum dark brown; tarsi extensively snowy white; wings with a strong brown suffusion, the cord and outer end of cell 1st M_2 narrowly seamed with darker; male hypopygium with the dorsal dististyle a slender blackened rod; rostral spine long and slender, arising from a long basal tubercle that is fully one-third as long as the spine itself.

Male.—Length, about 5 millimeters; wing, 6.2.

Rostrum and palpi black. Antennæ black throughout; flagellar segments with short apical necks; longest verticils about one-half longer than the segments; terminal segment elongate. Head dark brown.

Mesonotum uniformly dark brown. Pleura with the dorsal sclerites brownish black, the ventral sternopleurite dark brown, the dorsal sternopleurite a little brightened. Halteres black, the extreme base of stem obscure yellow. Legs with the coxæ brown, the fore coxæ somewhat darker; trochanters brownish yellow; femora and tibiæ black; tarsi white, on middle legs the basitarsi with a little more than the proximal four-fifths blackened; fore and hind legs broken; claws elongate, with a long basal spine on lower face and a much smaller appressed spinule at near midlength. Wings (Plate 1, fig. 5) with a strong brown suffusion, the costal region somewhat more saturated; a narrow stigmal seam and poorly indicated clouds along cord and outer end of cell 1st M_2 darker brown; veins dark brown. Venation: Sc_1 ending about opposite three-fourths the length of Rs, Sc_2 some distance from its tip; free tip of Sc_2 and R_2 in approximate transverse alignment; m-cu just beyond the fork of M; vein 2d A converging strongly toward 1st A.

Abdomen black, the caudal margins of the individual segments paler; eighth segment pale; hypopygium dark. Male hypopygium (Plate 2, fig. 31) with the ninth tergite, *9t*, transverse, the caudal margin gently emarginate. Basistyle, *b*, elongate, the ventromesal lobe basal in position, bearing a slender clavate extension. Dorsal dististyle a slender, nearly straight, blackened rod. Ventral dististyle, *vd*, oval, the rostral spine very long and slender, from an enlarged basal tubercle that is fully one-third as long as the spine itself. Gonapophyses, *g*, with the mesal-apical lobe stout. Ædeagus, *a*, with the apex simple.

MINDANAO, Davao district, Mount Apo, Galog River, altitude 6,000 feet, October 21, 1930 (*Clagg*); holotype, male.

Limonia (*Limonia*) *capella* is quite distinct from the allied *L.* (*L.*) *subalbitarsis* Alexander (Luzon) in the small size and distinct male hypopygium, especially the long basal tubercle of the rostral spine, the slender dorsal dististyle, and the simple apex of the ædeagus.

LIMONIA (LIMONIA) BRACHYNEURA sp. nov. Plate 1, fig. 6; Plate 2, fig. 32.

Closely allied to *calianensis;* general coloration orange, the mesonotum with two narrow, dark brown, nearly parallel stripes extending from midlength of the præscutum to the base of abdomen; pleura with a broad dark brown longitudinal stripe; wings strongly tinged with blackish; Sc relatively short, ending about opposite one-third the length of Rs; male hypopygium with the two rostral spines placed close together on the actual

face of style, their bases completely encircled by microscopic setulæ.

Male.—Length, about 3.6 millimeters; wing, 4.

Mouth parts greatly reduced in size, black. Antennæ black throughout; flagellar segments oval, the outer segments becoming more slender and elongate; terminal segment elongate, subequal to the penultimate; verticils very long and conspicuous, especially on the outer segments, chiefly unilaterally arranged. Head orange; anterior vertex very broad.

Pronotum yellow, blackened on sides. Mesonotum with the præscutum chiefly covered by three orange-yellow stripes that are confluent in front, the dark brown interspaces represented by conspicuous lateral margins and posterior intermediate lines, the latter continued caudal, crossing the scutal lobes, scutellum, and postnotal mediotergite, nearly parallel or but gently converging at the abdomen. Pleura light yellow, traversed by a broad, dark brown, longitudinal stripe. Halteres brownish black, the base of stem narrowly brightened. Legs with the coxæ and trochanters pale yellow; remainder of legs black, the femoral bases restrictedly brightened; claws slender, with a long erect basal spine and a more-appressed lateral spine at midlength. Wings (Plate 1, fig. 6) strongly tinged with blackish; very vague, slightly darker seams along cord and outer end of cell 1st M_2; stigma appearing as a narrow seam on R_2; veins slightly darker. Venation: Sc short, Sc_1 ending about opposite one-third to one-fourth the length of Rs, Sc_2 at its tip; m-cu more than one-half its length beyond the fork of M.

Abdominal tergites dark brown; basal sternites yellow, the outer segments dark brown with their caudal margins narrowly yellow. Male hypopygium (Plate 2, fig. 32) with the tergite, 9*t*, transverse, its caudal margin weakly emarginate. Dorsal dististyle glabrous. Rostral prolongation of ventral dististyle, *vd*, elongate, slightly bent at beyond midlength; rostral spines placed on face of style and not at the base of the prolongation, as in *calianensis*, their fossæ being entirely surrounded by microscopic setulæ. Gonapophyses, *g*, elongate, pale, as in *calianensis*.

LUZON, Tayabas Province, Lucban, January 24, 1931 (*Rivera*); holotype, male.

Limonia (*Limonia*) *brachyneura* is allied to *L.* (*L.*) *calianensis* Alexander (Luzon, Mindanao), differing especially in the short subcosta and the slightly different male hypopygium, notably the basal position of the insertion of the rostral spines.

LIMONIA (LIMONIA) BROWNI sp. nov. Plate 1, fig. 7; Plate 3, fig. 33.

Allied to *Limonia ligayai;* general coloration of mesonotal præscutum brownish black, obscure yellow sublaterally; antennal segments (male) not pedicellate apically; tibiæ and tarsi conspicuously paler than the femora; wings dusky, the stigma darker brown; male hypopygium with the gonapophyses very broad, the mesal-apical angle an acute spine.

Male.—Length, about 4 millimeters; wing, 4.5.

Rostrum and palpi black. Antennæ black throughout; flagellar segments oval to subcylindrical, without glabrous apical necks; verticils subequal in length to the segments; terminal segment a little exceeding the penultimate, at apex narrowed to a button. Head blackish, the narrow anterior vertex slightly pruinose.

Mesonotal præscutum with the ground color obscure yellow, the dorsum almost covered by three confluent brownish black stripes; lateral margins of præscutum behind the pseudosutural foveæ narrowly infuscated; posterior sclerites of mesonotum blackened. Pleura obscure yellow, traversed by a narrow, black, longitudinal stripe that passes beneath the root of the halteres, the latter black with the base of the stem narrowly but conspicuously yellow. Legs with the coxæ and trochanters obscure yellow; femora black; tibiæ yellowish brown, the bases of fore and middle tibiæ more infuscated, the tips of all tibiæ very narrowly and insensibly darkened; tarsi obscure yellow, the outer segments darkened; claws small, with about three slender spines at base, the outermost largest, the more basal ones setiform. Wings (Plate 1, fig. 7) with a dusky tinge, the costal region darker; stigma short-oval, brown; veins dark brown. Venation: Sc_1 ending about opposite midlength of Rs, Sc_2 not far from its tip; m-cu just beyond fork of M.

Abdominal tergites black, the basal sternites more yellowish brown; hypopygium dark. Male hypopygium (Plate 3, fig. 33) with the tergite, 9*t*, transverse, narrowed outwardly, the caudal portion weakly emarginate. Dorsal dististyle, *dd*, a long, curved, acutely pointed rod, its surface with long delicate setulæ. Rostral prolongation of ventral dististyle, *vd*, elongate, the two spines at its base. Gonapophyses, *g*, very broad, the mesal-apical angle a short, acute, curved spine, the margin of the apophysis adjoining this spine provided with microscopic serrulations. Ædeagus, *a*, deeply notched at apex.

LUZON, Tayabas Province, Lucban, January 26, 1931 (*Rivera*); holotype, male; paratype, male.

Limonia (*Limonia*) *browni* is named in honor of Director William H. Brown, of the Philippine Bureau of Science, to whom I express my indebtedness for coöperation in making known the extensive tipulid fauna of the Islands. The fly is most nearly allied to *L.* (*L.*) *ligayai* Alexander (Luzon, Mindanao) in the setiferous outer dististyle and structure of the inner dististyle of the male hypopygium, differing conspicuously in the nonpedicellate flagellar segments and in the very differently constructed gonapophyses and narrow tergite of the hypopygium.

LIMONIA (DICRANOMYIA) SUBORTHIA sp. nov. Plate 1, fig. 8; Plate 3, fig. 34.

General coloration of thorax gray, the præscutum with a median dark brown stripe; knobs of halteres orange; femora yellow, with a narrow, dark brown, subterminal ring; wings with costal fringe (male) long and conspicuous; disk cream-colored with a heavy brown pattern that is chiefly costal but includes large darkened areas at ends of both anal veins; abdominal segments dark brown, their caudal margins broadly yellow.

Male.—Length, 4.2 to 4.5 millimeters; wing, 5 to 5.5.

Female.—Length, about 5 millimeters; wing, 5.5.

Rostrum and palpi black. Antennæ black; scape more or less pruinose; flagellar segments oval; verticils short, subequal to the segment. Head brownish gray.

Mesonotal præscutum gray with a median dark brown stripe; scutal lobes similarly darkened; posterior sclerites of mesonotum dark gray. Pleura dark gray, more or less variegated by blackish areas. Halteres testaceous, the knobs orange. Legs with the fore coxæ blackened, the remaining coxæ somewhat paler; trochanters yellow; femora yellow, with a narrow dark brown subterminal ring; tibiæ brownish yellow, the tips narrowly darkened; tarsi brownish yellow, the outer segments darker. Wings (Plate 1, fig. 8) cream-colored, heavily patterned with brown, including a series of about five areas in the costal region, the fourth, largest, being the stigma; smaller marginal clouds at ends of medial and cubital veins, with large conspicuous areas at ends of both anal veins; cord and outer end of cell 1st M_2 narrowly seamed with brown; veins pale, darker in the infuscated areas. Costal fringe (male) long and conspicuous. Venation Sc_1 ending opposite or shortly beyond the origin of Rs, Sc_2 far from its tip, being placed in the second dark costal area; m-cu close to fork of M, subequal to or longer than the distal section of Cu_1; cell 2d A wide.

Abdomen dark brown, the caudal margins of the segments conspicuously ringed with obscure yellow; hypopygium reddish

brown, especially the ventral dististyle. Male hypopygium (Plate 3, fig. 34) with the basistyle, *b*, small, with its ventral-mesal lobe large. Ventral dististyle, *vd*, large and fleshy, the rostral prolongation small, with two short spines that are placed close together. Dorsal dististyle a very strongly curved hook, the extreme tip gently upcurved.

MINDANAO, Davao district, Mati, Mount Mayo, altitude 5,000 feet (*Clagg*); holotype, male, January 28, 1931; allotype, female, January 30, 1931; paratopotypes, 8 males and females, January 28 to 30, 1931; paratype, 1 male, Calian, La Lun Mountains, altitude 5,500 feet, December 29, 1931 (*Clagg*).

Although closely allied to *Limonia* (*Dicranomyia*) *orthia* Alexander (Luzon), the present species is clearly distinct in the entirely different pattern of the legs and in the long, erect costal fringe in the male sex. The paratype male from the La Lun Mountains has the costal fringe short but with the leg pattern as in *suborthia* and is here considered as belonging to the present species, although the possibility exists that there is still another closely allied species or race involved.

LIMONIA (DICRANOMYIA) ORTHIOIDES sp. nov. Plate 1, fig. 9.

Allied to *orthia;* mesonotum brown, sparsely pollinose, the præscutum without distinct markings; knobs of halteres infuscated; legs dark brown; wings pale grayish, with a restricted dark costal pattern; cell 1st M_2 tending to be open by the atrophy of m.

Male.—Length, about 4.5 millimeters; wing, 5.3.

Female.—Length, about 4.8 millimeters; wing, 5.2.

Rostrum, palpi, and antennæ black; basal flagellar segment longer than the second; intermediate segments short-oval, the outer segments more elongate; terminal segment a little exceeding the penultimate; longest verticils of basal and intermediate flagellar segments about one-half longer than the segments alone. Head light gray, more infuscated medially behind.

Mesonotum brown, with a sparse yellow pollen, the præscutum without distinct stripes; scutal lobes conspicuously darkened; posterior sclerites of mesonotum dark brown, sparsely pruinose. Pleura pale, the anepisternum and ventral sternopleurite variegated with darker. Halteres pale, the knobs infuscated. Legs with the fore coxæ dark brown, the remaining coxæ paler; trochanters obscure yellow; remainder of legs dark brown, the femoral bases restrictedly pale. Wings (Plate 1, fig. 9) with a grayish tinge, the prearcular region somewhat paler; a restricted dark costal pattern, including small darkened areas

above arculus, at Sc_2, and at tip of Sc_1; stigmal area larger; no distinct cloudings elsewhere on membrane. Venation: Sc_1 ending opposite origin of Rs, Sc_2 far before its tip, at near mid-distance between arculus and tip of Sc_1; cell 1st M_2 tending to be open by the atrophy of m; m-cu close to fork of M; cell 2d A wide.

Abdomen dark brown, the eighth segment paler; caudal margins of the individual segments slightly paler. Male hypopygium much as in *orthia* and *suborthia*.

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

Limonia (*Dicranomyia*) *orthioides* is readily told from both *L.* (*D.*) *orthia* Alexander (Luzon) and *L.* (*D.*) *suborthia* sp. nov. (Mindanao) in the slightly patterned wings, with cell 1st M_2 tending to be open by the atrophy of m. It is further told from *suborthia* by the infuscated knobs of the halteres, the dark brown legs, and the short costal fringe of the male sex. Cell 1st M_2 is entirely open on both wings of the allotype and partly open on one wing of the holotype.

LIMONIA (RHIPIDIA) SERVILIS sp. nov. Plate 1, fig. 10; Plate 3, fig. 35.

Belongs to the *maculata* group; antennæ (male) with six bipectinate flagellar segments; median præscutal stripe entire or nearly so; knobs of halteres dark brown; wings creamy white, with an abundant brown and gray spotted and clouded pattern, the gray areas abundant and confluent; Sc_1 ending about opposite midlength of Rs; m-cu shortly before the fork of M; male hypopygium with four rostral spines.

Male.—Length, about 5 millimeters; wing, 5.7.

Female.—Length, about 5.5 millimeters; wing, 5.6.

Rostrum and palpi brownish black. Antennæ (male) with the scape, pedicel, and flagellar branches brownish black, the long apical pedicels of all branched segments whitish; flagellar segments 2 to 7 each with two branches, the longest about one-half longer than the segment itself; eighth flagellar segment with a single branch that is subequal to the segment itself; remaining flagellar segments simple. Antennæ (female) with the basal flagellar segments produced on ventral face. Head blackish gray; anterior vertex narrow.

Mesonotal præscutum covered with a yellowish pollen, leaving a broad, entire, dark brown or black, median area and narrower, less distinct, lateral stripes; scutal lobes darkened; scutellum

and postnotum dark brown, sparsely pruinose. Pleura brownish gray, narrowly striped longitudinally with darker. Halteres pale, the knobs dark brown. Legs with the coxæ dark; trochanters obscure yellow; remainder of legs dark brown, the femoral bases slightly paler; in male, the femora more yellowish brown, the tips darkened. Wings (Plate 1, fig. 10) with the ground color creamy white, the costal region more yellowish; a heavy brown and gray spotted and clouded pattern, the darker areas being costal in position, five or six in number, the fifth being at stigma, the third and fourth areas, at origin of Rs and tip of Sc, separate; all gray areas more or less confluent and chiefly obscuring the ground color; veins brown, paler in the costal interspaces. Costal fringe relatively long, especially in male. Venation: Sc_1 ending at near midlength of Rs, Sc_2 at its tip; m-cu shortly before fork of M.

Abdomen dark brown; hypopygium paler. Male hypopygium (Plate 3, fig. 35) with the rostral prolongation of the ventral dististyle, *vd*, relatively long, with four spines that are directed basad at their tips, arising from a close group at near two-thirds the length of the prolongation.

MINDANAO, Davao district, La Lun Mountains, altitude 5,500 feet, December 31, 1930 (*Clagg*); holotype, male; allotype, female.

Limonia (*Rhipidia*) *servilis* is closely allied to several other regional species of the *maculata* group in the Malayan fauna, especially *L.* (*R.*) *griseipennis* (Edwards) of Borneo, *L.* (*R.*) *javanensis* (de Meijere) of Java, and *L.* (*R.*) *triarmata* Alexander of Formosa. From the last two it differs in the presence of only six branched flagellar segments in the male and in the armature of the male hypopygium, especially the number of rostral spines. The male sex of *griseipennis* has not been fully described. The present fly differs from it most evidently in the entire median præscutal stripe and the uniformly darkened knobs of the halteres.

LIMONIA (EUGLOCHINA) CAPTIOSA sp. nov. Plate 1, fig. 11.

Size large (wing, male, 8.5 millimeters or more); proximal ends of basitarsi extensively blackened, including approximately two-thirds the total length of the segment; wings with Rs not contiguous to the proximal end of stigma; male hypopygium with the ventral dististyle very large, oval.

Male.—Length, about 8 to 9 millimeters; wing, 8.5 to 11.

Female.—Length, about 8 to 9 millimeters; wing, 8 to 9.

Rostrum, palpi, and antennæ black; flagellar segments elongate-oval, with short glabrous apical necks and long, secund verticils that are approximately twice as long as the segments. Head brownish black.

Pronotum and mesonotal præscutum brownish black medially, obscure yellow laterally; scutal lobes extensively brownish black; posterior sclerites of mesonotum more yellowish. Pleura brownish yellow. Halteres elongate, pale brown, the knobs darker. Legs with the coxæ, trochanters, and bases of femora pale yellow, the remainder of femora, all tibiæ, and proximal ends of basitarsi black; remainder of tarsi snowy white; the amount of blackening on basitarsi slightly variable, including about the proximal two-thirds of the segment. Wings (Plate 1, fig. 11) with a brownish tinge, the oval stigma darker brown; veins brownish black. Venation: Sc relatively long, the space on Sc between the tip of Sc_1 and origin of Rs less than twice the length of the stigma; Rs angularly bent at near midlength, not lying contiguous to the proximal end of stigma, as in *arachnobia, cuneiformis,* and other species; basal section of R_{4+5} angularly bent before midlength; vein 2d A long, ending opposite or just before the level of tip of Sc_1.

Abdominal tergites brownish black; basal sternites more yellowish; hypopygium dark. Male hypopygium with the ventral dististyle unusually large, oval in shape.

MINDANAO, Davao district, Mount Apo (*Clagg*); holotype, male; allotype, female, Mainit River, altitude 6,500 feet, September 10, 1930; paratopotypes, 2 males; paratypes, 1 female, Mainit River, altitude 6,000 feet, September 4, 1930; 1 male, 2 females, Kidopawan train from Lake Lino, altitude 7,000 to 8,000 feet, September 20 and 21, 1930; 1 male, 1 female, Baroring River, altitude 7,000 feet, November 8, 1930; 1 male, Bawook Falls, Sibulan River, altitude 2,000 feet, November 13, 1930; 1 male, 2 females, La Lun Mountains, altitude 5,000 feet, January 1, 1931.

In its large size and venation, *Limonia* (*Euglochina*) *captiosa* is similar to *L.* (*E.*) *dignitosa* Alexander (western China), differing in the extensive blackened proximal ends of the basitarsi. The fly differs from *L.* (*E.*) *arachnobia* Alexander (Philippines) in the large size, details of venation, as the relation of Rs to the proximal end of stigma, and the large oval ventral dististyle of the male hypopygium. There appear to be several species of *Euglochina* in the Malayan Region that are very difficult of separation, the male hypopygium being generally similar in all

species, leaving the chief characters for separation in the size, the venation, especially the relative length of Sc and the length and position of Rs, and the presence and degree of blackening of the basitarsi of all legs.

LIMONIA (PSEUDOGLOCHINA) BILATIOR sp. nov. Plate 1, fig. 12.

General coloration of mesonotal præscutum chestnut-brown; thoracic pleura yellow dorsally, brown on ventral sclerites; tibiæ and tarsi snowy white, the former with a narrow subbasal and a broad postmedial brownish black ring, the latter subequal to or a trifle longer than the whitened apex beyond; wings with a faint brown tinge, the oval stigma dark brown; vein 2d A with the arched portion short; abdominal segments dark brown, ringed caudally with yellow.

Female.—Length, about 6.5 millimeters; wing, 7.4.

Rostrum and palpi black. Antennæ black throughout; flagellar segments oval, with conspicuous glabrous apical necks that are from one-third to one-fourth the length of the enlargement; ventral verticils elongate, the longest fully twice the segment; terminal segment elongate. Head brown; anterior vertex broad.

Pronotum obscure brownish yellow. Mesonotal præscutum uniformly chestnut-brown, the posterior sclerites of mesonotum darker brown. Pleura chiefly obscure yellow on dorsal portion, the ventral pleurites, including the extensive sternopleurite, dark brown. Halteres dark brown. Legs with the coxæ and trochanters dark brown, the posterior coxæ a little paler basally; femora brown, the apices slightly darker; tibiæ snowy white, with a narrow brownish black ring on basal fifth, together with a much wider (approximately four times) brownish black ring on distal half, this subequal to the white annuli on either side; tarsi white; claws simple, hairy on outer faces (a single leg—posterior—remains). Wings (Plate 1, fig. 12, with a faint brown tinge, the oval stigma dark brown; veins dark brown. Venation: Sc_1 ending about opposite the fork of Rs, Sc_2 some distance before the origin of Rs; Rs shorter than the basal section of R_{4+5} and more nearly straight; m-cu close to fork of M; vein 2d A with the arched portion short.

Abdominal tergites dark brown, the caudal margins of the intermediate segments narrowly ringed with pale, the outer segments more uniformly darkened; sternites with the pale apices more extensive. Ovipositor with the tergal valves nearly straight; hypovalvæ very short.

MINDANAO, Davao district, Mount Apo, Mainit River, altitude 6,000 feet, November 5, 1930 (*Clagg*); holotype, female.

Limonia (*Pseudoglochina*) *bilatior* is quite distinct from all regional species of the subgenus, with the exception of the species next described as *L.* (*P.*) *bilatissima* sp. nov. Both species have the second black ring of the tibiæ very broad and conspicuous, but it is less so in the present fly.

LIMONIA (PSEUDOGLOCHINA) BILATISSIMA sp. nov. Plate 1, fig. 13; Plate 3, fig. 36.

General coloration of mesonotum light brown, the præscutum with a narrow darker median line; pleura yellow, the ventral sclerites darker; tibiæ snowy white, with two black rings, the outer broad, subequal to or exceeding twice the white apex beyond; Sc_1 ending opposite origin or to just beyond midlength of Rs; arched portion of vein 2d A short; abdominal tergites dark brown; male hypopygium with the rostral spines very unequal in size.

Male.—Length, about 5.5 millimeters; wing, 6.5.

Female.—Length, about 5 millimeters; wing, 5.8.

Rostrum yellow; palpi black. Antennæ black throughout; flagellar segments (male) with long apical pedicels; verticils a little exceeding the segments in length; terminal segment elongate, about one-third longer than the penultimate; in female, the verticils are longer and more conspicuous, being approximately twice the segments. Head light brown, the front and anterior vertex more yellowish; a darker brown spot on either side of posterior vertex, adjoining the eyes.

Mesonotum light brown, the præscutum with a slightly darker median line, especially evident in front. Pleura yellow, the ventral sternopleurite dark brown. Halteres brownish yellow, the base of stem clearer yellow, the knobs brownish black. Legs with the fore and middle coxæ brown, the posterior coxæ light yellow; trochanters yellow; femora light brown, at tips passing to darker brown; tibiæ snowy white, with two conspicuous black rings, the outer very broad, exceeding twice the white apex; basal black ring of tibia subequal to or only a little narrower than the white ring immediately beyond it; tarsi white. Wings (Plate 1, fig. 13) grayish subhyaline, the oval stigma pale brown; veins dark brown. Costal fringe relatively long and conspicuous in both sexes. Venation: Sc variable in length, Sc_1 ending opposite the origin to shortly beyond midlength of Rs, the latter short and nearly straight; basal sec-

tion of R_{4+5} gently arcuated; vein 2d A slightly more arcuated than in *bilatior*.

Abdominal tergites dark brown; sternites dimidiate, their bases brown, the apices broadly yellow. Male hypopygium (Plate 3, fig. 36) with the tergite, *9t*, transverse, the caudal margin very gently emarginate. Dorsal dististyle, *dd*, a strongly curved rod, the apex suddenly narrowed into a straight spine. Ventral dististyle, *vd*, fleshy, the rostral prolongation short, with two very unequal spines, the outer stout, from a very broad, slightly elevated base, the inner spine very slender. Gonapophyses, *g*, pale in color.

LUZON, Tayabas Province, Lucban (*Rivera*); holotype, male, January 24, 1931; allotype, female, January 23, 1931; paratypes, 4 males and females, January 24 to 26, 1931.

Limonia (*Pseudoglochina*) *bilatissima* is most nearly allied to *L.* (*P.*) *bilatior* sp. nov. (Mindanao), differing especially in the details of coloration. The outer black ring of the tibia is here unusually broad, subequal to twice the length of the white apex beyond.

ORIMARGA (ORIMARGA) QUADRILOBATA sp. nov. Plate 1, fig. 14; Plate 3, fig. 37.

General coloration black, sparsely pruinose; antennæ and legs black throughout; wings subhyaline, veins brownish black; Rs strongly angulated at origin; cells beyond cord deep; male hypopygium with the tergal region produced into two conspicuous lobes; basistyle on mesal face at cephalic end bearing a strong lobe that is provided with a dense brush of long setæ; inner dististyle bearing a triangular lobe on outer margin at near two-thirds the length.

Male.—Length, about 5 millimeters; wing, 5.5.

Rostrum and palpi black. Antennæ black throughout; flagellar segments oval, becoming progressively smaller to the end; verticils approximately equal in length to the segments. Head gray.

Mesonotum blackish, gray pruinose, the median area of the præscutum broadly of the ground color; centers of scutal lobes similarly blackened. Pleura black, pruinose. Halteres brownish black, the extreme base of stem vaguely brightened. Legs black throughout, the coxæ slightly pruinose. Wings (Plate 1, fig. 14) subhyaline, the veins very distinct, brownish black. Costal fringe of moderate length. Venation: Sc_1 ending just before fork of Rs, Sc_2 at its extreme tip; Rs very strongly an-

gulated at origin; R_{2+3} subequal to the basal section of R_{4+5} and only a little shorter than Rs; cells beyond cord deep; m-cu opposite the point of angulation of Rs; cell 2d A relatively wide.

Abdomen black throughout. Male hypopygium (Plate 3, fig. 37) of very remarkable construction for a member of this usually conservative genus. Region of the tergite, *9t*, on either side produced into a conspicuous lateral lobe that is provided at apex with several powerful setæ; a group of five or six on margin just before apex being longer and more powerful than are the terminal setæ. Basistyle, *b*, with a powerful lobe on mesal face at cephalic end, this lobe bearing a dense brush of long, sinuous setæ that are more or less decussate across the median line with the set of the opposite style. Outer dististyle of normal conformation, a long, slender, gently curved rod that narrows to the acute tip. Inner dististyle, *id*, longer and wider, flattened, on outer margin at near two-thirds the length with a triangular lobe; apex of style beyond this point densely set with retrorse spinous setæ.

MINDANAO, Davao district, Mount Apo, Galog River, altitude 6,000 feet, October 18, 1930 (*Clagg*); holotype, male.

Orimarga (*Orimarga*) *quadrilobata* is entirely distinct from the other described Philippine species of the genus in the venation, especially the elongate R_{2+3}. In the latter regard, it comes closer to a group of species in China, Japan, and Formosa, such being *O.* (*O.*) *formosicola* Alexander, *O.* (*O.*) *fuscivenosa* Alexander, *O.* (*O.*) *omeina* Alexander, *O.* (*O.*) *pruinosa* Alexander, and others, differing most evidently in the very strongly angulated Rs and the complicated structure of the male hypopygium. The latter character serves to separate this fly from all others in Asia that are known to me and where the male sex has been described.

HELIUS (HELIUS) ANÆMICUS sp. nov. Plate 1, fig. 15; Plate 3, fig. 38.

General coloration yellow; head gray; posterior sclerites of mesonotum darkened; knobs of halteres clear light yellow; legs yellow, the tips of femora narrowly and vaguely darkened; wings pale yellow, the costal and apical portions more saturated yellow; cell R_2 open at margin; inner end of cell 1st M_2 arcuated, with r-m at or beyond midlength of the cell; m-cu just before the fork of M; abdominal segments yellow, narrowly ringed on caudal margins with brown; segments 8 and 9 uniformly brown.

Male.—Length, about 4 millimeters; wing, 4.2.

Rostrum light brown, about equal to the remainder of head; palpi dark brown. Antennæ short, brown; basal flagellar segments short and crowded, the first two closely approximated or slightly united; outer segments more elongate, with conspicuous verticils. Head light gray.

Mesonotal præscutum and scutal lobes clear yellow; median region of scutum more infuscated; scutellum testaceous, infuscated medially at base; postnotal mediotergite infuscated. Pleura testaceous yellow, clearer yellow on the ventral sternopleurite. Halteres pale, the knobs clear light yellow. Legs with the coxæ and trochanters yellowish testaceous; femora yellow, the tips very narrowly and vaguely darkened; tibiæ and tarsi pale yellow, the outer tarsal segments brown. Wings (Plate 1, fig. 15) pale yellow, the costal and apical regions more saturated yellow; veins yellow. Costal fringe short; macrotrichia of veins caudad of R_1 very small and few in number, there being short series on both branches of Rs and on the distal half of the outer section of M_{1+2}. Venation: Rs short and straight, about twice the basal section of R_{4+5}; anterior branch of Rs extending generally parallel to vein R_{1+2}, the outer end of cell R_2 being about as extensive as r-m; inner end of cell 1st M_2 strongly arcuated, so r-m lies at or beyond midlength of cell 1st M_2; m-cu shortly before the fork of M.

Abdominal tergites yellow, the caudal fourth or fifth of the segments brown; a subterminal brown ring on segments 8 and 9; hypopygium yellow; sternites similar in pattern, but with the brown a little less intense. Male hypopygium (Plate 3, fig. 38) with the outer dististyle, *od*, relatively small, straight, bidentate at apex. Inner dististyle, *id*, a little longer. Lateral arm of tergite, 9*t*, appearing as a conspicuous, pale, compressed blade that is extended into a long, straight, more-sclerotized point.

LUZON, Tayabas Province, Lucban, January 27, 1931 (*Rivera*); holotype, male.

Helius (*Helius*) *anæmicus* is very different from all other regional species of the genus. By my key to the Philippine species of *Helius*[1] the present fly runs to *H.* (*H.*) *argyrosterna* Alexander, which is entirely distinct in the coloration, venation, and structure of the male hypopygium.

[1] Philip. Journ. Sci. 47 (1932) 184.

HELIUS (EURHAMPHIDIA) SCABIOSUS sp. nov. Plate 1, fig. 16; Plate 3, fig. 39.

Belongs to the *indivisus* group; rostrum relatively long, about equal to the remainder of head; femoral tips broadly snowy white, tibial bases usually brightened, tarsi white; eighth and ninth segments of abdomen brownish black; male hypopygium with the lateral arms of tergite slender, entire; distal portion of outer dististyle with microscopic tubercles.

Male.—Length, about 4.2 to 4.5 millimeters; wing, 5 to 5.3.

Rostrum brown, relatively long, subequal to remainder of head; palpi black. Antennæ black throughout; flagellar segments long-oval, with conspicuous verticils. Head gray.

Mesonotal præscutum dark brown medially, the humeral and lateral regions brighter; posterior sclerites of mesonotum chiefly dark brown. Pleura obscure yellow. Halteres brown, the base of stem restrictedly yellow. Legs with the coxæ and trochanters yellowish testaceous; femora dark brown to black, paler basally, the tips broadly and conspicuously snowy white, the tibial bases less distinctly so whitened; in some cases, including the holotype, the amount of white on bases of tibiæ is much reduced; tibiæ black, the tips conspicuously snowy white, the amount including about the distal fourth or slightly more; tarsi snowy white, with segments 4 and 5, together with the apex of 3, dark brown. Wings (Plate 1, fig. 16) with a faint brownish tinge, the costal region a trifle darker; stigma distinct; veins pale brown. Venation: Sc_1 ending opposite r-m; m variable in length.

Abdominal tergites brown, the sternites obscure yellow; eighth and ninth segments brownish black; hypopygium yellow. Male hypopygium (Plate 3, fig. 39) with the lateral arms of the tergite, 9*t*, slender, entire. Outer dististyle, *od*, on distal third or fourth densely set with microscopic tubercles. Inner dististyle terminating in one seta of unusual length and stoutness.

MINDANAO, Davao district, Mati, Mount Mayo, altitude 5,000 feet (*Clagg*); holotype, male, January 28, 1931; paratypes, 2 males, January 30, 1931.

By my key to the Philippine species of *Helius*,[8] the present species runs to couplet 6 which includes its nearest allies, *H.* (*E.*) *indivisus* Alexander (Mindanao) and *H.* (*E.*) *glabristylatus* Alexander (Mindanao), all three forms having the lateral arms of the ninth tergite of the male hypopygium entire and

[8] Loc. cit.

simple and with the tips of the femora broadly white. The present fly is told from *indivisus* by the lack of setulæ on the outer dististyle and from both of the above species by the numerous microscopic tubercles at apex of this style, giving to the organ a scabious or roughened appearance.

HEXATOMINI

Genus EPIPHRAGMA Osten Sacken

Epiphragma OSTEN SACKEN, Proc. Acad. Nat. Sci. Philadelphia for 1859 (1859) 238.

The numerous Philippine species of *Epiphragma* fall naturally within the limits of two subgenera. Of these, the typical subgenus is known only from two species in Mindanao. Elsewhere in the world, *Epiphragma,* s. s., is numerously represented in the Nearctic, Neotropical, Palæarctic, Oriental, and Australasian Regions.

The subgenus *Polyphragma* Alexander [9] is abundantly represented in the Philippines, with more than a score of species described. Representatives have been found only in Luzon and Mindanao, where they are nearly equal in number of discovered forms. Two species, *caninota* and *fuscinota,* have been found in both of these major islands, but most of the remaining species may well prove to be restricted to the island in question. There will undoubtedly be discovered numerous additional forms in the other larger islands of the Archipelago, and likewise in Luzon and Mindanao, which are still insufficiently known. Members of the subgenus have been reported from Borneo but are unknown from the other Malayan islands.

The physical stature of the species is much smaller than usual for the typical subgenus *Epiphragma,* the only one of the Philippine species that at all approaches the latter in size being the subgenotype, *bakeri.* For convenience, I have arranged the known species in five groups, which may be defined briefly as follows:

1. The *bakeri* group. Size large (wing, male, over 10 millimeters); legs almost uniformly darkened. *Epiphragma* (*Polyphragma*) *bakeri.*

2. The *ochrinota* group. Mesonotal præscutum reddish to ocherous, scarcely if at all pruinose, contrasting abruptly with the blackened thoracic pleura. Legs chiefly yellow (except in *fuscofasciata*). *Epiphragma* (*Polyphragma*) *flavosternata,*

[9] Philip. Journ. Sci. 45 (1931) 435.

E. (*P.*) *fulvinota, E.* (*P.*) *fuscofasciata, E.* (*P.*) *incisuralis, E.* (*P.*) *latitergata, E.* (*P.*) *ochrinota, E.* (*P.*) *parviloba, E.* (*P.*) *riverana,* and *E.* (*P.*) *triarmata.*

3. The *crenulata* group. Dorsum of head and mesonotal præscutum light ashy-gray, the margins of the latter, together with the thoracic pleura, light yellow or fulvous. Axillary lobe or squama often conspicuously developed. Legs chiefly yellow. *Epiphragma* (*Polyphragma*) *angusticrenulata, E.* (*P.*) *caninota, E.* (*P.*) *cinereinota, E.* (*P.*) *crenulata,* and *E.* (*P.*) *griseicapilla.* Position in group of *E.* (*P.*) *subcrenulata* is doubtful.

4. The *fuscosternata* group. Mesonotum patterned with dark brown; thoracic pleura black, variegated with small yellow spots. Legs chiefly yellow (except in *nigrotibiata*). *Epiphragma* (*Polyphragma*) *apoensis, E.* (*P.*) *fuscosternata, E.* (*P.*) *hastata,* and *E.* (*P.*) *nigrotibiata.*

5. The *fuscinota* group. A single dull-colored species, without bright pattern of the body or legs, with very extensive wing cloudings, and with the interbasal process of the male hypopygium a simple spatulate process. *Epiphragma* (*Polyphragma*) *fuscinota.*

The following species of *Polyphragma* are still known only from the female sex and the structure of the interbasal process of the hypopygium cannot be described or figured: *Epiphragma* (*Polyphragma*) *cinereinota, E.* (*P.*) *fuscofasciata, E.* (*P.*) *fuscosternata,* and *E.* (*P.*) *subcrenulata.* The first three surely fall within the limits of the three major groups, as above defined, but the true position of *subcrenulata* is still in doubt. Despite its different coloration, it appears to be correctly placed in the *crenulata* group, the other members of which have the head and mesonotum light ashy-gray.

The chief characters available for the separation of these rather similar flies lie in the general coloration of the body, wings, and legs; in the wing venation, pattern, and conformation, especially the degree of development of the squama in certain species; and in the details of the male hypopygium. Of the latter structures, the tergite and the interbasal process furnish the features most readily to be seen. I have redrawn outlines of the interbase of all species of which the male sex is known at the present time (Plate 4). The commonest type of structure of the interbase is that of a flattened blade that usually bears an outer apical hook. This type of appearance is lost in the species having the interbase a simple acute spine (*hastata,*

ochrinota, parviloba), and in *fuscinota* which has a simple spatulate head. In other species this hook is variously developed, being almost lost in *flavosternata.*

Key to the Philippine species of Epiphragma Osten Sacken. (Based chiefly on male characters.)

1. A single supernumerary crossvein in cell C of wings; no supernumerary crossvein in cell Cu. (Subgenus *Epiphragma* Osten Sacken.) ..... 2.
   A series of supernumerary crossveins and spurs of veins in cell C of wings; a more or less distinct crossvein in cell Cu. (Subgenus *Polyphragma* Alexander.) ..... 3.
2. Wings with m-cu shortly beyond the fork of M, far before midlength of cell 1st M_2. (Mindanao; Java.) ..... *signata* de Meijere.
   Wings with m-cu far beyond midlength of cell 1st M_2. (Mindanao.) *distivena* sp. nov.
3. Larger (wing, male, over 10 millimeters); tibiæ uniformly dark brown; (dark wing pattern not bordered by light margins, hypopygium with interbase unequally bidentate at apex (Plate 4, fig. 46). (Luzon.) ..... *bakeri* Alexander.
   Smaller (wing, male, under 10 millimeters); tibiæ yellow, dark only in *fuscinota, fuscofasciata,* and *nigrotibiata* (wing-pattern of *fuscofasciata* broadly and conspicuously crossbanded with brown; of *nigrotibiata,* the dark areas of wing narrowly bordered by light yellow; of *fuscinota,* the dark areas of wing so extensive as to almost suffuse the entire disk).
4. Mesonotal præscutum light reddish to ocherous, contrasting abruptly with the uniformly blackened thoracic pleura. (*ochrinota* group.) 5.
   Mesonotum not patterned as above, thoracic pleura not uniformly blackened ..... 13.
5. Wings with a broad, continuous brown crossbanded pattern, including an area at cord and a narrower one at level of origin of Rs; legs with all femora chiefly blackened, the extreme tip pale yellow; tibiæ chiefly blackened, the posterior tibiæ with the distal sixth yellow; fore and middle tarsi dark, posterior tarsi yellow. (Mindanao.) *fuscofasciata* Alexander.
   Wings not so crossbanded; legs not as above, the tibiæ and tarsi yellow. 6.
6. Male hypopygium with the interbasal process a slender, simple, acute spine (Plate 4, figs. 57, 58) ..... 7.
   Male hypopygium with the interbasal process not an acute spine.... 8.
7. Dark pattern of wing narrowly bordered by light yellow; male hypopygium with the tergite having lobes long and narrow, separated by a narrow U-shaped notch. (Luzon.) ..... *ochrinota* Alexander.
   Dark pattern of wing not bordered by pale; male hypopygium with the tergal lobes very small, separated by a shallow V-shaped notch. (Luzon.) ..... *parviloba* Alexander.
8. Dark pattern of wing narrowly bordered by light yellow..... 9.
   Dark pattern of wing not bordered by pale..... 12.

9. Femora brown, the tips narrowly pale yellow; male hypopygium with the interbasal process very long and slender, at apex expanded into a flattened blade (Plate 4, fig. 49). (Luzon.)
flavosternata Alexander.

Femora yellow, with a narrow, dark, subterminal ring; male hypopygium with the interbase not as above ..... 10.

10. Male hypopygium with the interbasal process having a small curved apical hook but without additional lateral projections or flanges (Plate 4, fig. 55). (Mindanao.) ..... *latitergata* Alexander.

Male hypopygium with the interbase having a small to large lateral flange, in addition to the apical hook ..... 11.

11. Interbase with a large conspicuous flange; apical notch of the structure widely open (Plate 4, fig. 60). (Mindanao.)
triarmata Alexander.

Interbase with only a weak lateral flange; apex of structure dilated into a long-oval blade, the apical notch so narrow as to be almost closed (Plate 4, fig. 54). (Luzon.) ..... *incisuralis* sp. nov.

12. Wings pale yellow, the dark pattern restricted in amount; male hypopygium with lateral lobes of tergite small and broad, about as wide as the notch between them; interbasal process very slender (Plate 4, fig. 59). (Luzon.) ..... *riverana* sp. nov.

Wings with the ground color infuscated, with a conspicuous darker pattern; male hypopygium with lateral lobes of tergite very slender, spiniform, separated by a very broad U-shaped notch; interbase not conspicuously narrowed (Plate 4, fig. 50). (Mindanao.)
fulvinota Alexander.

13. Mesonotum and dorsum of head clear light gray, contrasting conspicuously with the pale margins of the præscutum and with the pleura (*crenulata* group) ..... 14.

Mesonotum and dorsum of head not clear gray ..... 18.

14. Wings with axillary lobe only slightly developed, its width narrower than cell 2d A at distal end ..... 15.

Wings with axillary lobe conspicuously developed, its width equal to or greater than the width of cell 2d A at distal end ..... 17.

15. Dark wing pattern narrowly ringed with pale yellow; male hypopygium with the interbasal process having the outer hook very deep (Plate 4, fig. 52). (Mindanao.) ..... *griseicapilla* Alexander.

Dark wing pattern not ringed with paler; male hypopygium with the interbase having the outer hook slender, separated from the inner lobe by a conspicuous notch (Plate 4, fig. 44). (Male of *cinereinota* unknown.) ..... 16.

16. Abdomen with a blackened subterminal ring; ground color of wing light yellow, the dark color restricted in amount but contrasting with the ground; axillary lobe slightly developed. (Luzon.)
cinereinota Alexander.

Abdomen without a blackened subterminal ring; ground color of wing brownish, the dark pattern but little conspicuous against this ground; axillary lobe scarcely developed. (Mindanao.)
angusticrenula Alexander.

17. Dark wing pattern restricted to narrow seams and small marginal spots at ends of longitudinal veins. (Luzon.)
crenulata Alexander.

Dark wing pattern extensive, with large conspicuous clouds at origin of Rs, along cord, and as marginal areas at ends of longitudinal veins. (Luzon; Mindanao.) ..... *caninota* Alexander.

18. Mesonotum and pleura dark brown, variegated with yellow spots; dark areas of wing conspicuously bordered by light yellow. (*fuscosternata* group.) ..... 19.

Mesonotum and pleura uniform in color; dark areas of wing not bordered by pale ..... 22.

19. Tibiæ black. (Mindanao.) ..... *nigrotibiata* Alexander.

Tibiæ uniformly yellow ..... 20.

20. Cell 1st M_2 of wings long, the second section of vein M_{1+} exceeding vein M_4; petiole of cell M_1 short, subequal to m. (Luzon.)
fuscosternata group.

Cell 1st M_2 of wings shorter, the second section of vein M_{1+2} not exceeding vein M_4; petiole of cell M_1 long, subequal to or exceeding m ..... 21.

21. Male hypopygium with the interbase a simple acute spine (Plate 4, fig. 53). (Mindanao.) ..... *hastata* Alexander.

Male hypopygium with the interbase short and broad, at apex narrowed to a small curved point (Plate 4, fig. 45). (Mindanao.)
apoensis Alexander.

22. Legs chiefly brown; wing pattern very extensive, the dark coloration nearly suffusing the disk, restricting the ground to small scattered areas. (*fuscinota* group.) (Luzon; Mindanao.)
fuscinota Alexander.

Legs yellow; wings pale yellow, with a restricted dark pattern. (Luzon.) ..... *subcrenulata* Alexander.

The species of *Epiphragma* as they occur in the Philippines, with references to their actual occurrence in the islands, are as follows:

Epiphragma (*Epiphragma*) *distivena* sp. nov.; this report.

Epiphragma (*Epiphragma*) *signata* de Meijere; this report.

Epiphragma (*Polyphragma*) *angusticrenula* Alexander; ALEXANDER, Philippines, XII, Philip. Journ. Sci. 46 (1931) 468–469. (Plate 4, fig. 44.)

Epiphragma (*Polyphragma*) *apoensis* Alexander; ALEXANDER, Philippines, XII, Philip. Journ. Sci. 46 (1931) 462–463. (Plate 4, fig. 45.)

Epiphragma (*Polyphragma*) *bakeri* Alexander; ALEXANDER, Philippines, I, Philip. Journ. Sci. 21 (1922) 373–374; Philippines, X, Philip. Journ. Sci. 46 (1931) 23. (Plate 4, fig. 46.)

Epiphragma (*Polyphragma*) *caninota* Alexander; ALEXANDER, Philippines, XII, Philip. Journ. Sci. 46 (1931) 466–467. (Plate 4, fig. 47.)

Epiphragma (*Polyphragma*) *cinereinota* Alexander; ALEXANDER, Philippines, VIII, Philip. Journ. Sci. 45 (1931) 288–289.

Epiphragma (*Polyphragma*) *crenulata* Alexander; ALEXANDER, Philippines, VII, Philip. Journ. Sci. 43 (1930) 293–294. (Plate 4, fig. 48.)

Epiphragma (*Polyphragma*) *flavosternata* Alexander; ALEXANDER, Philippines, VI, Philip. Journ. Sci. 41 (1930) 304. (Plate 4, fig. 49.)

Epiphragma (*Polyphragma*) *fulvinota* Alexander; ALEXANDER, Philippines, IX, Philip. Journ. Sci. 45 (1931) 436–437. (Plate 4, fig. 50.)

Epiphragma (*Polyphragma*) *fuscinota* Alexander; ALEXANDER, Philippines, IX, Philip. Journ. Sci. 45 (1931) 435–436. (Plate 4, fig. 51.)

Epiphragma (*Polyphragma*) *fuscofasciata* Alexander; ALEXANDER, Philippines, XII, Philip. Journ. Sci. 46 (1931) 459–460.

Epiphragma (*Polyphragma*) *fuscosternata* Alexander; ALEXANDER, Philippines, VI, Philip. Journ. Sci. 41 (1930) 304.

Epiphragma (*Polyphragma*) *griseicapilla* Alexander; ALEXANDER, Philippines, XII, Philip. Journ. Sci. 46 (1931) 467–468. (Plate 4, fig. 52.)

Epiphragma (*Polyphragma*) *hastata* Alexander; ALEXANDER, Philippines, XII, Philip. Journ. Sci. 46 (1931) 464–466. (Plate 4, fig. 53.)

Epiphragma (*Polyphragma*) *incisuralis* sp. nov.; this report. (Plate 4, fig. 54.)

Epiphragma (*Polyphragma*) *latitergata* Alexander; ALEXANDER, Philippines, XII, Philip. Journ. Sci. 46 (1931) 460–462. (Plate 4, fig. 55.)

Epiphragma (*Polyphragma*) *nigrotibiata* Alexander; ALEXANDER, Philippines, XII, Philip. Journ. Sci. 46 (1931) 462–463. (Plate 4, fig. 56.)

Epiphragma (*Polyphragma*) *ochrinota* Alexander; ALEXANDER, Philippines, VI, Philip. Journ. Sci. 41 (1930) 303–304. (Plate 4, fig. 57.)

Epiphragma (*Polyphragma*) *parviloba* Alexander; ALEXANDER, Philippines, X, Philip. Journ. Sci. 46 (1931) 23–24. (Plate 4, fig. 58.)

Epiphragma (*Polyphragma*) *riverana* sp. nov.; this report. (Plate 4, fig. 59.)

Epiphragma (*Polyphragma*) *subcrenulata* Alexander; ALEXANDER, Philippines, VIII, Philip. Journ. Sci. 45 (1931) 287–288.

Epiphragma (*Polyphragma*) *triarmata* Alexander; ALEXANDER, Philippines, IX, Philip. Journ. Sci. 45 (1931) 437–438. (Plate 4, fig. 60.)

The above references to figs. 45 to 60, inclusive, are comparison figures of the interbasal processes of the various species of *Polyphragma*.

EPIPHRAGMA (EPIPHRAGMA) SIGNATA (de Meijere).

Ephiphragma (sic) *signata* DE MEIJERE, Tijdschr. v. Entomol. 54 (1911) 52, pl. 4, fig. 43.

Described from Java. One male, La Lun Mountains, Calian, Davao district, Mindanao, altitude 5,300 feet, July 3, 1930 (*Clagg*).

EPIPHRAGMA (EPIPHRAGMA) DISTIVENA sp. nov. Plate 1, fig. 17; Plate 3, fig. 40.

General coloration ocherous-yellow, the ground color of the præscutum dark brown; pleura variegated with brownish black areas; femora fulvous brown, becoming slightly darker before the narrow yellow tips; wings whitish subhyaline, with an ocellate and banded brown pattern, the areas ocher-yellow, bordered with darker; cell R_3 relatively short, m-cu lying far distad; male hypopygium with the interbase a slender sclerotized rod, the apical third flexible and bent at an angle to the remainder of the rod.

Male.—Length, about 14 millimeters; wing, 13.8.

Rostrum ocher-yellow; basal three segments of maxillary palpi pale yellow, terminal segment uniformly darkened. Antennæ with the scape dark brown; pedicel reddish brown; basal segment of flagellum yellow, the remainder black; flagellar segments cylindrical, with long verticils that slightly exceed the segments; if bent backwards, the antennæ extend to near middistance between the bases of the wings and halteres. Head buffy.

Pronotum yellow, the anterior notum narrowly trivittate with dark brown. Mesonotal præscutum with the ground color dark brown, the four usual stripes extensive, the laterals confluent with the intermediate pair near their anterior ends, isolating the posterior interspaces; intermediate stripes confluent, except for a capillary black vitta on anterior third of sclerite; scutum fulvous-brown, the lobes more or less darkened; scutellum black medially, the margin obscure yellow; postnotal mediotergite with a yellow pollen, variegated with brown on both caudal and cephalic ends. Pleura yellowish white, variegated with small brownish black areas on propleura, two or three on anepisternum, ventral sternopleurite, ventral pteropleurite, and dorsal pleurotergite. Halteres yellow, the distal portion of stem and base of knob a little darkened. Legs with the coxæ light yellow, the fore coxæ with a narrow brown girdle at near mid-

length, the middle and posterior coxæ narrowly darkened at both base and apex; trochanters yellow; femora fulvous-brown, becoming somewhat darker just before the narrow yellow tips; tibiæ and tarsi yellow, the terminal segments of the latter broken. Wings (Plate 1, fig. 17) whitish subhyaline, with an ocellate and banded pattern that is almost exactly as in *klossi;* areas rich ocher-yellow, bordered with darker; veins yellow, darker in the clouded areas. Venation: Supernumerary cross-vein in cell C long and very oblique; anterior branch of Rs ($R_{2+3}+R_3$) shorter than cell 1st M_2; m-cu lying far distad, at near three-fifths the length of the cell.

Abdominal tergites with the basal ring fulvous, variegated laterally with dark brown triangles; posterior ring dark brown, conspicuously bordered laterally and caudally with whitish; sternites more uniformly yellow. Male hypopygium (Plate 3, fig. 40) with the interbase, *i*, a slender, sclerotized rod, the distal third flexible, bent at an angle to the axis of the rod.

MINDANAO, Davao district, Mount Apo, Seliban River, altitude 7,000 feet, September 11, 1930 (*Clagg*); holotype, male.

In its general appearance, wing pattern, and venation, *Epiphragma* (*Epiphragma*) *distivena* is most nearly allied to *E.* (*E.*) *klossi* Brunetti (Federated Malay States), differing most evidently in the pale femora, these being entirely black in *klossi.* The structure of the interbases is very different from that of all species found in Japan and Formosa.

EPIPHRAGMA (POLYPHRAGMA) FUSCOFASCIATA Alexander.

Epiphragma (*Polyphragma*) *fuscofasciata* ALEXANDER, Philip. Journ. Sci. 46 (1931) 459–460.

Additional specimens show the leg pattern much more distinctly than did the original type material. This arrangement of color on the various legs is quite different from that found in the other species of *Polyphragma.* All femora chiefly blackened, the extreme tips pale yellow; fore and middle tibiæ black, the base narrowly yellow; hind tibiæ similar, the distal sixth paling to yellow; fore and middle tarsi black, the posterior tarsi yellow.

One female, Galog River, Mount Apo, Mindanao, altitude 6,000 feet, October 22, 1930; 1 female, La Lun Mountains, Calian, Davao district, Mindanao, altitude 5,500 feet, January 2, 1931 (*Clagg*).

EPIPHRAGMA (POLYPHRAGMA) INCISURALIS sp. nov. Plate 1, fig. 18; Plate 3, fig. 41; Plate 4, fig. 54.

Belongs to the *ochrinota* group; mesonotum pale brownish ocherous, sparsely pruinose; pleura and sternum dark brown; femora yellow, with a broad brown subterminal ring; wings with the dark brown pattern narrowly ringed with clear yellow; inner end of cell R_4 lying basad of that of cell R_5; male hypopygium with the inner dististyle angularly bent beyond midlength; interbase expanded into an oval blade at apex, terminating in a small hook, the blade subtended by a low flange.

Male.—Length, about 6.5 millimeters; wing, 7.3.

Rostrum dark brown; basal segment of palpus pale brown, the outer segments brownish black. Antennæ with the scape, pedicel, and basal three flagellar segments yellow, the remainder dark brown. Head with the central portion of vertex extensively dark brown, the lateral portions and orbits more reddish, the surface sparsely pruinose.

Mesonotum pale brownish ocherous, the lateral portions of of præscutum more chestnut-brown; surface of notum sparsely pruinose. Pleura and sternum uniformly dark brown, contrasting abruptly with the pale yellow coxæ. Halteres pale yellow, the knobs dark brown. Legs with the coxæ pale yellow, their bases conspicuously dark brown, more broadly so on posterior coxæ; trochanters yellow; femora yellow, with a broad brown subterminal ring; tibiæ and tarsi yellow. Wings (Plate 1, fig. 18) with the ground color pale brown, the prearcular and costal regions clear yellow; a heavy and conspicuous brown pattern that is narrowly bordered by clear yellow; major dark areas at arculus, origin of Rs, along cord, outer end of cell 1st M_2, and as a marginal series at ends of all longitudinal veins, deeper and more intensely brown in the costal and apical portions, becoming more diffuse in the cubital and anal fields; costal crossveins and spurs about six in number; veins dark brown, paler in the clear areas. No axillary crenulation. Venation: Rs relatively long; R_{2+3+4} about twice the basal section of R_5; inner end of cell R_4 lying basad of that of cell R_5; m-cu between one-third and one-half its length beyond the fork of M; supernumerary crossvein in cell Cu distinct.

Abdominal tergites dark brown; hypopygium dark. Male hypopygium (Plate 3, fig. 41) with the tergal lobes, 9*t*, broad,

separated by a median notch that is a little narrower at apex than either lobe. Outer dististyle, *od*, slender, the apex weakly and unequally bidentate. Inner dististyle longer, at about two-thirds the length bent at a strong angle into a flattened blade. Interbase (Plate 4, fig. 54, *i*) with the proximal portion large and powerful, at apex expanded into a flattened blade, the apical hook of which is separated from the main body of the blade by a small oval to subcircular incision that is closed; on outer face of rod, extending to base of the oval expansion is a low flange.

LUZON, Tayabas Province, Lucban, January 23, 1931 (*Rivera*); holotype, male.

The nearest described ally of the present fly is *Epiphragma* (*Polyphragma*) *triarmata* Alexander (Mindanao), which has a somewhat similar wing pattern and condition of the ninth tergite and dististyles of the male hypopygium, but an entirely different interbasal process.

EPIPHRAGMA (POLYPHRAGMA) RIVERANA sp. nov. Plate 1, fig. 19; Plate 3, fig. 42; Plate 4, fig. 59.

Belongs to the *ochrinota* group; mesonotum light reddish brown, the pleura and sternum dark brown; legs yellow, the femur with a broad subterminal brown ring; wings with the ground color almost uniformly pale yellow, with relatively small brown spots; male hypopygium with the lobes of the tergite small, triangular in outline, separated by a U-shaped notch; interbase elongate, a little expanded at apex, terminating in a small curved point.

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

Rostrum and palpi dark brown. Antennæ with the scape, pedicel, and basal two flagellar segments yellow to fulvous, the remainder brownish black. Head brownish black medially, the sides of the posterior vertex reddish brown, the surface very sparsely pruinose.

Mesonotum light reddish brown, the scutellum and postnotal mediotergite darker and sparsely pruinose. Pleura and sternum dark brown, contrasting abruptly with the yellow coxæ. Halteres yellow, the knobs dark brown. Legs yellow, the posterior coxæ darkened at bases; femora with a broad brown subterminal ring. Wings (Plate 1, fig. 19) with the ground color almost uniform pale yellow to grayish yellow, variegated with restricted brown spots that do not form bands or extensive areas; darkened spots at arculus, origin of Rs, cord, outer end

of cell 1st M_2, fork of M_{1+2}, and marginal clouds at ends of all longitudinal veins, those of the radial field larger and more distinct. Venation: m-cu variable in position, from close to fork of M to nearly its own length beyond this fork.

Abdominal tergites light brown, margined caudally and laterally with dark brown; sternites clearer yellow, the caudal margins narrowly dark brown; hypopygium dark brown. Male hypopygium (Plate 3, fig. 42) with the lobes of the tergite, 9*t*, small, triangular in outline, separated by a U-shaped notch. Interbase (Plate 4, fig. 59, *i*) relatively long and slender, at apex a little expanded and terminating in a small curved point.

LUZON, Tayabas Province, Lucban (*Rivera*); holotype, male, January 23, 1931; paratypes, 3 males, January 24 and 25, 1931.

Epiphragma (*Polyphragma*) *riverana* is named in honor of Mr. Francisco Rivera, whose collections of Tipulidæ in many parts of the Philippines have added very materially to our knowledge of the subject. The present fly is most closely allied to *E.* (*P.*) *parviloba* Alexander (Luzon), differing most conspicuously in the structure of the interbasal process of the male hypopygium, which, in *parviloba*, is a long, acutely pointed spine.

Genus LIMNOPHILA Macquart

Limnophila MACQUART, Suit. à Buffon 1 (1834) 95.

The Philippine species of the genus *Limnophila* belong to three subgenera. The typical subgenus *Limnophila* (*Poecilostola*, syn.) has four species that fall into two groups, based on the structure of the gonapophyses. *Limnophila* (*Limnophila*) *petulans* is allied to species such as *L.* (*L.*) *aino* Alexander (northern Japan), *L.* (*L.*) *dicranophragmoides* Alexander (Riukiu Islands), and *L.* (*L.*) *murudensis* Edwards (Borneo). *Limnophila* (*L.*) *benguetana*, *L.* (*L.*) *bituminosa*, and *L.* (*L.*) *subguttularis* find their nearest ally in the Bornean *L.* (*L.*) *guttularis* Edwards. Elsewhere, members of the typical subgenus are chiefly Palæarctic in distribution, but there are, in many regions of the world, numerous species of the genus whose strict position in subgenera is still in question.

The single local species of *Elæophila* (*Ephelia*, syn.) finds its near ally in *L.* (*E.*) *granulata* Edwards (Borneo), with the other members of the subgenus widely spread over the Holarctic Region. The three closely allied species of *Dicranophragma*

are nearly allied to the Javan *L.* (*D.*) *remota* (de Meijere) in the long costal fringe of the male and the retracted position of the supernumerary crossvein in cell R_3. All three Philippine species of this subgenus have the mesonotum unmarked, or virtually so. Elsewhere, members of this subgenus occur only in the eastern Nearctic, eastern Palæarctic and Oriental Regions.

Key to the Philippine species of Limnophila Macquart. (Based in part on male characters.)

1. Wings without supernumerary crossveins in the cells. (Subgenus *Limnophila* Macquart.) ..... 2.
   Wings with a supernumerary crossvein in cell R_3 or in cell M..... 5.
2. Legs yellow, the femora with a faint, ill-defined, subterminal brown ring; wing pattern consisting of an abundance of dots and spots, the major areas being in part ocelliform (origin of Rs and along cord); male hypopygium with the gonapophyses appearing as flattened, paddlelike blades. (Mindanao.)..... *petulans* Alexander.
   Legs brown or black; if yellow (*subguttularis*), the tips of the femora and tibiæ narrowly blackened; wing pattern not ocelliform, chiefly restricted to the vicinity of the veins; male hypopygium with the gonapophyses not appearing as flattened blades, their tips terminating in acute spines ..... 3.
3. Legs yellow, the tips of the femora and tibiæ narrowly dark brown; wings with numerous brown dots in the medial field. (Mindanao.) *subguttularis* sp. nov.
   Legs chiefly brown or black, especially the tibiæ; wings without isolated brown dots in the outer medial field..... 4.
4. Wings with the dark pattern restricted, the yellow interspaces being much broader than the darkened areas; male hypopygium with the gonapophyses appearing as long, slender points. (Luzon.) *benguetana* Alexander.
   Wings with the ground color much restricted by a dark pattern, the latter areas being equal or greater in extent than the yellow interspaces; male hypopygium with the gonapophyses appearing as flattened blades with only the relatively short apices narrowed into points. (Mindanao.) ..... *bituminosa* Alexander.
5. A supernumerary crossvein in cell M of wings. (Subgenus *Elæophila* Rondani.) (Luzon; Mindanao.) ..... *igorota* Alexander.
   A supernumerary crossvein in cell R_3 of wings. (Subgenus *Dicranophragma* Osten Sacken.) ..... 6.
6. Wings with the darkened areas in outer radial cells large and nearly confluent; spots in cells M, Cu, 1st A, and 2d A tending to form parallel cross-lines. (Mindanao.) ..... *radialis* Alexander.
   Wings without large and nearly confluent areas filling the outer radial cells; spots in cells Cu, 1st A, and 2d A small, spotlike, not forming cross-lines ..... 7.
7. Halteres with the knobs infuscated; wing pattern very abundantly spotted and dotted with brown in all interspaces; markings along caudal margin tending to form small but distinct circles. (Luzon.) *pardalota* Alexander.

Halteres light yellow; wing pattern more restricted, with relatively sparse brown dots in the interspaces between the major dark areas; marginal areas solid, not forming circles. (Mindanao.)

retracta Alexander.

A list of the Philippine species of *Limnophila,* with references to occurrence, is as follows:

Limnophila (*Limnophila*) *benguetana* Alexander; ALEXANDER, Philippines, VIII, Philip. Journ. Sci. 45 (1931) 289–290.

Limnophila (*Limnophila*) *bituminosa* Alexander; ALEXANDER, Philippines, XIII, Philip. Journ. Sci. 47 (1932) 189–190.

Limnophila (*Limnophila*) *petulans* Alexander; ALEXANDER, Philippines, XIV, Philip. Journ. Sci. 48 (1932) 38–39.

Limnophila (*Limnophila*) *subguttularis* sp. nov.; this report.

Limnophila (*Elæophila*) *igorota* Alexander; ALEXANDER, Philippines, X, Philip. Journ. Sci. 46 (1931) 24–25.

Limnophila (*Dicranophragma*) *pardalota* Alexander; ALEXANDER, Philippines, VIII, Philip. Journ. Sci. 45 (1931) 291.

Limnophila (*Dicranophragma*) *radialis* Alexander; ALEXANDER, Philippines, IX, Philip. Journ. Sci. 45 (1931) 440–441.

Limnophila (*Dicranophragma*) *retracta* Alexander; ALEXANDER, Philippines, IX, Philip. Journ. Sci. 45 (1931) 439–440.

LIMNOPHILA (LIMNOPHILA) SUBGUTTULARIS sp. nov. Plate 1, fig. 20; Plate 3, fig. 43.

General coloration dark brown, with a sparse yellow pollinosity; median region of præscutum elevated into a series of weak tubercles; halteres pale yellow; legs yellow, the tips of femora and tibiæ narrowly blackened, more broadly so on the former; wings light yellow, with a conspicuous brown spotted and dotted pattern, the smaller dots being most abundant throughout the whole length of the medial field; male hypopygium with the apex of each gonapophysis suddenly narrowed into a slender beak.

Male.—Length, about 5.8 millimeters; wing, 6.5.

Female.—Length, about 6 millimeters; wing, 6.3.

Rostrum and palpi black. Antennæ black throughout; flagellar segments oval with verticils that are fully twice as long as the segments bearing them. Head yellowish brown, the center of the vertex darker brown.

Mesonotum dark brown, with a sparse yellow pollen, leaving traces of three brown stripes; median line of præscutum elevated into weak tubercles, this identical in both sexes and apparently a normal condition; posterior sclerites of mesonotum dark, sparsely pollinose. Pleura black, sparsely pollinose, with indications of narrow, darker, longitudinal stripes across the anepisternum and ventral sternopleurite. Halteres pale yellow.

Legs with the coxæ and trochanters black, sparsely pollinose; femora and tibiæ yellow, the tips very narrowly darkened, more broadly so on the femora; tarsi yellow, the tips of the individual segments narrowly darkened, the terminal two segments uniformly infuscated; legs conspicuously hairy. Wings (Plate 1, fig. 20) with the ground color light yellow, with a conspicuous brown spotted and dotted pattern, including about five major areas, that at the cord nearly continuous across the wing; numerous small dots distributed over the entire length of the medial field; costal cell with a variable number of small spots, additional to the larger costal areas; veins yellow, darker in the infuscated areas. Costal fringe (male) relatively long and conspicuous. Venation: R_2 very faint; m-cu at near midlength of cell 1st M_2.

Abdomen brownish black, including the hypopygium. Male hypopygium (Plate 3, fig. 43) with the outer dististyle, *od*, simple, narrowed to an acute tip, the surface with numerous short setæ. Gonapophyses, *g*, appearing as gently curved pale blades that narrow suddenly before their tips into a slender beaklike portion, before this narrowed portion, on outer margin, with a small denticle. Ædeagus slender, curved at apex.

MINDANAO, Davao district, Mati, Mount Mayo, altitude 5,000 feet (*Clagg*); holotype, male, January 27, 1931; allotype, female, January 30, 1931.

The closest ally of *Limnophila* (*Limnophila*) *subguttularis* appears to be *L.* (*L.*) *guttularis* Edwards (Borneo), which differs in the less conspicuously spotted wings, the outer medial field being free from darkened areas except those along cord, outer end of cell 1st M_2 and at fork of vein M_{1+2}. The darkened tips of the tibiæ are more extensive than those of the femora in *guttularis*, the reverse condition being true in the present species. The Bornean fly differs further in having the pedicel of the antenna paler than the remainder of the organ and with the abdominal sternites pale.

Genus PILARIA Sintenis

Pilaria SINTENIS, Sitzgsber. Naturf. Gesell. Dorpat 8 (1888) 398.

A few species of the typical subgenus *Pilaria* occur in the Philippines, in addition to about an equal number of the endemic group *Eupilaria*. Elsewhere in the world, *Pilaria* s. s. is widely spread throughout the Holarctic and Oriental Regions, with fewer species in the Neotropical and Ethiopian Regions.

Key to the Philippine species of Pilaria Sintenis. (Based in part on male characters.)

1. Cell M_1 lacking; anterior branch of Rs very short, less than one-half R_4, cell R_3 at wing margin being very wide, exceeding four times that of cell R_2; antennæ short in both sexes. (Subgenus *Eupilaria* Alexander.) ..... 2.
   Cell M_1 present; anterior branch of Rs elongate, exceeding two-thirds of R_4, cell R_3 at wing margin of normal width, subequal to cell R_2; antennæ (male) elongate. (Subgenus *Pilaria* Sintenis.) ..... 4.
2. Tarsi conspicuously white. (Mindanao.) ..... *leucopoda* Alexander.
   Tarsi black ..... 3.
3. Male hypopygium with the outer dististyle very slender, much narrower than the inner style, subequal in diameter or more slender than the gonapophyses; tergite with low irregular lobes that are separated by a broad U-shaped notch. (Mindanao.) ..... *auranticolor* Alexander.
   Male hypopygium with the outer dististyle broad, exceeding one-half the width of the inner style and much wider than the gonapophyses; tergite with two submedian lobes that are separated by a linear notch. (Luzon.) ..... *phœnosoma* Alexander.
4. Posterior tarsi conspicuously whitened. (Luzon; Mindanao.) *albopostícata* Alexander.
   Tarsi uniformly pale brown to dark brown ..... 5.
5. Mesonotum polished black, the thoracic pleura abruptly yellow. (Luzon; Mindanao.) ..... *carbonipes carbonipes* Alexander.
   Mesonotum and pleura entirely polished black. (Mindanao.) *carbonipes holomelania* Alexander.

The Philippine members of *Pilaria*, with references to their occurrence in the islands, are as follows:

Pilaria (*Eupilaria*) *auranticolor* Alexander; ALEXANDER, Philippines, XIV, Philip. Journ. Sci. 48 (1932) 39–40.

Pilaria (*Eupilaria*) *leucopoda* Alexander; ALEXANDER, Philippines, XIII, Philip. Journ. Sci. 47 (1932) 190–191.

Pilaria (*Eupilaria*) *phœnosoma* Alexander; ALEXANDER, Philippines, X, Philip. Journ. Sci. 46 (1931) 25–27.

Pilaria (*Pilaria*) *albopostícata* Alexander; ALEXANDER, Philippines, X, Philip. Journ. Sci. 46 (1931) 28; this report.

Pilaria (*Pilaria*) *carbonipes carbonipes* Alexander; ALEXANDER, Philippines, X, Philip. Journ. Sci. 46 (1931) 27–28; this report.

Pilaria (*Pilaria*) *carbonipes holomelania* Alexander; ALEXANDER, Philippines, X, Philip. Journ. Sci. 46 (1931) 28.

PILARIA (PILARIA) ALBOPOSTICATA Alexander.

Pilaria albopostícata ALEXANDER, Philip. Journ. Sci. 46 (1931) 28.

Described from Luzon. One male, Mainit River, Mount Apo, Davao district, Mindanao, altitude 6,000 feet, September 9, 1930 (*Clagg*).

PILARIA (PILARIA) CARBONIPES CARBONIPES Alexander.

Pilaria carbonipes ALEXANDER, Philip. Journ. Sci. 46 (1931) 27–28.

Described from Luzon. What seem to be exactly the same race are from various stations on Mount Apo, Davao district, Mindanao. Mainit River, altitude 6,000 feet, September 22, 1930; Kidopawan trail from Lake Lino, altitude 7,000 to 8,000 feet, September 30, 1930; Lake Lino, altitude 8,000 feet, September 19, 1930 (*Clagg*).

ERIOPTERINI

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

General coloration of mesonotum light fulvous-yellow; head dark, the posterior vertex weakly carinate; antennal verticils short; legs brownish black, the tarsi paling to yellow; wings cream-colored, the stigma small but distinct; R_{3+4} short but distinct; inner ends of cells R_5 and M_3 nearly in alignment.

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

Female.—Length, about 6.5 millimeters; wing, 7.

Rostrum brown, the palpi black. Antennæ black throughout; flagellar segments long-oval to subcylindrical, with verticils that are shorter than the segments. Head brownish black, the anterior vertex narrow, the posterior vertex carinate medially.

Cervical sclerites black. Mesonotum light fulvous yellow, in cases with the posterior sclerites slightly more infuscated. Pleura obscure yellow, the dorsopleural region and ventral sternopleurite very weakly darkened. Halteres dark brown, the base of stem restrictedly yellow. Legs with the coxæ brownish yellow; trochanters obscure yellow; femora brownish black, paler at bases; tibiæ and most of basitarsi brownish black, the remainder of tarsi paling to obscure yellow; posterior tibiæ with a single enlarged spinous seta at apex; proximal end of basitarsi with a dense grouping of the ordinary setæ. Wings (Plate 1, fig. 21) with a creamy tinge, the prearcular and costal regions clearer yellow; stigma small but distinct; veins dark brown, some, especially the posterior cord, vaguely seamed with darker. Venation: R_2 from three to four times as long as R_{3+4}; inner ends of cells R_5 and M_3 nearly in transverse alignment; m-cu at or close to fork of M; fusion of veins Cu_1 and 1st A short.

Abdominal tergites dark brown, the caudal portions of the segments narrowly brownish black, the extreme edges pale; basal sternites brownish yellow; hypopygium brownish black. Ovipositor with the genital shields obscure yellow, cerci relatively elongate, horn-brown.

MINDANAO, Davao district, Mount Apo (*Clagg*); holotype, male, altitude 7,000 to 8,000 feet, Kidapawan trail from Lake Lino, September 20, 1930; allotype, female, altitude 6,000 feet, Baroring River, November 10, 1930; paratopotype, male, with the holotype; paratypes, 2 males, with the allotype; 1 male, altitude 6,500 feet, Sibulan River, September 1, 1930; 6 males and females, La Lun Mountains, altitude 5,500 feet, July 2, 1930, December 31, 1930, January 1, 1931.

By my key to the Philippine species of *Trentepohlia*,[10] the present species runs to couplet 8, agreeing most closely with *T.* (*M.*) *riverai* Alexander (Luzon) which differs in the small size, dark brown coloration, and the details of venation, as the less erect R_3, with cell R_2 at margin correspondingly much wider.

TRENTEPOHLIA (MONGOMA) TENEROIDES sp. nov. Plate 1, fig. 22.

General coloration of mesonotum dark brown; rostrum brownish black; antennæ black, the flagellar segments without modified verticils; legs elongate, black, the tips of the femora narrowly, of the tibiæ more broadly whitened; tarsi white; wings with a faint brown tinge, cells C and Sc blackened; inner end of cell M_3 lying proximad of the other cells that lie at outer end of cell 1st M_2.

Male.—Length, about 9 millimeters; wing, 8.5.

Female.—Length, about 8.5 millimeters; wing, 8.

Rostrum and palpi brownish black. Antennæ black throughout; flagellar segments subcylindrical, with short verticils. Head black, sparsely pruinose; anterior vertex narrow; posterior vertex carinate.

Pronotum dark brown. Mesonotal præscutum and centers of scutal lobes dark brown, the median region of scutum obscure yellow; scutellum and postnotum darkened medially, paler on sides. Pleura obscure yellow, infuscated on the anepisternum and dorsal sternopleurite. Halteres blackened. Legs with the fore and middle coxæ infuscated, the posterior coxæ paler; trochanters obscure yellow; femora black, the tips narrowly but conspicuously white; tibiæ dark brown, the tips broadly whitened; tarsi white, the proximal ends of basitarsi a little infumed; legs very long and slender (male, hind leg, femur, 16.3 millimeters; tibia, 17; tarsus, 10); femora (fore legs missing) with a series of long setæ on lower face, these longest at proximal end of segment, becoming progressively smaller

[10] Philip. Journ. Sci. 43 (1930) 297–298.

outwardly. Wings (Plate 1, fig. 22) with a faint brown tinge; cells C and Sc conspicuously blackened; wing margin in outer radial field vaguely darkened; veins brown. Venation: Rs subequal to or a little longer than basal section of R_5 and somewhat more than one-half R_{2+3+4}; R_{3+4} distinct but variable in length, shorter than R_2; veins R_3 and R_4 not strongly divergent; inner end of cell M_3 lying far proximad of the other cells that lie at outer end of cell 1st M_2; m-cu at or close to fork of M; apical fusion of veins Cu_1 and 1st A slight.

Abdominal tergites dark brown; sternites similar, vaguely brightened laterally.

MINDANAO, Davao district, Mount Apo (*Clagg*); holotype, male, altitude 6,500 feet, Mainit River, September 14, 1930; allotype, female, altitude 7,000 feet, Baroring River, November 9, 1930.

By my key to the Philippine species of *Trentepohlia*,[11] the present fly runs to couplet 5, disagreeing with both included forms, *saxatilis* Alexander and *tenera* (Osten Sacken), in the darkened tibiæ. I consider that *tenera* is the closest ally of the present species, which is distinguished by the darkened tibiæ and the darkened costal margin of the wing.

[11] Loc. cit.

ILLUSTRATIONS

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

PLATE 1

FIG. 1. *Tipula* (*Indotipula*) *latilobata* sp. nov., wing.
2. *Tipula* (*Indotipula*) *angustilobata* sp. nov., wing.
3. *Tipula* (*Tipulodina*) *varitarsis* sp. nov., wing.
4. *Tipula* (*Tipulodina*) *deprivata* sp. nov., wing.
5. *Limonia* (*Limonia*) *capella* sp. nov., wing.
6. *Limonia* (*Limonia*) *brachyneura* sp. nov., wing.
7. *Limonia* (*Limonia*) *browni* sp. nov., wing.
8. *Limonia* (*Dicranomyia*) *suborthia* sp. nov., wing.
9. *Limonia* (*Dicranomyia*) *orthioides* sp. nov., wing.
10. *Limonia* (*Rhipidia*) *servilis* sp. nov., wing.
11. *Limonia* (*Euglochina*) *captiosa* sp. nov., wing.
12. *Limonia* (*Pseudoglochina*) *bilatior* sp. nov., wing.
13. *Limonia* (*Pseudoglochina*) *bilatissima* sp. nov., wing.
14. *Orimarga* (*Orimarga*) *quadrilobata* sp. nov., wing.
15. *Helius* (*Helius*) *anæmicus* sp. nov., wing.
16. *Helius* (*Eurhamphidia*) *scabiosus* sp. nov., wing.
17. *Epiphragma* (*Epiphragma*) *distivena* sp. nov., wing.
18. *Epiphragma* (*Polyphragma*) *incisuralis* sp. nov., wing.
19. *Epiphragma* (*Polyphragma*) *riverana* sp. nov., wing.
20. *Limnophila* (*Limnophila*) *subguttularis* sp. nov., wing.
21. *Trentepohlia* (*Mongoma*) *fulvinota* sp. nov., wing.
22. *Trentepohlia* (*Mongoma*) *teneroides* sp. nov., wing.

PLATE 2

FIG. 23. *Tipula* (*Indotipula*) *latilobata* sp. nov., antenna, basal seven segments.
24. *Tipula* (*Indotipula*) *latilobata* sp. nov., male hypopygium, details.
25. *Tipula* (*Indotipula*) *manobo* sp. nov., male hypopygium, details.
26. *Tipula* (*Indotipula*) *ubensis* sp. nov., male hypopygium, details.
27. *Tipula* (*Indotipula*) *ifugao* sp. nov., male hypopygium, details.
28. *Tipula* (*Indotipula*) *angustilobata* sp. nov., antenna, basal seven segments.
29. *Tipula* (*Indotipula*) *angustilobata* sp. nov., male hypopygium, details.
30. *Tipula* (*Tipulodina*) *varitarsis* sp. nov., male hypopygium, styli.
31. *Limonia* (*Limonia*) *capella* sp. nov., male hypopygium.
32. *Limonia* (*Limonia*) *brachyneura* sp. nov., male hypopygium.

PLATE 3

FIG. 33. *Limonia* (*Limonia*) *browni* sp. nov., male hypopygium.
34. *Limonia* (*Dicranomyia*) *suborthia* sp. nov., male hypopygium.
35. *Limonia* (*Rhipidia*) *servilis* sp. nov., male hypopygium.
36. *Limonia* (*Pseudoglochina*) *bilatissima* sp. nov., male hypopygium.
37. *Orimarga* (*Orimarga*) *quadrilobata* sp. nov., male hypopygium.
38. *Helius* (*Helius*) *anæmicus* sp. nov., male hypopygium.
39. *Helius* (*Eurhamphidia*) *scabiosus* sp. nov., male hypopygium.
40. *Epiphragma* (*Epiphragma*) *distivena* sp. nov., male hypopygium.
41. *Epiphragma* (*Polyphragma*) *incisuralis* sp. nov., male hypopygium.
42. *Epiphragma* (*Polyphragma*) *riverana* sp. nov., male hypopygium.
43. *Limnophila* (*Limnophila*) *subguttularis* sp. nov., male hypopygium.

PLATE 4

FIG. 44. *Epiphragma* (*Polyphragma*) *angusticrenula* Alexander, male hypopygium, interbasal process.
45. *Epiphragma* (*Polyphragma*) *apoensis* Alexander, male hypopygium, interbasal process.
46. *Epiphragma* (*Polyphragma*) *bakeri* Alexander, male hypopygium, interbasal process.
47. *Epiphragma* (*Polyphragma*) *caninota* Alexander, male hypopygium, interbasal process.
48. *Epiphragma* (*Polyphragma*) *crenulata* Alexander, male hypopygium, interbasal process.
49. *Epiphragma* (*Polyphragma*) *flavosternata* Alexander, male hypopygium, interbasal process.
50. *Epiphragma* (*Polyphragma*) *fulvinota* Alexander, male hypopygium, interbasal process.
51. *Epiphragma* (*Polyphragma*) *fuscinota* Alexander, male hypopygium, interbasal process.
52. *Epiphragma* (*Polyphragma*) *griseicapilla* Alexander, male hypopygium, interbasal process.
53. *Epiphragma* (*Polyphragma*) *hastata* Alexander, male hypopygium, interbasal process.
54. *Epiphragma* (*Polyphragma*) *incisuralis* sp. nov., male hypopygium, interbasal process.
55. *Epiphragma* (*Polyphragma*) *latitergata* Alexander, male hypopygium, interbasal process.
56. *Epiphragma* (*Polyphragma*) *nigrotibiata* Alexander, male hypopygium, interbasal process.
57. *Epiphragma* (*Polyphragma*) *ochrinota* Alexander, male hypopygium, interbasal process.
58. *Epiphragma* (*Polyphragma*) *parviloba* Alexander, male hypopygium, interbasal process.
59. *Epiphragma* (*Polyphragma*) *riverana* sp. nov., male hypopygium, interbasal process.
60. *Epiphragma* (*Polyphragma*) *triarmata* Alexander, male hypopygium, interbasal process.

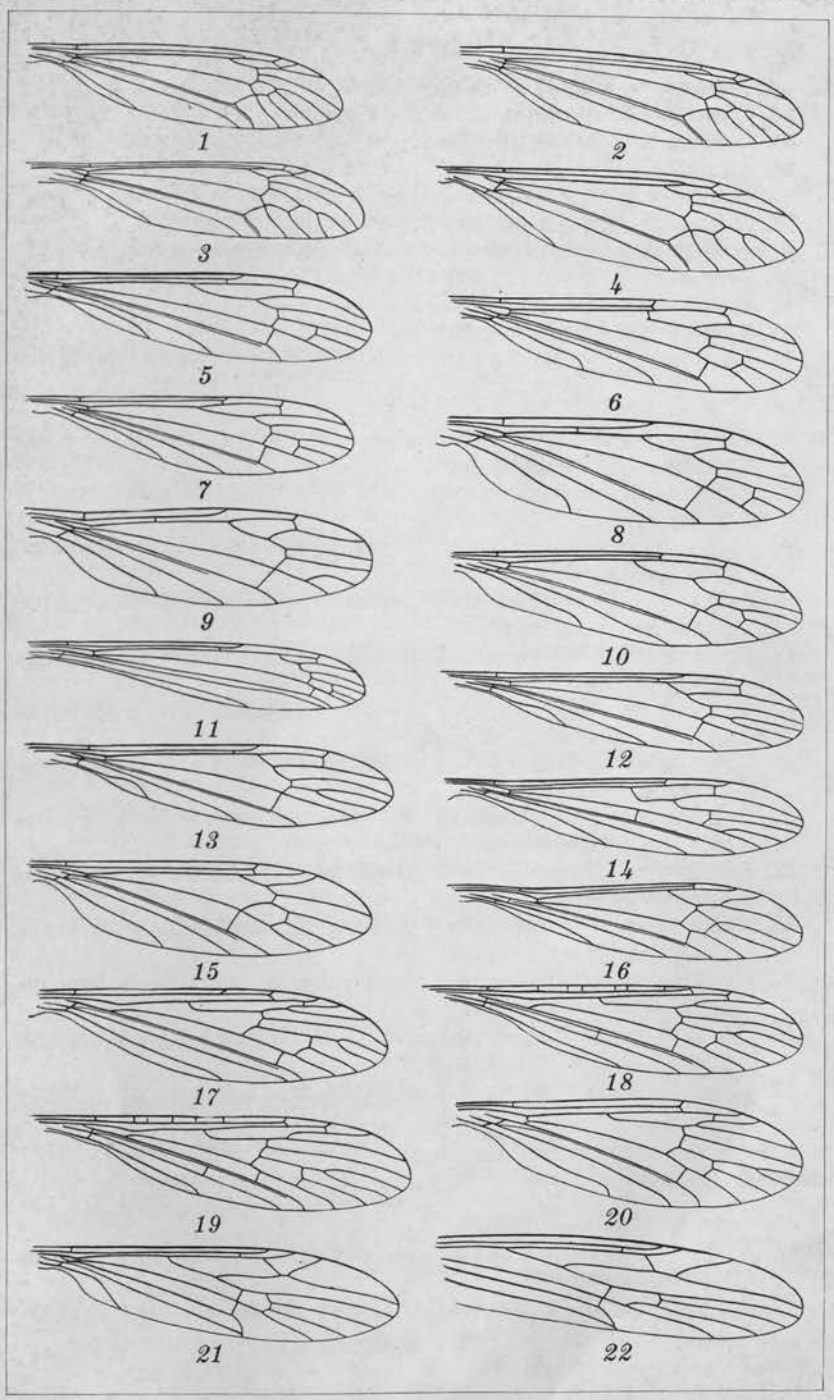

PLATE 1.

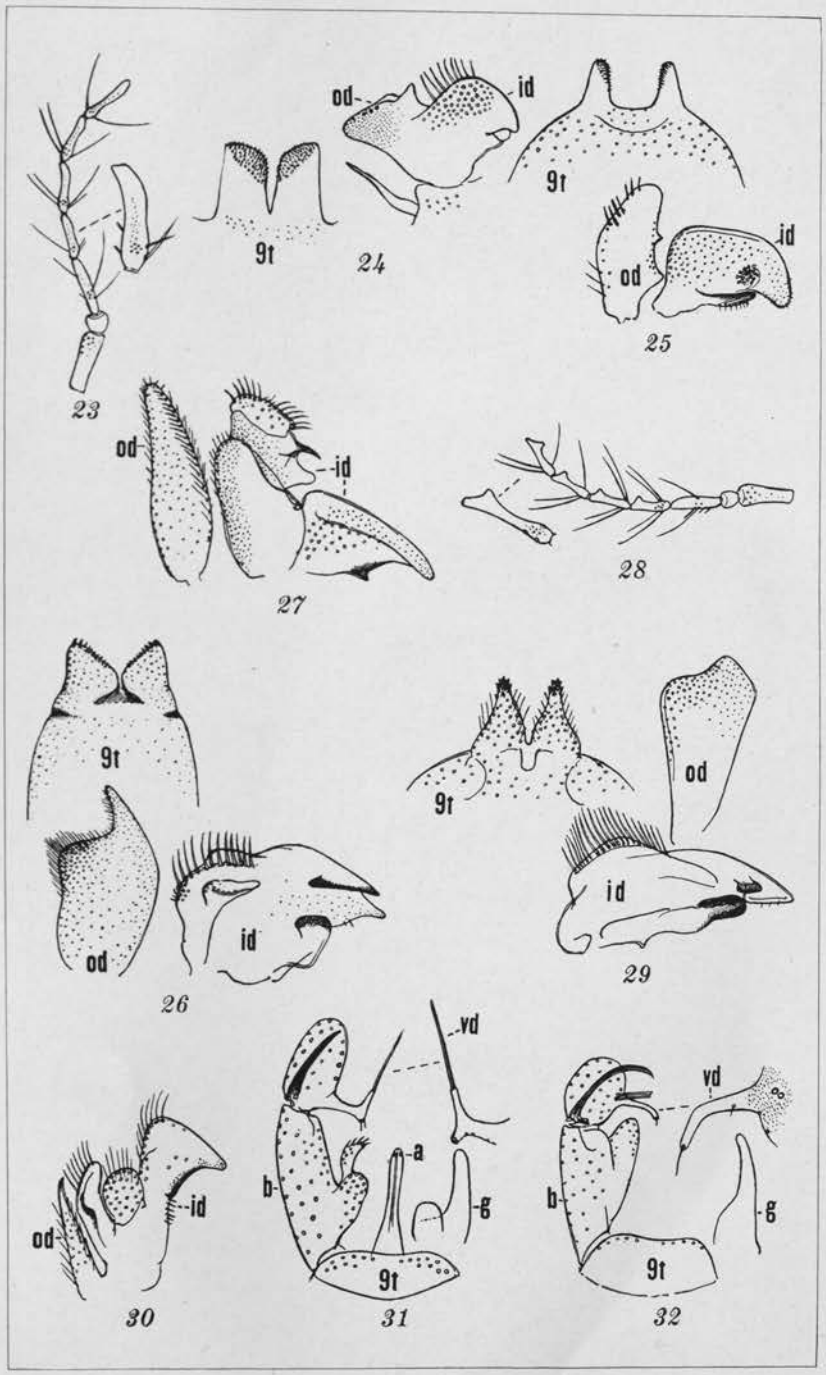
od
id
9t
24
9t
id
od
25
23
od
id
27
28
9t
od
id
26
9t
od
id
29
vd
a
b
g
9t
30
31
vd
b
g
9t
32

PLATE 2.

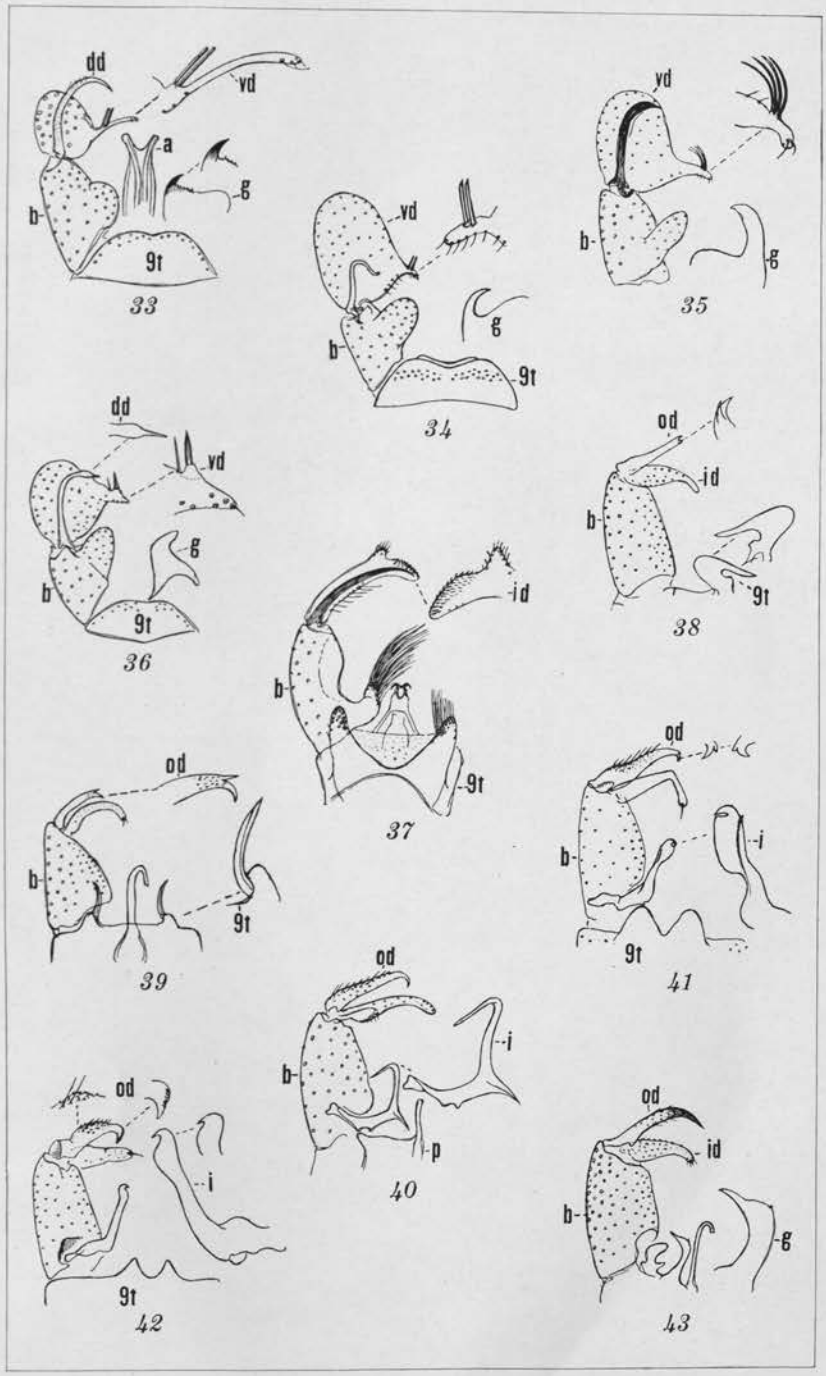
dd
vd
a
g
b
9t
33
vd
g
b
9t
34
vd
b
g
35
dd
vd
g
b
9t
36
od
id
b
9t
38
id
b
9t
37
od
b
9t
39
od
i
b
9t
41
od
i
b
p
40
od
i
9t
42
od
id
b
g
43

PLATE 3.

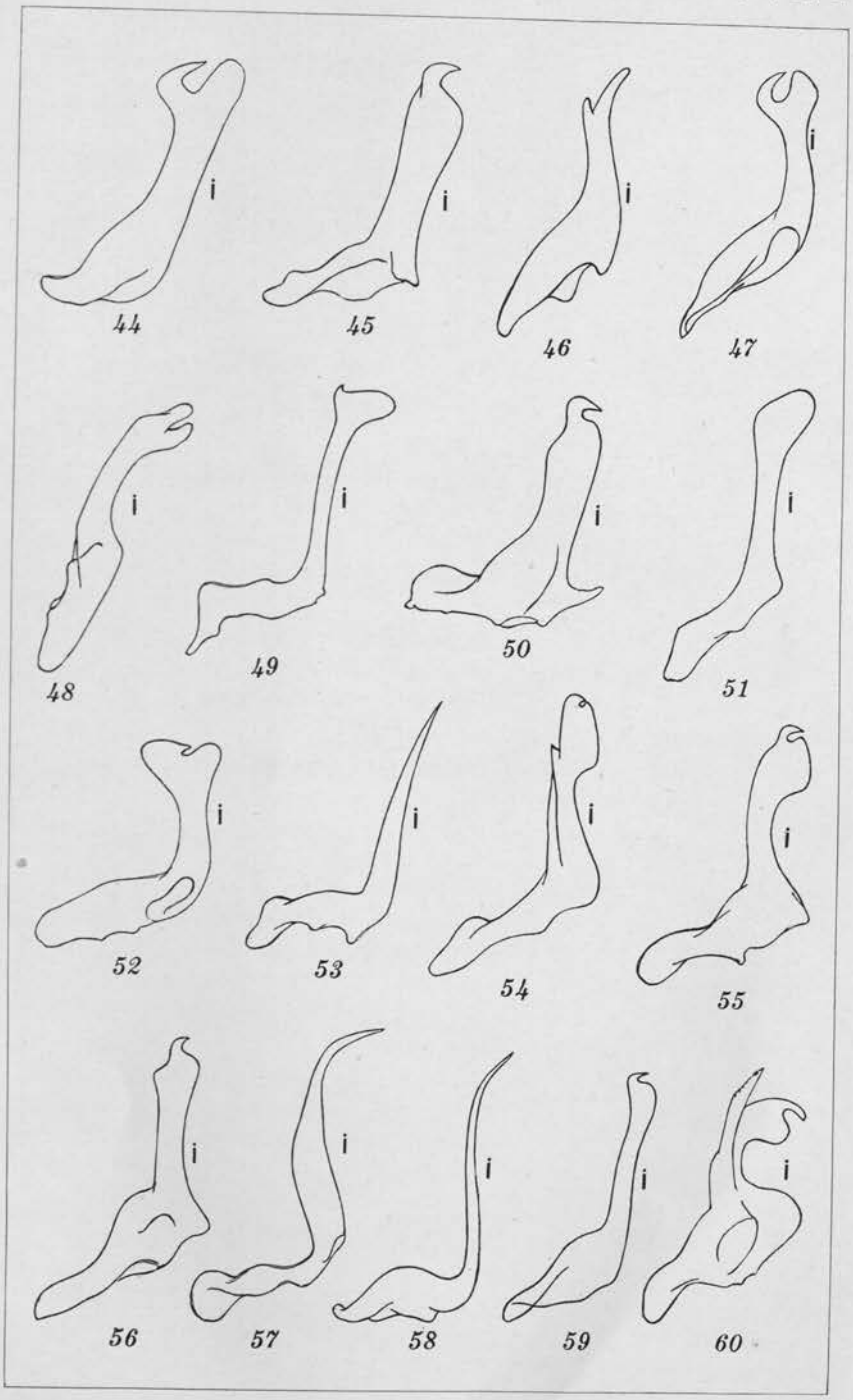
i
44
i
45
i
46
i
47
i
48
i
49
i
50
i
51
i
52
i
53
i
54
i
55
i
56
i
57
i
58
i
59
i
60

PLATE 4.