

NEW OR LITTLE-KNOWN TIPULIDÆ FROM THE PHILIPPINES (DIPTERA), XII ¹

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TWO PLATES

The crane flies discussed in the present report are all from Davao district, Mindanao, Philippine Islands, where they were collected by my friend and former student Mr. Charles F. Clagg. The majority of the specimens were taken at high altitudes on Mount Apo, which was twice ascended to the summit by Mr. Clagg. Other species from this rich collection will be discussed in later parts under this general title. All types are preserved in the author's collection.

LIMONIINÆ

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LIMONIA (LAOSA) MANOBO sp. nov. Plate 1, fig. 1.

Ground color of notum whitish, the præscutum with four chestnut-brown stripes; femora yellow, the tips broadly blackened; wings whitish, with an irregularly banded yellow pattern, the areas bordered by darker; the supernumerary crossvein in cell R_3 lying far distad of the one in cell R_5 .

Male.—Length, about 7.5 millimeters; wing, 9.5.

Rostrum and palpi black, the former about one-half the remainder of the head. Antennæ with the scapal segments black; first flagellar segment light yellow, the remaining segments passing through brown to black; flagellar segments oval, clearly demarcated, each with one seta that is a little longer than the segment, unilaterally arranged, in addition to several small setæ; terminal segment one-half longer than the penultimate, the terminal two setæ small. Head brownish gray, the center of the posterior vertex narrowly blackened, the narrow anterior vertex light golden yellow.

¹ Contribution from the entomological laboratory, Massachusetts State College.

Pronotum medially obscure yellow, dark brown sublaterally. Mesonotal præscutum with the restricted ground color whitish, the disk almost covered by four confluent chestnut-brown stripes that are narrowly bordered by blackish, the lateral stripes continued laterad to the margin, leaving a large humeral area of the ground color completely isolated from a small area before the suture; scutal lobes light orange, bordered by blackish, the median area darkened; scutellum yellow, the caudal portion with a large brown spot; postnotal mediotergite chiefly dark brown, the cephalic portion more yellowish, especially medially. Pleura whitish, extensively variegated with dark brown, the major areas including most of the anepisternum and sternopleurite, together with the pleurotergite, and a small spot on the pteropleurite. Halteres black, the base and apex of the stem narrowly and subequally light yellow. Legs with the coxæ pale yellowish white, variegated with brown; trochanters yellow; femora yellow, the tips very broadly blackened, the amount including about the distal quarter and subequal in amount on all legs; tibiæ light yellow; tarsi yellow, the outer segments blackened. Wings (Plate 1, fig. 1) whitish, with an irregularly banded brownish yellow pattern that is suggestive of that of many species of *Epiphragma*; the bands include a restricted postarcular area; a complete band at near midlength of cells R and M, widened out along vein Cu, ending at margin at vein 2d A; bands at cord and outer end of cell 1st M₂, broadly confluent in the stigmal region, the latter extended out across the supernumerary crossveins in the radial field to the margin at midlength and apex of cell R₂; all bands margined with brown; an isolated small brown spot at end of vein 1st A; cells C and Sc uniformly darkened. Venation: Sc₁ ending beyond r-m, Sc₂ close to its tip; R₁ bent strongly caudad at R₂; supernumerary crossvein in cell R₃ lying far more than its own length beyond the one in cell R₅; second section of M₁₊₂ strongly sinuous; m-cu about one-half its length beyond the fork of M; cell 2d A wide.

Abdominal tergites dark brown, narrowly pale medially and sublaterally at base; hypopygium chiefly darkened. Male hypopygium almost as in the typical form of the subgenus *Libnotes*.

MINDANAO, Davao district, Mount Apo, Mainit River, altitude 6,500 feet, September 14, 1930 (*C. F. Clagg*); holotype, male.

Limonia (*Laosa*) *manobo* is the second species of *Laosa* to be described and the first record of the subgenus from the Philippines. It is very different from the subgenotype, *gloriosa*

(Edwards), of French Indo-China, in all details of coloration and venation, although the beautifully patterned wings are somewhat alike in the two species. The specific name, *manobo*, is that of a native tribe. It should be noted that the very peculiar structure of the male hypopygium is almost identical with that of the typical form of *Libnotes* and that the same structure has been found in at least one species of the typical subgenus, *Limonia*.

LIMONIA (LIMONIA) BILAN sp. nov. Plate 1, fig. 2.

General coloration of mesonotum obscure yellow, the præscutum with three brown stripes; antennæ black; flagellar segments subglobular, with short yellow apical pedicels; halteres orange; legs obscure yellow, the tips of the femora and tibiæ darkened; wings cream-colored, with a very heavy clouded and spotted pattern; abdomen dark brown.

Female.—Length, about 11 millimeters; wing, 10.5.

Rostrum and palpi black. Antennæ black, the basal flagellar segments subglobular, with abrupt short yellow apical pedicels; penultimate segment short-oval; terminal segment elongate, pointed at apex, about one-third longer than the penultimate; verticils longer than the segments. Head dark gray; anterior vertex (female) a trifle narrower than the diameter of the first scapal segment.

Pronotum dark brown. Mesonotal præscutum obscure yellow, with three brown stripes, the median stripe broad and entire, the lateral stripes narrow and becoming subobsolete on their mesal edges; scutum with the median area gray, the lobes chiefly blackened; scutellum large, pale gray; postnotal mediotergite blackened. Pleura black, variegated with brown on the dorsal and ventral sternopleurite and on the meron; dorso-pleural region restrictedly buffy. Halteres orange. Legs with the coxæ black, the apices restrictedly paler; trochanters obscure yellow; femora obscure yellow, the tips deepening to black; trochanters obscure yellow, the tips narrowly blackened; basitarsi black, the proximal ends brown; remainder of tarsi black; claws (female) with a large outer and two progressively smaller, more basal spines. Wings (Plate 1, fig. 2) with the very restricted ground cream-colored, the prearcular and costal ground deeper yellow; a heavy dark brown costal and paler grayish brown discal pattern; the major brown areas are distributed along the costa, those at arculus and at the supernumerary cross-vein in cell Sc more extensive; areas at origin of Rs and end

of Sc very narrowly divided by a line of the ground color; stigmal area in oblique alignment with a band along the cord, crossing the base of cell R_3 , the area contiguous with a large spot immediately preceding it; numerous grayish brown spots and clouds in all the cells, these confluent to form a pattern that is much more extensive than the ground; veins yellow, darker in the clouded areas. Venation: Sc_1 ending just before midlength of R_s , Sc_2 at its tip; a weak supernumerary crossvein at near midlength of cell Sc; free tip of Sc_2 in alignment with R_2 ; cell 1st M_2 relatively small; m-cu at or just before the fork of M; anal veins at origin parallel or nearly so.

Abdomen dark brown, the two basal sternites vaguely more yellowish at base, the succeeding two segments with a linear yellow median dash; genital segment obscure fulvous. Ovipositor with the valves reddish horn color; tergal valves slender and acute.

MINDANAO, Davao district, Mount Apo, altitude 8,000 feet, September 19, 1930 (C. F. Clagg); holotype, female.

Limonia (*Limonia*) *bilan* is named from one of the native tribes living in the vicinity of Mount Apo. It is quite distinct from the numerous regional species of the subgenus in the abundantly spotted wings, structure of antennæ, and details of coloration.

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

General coloration of head and thorax intense orange, the mesonotum with two dark brown lines that extend from the præscutum to the abdomen, converging behind; a narrow black longitudinal stripe on pleura; knobs of halteres darkened; wings dirty whitish, with a heavy brown clouded and spotted pattern; Sc relatively short, Sc_1 ending about opposite one-third the length of R_s ; m-cu at near one-third the length of cell 1st M_2 .

Female.—Length, about 4.6 millimeters; wing, 5.

Mouth parts very small, black; palpi reduced, black. Antennæ with the scapal segments black; remainder of organ broken. Head fiery orange; anterior vertex very broad, at narrowest point fully three times the diameter of the scape.

Pronotum orange, the anterior notum behind narrowly bordered by black. Mesonotal præscutum intense orange, the usual sublateral stripes represented by brown lines, the broad median area remaining of the ground color; extreme lateral margins of sclerite narrowly and evenly bordered by brownish black, the

lines not quite meeting on the cephalic margin; remaining sclerites of mesonotum orange, traversed by narrow brown lines that converge behind and are direct prolongations of the sublateral præscutal stripes, on the postnotal mediotergite strongly approximated, being divided only by a capillary median line of the ground color. Pleura orange and yellow, with a narrow black longitudinal stripe, extending from the cervical sclerites to the abdomen, the region dorsad of this line more orange, below this line more yellow; a linear black streak at the anterior spiracle. Halteres with the stem obscure yellow, the knobs infuscated. Legs with the coxæ and trochanters yellow; remainder of legs broken, a single one detached, with the specimen and probably belonging here, is almost uniformly blackened, the femora a trifle paler. Wings (Plate 1, fig. 3) dirty whitish, with a heavy brown pattern consisting of very large clouds and washes; the major clouds are at arculus; origin of Rs and tip of Sc; stigma; along cord and outer end of cell 1st M_2 ; beyond midlength of cells R_2 and R_3 ; large clouds at ends of anal veins, with an additional major area at midlength of cell 2d A; cells R and M extensively washed with brown; veins pale, darker in the clouded areas. Venation: Sc short, Sc_1 ending at near one-third the length of Rs, Sc_2 close to its tip; Rs relatively short, angulated and spurred at origin; free tip of Sc_2 and R_2 in transverse alignment; cell 1st M_2 rectangular, a little shorter than vein M_{1+2} beyond it; m-cu at one-third the length of cell 1st M_2 , subequal to the distal section of Cu_1 ; anal veins bent rather strongly into the margin, especially 2d A.

Abdominal tergites velvety black laterally, more brownish black medially, the caudal margin medially of each segment with a narrow transverse obscure yellow line, on the basal tergite much more extensive and almost covering the segment; subterminal segments more uniformly brown; genital segment reddish brown; sternites pale brown, the caudal margins narrowly ocherous. Ovipositor with the tergal valves (cerci) small and strongly upcurved; sternal valves (hypoalvæ) longer, straight, blackened at bases.

MINDANAO, Davao district, Mount Apo, Mainit River, altitude 6,500 feet, September 14, 1930 (*C. F. Clagg*); holotype, female.

This beautiful little *Limonia* is very different from any other fly in the Philippine fauna. The short Sc is distinctive of the subgenus *Limonia*; but the distal position of m-cu is a rare condition in this subgenus, being more characteristic of *Libnotes*.

LIMONIA (LIMONIA) BAGOBO sp. nov. Plate 1, fig. 4; Plate 2, fig. 23.

General coloration obscure yellow; front silvery; antennæ, halteres, and legs blackened; basal flagellar segments subglobular, terminal segment elongate; wings with a blackish tinge; cell 1st M_2 open by atrophy of the basal section of M_3 ; male hypopygium with the dististyle single, at apex produced into an acute blackened spine.

Male.—Length, about 3.5 millimeters; wing, 4.2.

Rostrum and palpi very much reduced, black. Antennæ black throughout; flagellar segments subglobular, the outer ones passing into oval; terminal segment elongate, narrowed outwardly, about one-half longer than the penultimate; verticils short, unilaterally arranged, on outer segments becoming smaller and insignificant. Head brown, the broad frontal region silvery white.

Mesonotum deep yellow, without distinct markings, the pleura paler yellow. Halteres dusky, the knobs blackened. Legs with the coxæ and trochanters yellowish testaceous; remainder of legs black; claws apparently simple or with setæ only. Wings (Plate 1, fig. 4) with a strong blackish suffusion; veins slightly darker. Venation: Sc_1 ending about opposite one-third to two-fifths the length of R_s , Sc_2 at its tip; free tip of Sc_2 some distance before the arcuated R_2 ; cell 1st M_2 open by the atrophy of the basal section of M_3 , cell 2d M_2 a trifle longer than its petiole; m-cu a short distance beyond the fork of M .

Abdomen, including the hypopygium, dark brown. Male hypopygium (Plate 2, fig. 23) with the tergite, $9t$, elongate, slightly longer than wide, the apex bilobed, provided with long conspicuous setæ. Basistyle, b , elongate, the ventromesal lobe slender. Dististyle, d , single, oval, narrowed outwardly, at apex produced into an acute blackened spine; on outer face of basal half with a circular pale area provided with a small tubercle bearing two short stout setæ. Gonapophyses, g , with the mesal-apical lobe appearing as an acute blackened hook.

MINDANAO, Davao district, Mount Apo, Bakraeyon, altitude 8,000 feet, September 16, 1930 (*C. F. Clagg*); holotype, male.

Limonia (Limonia) bagobo is named from one of the native tribes inhabiting Mount Apo and surrounding country on the west side of Davao Gulf. The species is very distinct in the venation and structure of the male hypopygium. The peculiar bisetose tubercle on the dististyle of the hypopygium would indicate a relationship with the otherwise very different *L. (L.) canis* Alexander and *L. (L.) cynotis* Alexander.

LIMONIA (LIMONIA) SUBPACATA sp. nov. Plate 1, fig. 5; Plate 2, fig. 24.

Male.—Length about 3 millimeters; wing, 3.8.

Female.—Length, about 3.5 millimeters; wing, 4.

Closely related to *L. (L.) pacata* Alexander and *L. (L.) proluxicornis* Alexander; differing especially in the venation and structure of the male hypopygium.

Antennæ (male) of moderate length, the flagellar segments short-cylindrical, almost as in *subprolixa* sp. nov. and much shorter than in *prolixicornis*. Head dark.

Thorax light reddish yellow, without distinct markings. Halteres with dusky knobs. Legs chiefly pale testaceous brown, the outer tarsal segments darkened. Wings (Plate 1, fig. 5) grayish subhyaline, the stigma not or scarcely differentiated; veins pale brown. Venation: Sc very short, Sc₁ ending shortly beyond the origin of Rs, with Sc₂ immediately beyond this origin; cell 2d A very narrow.

Abdomen reddish brown, the sternites paler. Male hypopygium (Plate 2, fig. 24) with the lateral lobes of the tergite, 9t, pale, glabrous, the caudal margin between the lobes emarginate. Gonapophyses, g, with the lateral lobe darkened, the mesal-apical lobe pale, very broad, the apex obtusely rounded.

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

The present species differs from all described species of the *pacata* group in the unusually short Sc which extends only a short distance beyond the origin of Rs. The male hypopygium furnishes ready identification characters to separate this fly from *prolixicornis* Alexander and *subprolixa* sp. nov.

LIMONIA (LIMONIA) SUBPROLIXA sp. nov. Plate 1, fig. 6; Plate 2, fig. 25.

Belongs to the *pacata* group; antennæ of male elongate but shorter than in *prolixicornis*; Sc₁ ending beyond midlength of Rs; hypopygium with the tergite terminating in two stout lobes, each bearing five powerful setæ; male hypopygium with the mesal apical lobe of the gonapophyses long and slender.

Male.—Length, about 4 to 4.5 millimeters; wing, 4.5 to 5.5.

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

Rostrum and palpi brownish black. Antennæ (male) elongate, but still shorter than in *prolixicornis*; flagellar segments cylindrical, with short apical pedicels. Head dark brownish gray.

Mesonotal præscutum reddish brown, without distinct markings, the posterior sclerites of the notum darker medially.

Pleura yellow, the dorsal pleurites usually darker. Halteres dusky, the knobs infuscated. Legs with the fore coxæ more or less darkened on outer face, the other coxæ and all trochanters yellow; remainder of legs brownish black, the femoral bases restrictedly obscure yellow. Wings (Plate 1, fig. 6) with a brownish tinge, the oval stigma a trifle darker brown; veins dark brown. Venation: Sc_1 ending beyond midlength of R_s , Sc_2 a short distance from its tip; cell M_2 open by the atrophy of m ; $m-cu$ at or close to the fork of M .

Abdominal tergites dark brown, the sternites obscure yellow or brownish yellow. Male hypopygium (Plate 2, fig. 25) with the tergal plate, $9t$, narrow, conspicuous, at apex with two lobes, each bearing about five stout marginal setæ. Basistyles and dististyles almost as in *prolixicornis*. Gonapophyses, g , with the mesal-apical lobe long and slender, gently curved, the apex truncated. Ædeagus with unusually wide lateral flanges.

MINDANAO, Davao district, Mount Apo (C. F. Clagg); holotype, male, 7,000 to 8,000 feet, September 20, 1930; allotype, female, altitude 8,000 feet, September 19, 1930; paratypes, 15 males and females, 6,500 to 8,000 feet, September 5 to 30, 1930.

Limonia (Limonia) subprolixa is most closely allied to *L. (L.) prolixicornis* Alexander, differing in the shorter antennæ of the male and the details of structure of the male hypopygium, especially the tergite and gonapophyses.

HELIUS (HELIUS) PROCERUS sp. nov. Plate 1, fig. 7; Plate 2, fig. 26.

General coloration dark brown; rostrum black, slightly longer than the head; antennæ (male) elongate, if bent backward extending nearly to the base of abdomen; legs black, the tarsi paling to yellow; wings with a faint blackish tinge; anterior branch of R_s strongly arcuated at origin and thence running close to and generally parallel to R_1 ; cell 1st M_2 long-rectangular, with $m-cu$ shortly beyond its base.

Male.—Length, about 7 millimeters; wing, 7.8.

Female.—Length, about 8 millimeters; wing, 7.2.

Rostrum slightly longer than the remainder of head, black; palpi black. Antennæ (male) unusually elongate for this genus, if bent backward extending nearly to base of abdomen; black throughout; flagellar segments cylindrical, with abundant short dense erect setulæ. Antennæ (female) short, only a little longer than the head. Head black.

Pronotum dark medially, obscure yellow laterally. Mesonotal præscutum dark brown, without distinct markings; me-

dian region of scutum and vicinity of the suture yellow; posterior sclerites of mesonotum darker brown. Pleura dark brown dorsally, more yellowish brown ventrally. Halteres infuscated. Legs with the coxæ brownish testaceous; trochanters yellowish testaceous; remainder of legs blackened, the terminal tarsal segments paling to yellowish. Wings (Plate 1, fig. 7) with a faint blackish tinge, cells C and Sc dark brown, confluent with the scarcely differentiated brown stigma; veins dark brown. Venation: Sc_1 ending some distance beyond r-m, Sc_2 faint or obsolete; r-m on R_{4+5} shortly beyond the fork of Rs; anterior branch of Rs very strongly arcuated at base, at the level of the end of Sc running generally parallel and close to R_1 ; Rs nearly in alignment with the distal section of R_{4+5} ; cell 1st M_2 long-rectangular, shorter than any of the veins beyond it; m-cu a short distance beyond the fork of M.

Abdomen, including the hypopygium, brownish black. Male hypopygium (Plate 2, fig. 26) with the mesal face of basistyle, *b*, at cephalic end with a conspicuous lobe that is covered with abundant spinous setæ. Outer dististyle, *od*, a simple blackened rod, the apex entire. Inner dististyle stout and with conspicuous setæ on basal two-thirds, the apex suddenly narrowed. Gonapophyses, *g*, with the mesal angle a long, slender tail-like spine.

MINDANAO, Davao district, Mount Apo (*C. F. Clagg*); holotype, male, Mainit River, altitude 6,000 feet, September 4, 1930; allotype, female, Galog River, attracted to camp fire, altitude 6,000 feet, September 22, 1930; paratype, a fragmentary specimen, altitude 7,000 feet, September 11, 1930.

Helius (*Helius*) *procerus* is most closely allied to *H. (H.) arcuarius* Alexander (Luzon), differing most evidently in the large size and elongate antennæ of the male sex.

HELIUS (HELIUS) APOENSIS sp. nov. Plate 1, fig. 8.

General coloration pale yellow ochereous, without markings; head blackish gray; wings ochre brown, the stigma a little darker; wings with cell R_1 closed by the apical fusion of veins R_{1+2} and R_3 .

Male.—Length, about 3 millimeters; wing, 3.5 to 3.6.

Rostrum and palpi black. Antennæ black throughout. Head blackish gray.

Pronotum brown. Mesothorax light yellow ochereous, unmarked, the scutellum a little paler. Halteres pale, the knobs slightly darkened. Legs with the coxæ and trochanters yellowish testaceous; remainder of legs pale brownish yellow, the ter-

minal tarsal segments brighter yellow. Wings (Plate 1, fig. 8) pale ocher brown, the pale stigma only slightly indicated; veins pale brown. Costal fringe (male) conspicuous. Venation: Almost as in *trianguliferus*; anterior branch of Rs shorter and more erect at origin, the fusion with R_{1+2} slightly longer.

Abdomen pale brownish yellow.

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

Very similar and closely related to *Helius* (*Helius*) *trianguliferus* Alexander (Luzon-Mindanao), differing especially in the light ocher-yellow coloration of the body.

THAUMASTOPTERA (THAUMASTOPTERA) MACULIVENA sp. nov. Plate 1, fig. 9; Plate 2, fig. 27.

General coloration pale yellow; antennal scape black, the flagellum yellow; knobs of halteres weakly infuscated; legs pale yellow, the genua very restrictedly to scarcely darkened; wings grayish white with a conspicuous brown and gray pattern that appears as seams to the veins; Sc relatively short; r-m shortened by approximation of the adjoining veins; male hypopygium with the dististyle slender, its tip pointed.

Male.—Length, about 2.5 millimeters; wing, 3.5.

Rostrum brownish black; palpi black. Antennæ with the scape black, the flagellum abruptly light yellow; flagellar segments subglobular to short-oval, with long conspicuous verticils that much exceed the segments. Head brown.

Mesonotum pale yellow, in cases the postnotal mediotergite a trifle darker. Pleura pale yellow. Halteres pale, the knobs weakly infuscated. Legs with the coxæ and trochanters pale yellow; remainder of legs pale yellowish white, the genua very restrictedly to almost insensibly darkened. Wings (Plate 1, fig. 9) with the ground color grayish white, the prearcular and costal regions clearer cream yellow; a restricted brown and gray pattern appearing as seams along the veins, arranged as follows: Arculus, including the surrounding veins; origin of Rs and opposite portion of costa; cord; ends of longitudinal veins from M_{1+2} to anal veins, inclusive; a cloud on costa at near three-fourths the length of cell R_2 ; at midlength of vein R_{4+5} ; m and adjoining parts of M_{1+2} and M_3 ; m-cu; at near midlength of basal section of Cu_1 ; a second dash on vein 2d A on basal half; a weak axillary darkening; veins pale yellow, brown in the clouded areas. Costal fringe relatively long. Venation: Sc of mod-

erate length, Sc_1 ending about opposite one-third the length of Rs , Sc_2 some distance from its tip, opposite or close to origin of Rs , the latter angulated and long- or short-spurred at origin; $r-m$ short, reduced by approximation of adjoining veins.

Abdomen yellow, including the hypopygium. Male hypopygium (Plate 2, fig. 27) with the dististyle, d , slender, pale, terminating in an acute pale spinous point, with one long pale seta on outer margin before apex, together with a row of four black setæ on inner margin, distributed over the outer half; additional setæ on inner face at base. Ædeagus, a , short.

MINDANAO, Davao district, Mount Apo, Galog River, altitude 6,000 feet, September 26, 1930; Mainit River, altitude 6,000 to 6,500 feet, September 6 to 14, 1930 (*C. F. Clagg*); holotype, male; paratypes, 3 males.

It should be noted that this is the first record of the typical subgenus of *Thaumastoptera* in the eastern Asiatic area, the only other member of the genus so far discovered in Asia being *Thaumastoptera (Taiwanita) issikiana* Alexander, from the high mountains of Formosa. The present species is very distinct from the genotype, *calceata* Mik, in the wing pattern.

HEXATOMINI

ADELPHOMYIA APOANA sp. nov. Plate 1, fig. 10.

General coloration dark brown; antennæ 16-segmented, dark throughout; wings with a faint brown tinge, with a restricted darker brown pattern, including the stigma and narrow seams at origin of Rs and along cord; macrotrichia of membrane relatively sparse.

Female.—Length, about 4 millimeters; wing, 4.3.

Rostrum and palpi black. Antennæ black, the flagellar segments somewhat paler; sixteen distinct segments, the basal ones shorter and more crowded; outer segments long-cylindrical, with long verticils that exceed the segments; terminal segment about one-half longer than the penultimate. Head dark brown.

Thorax almost uniform brown, the central portion of the præscutum darker. Pleura a trifle more testaceous brown than the notum. Halteres elongate, dusky, the base of the stem restrictedly pale. Legs with the coxæ and trochanters yellowish testaceous; remainder of legs brown, with long outspreading setæ. Wings (Plate 1, fig. 10) with a faint brown tinge, with a very restricted, slightly darker brown pattern, including the stigma and narrow seams at origin of Rs and along the cord;

veins pale brown. Macrotrichia of cells relatively sparse, in the outer ends of cells R_2 to M_3 , inclusive. Venation: Sc_1 ending shortly before the fork of R_s , Sc_2 some distance from its tip; R_s weakly angulated at origin; m-cu at near midlength of lower face of cell 1st M_2 ; cell M_1 present.

Abdomen brownish black. Ovipositor with the elongate tergal valves darkened at bases, the slightly upcurved acute tips yellow.

MINDANAO, Davao district, Mount Apo, Kidopawan trail to Lake Lino, altitude 7,000 to 8,000 feet, September 20, 1930 (C. F. Clagg); holotype, female.

Adelphomyia apoana is apparently distinct from any of the now rather numerous regional species in the wing pattern, venation, and conformation, and in the relatively sparse macrotrichia of the membrane. The nearest ally seems to be *A. carbonicolor* Alexander.

ADELPHOMYIA PAUCISETOSA sp. nov. Plate 1, fig. 11; Plate 2, fig. 28.

General coloration black; antennæ 15-segmented, the fusion segment yellow, remainder of organ darkened; wings milk white with a heavy brown pattern that is distributed chiefly as narrow broken crossbands; macrotrichia of membrane very sparse, being restricted to a few trichia in ends of cells R_3 and R_4 ; male hypopygium with the outer dististyle bearing a long erect spine on inner face at near midlength.

Male.—Length, about 3 millimeters; wing, 3.8.

Rostrum and palpi brownish black. Antennæ with the scape black, the fusion segment pale yellow; remainder of flagellum brown; antennæ with fifteen segments, the short-conical fusion segment involving two segments; outer flagellar segments subcylindrical, with verticils that exceed the segments in length; terminal segment about one-fourth longer than the penultimate. Head black.

Pronotum obscure brownish yellow medially, blackened laterally. Mesonotal præscutum yellowish brown to chestnut, darker medially; scutal lobes light brown; posterior sclerites of mesonotum dark brown. Pleura black. Halteres chiefly pale yellow, the central portion of stem vaguely darker. Legs with the fore coxæ brownish yellow, the remaining coxæ black; trochanters testaceous; remainder of legs brown, the outer tarsal segments somewhat darker; no tibial spurs; segments of legs with long conspicuous setæ. Wings (Plate 1, fig. 11) milky white, with a heavy brown pattern that is arranged chiefly as six or

seven, narrow, broken crossbands, interrupted at the central portion of the disk; basal band beyond arculus, complete; second band at origin of Rs and end of vein 2d A, broken in cells M and Cu; third band at Sc₂ and end of 1st A, interrupted but replaced in a slightly more distal position by a similar seam along cord; an interrupted irregular band includes the stigma, outer end of cells 1st M₂ and M₄; an outer band includes end of R₃, and a prolongation of the area across cells R₅ and 2d M₂; additional brown clouds at ends of veins R₄ and R₅; paler washes in cells M, Cu, and at midlength of cell 2d A; veins pale, darker in the clouded areas. Macrotrichia of cells very sparse, being restricted to a group of five or six in outer end of cell R₄, with one or two more in cell R₃. Venation: Sc₁ ending about opposite the end of Rs; veins R₃ and R₄ slightly upcurved at ends; R₂ at fork of R₃₊₄; cell M₁ present; cell 1st M₂ strongly narrowed at proximal end, r-m being correspondingly lengthened, arcuated.

Abdomen chiefly black, including the hypopygium. Male hypopygium (Plate 2, fig. 28) with the outer dististyle, *od*, an elongate-oval blackened structure, terminating in two slender spines, one being slightly more curved; just beyond midlength of style on inner margin a long slender erect spine. Inner dististyle, *id*, very stout at base, the obtuse tip narrowed.

MINDANAO, Davao district, Mount Apo, Mainit River, altitude 6,000 feet, September 22, 1930 (*C. F. Clagg*); holotype, male.

Adelphomyia paucisetosa most closely resembles *A. nebulosa* (de Meijere), of western Java, differing from all known species in the very notable reduction in number of macrotrichia of the wings, a condition which presages their total loss.

EPIPHRAGMA (POLYPHRAGMA) FUSCOFASCIATA sp. nov. Plate 1, fig. 12.

General coloration of mesonotum ochereous brown, dark brown laterally; pleura and pleurotergite black; antennal scape and fusion segment of antenna pale; halteres black; wings yellow, with three more or less complete crossbands of brownish black, the third band at the cord, very broad but more or less interrupted by pale; wing tip pale, with small dark spots at ends of the veins.

Female.—Length, about 7 millimeters; wing, 7.5.

Rostrum yellowish gray; palpi black. Antennæ with the first scapal segment light brown; second segment obscure yellow; fusion segment bright orange; remainder of flagellum black. Head yellowish gray, the central and posterior portions of the vertex darker.

Pronotum obscure yellow, deepening to black on sides. Mesonotal præscutum ocher brown sublaterally, darker brown medially, the lateral margins narrowly and abruptly dark brown; scutal lobes dark brown; scutellum black, the parascutella somewhat paler; postnotal mediotergite obscure yellowish brown, blackened posteriorly. Pleura and pleurotergite black. Halteres black. Legs with the fore coxæ dark brown, the remaining coxæ black; trochanters brownish yellow; femora yellow, darkened subterminally; remainder of legs yellow. Wings (Plate 1, fig. 12) with the ground color yellow, with three heavy crossbands of brown to brownish black; basal area including the arcular region; second band at origin of R_s ; third band very broad, extending from before the cord to the level of R_3 , interrupted by a few small yellow areas, as in cells Sc_2 , R_2 , 1st M_2 , M_3 , and M_4 ; wing apex pale, varied by a series of marginal brown areas at ends of veins R_4 to M_2 , inclusive; the yellow alternating crossbands are slightly clouded with dusky in the cubital and anal fields, leaving clear yellow margins bordering the crossbands; veins yellow, dark in the infuscated areas. In the paratypes, the outer band is more extensively interrupted by pale markings. Venation: Crossveins and spurs in cell C very much restricted in number; R_s square and weakly spurred at origin; cell 1st M_2 relatively small.

Abdomen rather light brown, the caudal margins of the segments narrowly but conspicuously brownish black; genital segment obscure yellow; valves of ovipositor horn-colored, the bases of the cerci darker.

MINDANAO, Davao district, Mount Apo (*C. F. Clagg*); holotype, female, Galog River, altitude 5,000 to 6,000 feet, September 12, 1930; paratypes, two females, Sibulan River, altitude 7,000 to 8,000 feet, September 21, 1930; one female, Kidopawan trail from Lake Lino, altitude 7,000 to 8,000 feet, September 20, 1930.

Epiphragma (*Polyphragma*) *fuscofasciata* is distinguished from other members of the *ochrinota* group by the handsomely banded wing pattern.

EPIPHRAGMA (POLYPHRAGMA) LATITERGATA sp. nov. Plate 2, fig. 29.

General coloration of mesonotum brownish yellow, contrasting with the blackened pleura; legs yellow, the femora with a broad pale yellow subterminal ring; wings with the ground color light brown, with a heavier brown pattern that is narrowly margined with light yellow; male hypopygium with the lateral lobes of the tergite broad, obtuse; interbasal process at apex expanded

at apex into a truncated blade, the outer apical angle bearing a small, curved, beaklike spine.

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

Female.—Length, about 9 to 10 millimeters; wing, 9 to 9.5.

Rostrum and palpi dark brown. Antennæ with the first scapal segment blackened, the second obscure brownish yellow; basal flagellar segments not distinctly united into a fusion segment, beyond the base black, the verticils exceeding the segments in length. Head dull yellowish gray, the posterior vertex more reddish brown, the caudal portions more infuscated on either side of the midline.

Mesonotum dull brownish yellow, without markings, the lateral portions of the præscutum deep chestnut orange. Pleura blackened, as in the group, the ventral sternopleurite remaining yellowish. Halteres yellow, the knobs dark brown. Legs with the coxæ obscure yellow, narrowly darkened basally, especially the posterior coxæ; trochanters yellow; femora yellow, with a broad pale brown subterminal ring; remainder of legs light yellow, the terminal tarsal segments passing into fulvous. Wings with the ground color light brown with a heavier brown pattern, arranged as in the group, the major areas being at arculus; origin of Rs; along cord and outer end of cell 1st M_2 ; fork of M_{1+2} ; and as conspicuous circular marginal clouds at ends of all longitudinal veins; the dark pattern is narrowly but conspicuously bordered by pale yellow; costal margin yellow, beyond the region of the stigma appearing as three isolated spots in outer ends of cells R_2 , R_3 , and R_4 ; veins dark, obscure yellow in the costal interspaces. No dilation of the axillary region. Venation: Spurs and supernumerary crossveins in cell C six to eight in number, all seamed by darker; Rs relatively long, angulated and weakly spurred at origin; m-cu variable in position, at one-fourth to midlength of cell 1st M_2 .

Abdomen chiefly dark brown, including the sternites and hypopygium. Male hypopygium (Plate 2, fig. 29) generally as in *fulvinota* but differing in some important regards, notably the broad, obtuse lobes of the tergite, 9*t*, and the shape of the interbasal processes, *i*. These latter normally are expanded at apex into a squarely truncated blade that bears on outer apical angle a small, curved hooklike spine.

MINDANAO, Davao district, Mount Apo, altitude 5,000 to 8,000 feet, August 31 to September 21, 1930 (*C. F. Clagg*); holotype, male; allotype, female; paratopotypes, several of both sexes.

Among the species of the *ochrinota* group, the present fly is closest to *Epiphragma* (*Polyphragma*) *fulvinota* Alexander, from which it differs most evidently in the wing pattern, with conspicuous narrow yellow margins to the darkened areas, the paler brown femoral annuli, and the structure of the male hypopygium, notably of the tergite and interbasal processes.

EPIPHRAGMA (POLYPHRAGMA) NIGROTIBIATA sp. nov. Plate 1, fig. 13; Plate 2, fig. 30.

General coloration of mesonotum yellow, variegated with dark brown; pleura yellow, with scattered small dark brown spots; femora yellow basally, the distal half black, inclosing two narrow yellow rings; tibiae black; tarsi yellow; wings brownish yellow, the cephalic portion deeper yellow, the surface with a heavy brown pattern.

Male.—Length, about 7.5 millimeters; wing, 8.5.

Rostrum and palpi black. Antennae relatively short; scapal segments brown, the fusion segment and second segment of flagellum orange; remainder of flagellum black; verticils exceeding the segments in length. Head brownish gray, the lateral portions of the vertex and the genae more reddish brown.

Pronotum yellow, the anterior notum variegated with dark brown on the sides. Mesonotal praescutum yellow, variegated with dark brown medially, the area broad and entire behind, becoming bifid and obsolete in front; sublateral portions of the sclerite deeper reddish yellow than the pollinose interspaces; extreme lateral margins of praescutum dark brown; scutal lobes reddish brown, margined with slightly darker brown, the cephalic lateral portions brighter; scutellum brown; postnotal mediotergite dark brown, pruinose. Pleura yellow, variegated with scattered brown areas, located on the dorsal anepisternum, dorsal sternopleurite, ventral sternopleurite, meron, and dorsal and ventral pleurotergite. Halteres dark brown, the base of the stem light yellow. Legs with the coxae and trochanters yellow, the posterior coxae a little darker apically; femora yellow basally, the outer half passing into black, inclosing a narrow apical and a slightly wider subapical yellow ring; tibiae black, the extreme base yellow; tarsi light yellow, the terminal segments darkened. Wings (Plate 1, fig. 13) brownish yellow, the prearcular, costal, and radial fields deeper yellow; a heavy brown pattern, distributed as follows: A series of narrow costal and subcostal areas surrounding the crossveins and spurs in the former cell; larger areas at arculus; origin of Rs; along cord; outer end of cell 1st

M₂; fork of M₁₊₂; marginal clouds at ends of all longitudinal veins, largest on the anals; a restricted dark area in axillary region; radial and medial cells beyond the level of the fork of M₁₊₂ extensively darkened, confluent with the marginal dark areas in this field to produce a radiate appearance; dark areas behind the costa narrowly bordered by cream yellow; veins pale brown, darker in the infuscated areas. Venation: A series of supernumerary crossveins and spurs in cell C; m-cu more than one-half its length beyond the fork of M; supernumerary crossvein in cell Cu atrophied or nearly so.

Abdominal tergites dark brown, the basal ring of the second segment obscure yellow laterally; impressed transverse lines of the remaining tergites narrowly bordered by pale; sternites obscure yellow, the extreme caudal margins of the segments darkened. Male hypopygium (Plate 2, fig. 30) with the interbasal process, *i*, a slender rod from a dilated base, the apex weakly expanded and further produced into a small curved point. Outer dististyle, *od*, dilated at midlength, the apex a strongly curved spine.

MINDANAO, Davao district, Mount Apo, Mainit River, altitude 6,500 feet, September 14, 1930 (*C. F. Clagg*); holotype, male.

Epiphragma (Polyphragma) nigrotibiata is well-distinguished by the uniformly black tibiæ and the pattern of the femora.

EPIPHRAGMA (POLYPHRAGMA) APOENSIS sp. nov. Plate 1, fig. 14; Plate 2, fig. 31.

General coloration of mesonotum yellow, the disk with three confluent brown stripes; pleura chiefly yellow, margined with brownish black; femora yellow with a broad black subterminal ring; wings pale brown, with a heavy dark brown pattern that is narrowly bordered by cream yellow; male hypopygium with the lateral lobes of the tergite broad; interbasal process a simple blade terminating in a small beak.

Male.—Length, about 7.5 millimeters; wing, 8.5.

Rostrum brown; palpi black. Antennæ with the scape light brown; fusion segment small, yellow; remainder of flagellum black; basal flagellar segments short-oval, the outer segments subcylindrical, with verticils that are about as long as the segments. Head above with the central area dark brown, paling to reddish on sides of posterior vertex.

Pronotum yellow, dark brown laterally. Mesonotal præscutum yellow, the extreme lateral margin dark brown; disk of præscutum almost covered by three confluent brown stripes that are further divided by a capillary dark brown vitta; scutal lobes

brown, the extreme cephalic-lateral angles brightened; posterior sclerites of mesonotum yellowish brown, the postnotal mediotergite darker medially. Pleura chiefly yellow, variegated with brownish black on the margins, including the dorsopleural membrane, cephalic and ventral margin of sternopleurite, meron and dorsal and ventral portions of pleurotergite. Halteres long, pale yellow, the knobs infuscated. Legs with the coxæ and trochanters yellow; only a single (hind) leg remains; femora yellow, brighter yellow on distal fourth, this area inclosing a broad black ring; tibiæ and tarsi yellow. Wings (Plate 1, fig. 14) with the ground color pale brown, with a heavy dark brown pattern that is bordered by narrow cream-yellow margins; costal brown pattern including both cells C and Sc, with three costal areas passing into a large solid marking at origin of Rs; an hourglass-shaped darkening at the cord; wing apex beyond cell 1st M_2 chiefly darkened, variegated by yellow marginal areas in the outer ends of cells R_3 , R_4 , M_1 , and 2d M_2 , together with small paler yellow spots in bases of cells M_1 , 2d M_2 , and M_3 ; a large darkened mark at end of vein 2d A, extending to Cu; axilla darkened; a large area at arculus; veins pale yellow in the ground, darker in the clouded portions. Venation: Costal spurs and crossveins numerous, including about four beyond the origin of Rs, the latter angulated and spurred at origin; m-cu about one-half its length beyond the fork of M.

Abdominal tergites dark brown, the basal ring brighter, especially laterally; sternites extensively yellowish, the caudal margins darkened; hypopygium chiefly darkened. Male hypopygium (Plate 2, fig. 31) with the lateral lobes of the ninth tergite, 9*t*, broad, separated by a deep notch. Interbasal process, *i*, a relatively narrow blade, the apex a small curved beak. Outer dististyle, *od*, with the main body spinous on outer margin, the apex a long curved spine.

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

Belongs to the *fuscosternata* group, having the mesonotum and pleura conspicuously variegated yellow and brown. The type of hypopygium is much like that of *E. (P.) fulvinota* that belongs to the *ochrinota* group, the resemblance being especially striking in the general features of the interbasal process and dististyles.

EPIPHRAGMA (POLYPHRAGMA) HASTATA sp. nov. Plate 2, fig. 32.

General coloration of mesonotal præscutum dark brown, margined with yellow; pleura yellow, variegated with dark brown; femora yellow, with a broad subterminal dark brown to

brownish black ring; wings with a heavy dark brown pattern that is bordered by cream yellow; male hypopygium with the lobes of the ninth tergite broad, microscopically roughened at apices; interbasal rod an acute spearlike point.

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

Rostrum light brown; palpi dark brown. Antennæ with the scape brownish yellow; basal three flagellar segments light yellow, the remainder passing into dark brown; no distinctly developed fusion segment. Head orange, the center of the vertex infuscated.

Pronotum yellow. Mesonotal præscutum yellow laterally, margined narrowly with dark brown; disk almost covered by three confluent dark brown stripes, the region of the interspaces more yellowish pollinose; scutal lobes dark brown; median area of scutum and the scutellum pale, yellowish pollinose; postnotal mediotergite brown, with a more yellow pollinose area on either side at midlength. Pleura yellow pollinose, variegated with dark brown, including the anterior dorsopleural region, the anterior margin of the anepisternum and sternopleurite, the meron, and the dorsal and ventral pleurotergite. Halteres pale yellow, the knobs infuscated. Legs with the coxæ and trochanters orange yellow, the posterior coxæ and cephalic face of the fore coxæ darkened; femora yellow, with a very broad dark brown (fore femora) to brownish black (posterior femora) subterminal ring; remainder of legs yellow. Wings with the ground color pale brown, with a heavy dark brown pattern; prearcular and costal portions deeper yellow; brown areas bordered by creamy margins; dark markings in cells C and Sc numerous; major dark areas arranged as follows: Arculus; origin of Rs, with a more-elongate area in alignment at the supernumerary crossvein in cell Cu and end of vein 2d A, interrupted at cell M; along cord, narrowed in the medial field; outer end of cell 1st M₂; ends of all longitudinal veins, continued back along the veins; veins light brown, darker in the infuscated areas, more yellow in the flavous interspaces.

Abdominal tergites chiefly dark brown, the basal rings paler; sternites more yellowish, the incisures narrowly darkened; hypopygium with the basistyles pale. Male hypopygium (Plate 2, fig. 32) with the lateral lobes of the tergite, 9*t*, broad, microscopically roughened at apices, separated by a deep U-shaped notch. Interbasal process, *i*, an acute spearlike rod. Outer dististyle, *od*, terminating in an acute curved spine.

MINDANAO, Davao district, Mount Apo (*C. F. Clagg*); holotype, male, altitude 6,000 feet, August 30, 1930; allotype, female, altitude 7,000 feet, September 11, 1930.

Epiphragma (*Polyphragma*) *hastata* belongs to the *fuscosternata* group, being most closely allied to *E. (P.) fuscosternata* Alexander and *E. (P.) apoensis* sp. nov. It differs from the latter in the distinctive structure of the male hypopygium and from the former (the male of which is still unknown) in the more-restricted amount of dark coloring in the anal cells of the wing.

EPIPHRAGMA (POLYPHRAGMA) CANINOTA sp. nov. Plate 1, fig. 15; Plate 2, fig. 33.

General coloration of dorsum of head and mesonotum light ashy gray; knobs of halteres infuscated; legs yellow; wings of both sexes with a conspicuous axillary crenulation; radial cells clouded with brown; darkened areas of wing not bordered by paler.

Male.—Length, about 6.5 millimeters; wing, 7.5.

Female.—Length, about 8.5 millimeters; wing, 8.2.

Rostrum reduced, pale brown. Antennæ with the scape and fusion segment pale yellow, the remainder of the flagellum black. Head above light ashy gray, the posterior slope of the vertex, together with the genæ, more orange yellow, infuscated medially.

Mesonotum above light ashy gray on the dorsomedian portion, the sides of the præscutum and postnotal mediotergite abruptly orange yellow. Pleura yellow. Halteres yellow, the knobs infuscated. Legs yellow, the terminal tarsal segments darkened. Wings (Plate 1, fig. 15) yellowish brown, the costal margin light yellow, continued to the wing tip in the radial field but here broken into spots by brown clouds at the ends of the veins; radial field extensively suffused with brown; additional brown clouds and spots at arculus; origin of Rs; cord; outer end of cell 1st M_2 ; fork of M_{1+2} ; at supernumerary crossveins in cells C and Cu, and as large marginal clouds at ends of the veins; veins brownish yellow, darker in the clouded areas. Axillary crenulation large and conspicuous, a trifle less developed in female than in male. Venation: Supernumerary crossvein in cell Cu well-preserved in both sexes; m-cu in male at fork of M, in female, beyond the fork but with the crossvein in transverse alignment with the other elements of the cord.

Abdominal tergites yellowish brown, darker laterally; sternites clearer yellow. Male hypopygium (Plate 2, fig. 33) with

the apex of the interbasal process, *i*, a tonglike structure, the lateral arm being a curved spine. Outer dististyle relatively slender, the vestiture of outer face consisting of abundant delicate setulæ, with a few longer setæ. Inner dististyle with apex dilated into a slight head, bearing one unusually long seta.

MINDANAO, Davao district, Mount Apo, Galog River, altitude 6,000 feet, September 8, 1930 (*C. F. Clagg*); holotype, male; allotype, female, in copula.

There is a considerable group of species of *Polyphragma* in the Philippines having the head and mesonotum chiefly clear ashy gray, differing from one another by distinctions in the degree of development of the axillary lobe, the wing pattern, and slight details of structure of the male hypopygium. I have called this group of flies the *crenulata* group. The present fly falls in this division and seems closest to *E. (P.) cinereinota* Alexander; which differs in the coloration of wing and body, as the blackened subterminal ring of the abdomen.

EPIPHRAGMA (POLYPHRAGMA) GRISEICAPILLA sp. nov. Plate 1, fig. 16; Plate 2, fig. 34.

Belongs to the *crenulata* group; general coloration of dorsum of head and mesonotum light ashy gray; antennal scape dark brown, the flagellar fusion segment light yellow; wings with the ground color brownish yellow, the costal region clearer yellow; a heavy brown pattern that is narrowly bordered by clear yellow; male hypopygium with the apex of the interbasal process expanded, the notch small, the lobes broadly flattened.

Male.—Length, about 7 millimeters; wing, 7.5.

Rostrum and palpi black. Antennæ with the scapal segments dark brown, sparsely pruinose; fusion segment yellow; remainder of flagellum black; verticils longer than the segments. Head light gray in front, behind and on sides more brownish, the center of the posterior vertex brownish black.

Mesonotum clear light gray, the suture medially more brightened; lateral portions of the præscutum broadly and abruptly orange yellow. Pleura yellow. Halteres obscure yellow, the knobs infuscated. Legs with the coxæ and trochanters yellow; remainder of legs yellow, the femora a trifle darker just before the tips, this coloration caused more especially by an increase in dark setæ; terminal tarsal segments only slightly darkened. Wings (Plate 1, fig. 16) with the ground color brownish yellow, the cells beyond the cord even more suffused; prearcular and costal regions clear yellow, beyond the end of Sc continued to

the wing tip as yellow spots in the outer ends of cells R_2 , R_3 , and R_4 ; darker brown areas at arculus; origin of R_s ; cord; fork of R_{2+3+4} ; outer end of cell 1st M_2 ; fork of M_{1+2} ; supernumerary crossvein in cell Cu, and the marginal clouds, all these areas narrowly bordered by clearer yellow rings; veins dark brown, darker in the clouded areas. Axillary crenulation of moderate size only, about one-half as deep as in the corresponding sex of *crenulata* or *caninota*. No macrotrichia on R_s or R_{2+3+4} . Venation: m-cu nearly its own length beyond the fork of M.

Abdominal tergites yellowish brown, the sternites clearer yellow, with the incisures narrowly darkened; hypopygium brownish yellow. Male hypopygium (Plate 2, fig. 34) much as in *caninota*, but the interbasal process, *i*, differently constructed, the apical notch being very small and shallow, the lobes broadly flattened.

MINDANAO, Davao district, Mount Apo, Mainit River, altitude 6,000 feet, September 16, 1930 (C. F. Clagg); holotype, male.

Epiphragma (*Polyphragma*) *griseicapilla* is allied to *E. (P.) crenulata* Alexander and *E. (P.) caninota* sp. nov., in the general coloration and relatively deep crenulation of the wing axilla, differing in the wing pattern and details of structure of the hypopygium.

EPIPHRAGMA (POLYPHRAGMA) ANGUSTICRENULA sp. nov. Plate 1, fig. 17; Plate 2, fig. 35.

Belongs to the *crenulata* group; general coloration of head and mesonotum light ashy gray; wings with a yellowish brown ground color, the dark pattern but slightly evident against this ground and not margined with paler; axillary crenulation of wing very shallow; male hypopygium with the interbasal process bifid at tip, the lateral arm a slender curved spine.

Male.—Length, about 7.5 millimeters; wing, 8.2.

Rostrum and palpi black. Antennæ with the scape and fusion segment obscure brownish yellow; remainder of flagellum black; fusion segment oval, involving three segments; verticils of flagellum exceeding the segments in length. Dorsum of head on front and anterior vertex light gray, the posterior vertex dark reddish brown, more blackened medially.

Mesonotum above light gray, the lateral margins of the præscutum abruptly orange yellow. Pleura obscure yellow, the dorsopleural region slightly darkened. Halteres dusky, the knobs infuscated. Legs with the coxæ and trochanters yellow; remainder of legs yellow, the terminal tarsal segments darkened.

Wings (Plate 1, fig. 17) with a yellowish brown suffusion, the prearcular and costal regions more yellowish, variegated by brown clouds at the veins; disk of wing with a diffuse brown pattern that is little conspicuous against the ground color, the areas not bordered by brighter; veins brown, yellow in the flavous costal interspaces. Axillary crenulation very shallow for this group of the subgenus, being about as wide as the prearcular cell immediately cephalad of it. Venation: Costal cross-veins and spurs few, but strong and complete; m-cu about one-half its length beyond the fork of M.

Abdominal tergites light brown, bordered by dark brown laterally, the sternites yellow, with narrow darker margins. Male hypopygium (Plate 2, fig. 35) with the interbasal rods, *i*, bifid at tips, the lateral arm a slender curved spine, much as in *crenulata*, the mesal arm short and broadly truncated. Outer dististyle, *od*, relatively slender, the tip a chitinized, gently curved spine.

MINDANAO, Davao district, Mount Apo, Kidapawan trail to Lino Lake, altitude 7,000 to 8,000 feet, September 20, 1930 (*C. F. Clagg*) ; holotype, male.

Epiphragma (*Polyphragma*) *angusticrenula* differs from the other species of this group of the subgenus in the scarcely developed axillary crenulation of the wing, in conjunction with the other characters listed above.

ERIOPTERINI

TRENTEPOHLIA (PARAMONGOMA) CHIONOPODA sp. nov.

General coloration of thorax yellow; tips of femora white; tibiæ and tarsi white, the basal half of the former more-obscure whitish; wings grayish subhyaline, the prearcular and costal regions more yellowish.

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

Rostrum and palpi brown. Antennæ with the scape dark brown, the flagellum somewhat lighter in color; flagellar verticils a little longer than the segments.

Thorax uniformly yellow. Halteres pale, the knobs weakly dusky. Legs with the coxæ and trochanters yellow; femora dirty white, the tips paling to clear white; tibiæ and tarsi white, the basal half of the former a trifle more obscure. Wings grayish subhyaline, the prearcular and costal regions light yellow; stigma small and very vague; veins pale brown, Sc light yellow. Venation: R_2 close to fork of R_{3+4} ; R_3 less perpendicular and cell 1st M_2 smaller than in *banahaoensis*; cell 2d M_2 narrow.

Abdominal tergites brown medially, paler laterally; sternites light yellow, the outer segments more infuscated; hypopygium yellow.

MINDANAO, Davao district, Mount Apo, Galog River, altitude 6,000 feet, at trap lantern, September 13, 1930 (C. F. Clagg); holotype, male.

Trentepohlia (*Paramongoma*) *chionopoda* is readily told from the other regional species by the coloration of the legs. The type of the subgenus *Paramongoma*, *albitarsis* (Doleschall), of Amboina, still seems to be known only from Doleschall's insufficient description and faulty figure, which, if only approximately correct, serve to separate the two species of crane flies.

TRENTEPOHLIA (PARAMONGOMA) PUSILLA Edwards.

Trentepohlia (*Paramongoma*) *pusilla* EDWARDS, Treubia 9 (1927) 356.

MINDANAO, Davao district, Lawa, at light, April, 1930 (C. F. Clagg). This species was described from Sebesi Island, near Krakatau, Java, where it was taken in April, 1921, by Dammerman.

The present specimen agrees almost exactly with Edwards's description. The allied *T. (P.) banahaoensis* Alexander (Luzon) has R_3 short and more nearly erect and the tips of the femora narrowly but conspicuously whitened.

TRENTEPOHLIA (MONGOMA) ÆQUIALBA sp. nov. Plate 1, fig. 18.

General coloration of mesonotum orange fulvous, patterned with black; femora light brown, the tips abruptly snowy white, the amount subequal on all legs; bases and tips of tibiæ whitened; wings with cells C and Sc strongly blackened, the prearcular region pale; abdominal tergites yellow, with a broad black dorso-median stripe.

Male.—Length, about 14 to 16 millimeters; wing, 8.2 to 8.6.

Female.—Length, about 14 millimeters; wing, 9.

Rostrum and labial palpi obscure yellow; maxillary palpi black. Antennæ with the scapal segments brown, the flagellum black; flagellar segments long-cylindrical, with verticils that are subequal to the segments. Head fulvous orange, the vertex carinate medially.

Mesonotal præscutum orange fulvous, narrowly darkened laterally; centers of scutal lobes darkened; scutellum testaceous brown, darker brown caudally; postnotal mediotergite black

posteriorly and on sides, a little paler medially in front. Pleura chiefly orange yellow, the ventral pleurites slightly white pruinose; in cases the pleurotergite a little darkened posteriorly. Halteres blackened, the base of the stem restrictedly yellow. Legs with the coxæ and trochanters orange yellow; femora light brown, darkened outwardly, the tips abruptly snowy white, the amount subequal on all legs; tibiæ dark brown, the bases narrowly, the tips more broadly whitened; tarsi white, the terminal segment a little darkened; femora with short black setæ distributed over the entire length, with two or three longer black setæ at apex. Wings (Plate 1, fig. 18) narrow, cells C and Sc strongly blackened, confluent with the slightly darker stigma; wing apex narrowly infuscated; vague and narrow, scarcely evident dark seams on posterior cord; cell Cu and a spot between anal veins at point of divergence dark brown; prearcular region pale; veins black, the outer branches of M paler. Venation: R_2 about two-thirds to three-fourths its length before fork of R_{3+4} ; veins R_3 and R_4 very strongly divergent; m-cu at or shortly before fork of M; fusion of Cu_1 and 1st A very slight to punctiform.

Abdominal tergites yellow laterally, with a broad black dorso-median stripe; sternites more extensively yellow, the subcaudal margins narrowly darkened; extreme apices of segments silvery; subterminal segments and hypopygium blackened.

MINDANAO, Davao district, Mount Apo, Mainit River, altitude 6,500 feet, September 14, 1930; Galog River trail, altitude 5,000 to 6,000 feet, September 12, 1930 (*C. F. Clagg*); holotype, male; allotype, female; paratypes, 2 males.

The present species, and the two next defined, are all allied to *T. (M.) luzonensis* Edwards, from which they may be separated by the following key:

1. Tibiæ of all legs approximately alike in color..... 2.
 Tips of fore tibiæ broadly blackened, of posterior tibiæ even more broadly snowy white *T. (M.) luzonensis* Edwards.
 2. Tips of femora and tibiæ snowy white..... *T. (M.) æquialba* sp. nov.
 Tips of femora and tibiæ blackened 3.
 3. Mesonotal præscutum polished black, the humeral region yellow; a dark area on anepisternum; abdominal tergites blackened.
 *T. (M.) æquinigra* sp. nov.
- Mesonotal præscutum yellow, in cases restrictedly darkened at suture; pleura uniformly pale; abdominal tergites yellow with a narrow, more or less interrupted, dorsomedian black stripe.
 *T. (M.) majuscula* sp. nov.

TRENTEPOHLIA (MONGOMA) ÆQUINIGRA sp. nov. Plate 1, fig. 19.

General coloration of mesonotum polished black, the humeral region of the præscutum extensively yellow; pleura yellow, the dorsal anepisternum darkened; femora yellow, the tips of all narrowly but conspicuously blackened, the amount subequal on all legs; fore femora (male) broadly darkened on central portion; wings narrow, whitish, the costal border light yellow; wing tip narrowly darkened; abdominal tergites and a subterminal ring black, the sternites light yellow.

Male.—Length, about 13 millimeters; wing, 8.5 by 1.6.

Female.—Length, about 10 to 13 millimeters; wing, 7.2 by 1.5 to 9 by 1.75.

Rostrum and palpi brownish black. Antennæ with the scapal segments black; flagellum broken. Head brownish gray, clearer gray in front, the vertex carinate.

Pronotum obscure yellow. Mesonotal præscutum polished yellow, the lateral margins as far cephalad as the pseudosutural foveæ, together with a median line almost to the cephalic margin, blackened, leaving the humeral region extensively of the ground color; posterior sclerites of mesonotum chiefly blackened, the median area of the scutum a little brighter. Pleura abruptly yellow, with a large dark area on the dorsal anepisternum. Halteres brownish black, the base of the stem brightened. Legs with the coxæ and trochanters yellow; femora yellow, the tips of all legs somewhat narrowly but conspicuously blackened, the amount equal on all legs; in male, the general coloration of the fore femora is darker brown in the central portion, the tips again dark brown as described; tibiæ obscure yellow, the tips blackened; tarsi yellow; all femora with small scattered black setæ distributed over the entire length. Wings (Plate 1, fig. 19) narrow, whitish, the prearcular and costal regions light yellow; wing apex narrowly darkened; stigma small, dark brown; vague, scarcely evident dark seams along cord, the veins of the radial field, vein Cu_1 , and a spot between the anal veins at point of divergence; veins dark brown, yellow in the flavous areas. Venation: R_2 about one-half its length before the fork of R_{3+4} ; inner ends of cells R_5 and M_3 nearly in alignment; m-cu shortly before the fork of M; apical fusion of Cu_1 and 1st A punctiform.

Abdominal tergites black, the sternites abruptly orange yellow; a conspicuous subterminal black ring; female genitalia yellow horn color; male hypopygium chiefly darkened.

MINDANAO, Davao district, Mount Apo, Mainit River, altitude 6,500 feet, September 5, 1930 (*C. F. Clagg*); holotype, male; allotype, female; paratype, female.

The paratype is much smaller than the other types, as shown by the measurements. By my key to the Philippine species of *Trentepohlia*² the present species runs to couplet 10, disagreeing with both included species in the venation and wing pattern. The fly is most nearly related to *T. (M.) luzonensis* Edwards and allied species that have been discussed and keyed under the description of *T. (M.) æquialba* sp. nov.

TRENTEPOHLIA (MONGOMA) MAJUSCULA sp. nov. Plate 1, fig. 20.

Male.—Length, about 15 to 16 millimeters; wing, 10 to 10.5.

Female.—Length, about 16 to 16.5 millimeters; wing, 11.3 to 11.5.

Closely allied to *T. (M.) æquinigra* sp. nov., differing especially in the larger size and details of coloration.

Mesonotal præscutum rich fulvous orange, most intense medially, in cases entirely clear, in other specimens (including the holotype) narrowly blackened on either side at the suture; scutum with an irregular brown area on either lobe; scutellum chiefly testaceous yellow; postnotal mediotergite with the central portion yellow, the posterior margins darkened, the lateral portions again brightened. Pleura yellow to orange yellow. Halteres yellow, the knobs dark brown. Legs long and powerful; coxæ and trochanters concolorous with the pleura; femora chiefly light brown, the bases narrowly more yellowish, the tips narrowly blackened, the amount of the latter subequal on all legs; tibiæ brown, the tips broadly blackened; basitarsi black, the outer segments paling to brown; femora with scattered black setæ scattered over the entire length; a group of slightly longer and more erect setæ at base of posterior tibiæ. Wings (Plate 1, fig. 20) narrow, whitish, the prearcular and costal regions yellow; stigma small, dark brown; wing tip very narrowly infumed; Cu, the cord and veins of the radial field narrowly and vaguely seamed with darker; the usual small dark spot between anal veins present; veins black, C, Sc, and R more yellowish. Venation: Veins R_3 and R_4 strongly divergent; inner end of cell M_3 lying slightly proximad of cell R_5 , the basal section of M_3 being angulated; m-cu at or close to the fork of M; apical fusion of Cu_1 and 1st A punctiform.

² Philip. Journ. Sci. 43 (1930) 297–298.

Abdominal tergites chiefly yellow, with a narrow, more or less broken, black longitudinal stripe; sternites uniformly yellow; subterminal segments and male hypopygium black. Ovipositor with the bases and valves yellowish horn color.

MINDANAO, Davao district, Mount Apo, Mainit River, altitude 6,500 feet; Seliban River, 7,000 feet; Galog River trail, 5,000 to 6,000 feet, September 10 to 12, 1930 (*C. F. Clagg*); holotype, male; allotype, female; paratypes, 1 male, 1 female.

The relationships are shown by the key to the Philippine species of *Trentepohlia* allied to *luzonensis*, as given under the definition of *T. (M.) æquialba* sp. nov.

TRENTEPOHLIA (TRENTEPOHLIA) LÆTIPENNIS sp. nov. Plate 1, fig. 21.

Rostrum and palpi black; antennæ with the basal segment of scape black, the flagellum pale; mesonotal præscutum and scutum obscure yellow, unmarked; posterior sclerites of mesonotum brown; pleura blackened, with a more or less distinct longitudinal pale stripe on dorsal sternopleurite; halteres black, the extreme base of the stem yellow; legs yellow; wings whitish, with a heavy dark brown pattern arranged as in the *ornatipennis* group; vein R_3 straight to slightly concave, the cell pointed at base; basal abdominal segments reddish yellow, the remainder blackened.

Male.—Length, about 4.5 millimeters; wing, 5.5.

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

Rostrum and palpi black. Antennæ with the basal segment of scape black, the pedicel and flagellum pale brownish yellow, more darkened outwardly; antennæ (male) relatively elongate, if bent backward extending almost to the wing root; flagellar segments long-cylindrical, the verticils shorter than the segments. Head brownish gray.

Mesonotal præscutum and scutum obscure yellow, the scutellum and postnotal mediotergite more infuscated. Pleura dark brown, with a more or less distinct paler longitudinal stripe on the dorsal sternopleurite. Halteres black, the extreme base of the stem yellow. Legs with the coxæ blackened; trochanters obscure yellow; remainder of legs yellow. Wings (Plate 1, fig. 21) whitish, with a heavy dark brown pattern, arranged on the plan of *ornatipennis* and allies; very heavy brown areas at the wing base; at mid-length of wing, sending extensions to vein M at origin of R_s and to the fork of R_s along the anterior cord; cells beyond the cord chiefly darkened, variegated by three white marginal areas in ends of cells R_2 , R_3 , and $R_4 + R_5$; cubital and

anal cells chiefly clear; veins Cu and m-cu seamed with brown; outer portion of cell 1st A extensively clouded with gray; veins pale, dark in the infuscated areas. Venation: Rs a trifle longer than R_{2+3+4} ; vein R_3 straight or very gently concave, the inner end of the cell thus pointed; second section of M and $R_5 + M_{1+2}$ subequal and both about equal to the basal section of M_{1+2} ; apical fusion of Cu_1 and 1st A slight.

Abdomen with the basal four segments reddish yellow, the remainder of the abdomen, including the hypopygium and ovipositor, black; in female, the lateral margins of the basal segments more or less darkened.

MINDANAO, Davao district, Mount Apo, Galog River, altitude 6,000 feet, September 16 to 26, 1930 (C. F. Clagg); holotype, male; allotype, female; paratypes, 1 male, 2 females.

Trentepohlia (*Trentepohlia*) *lætippennis* is closely allied to species such as *T. (T.) ornatippennis* Brunetti (southwest India), *T. (T.) festivippennis* Edwards (Perak), and *T. (T.) venustippennis* Edwards (Borneo). It differs in the coloration of the body and the details of wing pattern and venation, falling closest to *ornatippennis* in the wing pattern but differing therefrom in the venation of the radial field and coloration of the body. In the present species, and very possibly in the other species of the group, the tip of R_{1+2} is atrophied.

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

Head dark gray; general coloration of mesonotum dark brown, the humeral region extensively obscure yellow; pleura yellow, the ventral sternopleurite infuscated; tibiæ with the central half to three-fifths blackened.

Male.—Length, about 7 to 8.5 millimeters; wing, 7 to 8.

Rostrum dark, the labial palpi yellow; maxillary palpi black. Antennæ black throughout; flagellar segments with verticils that exceed the segments. Head dark gray.

Mesonotal præscutum medially dark brown to black, more intense in front, the humeral region extensively obscure yellow; posterior sclerites of mesonotum chiefly darkened, the scutellum obscure yellow. Pleura obscure yellow, the ventral sternopleurite infuscated. Halteres brownish black, the base of the stem restrictedly obscure yellow. Legs with the coxæ and trochanters yellow; femora black, the tips broadly and conspicuously snowy white, the amount subequal on all the legs; tibiæ black, the central portion blackened, most extensively on the posterior legs where about three-fifths of the segment is included; tarsi white.

Wings (Plate 1, fig. 22) grayish, cells C, Sc, and the apex a trifle darker; veins dark brown, those of the medial field paler. Venation: Sc_1 ending opposite the cephalic end of R_2 , Sc_2 opposite the fork of R_s ; cell Cu widely open at margin.

Abdomen dark brown, the basal sternites more yellowish; hypopygium black.

MINDANAO, Davao district, Mount Apo, altitude 6,000 to 8,000 feet, August 30 to September 22, 1930 (*C. F. Clagg*); holotype, male; paratypes, several males.

Trentepohlia (*Anchimongoma*) *apoicola* is very close to *T. (A.) niveipes* Edwards (Java), differing only in the details of coloration of the body and the slightly increased amount of black on the posterior tibiae.

ILLUSTRATIONS

[Legend: *a*, ædeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *i*, interbasal process; *id*, inner dististyle; *od*, outer dististyle; *p*, phallosome; *t*, tergite.]

PLATE 1

- FIG. 1. *Limonia* (*Laosa*) *manobo* sp. nov., wing.
 2. *Limonia* (*Limonia*) *bilan* sp. nov., wing.
 3. *Limonia* (*Limonia*) *atroaurata* sp. nov., wing.
 4. *Limonia* (*Limonia*) *bagobo* sp. nov., wing.
 5. *Limonia* (*Limonia*) *subpacata* sp. nov., wing.
 6. *Limonia* (*Limonia*) *subprolixa* sp. nov., wing.
 7. *Helius* (*Helius*) *procerus* sp. nov., wing.
 8. *Helius* (*Helius*) *apoensis* sp. nov., wing.
 9. *Thaumastoptera* (*Thaumastoptera*) *maculivena* sp. nov., wing.
 10. *Adelphomyia* *apoana* sp. nov., wing.
 11. *Adelphomyia* *paucisetosa* sp. nov., wing.
 12. *Epiphragma* (*Polyphragma*) *fuscofasciata* sp. nov., wing.
 13. *Epiphragma* (*Polyphragma*) *nigrotibiata* sp. nov., wing.
 14. *Epiphragma* (*Polyphragma*) *apoensis* sp. nov., wing.
 15. *Epiphragma* (*Polyphragma*) *caninota* sp. nov., wing.
 16. *Epiphragma* (*Polyphragma*) *griseicapilla* sp. nov., wing.
 17. *Epiphragma* (*Polyphragma*) *angusticrenula* sp. nov., wing.
 18. *Trentepohlia* (*Mongoma*) *æqualba* sp. nov., wing.
 19. *Trentepohlia* (*Mongoma*) *æquinigra* sp. nov., wing.
 20. *Trentepohlia* (*Mongoma*) *majuscula* sp. nov., wing.
 21. *Trentepohlia* (*Trentepohlia*) *lætippennis* sp. nov., wing.
 22. *Trentepohlia* (*Anchimongoma*) *apoicola* sp. nov., wing.

PLATE 2

- FIG. 23. *Limonia* (*Limonia*) *bagobo* sp. nov., male hypopygium.
 24. *Limonia* (*Limonia*) *subpacata* sp. nov., male hypopygium.
 25. *Limonia* (*Limonia*) *subprolixa* sp. nov., male hypopygium.
 26. *Helius* (*Helius*) *procerus* sp. nov., male hypopygium.
 27. *Thaumastoptera* (*Thaumastoptera*) *maculivena* sp. nov., male hypopygium.
 28. *Adelphomyia* *paucisetosa* sp. nov., male hypopygium.
 29. *Epiphragma* (*Polyphragma*) *latitergata* sp. nov., male hypopygium.
 30. *Epiphragma* (*Polyphragma*) *nigrotibiata* sp. nov., male hypopygium.
 31. *Epiphragma* (*Polyphragma*) *apoensis* sp. nov., male hypopygium.
 32. *Epiphragma* (*Polyphragma*) *hastata* sp. nov., male hypopygium.
 33. *Epiphragma* (*Polyphragma*) *caninota* sp. nov., male hypopygium.
 34. *Epiphragma* (*Polyphragma*) *griseicapilla* sp. nov., male hypopygium.
 35. *Epiphragma* (*Polyphragma*) *angusticrenula* sp. nov., male hypopygium.

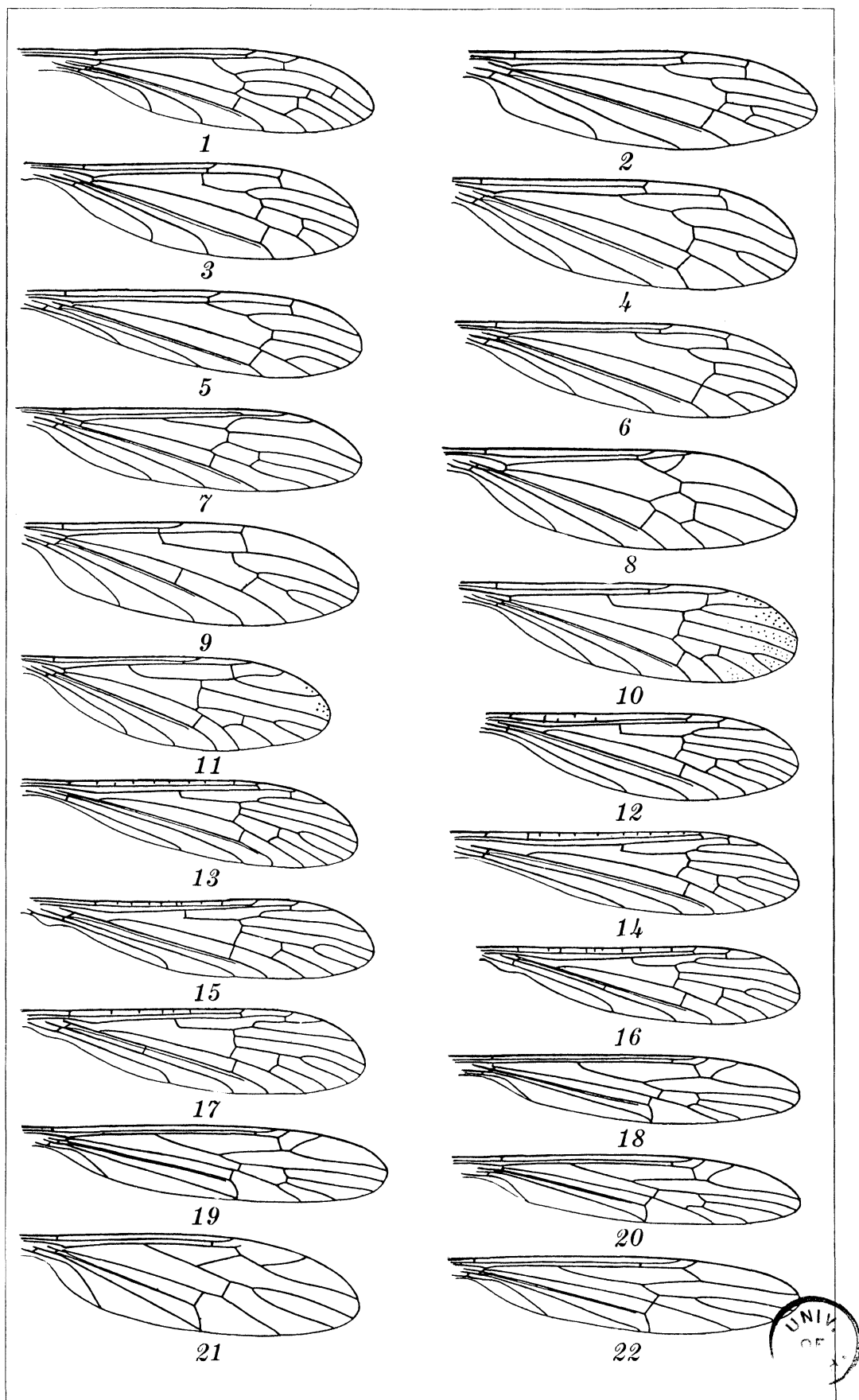


PLATE 1.

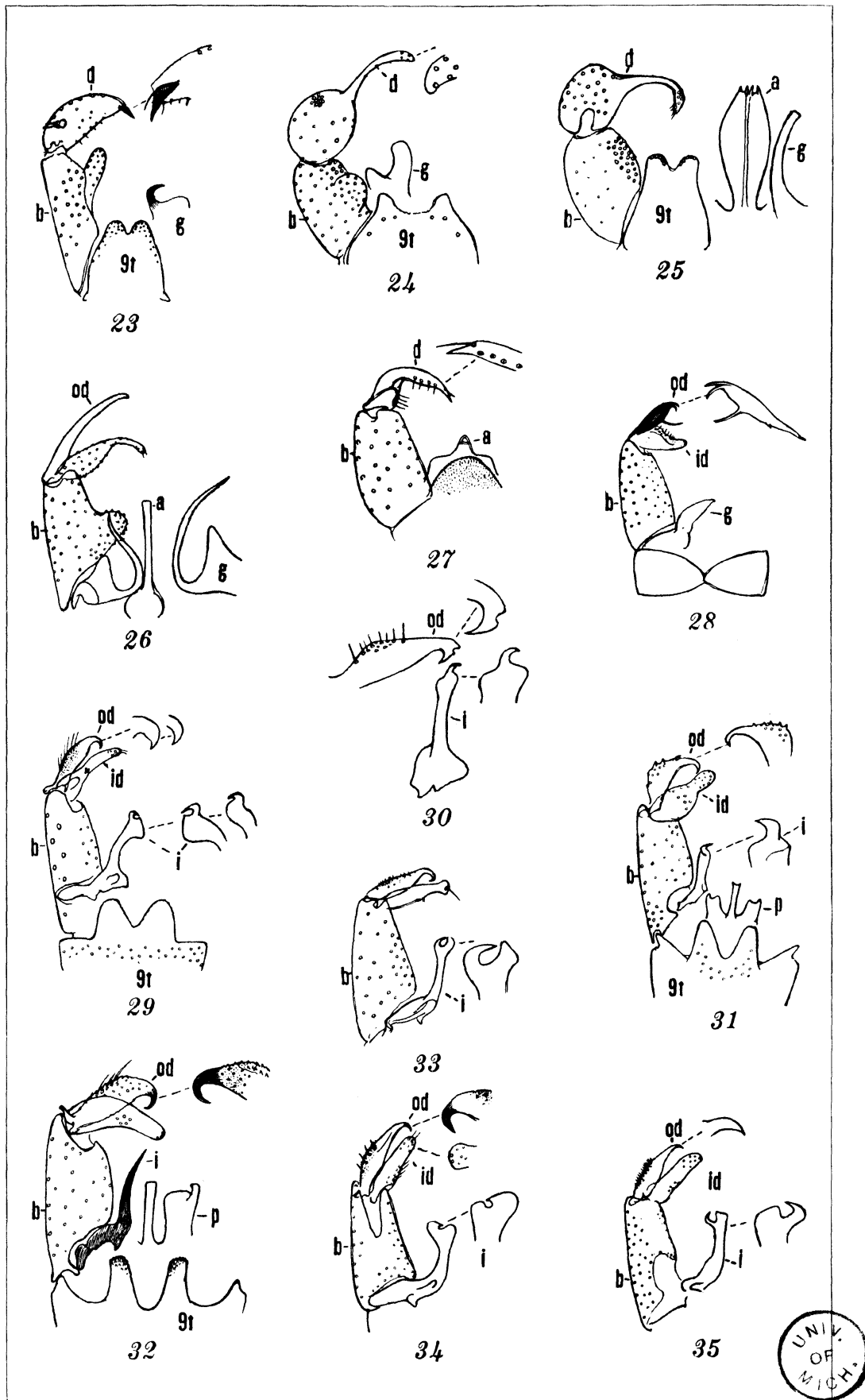


PLATE 2.