

NEW OR LITTLE-KNOWN TIPULIDÆ FROM EASTERN  
ASIA (DIPTERA), XI<sup>1</sup>

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THREE PLATES

The very interesting crane flies discussed at this time were all taken at altitudes of between 3,500 and 11,000 feet on Mount Omei, Szechwan, western China, by the Reverend Mr. Franck. The genera and subgenera *Trichotipula*, *Macgregoromyia*, *Adelphomyia*, *Phyllolabis*, *Rhabdomastix*, *Gnophomyia*, and *Tele-neura* are herewith added to the Chinese list. I wish to express my very deep thanks to Mr. Franck and Mr. Parish for the privilege of studying this exceptional series of Tipulidæ. All types are preserved in my collection.

TIPULINÆ

TIPULA (TRICHOTIPULA) POLYTRICHA sp. nov. Plate 1, fig. 1; Plate 2, figs. 23, 24, 25, 26.

General coloration of mesonotum black; thoracic pleura chiefly black; antennæ black, the basal two segments yellow; knobs of halteres yellow at apices; legs chiefly black; wings cream-colored, chiefly concealed by extensive brown seams on cord and other veins, and by darkened central areas in the primary basal cells; wing membrane with abundant macrotrichia in all cells almost to arculus; wing veins with a virtually complete series of trichia on all veins and crossveins; male hypopygium with the ninth tergite tridentate at tip; basistyle and tergite partly fused with the sternite.

*Male*.—Length, about 11 millimeters; wing, 12.3.

Frontal prolongation of head short and stout, testaceous brown; nasus short but distinct, blackened; palpi black. Antennæ (male) of moderate length, if bent backward extending about to root of halteres; scape and pedicel light yellow; flagellum black; basal enlargement of segments relatively small and little differentiated; verticils shorter than the segments; terminal

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

segment long-conical, about one-third as long as the twelfth. Front and anterior vertex yellow, the posterior portion of head dark brown, with abundant black setæ; vertical tubercle inconspicuous or lacking.

Pronotum brown. Mesonotum shiny black. Pleura brownish black, variegated with paler brown on the sutures, dorsopleural region, and meron; sternopleurite with setæ. Halteres brown, the apices of the knobs conspicuously light yellow. Legs with the coxæ brownish yellow, the posterior coxæ paler; trochanters obscure yellow; femora dark brown, the tips blackened; tibiæ and tarsi black. (A single leg, fore, remains, this with a single tibial spur.) Wings (Plate 1, fig. 1) broad; ground color cream-yellow, cells C and Sc somewhat deeper yellow; the ground largely obscured by broad brown seams to the veins and by longitudinal streaks in the centers of cells R, M, distal half of Cu, and the anal cells, that in 1st A widened outwardly; stigma dark brown, conspicuous; whitish obliterative areas before stigma and across cell 1st M<sub>2</sub>; veins brown. Macrotrichia of cells very numerous, including the entire wing excepting the restricted bases of cells R, M, Cu, and 1st A (shown by stippled dots in the figure); cell Cu<sub>1</sub> without macrotrichia except beyond level of m-cu; abundant macrotrichia in the prearcular subcostal cell. Macrotrichia of veins long and conspicuous, including all longitudinal veins, deflections, and crossveins, as m, r-m, and m-cu; a series of trichia on basal portion of the semiatrophied vein Cu<sub>2</sub>. Squama with a few long setæ that are scarcely to be differentiated from those of the anal fringe. Venation: Rs long; R<sub>1+2</sub> entire; m-cu elongate; petiole of cell M<sub>1</sub> shorter than or about equal to m; cell 2d A of moderate width.

Abdominal tergites black, the caudal margins and midline of the intermediate segments yellowish; sternites more uniformly reddish yellow; outer segments, including hypopygium, dark brown. Male hypopygium (Plate 2, fig. 23) relatively small and generalized in structure. Basistyle, *b*, separated from the sternite, 9s, by a wide ventral suture, at near apex constricted and then widened into a glabrous portion that bears the dististyles. Ninth tergite (Plate 2, fig. 24, 9t) separated from the sternite by a membranous line on about the outer three-fourths, but entirely fused on cephalic portion; caudal portion of tergite not or only slightly projecting beyond the general level of the basistyles; caudal margin, as viewed from above, subtruncate, weakly lobed; median region with three decurved blackened teeth, the median one much smaller than the laterals.

Ninth sternite (Plate 2, fig. 25, 9s) very widely membranous beneath, with a narrow median notch, the ventral caudal angles produced into slender hairy lobes. Outer dististyle (Plate 2, fig. 26, *od*) relatively narrow, gently arcuated. Inner dististyle (Plate 2, fig. 26, *id*) with the posterior portion or "heel" terminating in a flattened oval glabrous blade, the cephalic portion a very slender blackened spine.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 11,000 feet, July 20, 1931 (*Franck*).

The very remarkable *Tipula* here described requires comparison with none of the known regional species of the complex. The presence of macrotrichia on all the veins and in virtually all the cells of the wing, including a prearcular group in cell Sc, is elsewhere unknown in the genus. I hesitate to propose a new subgeneric group on this insufficient material and prefer to place it, tentatively at least, in *Trichotipula* Alexander, the other known species of which are Nearctic. The degree of trichiation of the cells of the wing exceeds that of the better-known limoniine genera having hairy wings, as *Ula*, *Adelphomyia*, *Ulomorpha*, and even *Ormosia*.

**TIPULA MUTILOIDES** sp. nov. Plate 1, fig. 2; Plate 2, figs. 27, 28, 29, 30.

Allied to *mutila*; general coloration of mesonotum light gray, the præscutum with three darker gray stripes; setigerous punctures conspicuous; basal segments of antennæ light yellow, the remainder black; legs black, the femoral bases narrowly yellow; wings pale brown, variegated with large whitish areas;  $R_{1+2}$  lacking; abdomen yellow, the basal tergites trivittate with black, the outer segments more uniformly blackened; male hypopygium with the tergite divided by a narrow membranous pale line; eighth sternite projecting as a shovel-shaped structure.

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

Frontal prolongation of head gray; nasus short and stout; palpi black. Antennæ of moderate length, if bent backward extending about to the base of abdomen; scape and pedicel light yellow, flagellum black, the base of first segment paler; basal enlargement of flagellar segments only moderately developed; verticils shorter than the segments; terminal segment small, subconical. Head gray.

Mesonotal præscutum light gray, with three darker gray stripes, the median stripe with a scarcely evident darker median vitta; interspaces with conspicuous brown setigerous punctures;

posterior sclerites of mesonotum light gray. Pleura, including the dorsopleural membrane, gray. Halteres buffy, the knobs dark brown. Legs with the coxæ gray; trochanters yellow; remainder of legs black, the femoral bases narrowly yellow; tibial spur formula 1-2-2; spurs long and straight, hairy; claws with basal tooth, the proximal half of each claw hairy. Wings (Plate 1, fig. 2) with the ground color pale brown, the prearcular region and cells C and Sc more yellowish; stigmal region somewhat darker brown; conspicuous whitish areas on wing disk, as follows: At near midlength of Rs, in both cells  $R_1$  and R; an incomplete crossband beyond the cord, including cells  $R_2$  to 1st  $M_2$ ; a large suboval white area at near three-fourths the length of cell M; bases of cells Cu and 1st A whitened; veins brown, paler in the flavous areas. Macrotrichia of veins relatively long and conspicuous, including practically complete series on veins beyond cord; vein 1st A with only two or three trichia at extreme outer end; vein 2d A with trichia on distal two-thirds; Rs without trichia; squama bare. Venation:  $R_{1+2}$  atrophied; Rs elongate, nearly twice  $R_{2+3}$ ; cell 1st  $M_2$  relatively small, pentagonal.

Abdominal tergites light yellow, narrowly trivittate with black; on fifth and succeeding segments more extensively darkened so as to obscure the yellow color; basal sternites more uniformly yellow, the outer segments blackened. Male hypopygium (Plate 2, fig. 27) with the tergite, 9t, entirely separate from the sternite, 9s. Basistyle, b, almost completely separated from sternite by a suture that is broken near its ventral portion for about one-fourth its length. Ninth tergite (Plate 2, fig. 28, 9t) extensive, heavily blackened, entirely divided by a pale median line; apex of tergite more narrowed, the caudal margin with a very shallow V-shaped notch; dorsal surface of tergite with numerous small setæ. Outer dististyle (Plate 2, fig. 29, od) a very slender elongate rod. Inner dististyle (Plate 2, fig. 29, id) relatively narrow, the base projecting caudad as a densely setiferous lobule. Ninth sternite with a dense brush of black setæ lying in the sheathing concavity of the eighth sternite, the latter (Plate 2, fig. 30, 8s) projecting caudad as a prow-shaped or shovel-like structure, narrowed caudally, the apex narrowly pale and provided with numerous setigerous punctures.

*Habitat.*—China (Szechwan).

Holotype, male, Mount Omei, altitude 11,000 feet, July 29, 1931 (*Franck*).

*Tipula mutiloides* is allied to species such as *T. futilis* Alexander (Japan), *T. edwardsella* Alexander (Formosa), and others in the eastern Palæarctic fauna, differing most evidently in the structure of the male hypopygium and details of coloration of the body.

MACGREGOROMYIA SZECHWANENSIS sp. nov. Plate 1, fig. 3; Plate 2, figs. 31, 32.

Mesonotal præscutum buffy gray, with three brown stripes; antennæ relatively long; legs with tibiæ and tarsi black; wings with a brownish tinge, stigma and a broad seam on anterior cord dark brown; forks of medial field relatively shallow, cell  $M_1$  less than twice the length of cell 1st  $M_2$ ; inner dististyle of male hypopygium with the apical beak long and slender.

*Male*.—Length, about 8 millimeters; wing, 8.5.

Frontal prolongation of head short, buffy brown; palpi dark. Antennæ (Plate 2, fig. 31) with the scape, pedicel, and basal half of first flagellar segment light yellow, the remainder of organ black; flagellar segments long, cylindrical, with short verticils; basal enlargements of segments only slightly developed; flagellar segments beyond the second gradually decreasing in length. Head dark brown.

Mesonotal præscutum buffy gray with three brown stripes; posterior sclerites of mesonotum dark brown, the postnotum sparsely pruinose. Pleura buffy, variegated with dark brown on anepisternum, ventral sternopleurite, and meron. Halteres pale, the knobs infuscated. Legs with the coxæ pale, slightly infuscated basally; trochanters yellow; femora dark brown, the tips blackened; tibiæ and tarsi black. Wings (Plate 1, fig. 3) with a brown tinge, the prearcular and costal regions more yellowish; stigma and a broad seam on anterior cord dark brown; posterior cord and adjoining veins narrowly seamed with brown; more whitish areas before and beyond the stigma; veins dark brown. Macrotrichia of veins relatively long and conspicuous; a few macrotrichia in outer ends of cells  $R_3$  and  $M_1$ . Venation:  $Sc_1$  present;  $R_s$  with basal section transverse, in alignment with r-m, the second section of  $R_s$  short;  $R_{1+2}$  lacking; forks of medial cells relatively shallow; cell  $M_1$  less than twice the length of cell 1st  $M_2$ .

Abdominal segments buffy brown, the basal ring narrowly blackened; outer segments, including hypopygium, more uniformly infuscated. Male hypopygium (Plate 2, fig. 32) with the lobes of the ninth tergite,  $9t$ , separated by a narrow notch,

each lobe not evenly rounded at apex but provided with a very shallow notch on outer margin. Outer dististyle, *od*, long-oval, narrowed to the blunt apex. Inner dististyle, *id*, with the apical beak long and slender.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 7,000 feet, July 17, 1931 (*Franck*).

The discovery of two new species of *Macgregoromyia* in western China is a matter of unusual interest, the only other species so far discovered being two that occur in the high mountains of northern Luzon. The two species described at this time are more closely related to *M. brevisector* Alexander, than they are to the genotype, *M. benguetensis* Alexander, having the short, perpendicular, basal section of the radial sector of the former species. The Chinese species differ most evidently in the uniformly blackened tibiae and other details of coloration of the body and wings; *M. szechwanensis* is more generalized in structure than is either *M. brevisector* or *M. celestia* sp. nov.

MACGREGOROMYIA CELESTIA sp. nov. Plate 1, fig. 4; Plate 2, figs. 33, 34.

General coloration of mesonotum brown, the præscutum with three darker brown stripes; antennæ (male) short, the basal segments yellow, the remainder black; flagellar segments without basal enlargements and with very much reduced verticils that are placed at near midlength of the segments; legs brown; wings with a faint brownish tinge, the stigma and seams along cord, vein  $Cu_1$ , and marginally from stigma to wing apex brown; cell 1st  $M_2$  small, about one-fourth as long as cell  $M_1$ ; male hypopygium with the inner dististyle short and broad, with a small apical beak.

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

Frontal prolongation of head light brown; nasus short but evident; palpi with the basal two segments brownish black, the third segment dark brown, the terminal segment paling to yellow. Antennæ (Plate 2, fig. 33) short; scape, pedicel, and first flagellar segment yellow, the remainder black; flagellar segments cylindrical, without indication of basal swelling, the segments gradually decreasing in length outwardly; verticils very small to scarcely evident, placed at near midlength of the segment; antennæ considerably shorter than in *szechwanensis*. Head light brown.

Mesonotum brown, the præscutum with three darker brown stripes, the median one becoming paler behind; humeral and

lateral portions of præscutum somewhat more grayish; scutal lobes and scutellum dark brown. Pleura brown, darker on the ventral anepisternum. Halteres long, the stem pale, the knobs dark brown. Legs very long and slender; coxæ darkened basally, their apices light yellow, most extensive on the posterior coxæ; trochanters pale yellow; remainder of legs brown, the femoral bases slightly brightened; claws small and nearly simple, each bearing a broad tooth near base. Wings (Plate 1, fig. 4) with a faint brownish tinge, cells C and Sc more yellowish brown; stigma oval, dark brown; a clearly defined brown seam along cord; narrow seams along vein Cu and in outer end of cell  $R_2$ , extending along wing margin to beyond apex; veins black. Macrotrichia of veins beyond cord long and conspicuous; anal veins without trichia; no trichia in cells of wings. Venation:  $Sc_1$  apparently lacking; Rs with basal section nearly perpendicular, fully twice the second section;  $R_{1+2}$  preserved as a short, erect spur; cell 1st  $M_2$  very small, only about one-fourth as long as cell  $M_1$ .

Abdominal tergites chiefly dark brown, a trifle more brightened sublaterally just before caudal margin; sternites yellow, with a narrow brown basal ring; outer abdominal segments, including hypopygium, more uniformly dark brown. Male hypopygium having the general structure of the genus; inner dististyle (Plate 2, fig. 34, *id*) of quite different conformation from that of *szechwanensis*, being broad, its apical beak small.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 7,000 feet, July 17, 1931 (*Franck*).

*Macgregoromyia celestia* is readily told from *M. szechwanensis* sp. nov. by the larger size, short antennæ, and very different wing venation, cell 1st  $M_2$  being unusually small when compared to cell  $M_1$ . In its general appearance, the present fly is somewhat more like *M. brevisector* Alexander (Luzon), yet quite distinct in the venation and in the pattern of the legs and wings.

#### LIMONIINÆ

##### LIMONIINI

LIMONIA (LIMONIA) FRANCKI sp. nov. Plate 1, fig. 5; Plate 2, fig. 35.

General coloration gray, the præscutum with a median brown stripe; knobs of halteres orange; legs black, only the femoral bases narrowly light yellow; wings with a heavy brown pattern, cells C and Sc uniformly infuscated; m-cu more than its own length before the fork of M; male hypopygium with the tergite

profoundly split by a median incision, the lobes densely hairy; ventromesal lobe of basistyle very long and conspicuous; mesal-apical lobe of gonapophysis long and slender.

*Male*.—Length, about 7 millimeters; wing, 8.2.

*Female*.—Length, about 7 millimeters; wing, 7.8.

Rostrum and palpi black. Antennæ black throughout; flagellar segments oval, with short, inconspicuous verticils; terminal segment from one-third to one-fourth longer than the penultimate. Head brownish gray, the center of vertex somewhat darker; anterior vertex a little less than twice the diameter of the scape.

Pronotum dark brown. Mesonotum gray, the præscutum with a conspicuous dark brown median stripe that becomes obsolete before the suture; lateral stripes obsolete or nearly so. Pleura gray, sparsely variegated with darker areas where the bloom has been denuded. Halteres pale, the knobs orange. Legs with the coxæ gray, vaguely brightened at tips; trochanters yellow; femora black, the bases narrowly light yellow, this equaling about one-fifth to one-sixth the total length of the segment; tibiæ and tarsi black; claws long and slender, with a long basal spine and microscopic denticles at extreme base. Wings (Plate 1, fig. 5) relatively narrow; ground color pale yellow, the prearcular region more intensely yellow; cells C and Sc uniformly dark brown; a heavy solidly dark brown pattern, distributed as follows: A quadrate area at origin of Rs, entirely crossing cell M; a very extensive seam along cord, extending from the stigma entirely across the wing; outer end of cell 1st  $M_2$  narrowly seamed; extensive darkenings in outer ends of anal cells, most extensive in 2d A where the outer two-thirds of the cell is included; wing margin narrowly seamed with brown; veins brown. Venation:  $Sc_1$  ending about opposite two-fifths the length of Rs,  $Sc_2$  close to its tip; free tip of  $Sc_2$  and  $R_2$  in transverse alignment;  $R_{4+5}$  elongate, subequal to or exceeding  $R_{2+3}$ ; cell 1st  $M_2$  about as long as vein  $M_{1+2}$  beyond it; m-cu a little more than its own length before the fork of M; cell 2d A of moderate width, the anal veins parallel at origin.

Abdomen black, gray pruinose, the basal sternite more yellowish; caudal margins of sternites narrowly ringed with pale. Male hypopygium (Plate 2, fig. 35) with the tergite, 9t, profoundly divided by a linear median incision, the very broad lobes thus formed darkened and provided with very numerous, long, coarse setæ that are more abundant near the midline, becoming fewer toward the lateral margin. Basistyle, *b*, rela-



tively small but with a very large ventromesal lobe that in a position of rest on a microscope slide extends caudad almost to the apex of the ventral dististyle, provided with numerous setæ, those of mesal face near apex very long, erect, light yellow. Ventral dististyle, *vd*, fleshy, the rostral prolongation pendant, narrowed apically, the two rostral spines placed at its base, nearly straight, lying flat against surface of style. Gonapophyses, *g*, with the mesal-apical lobes narrowed to a slender, gently curved spine.

*Habitat.*—China (Szechwan).

Holotype, male, Mount Omei, altitude 11,000 feet, July 18, 1931 (*Franck*). Allotopotype, female, altitude 11,000 feet, July 30, 1931.

This very distinct fly is named in honor of the collector as a slight appreciation of his efforts in making known the crane flies of western China. The unusual male hypopygium, in conjunction with the basal position of *m-cu*, furnishes characters that render it unnecessary to compare the fly with any of its distant relatives. The structure of the rostral prolongation of the male hypopygium vaguely suggests that of *Limonia* (*Dicranomyia*) *sordida* (Brunetti) and allies, but the present species is a member of the typical subgenus *Limonia*.

LIMONIA (LIMONIA) LATICELLULA sp. nov. Plate 1, fig. 6.

General coloration gray, the præscutum with three dark brown stripes; antennæ black throughout, the basal flagellar segments subglobular; femora yellowish brown, the tips narrowly blackened; wings broad, whitish, this color including the broad prearcular region, the disk heavily patterned with brown and gray; *m-cu* oblique in position, placed a short distance before fork of *M*; cell 2d A very broad.

*Female.*—Length, about 7 to 9 millimeters; wing, 7.2 to 11.

Rostrum black, pruinose; palpi black. Antennæ black throughout; basal flagellar segments subglobular to very short-oval, the outer segments passing to oval; verticils shorter than the segments. Head blackish, sparsely pruinose; anterior vertex narrow.

Mesonotum gray, the præscutum with three dark brown stripes, the median one not reaching the suture; scutal lobes dark brown. Pleura gray, this color including the dorsopleural region. Halteres whitish. Legs with the coxæ dark, gray pruinose; femora obscure yellow, the tips narrowly but conspicuously blackened, the amount not exceeding the distal eighth of the segment; tibiæ brownish yellow, the tips narrowly brownish black,

the degree of darkening less than that of the femoral tips; tarsi yellow to brownish yellow, the outer segments dark brown. In the Pehlinting paratype, the femoral tips are a little broader and the tibiae more uniformly darkened. Wings (Plate 1, fig. 6) broad, the ground color white, including the broad prearcular region; a heavy brown and gray pattern, distributed as follows: Bases of cells C and Sc darkened, the latter more extensively so; brown areas at arculus, origin of Rs, at fork of Sc, stigma, along cord, and on outer end of cell 1st  $M_2$ ; vague, paler, more-grayish clouds in the cubital and outer radial and medial cells; very large, grayish brown areas in the outer ends of both anal cells, that in cell 2d A being so extensive as to include all but the basal third of cell; veins dark brown, costa more yellowish, the prearcular veins paler. Venation:  $Sc_1$  ending about opposite midlength of Rs,  $Sc_2$  near its tip; Rs angulated and sometimes spurred at origin (including type); free tip of  $Sc_2$  and  $R_2$  in transverse alignment; m-cu oblique, approximately one-fourth to one-third its own length before fork of M; cell 2d A very wide.

Abdomen brownish black, the margins of the segments narrowly but conspicuously paler, gray. Ovipositor with the cerci slender and nearly straight; all valves dark reddish horn-color.

*Habitat*.—China (Szechwan).

Holotype, female, Mount Omei, altitude 11,000 feet, July 18, 1931 (*Franck*). Paratopotypes, 2 females, altitude 7,000 feet, July 17, 1931; 1 female, Pehlinting, Mount Omei, altitude 6,000 feet, July 1931.

The nearest ally of the present fly seems to be *Limonia* (*Limonia*) *francki* sp. nov., which has a somewhat similar wing pattern but is readily told by the blackened legs, the narrow wings, with m-cu far before the fork of M, and other characters. The Pehlinting paratype of the present species is much smaller than the type and differs somewhat in the coloration of the legs, as described.

LIMONIA (LIMONIA) BICORNIGERA sp. nov. Plate 1, fig. 7; Plate 2, fig. 36.

General coloration reddish yellow, the thoracic pleura with a dark brown longitudinal stripe; antennal segments with short, glabrous, apical necks; femora brownish black, the tibiae and tarsi paler brown; wings tinged with brown;  $Sc_1$  ending just beyond midlength of Rs; male hypopygium with the dististyle single, its rostral prolongation developed into a powerful, blackened, spinelike rod that narrows to an acute tip.

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

*Female*.—Length, about 5.5 millimeters; wing, 6.2.

Rostrum dark brown; palpi brownish black. Antennæ black throughout; flagellar segments short-oval, becoming smaller and more elongate-oval outwardly, the segments with short, stout, glabrous, apical necks; verticils shorter than the segments; terminal segment a little longer than the penultimate. Head gray, the anterior vertex reduced to a linear strip in both sexes.

Pronotum dark brown. Mesonotum light reddish yellow to yellowish testaceous, without distinct markings. Pleura yellow, with a conspicuous, dark brown, longitudinal stripe extending from the propleura across the central sclerites, passing beneath the wing root to abdomen. Halteres pale yellow, the knobs infuscated. Legs with the coxæ and trochanters yellow; femora brownish black, the bases obscure yellow; in female, the femora more extensively pale; tibiæ and tarsi light brown, the outer tarsal segments darker; claws with a single, slender, subbasal spine, with additional more basal spinous setæ. Wings (Plate 1, fig. 7) with a brownish tinge; stigma subcircular, darker brown; veins brown. Venation:  $Sc_1$  ending just beyond mid-length of  $R_s$ ,  $Sc_2$  at its tip; free tip of  $Sc_2$  and  $R_2$  in approximate transverse alignment; m-cu close to fork of  $M$ ; anal veins gently convergent beyond level of anal crossvein, thence sinuous to margin.

Abdomen brownish black, the basal sternites more brownish yellow; hypopygium dark. Male hypopygium (Plate 2, fig. 36) with the caudal margin of tergite,  $9t$ , gently emarginate. Basistyle,  $b$ , with the ventromesal lobe broad. A single dististyle,  $d$ , the body of which is a small oval setiferous lobe; rostral prolongation a powerful, heavily sclerotized spinelike rod that gradually narrows to a gently decurved acute point; surface of prolongation with setæ scattered over its entire length but without rostral spines. Gonapophyses,  $g$ , blackened and unequally bifid at tips. Apical lateral angles of ædeagus prolonged into narrow points. Ovipositor with the cerci relatively small, slender, strongly upcurved; hypovalvæ powerful, straight, dark horn-color, blackened basally.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 7,000 feet, July 17, 1931 (Franck). Allotopotype, female. Paratopotype, female.

*Limonia* (*Limonia*) *bicornigera* is most nearly allied to the eastern Asiatic *L. (L.) machidai* (Alexander), agreeing in the

general appearance and fundamentals of structure of the hypopygium. It differs from this species and from all other members of the subgenus known to me by the powerful, acutely pointed, rostral prolongation of the dististyle.

LIMONIA (DICRANOMYIA) SUBLIMIS sp. nov. Plate 1, fig. 8; Plate 2, fig. 37.

Belongs to the *pulchripennis* group; general coloration black, the thorax variegated by areas of yellowish gray pollen; wings white, with a heavy brown pattern, including about five costal areas that are solidly darkened in the costal and subcostal fields but with conspicuous white centers in cell R; male hypopygium with two spines on the rostral prolongation of the ventral dististyle.

*Male*.—Length, about 7 millimeters; wing, 8.3.

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

Rostrum and palpi black. Antennæ with the scape black, the remaining segments dark brown; flagellar segments oval, the outer segments more elongate-oval, the verticils subequal to or shorter than the segments. Head grayish brown, the narrow anterior vertex more yellowish gray; a blackish area on either side of the narrow median line on the anterior portion of the posterior vertex.

Mesonotal præscutum yellowish gray, with three conspicuous black stripes, the median stripe broad and complete, the lateral stripes small; lateral margins of sclerite blackened; posterior sclerites of mesonotum blackish. Pleura variegated with black and yellowish gray pollinose areas. Halteres almost white, the knobs blackened. Legs with the coxæ and trochanters black; femora yellow, the tips broadly and conspicuously blackened; tibiæ yellow, the bases blackened, the amount about equal to one-half the femoral apex; tips of tibiæ blackened; tarsi black, the proximal third of basitarsi paler; claws long, with a single slender basal spine, with additional microscopic denticles nearer the base. Wings (Plate 1, fig. 8) with the ground color white, the prearcular region light yellow; a very heavy brown pattern, including about five costal areas that are much wider than the interspaces, the third area at origin of Rs, the fourth at stigma; all costal areas solidly darkened in cells C and Sc, the first four with conspicuous white centers where they occupy the radial field; costal darkenings not narrowed posteriorly (as is the case in *frivola* and *shirakii*); wing apex solidly but not quite so intensely darkened; narrower clouds along cord and outer end of cell 1st M<sub>2</sub>; more grayish brown clouds in medial field and as large areas at ends of veins Cu<sub>1</sub>, 1st A, and 2d A, the latter

more intensely darkened at their margins; a further pale gray wash across the middle of the anal cells; veins pale, brown in the darkened areas. Venation:  $Sc_1$  ending about opposite one-third to one-fourth the length of  $Rs$ ,  $Sc_2$  apparently lacking;  $m-cu$  about one-third or more of its length before the fork of  $M$ ; cell  $2d A$  of moderate width.

Abdomen black, the caudal margins of the segments very narrowly paler; hypopygium dark. Male hypopygium (Plate 2, fig. 37) with the rostral prolongation of the ventral dististyle,  $vd$ , very short and stout, with two spines that exceed in length the entire prolongation, these spines placed close together on the summit of the prolongation. Gonapophyses,  $g$ , with the mesal-apical lobe relatively slender and gently curved.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 11,000 feet, July 18, 1931 (*Franck*). Allotopotype, female, altitude 11,000 feet, July 17, 1931.

The *pulchripennis* group of *Dicranomyia* includes several unusually handsome species, all having the body coloration black, variegated with yellowish gray, the knobs of halteres blackened, the tips of femora and bases and tips of tibiæ conspicuously blackened, and with a heavy brown wing pattern that includes several costal areas. The group divides into two subgroups, of which the typical one, including *pulchripennis* (Brunetti), of northern India and western China, and *subpulchripennis* Alexander, of western China, have the intermediate dark marginal areas of the front part of wing variegated by pale centers in the costal cell and have a single elongate spine on the rostral prolongation of the male hypopygium. The second subgroup, including the present fly, *frivola* Alexander, of Formosa, *kirishimana* Alexander, of southern Japan, and *shirakii* (Alexander), of Formosa, have the marginal areas solidly darkened in cell  $C$  and with two spines on the rostral prolongation of the male hypopygium. The present fly is closest to *kirishimana* in its general characters, differing most evidently in the larger size, clear white centers of the intermediate costal areas of the wing, where these latter occupy cell  $R$ , and by the narrowly darkened seams to the clouded areas along the anal margin of wing.

**HELIUS (HELIUS) INFIRMUS** sp. nov. Plate 1, fig. 9; Plate 3, fig. 38.

Allied to *tenuistylus*; general coloration dark brown; legs dark brown, the tarsi paling to brownish yellow; wings with a strong grayish brown suffusion, the stigma darker; costal

fringe (male) short; Rs only a little shorter than its anterior branch.

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

Rostrum about one-fourth longer than the remainder of head, brownish black; palpi black. Antennæ short, black throughout; flagellar segments oval, becoming more elongate-oval outwardly; outer verticils much exceeding the segments. Head blackish.

Pronotum, mesonotum, and pleura dark brown, the ventral pleurites a little more brightened. Halteres dark brown. Legs with the coxæ and trochanters brownish testaceous; femora and tibiæ chiefly dark brown; narrow tips of tibiæ and most of tarsi paling to brownish yellow. Wings (Plate 1, fig. 9) with a strong grayish brown tinge, cells C and Sc somewhat darker; stigma elongate, still darker brown; veins brownish black. Costal fringe (male) short. Venation: Sc<sub>1</sub> ending just before the fork of Rs, Sc<sub>2</sub> near its tip; Rs relatively long, only a little shorter than its anterior branch; second section of M<sub>1+2</sub> a little longer than the oblique m, so the inner end of cell 2d M<sub>2</sub> lies proximad of that of cell M<sub>3</sub>; m-cu shortly before fork of M.

Abdominal tergites brownish black, the basal sternites obscure brownish yellow, the outer segments darker. Male hypopygium (Plate 3, fig. 38) with the mesal face of basistyle, *b*, near base with a conspicuous spiniferous lobe. Outer dististyle, *od*, gently curved, blackened, the apex very indistinctly toothed.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 4,500 feet, July 17, 1931 (*Franck*).

*Helius (Helius) infirmus* is most nearly allied to *H. (H.) costofimbriatus* Alexander (Riukiu Islands) and *H. (H.) tenuistylus* Alexander (Formosa) in the venation and general structure of the male hypopygium. It differs from the former in the short costal fringe of the male sex; from the latter species it differs chiefly in the long Rs and slight details of the male hypopygium.

**ANTOCHA (ANTOCHA) CONSTRICTA** sp. nov. Plate 1, fig. 10; Plate 3, fig. 39.

General coloration gray; antennæ dark brown throughout; flagellar segments elongate-oval, the outer ones becoming smaller; femora yellow, the tips infuscated; wings milky white, the stigma barely indicated; cell 1st M<sub>2</sub> long, m-cu at fork of M; male hypopygium with each gonapophysis bearing a small lateral spine near apex; arms of phallosome powerful, each bearing a strong curved spine on mesal face at midlength.

*Male*.—Length, about 5 to 5.3 millimeters; wing, 6 to 6.2.

Rostrum and palpi brown. Antennæ dark brown throughout; flagellar segments elongate-oval, the outer segments becoming smaller and shorter, the terminal segment about two-thirds as long as the penultimate; verticils small and inconspicuous. Head light gray.

Pronotum brownish yellow, narrowly dark brown medially. Mesonotum gray, the humeral region restrictedly obscure yellow. Pleura, including pleurotergite, obscure yellow, very sparsely pruinose. Halteres pale, the knobs weakly infuscated. Legs with the coxæ and trochanters obscure yellow, the fore coxæ a trifle darker; femora yellow, the tips rather broadly and conspicuously infuscated; tibiæ yellow, the tips insensibly darkened; tarsi yellow, the outer segments brown. Wings (Plate 1, fig. 10) milky white, the prearcular region even clearer white; stigma barely indicated; veins brown, paler at the wing base. Anal angle of wing moderately developed. Venation:  $R_{2+3}$  only a trifle longer than  $R_{4+5}$ ; cell 1st  $M_2$  long, exceeding in length any of the veins beyond it; m-cu at fork of M, the distal section of  $Cu_1$  more than one-third longer than m-cu.

Abdominal tergites brown, the basal sternites more yellowish; hypopygium dark. Male hypopygium (Plate 3, fig. 39) with the tergite,  $9t$ , transverse, unusually narrow, the posterior margin constricted at near midlength, the greatest width (transverse) being about six times the length at narrowest point (longitudinal); tergal setæ numerous but confined to the caudal half of the segment, the more lateral setæ larger and powerful. Dististyles nearly terminal in position, the outer,  $od$ , shorter, the distal half heavily blackened, the apex obliquely truncated so the lower apical angle is subacute. Gonapophyses,  $g$ , long and slender, pale, before apex on outer margin with a slender spine that is not more than one-half as long as the stouter axial point. Phallosome,  $p$ , appearing as a somewhat lyrate plate, each arm stout and powerful, at near midlength on mesal face bearing a stout curved spine; outer margin near this same point with a small tubercle, larger and more conspicuous in the paratype than in the holotype figured.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 7,000 feet, July 17, 1931 (*Franck*). Paratopotype, male.

The branched gonapophyses and arms of phallosome of the hypopygium separate the present species from all regional allies,

with the exception of *Antocha (Antocha) multidentata* sp. nov., which is most readily told by genitalic characters.

**ANTOCHA (ANTOCHA) MULTIDENTATA** sp. nov. Plate 3, fig. 40.

General coloration of mesonotum brown, sparsely pruinose, the lateral margins of the præscutum obscure yellow; antennæ dark throughout; knobs of halteres weakly infumed; legs obscure yellow, the outer tarsal segments darkened; wings whitish subhyaline, sparsely variegated with darker; m-cu close to fork of M; male hypopygium with both the gonapophyses and lateral arms of phallosome bearing small lateral spines.

*Male*.—Length, about 4.5 to 5.2 millimeters; wing, 5 to 5.8.

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

Rostrum light brown; palpi brown. Antennæ dark brown throughout; flagellar segments oval, with very small, inconspicuous verticils. Head dark brownish gray.

Mesonotal præscutum chiefly covered by three brown stripes that are confluent or nearly so, the lateral margins and median area before the suture obscure yellow; posterior sclerites of notum dark brown, sparsely pruinose. Pleura obscure yellow, vaguely marked with darker on the ventral sternopleurite. Halteres pale, the knobs weakly infuscated. Legs with the fore coxæ darkened, the remaining coxæ and all trochanters yellow; remainder of legs obscure yellow, the outer tarsal segments more infuscated. Wings whitish subhyaline, the stigma and vague seams to most of the longitudinal veins slightly darker than the ground color, the seams most evident as darkened veins inclosed by somewhat paler brown margins; costal region clearer yellow; veins pale, those beyond cord, Cu, 2d A, and outer half of 1st A somewhat darker. Venation:  $R_2$  lying opposite or slightly distad of r-m; cell 1st  $M_2$  as long as or slightly longer than the cells beyond it; m-cu at or a very short distance before the fork of M.

Abdominal tergites dark brown, the caudal margins a trifle paler; sternites a little paler brown than the tergites; subterminal segments a trifle darker than the base; hypopygium brownish yellow. Male hypopygium (Plate 3, fig. 40) with the tergite,  $9t$ , transverse, the caudal margin gently emarginate. Outer dististyle,  $od$ , relatively short, the outer end blackened, the apex very obliquely truncated, so the extreme tip is subacute. Gonapophyses,  $g$ , branched near outer end, the axial spine being longer and stouter than the weak lateral spine, the reverse



of the condition obtaining in species such as *constricta* and *spiralis*. Arms of phallosome, *p*, somewhat lyriform, narrowed to acute points, on margin at about one-third the length bearing a slender acute branch.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 3,500 feet, August 17, 1931 (*Franck*). Allotype, female, altitude 7,000 feet, July 17, 1931. Paratypes, 2 males, with the allotype; 1 male, altitude 3,500 feet, August 16, 1931.

*Antocha* (*Antocha*) *multidentata* is readily told from all regional species by the structure of the male hypopygium. The most similar species is *A. (A.) constricta* sp. nov., which has a very different conformation of the outer structures of the phallosome.

ANTOCHA (ANTOCHA) SPIRALIS sp. nov. Plate 3, fig. 41.

General coloration gray; antennæ black throughout, short; halteres and legs brown; wings gray, the prearcular region milky white; abdomen brownish black, the hypopygium brighter; male hypopygium with the gonapophyses branched near tips; lateral arms of phallosome slender, simple, before apex twisted into a complete spiral turn.

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

Rostrum yellowish brown; palpi black. Antennæ black throughout, short, if bent backward not attaining the wing root; flagellar segments short-oval, the verticils short and inconspicuous. Head broad, dark gray.

Mesonotum and pleura uniformly dark gray. Halteres brownish black, the base of stem narrowly pale yellow. Legs with the coxæ yellow, the fore and middle coxæ more infuscated; trochanters obscure yellow; femora brown; tibiæ and tarsi dark brown to brownish black. Wings grayish, the prearcular region milky white; veins brown. Venation: Cell 1st  $M_2$  relatively small; m-cu a short distance before the fork of *M*.

Abdomen brownish black, the disk of the basal two tergites vaguely brighter; hypopygium brownish yellow. Male hypopygium (Plate 3, fig. 41) with the outer dististyle, *od*, moderately sclerotized, the apex obtuse. Gonapophyses, *g*, very slender, with a subterminal spine on outer margin, this much smaller and weaker than the inner or axial branch. Lateral arms of phallosome, *p*, simple, very slender, before apex twisted into a complete spiral turn.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 3,500 feet, August 17, 1931 (*Franck*).

The curious conformation of the lateral arms of the phallosome of the male hypopygium suffices to distinguish the present fly from all of its now numerous regional allies. There are now more than a score of species of *Antocha* in Japan and China, with no fewer than nine distinct forms occurring on the single peak, Mount Omei.

ANTOCHA (ANTOCHA) NIGRIBASIS sp. nov. Plate 1, fig. 11; Plate 3, fig. 42.

General coloration pale yellow, including the head, thorax, abdomen, and halteres; legs yellow, the tips of the femora narrowly brownish black; wings milky white, the prearcular region and areas on the wing disk brownish black;  $R_2$  lying far basad of r-m; m-cu about one and one-half times its own length before the fork of M; male hypopygium with the phallosome asymmetrical, consisting of a single elongate spine subtending the aedeagus.

*Male*.—Length, about 4.5 to 4.7 millimeters; wing, 5 to 5.3.

Rostrum yellow; palpi pale basally, the outer segments passing into brown. Antennæ short, pale yellow; flagellar segments oval, the longest verticils about equal to the segments. Head pale yellow.

Thorax pale yellow, the scutal lobes very weakly darkened. Halteres pale yellow. Legs pale yellow, the tips of the femora narrowly and conspicuously dark brown to brownish black; in one paratype, the tips of the tibiæ are similarly darkened but somewhat more narrowly so; outer tarsal segments darkened; claws with a small tooth at base. Wings (Plate 1, fig. 11) milky white, handsomely variegated with brownish black, as follows: Prearcular cells; a cloud at origin of Rs; stigma; narrow seams along cord, m-cu, outer end of cell 1st  $M_2$ , and along the veins issuing from cell 1st  $M_2$ , the dark color beyond cord being indicated mostly by the darkened veins; veins pale, brown in the darkened areas; costal region brighter yellow. Venation:  $R_2$  only a little shorter than  $R_{2+3}$ , the latter about one-third  $R_{4+5}$ ,  $R_2$  thus lying far proximad of r-m; veins issuing from cell 1st  $M_2$  divergent; m-cu more than one and one-half times its own length before the fork of M.

Abdomen yellow. Male hypopygium (Plate 3, fig. 42) with the tergite, 9t, transverse, the caudal end gently emarginate and weakly crenulate, with numerous setæ. Dististyles subterminal in position, the outer, *od*, a sclerotized, ribbonlike blade. Gona-

pophyses, *g*, appearing as straight, simple blades, their tips acute. Phallosome, *p*, appearing asymmetrical, consisting of a single curved spine subtending the elongate ædeagus.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 4,000 feet, July 14, 1931 (*Franck*). Paratopotypes, 2 males, with type; 1 male, August 10, 1931.

*Antocha (Antocha) nigribasis* is very distinct from all other described regional species of the genus in the pale yellow coloration of the body, in conjunction with the narrowly blackened tips of the femora, the darkened wing bases, the proximal position of *m-cu*, and the structure of the male hypopygium.

ANTOCHA (ANTOCHA) BIDENS sp. nov. Plate 1, fig. 12; Plate 3, fig. 43.

General coloration yellow, the præscutum with four brownish gray stripes, the lateral pair crossing the suture onto the lateral portions of the scutal lobes; postnotal mediotergite dark, the cephalic lateral portions pale; pleura and pleurotergite yellow, variegated with brown; wings white, the longitudinal veins conspicuously darkened; distal segments of abdomen dark brown, much darker than the basal segments; male hypopygium with the caudal margin of tergite bilobed; apex of outer dististyle bidentate; gonapophyses and lateral arms of phallosome simple.

*Male*.—Length, about 4 to 5.5 millimeters; wing, 4.5 to 6.2.

*Female*.—Length, about 5 to 6.5 millimeters; wing, 5.5 to 7.

Rostrum pale brown; palpi brownish black. Antennæ brown throughout; flagellar segments oval, the verticils shorter than the segments. Head obscure yellow.

Mesonotum obscure yellow, the præscutum with four brownish gray stripes, the intermediate pair contiguous to nearly confluent, ending some distance before the suture; scutum yellow, the lobes darkened by caudal extensions of the lateral præscutal stripes; scutellum dark, with a small median yellow triangle at base; postnotal mediotergite dark, the cephalic-lateral angles paler; pleurotergite pale yellow, the ventral margin dark brown. Pleura yellow, variegated with brown, this color including the ventral anepisternum and the more extensive ventral sternopleurite. Halteres pale, the knobs light yellow. Legs with the fore coxæ infuscated, the remaining coxæ and all trochanters pale yellow; remainder of legs yellow, the outer tarsal segments brownish black; claws each with a basal spine. Wings (Plate 1, fig. 12) white; stigma brown, elongate-oval, the costal margin adjoining stigma more yellowish; longitudinal veins, with the exception of *M* and basal half of 1st *A*, narrowly seamed

with brown, the veins being darkened, pale in the ground areas. Venation:  $Sc_1$  ending a short distance before end of  $R_s$ ;  $R_2$  and  $r-m$  in nearly transverse alignment; cell 1st  $M_2$  long, equal to the longest vein beyond it;  $m-cu$  at or only a short distance before fork of  $M$ .

Male with the abdominal tergites pale brown, with a capillary darker median line; segments 6 to 9, including hypopygium, more uniformly dark brown; female with abdomen more uniformly pale, the segments variegated with brown, the caudal margins narrowly yellow; terminal segments, including ovipositor, darker brown to brownish black. Male hypopygium (Plate 3, fig. 43) with the tergite,  $9t$ , transverse, the broad median portion produced, at the lateral ends of this area with a small obtuse tubercle; caudal margin of tergite incised medially. Outer dististyle,  $od$ , flattened, black, the apex unequally bifid. Gonapophyses,  $g$ , appearing as slender, simple rods, the tips very narrow, acute. Phallosome,  $p$ , with the lateral arms appearing as flattened blades, the two taken together appearing sublyriform.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 3,500 feet, August 17, 1931 (*Franck*). Allotopotype, female, August 16, 1931. Paratopotypes, 3 males, 4 females, August 16 and 17, 1931.

*Antocha* (*Antocha*) *bidens* is very distinct from all regional species of the genus. The handsomely variegated wings, in conjunction with certain details of the male hypopygium, as the bituberculate ninth tergite and notched outer dististyle, furnish characters that are distinctive.

#### HEXATOMINI

*ADELPHOMYIA LATISSIMA* sp. nov. Plate 1, fig. 13; Plate 3, fig. 44.

General coloration of mesonotal præscutum bright brown, the posterior sclerites of the mesonotum darker brown; antennæ black throughout; legs brownish yellow; wings (male) broad, widest opposite the termination of vein 2d A; macrotrichia of cells very sparse, restricted to about eight in extreme outer ends of cells  $R_4$  and  $R_5$ ; abdominal tergites dark brown, hypopygium yellow.

*Male*.—Length, about 4.5 millimeters; wing, 5.5 by 1.8.

Rostrum and palpi brownish black. Antennæ black throughout; basal flagellar segments long-oval, the outer segments more elongate, the verticils exceeding the segments; terminal segment

a little longer than the penultimate. Head dark brown; anterior vertex broad.

Pronotum dark brown. Mesonotal præscutum bright brown, the posterior sclerites of notum darker brown to brownish black. Pleura yellowish brown on ventral sclerites, darker brown dorsally. Halteres weakly infuscated, the base of stem narrowly yellow. Legs with the fore coxæ brownish yellow, the remaining coxæ more testaceous-yellow; trochanters yellow; remainder of legs pale brownish yellow; tibial spurs distinct. Wings (Plate 1, fig. 13) with a pale brownish tinge, the prearcular and costal regions somewhat more brownish yellow; stigma slightly darker brown than the ground; veins pale brown. Wings (male) wide, broadest opposite termination of vein 2d A; macrotrichia of cells restricted to about five in outer end of cell  $R_4$  and about three in outer end of cell  $R_5$ ; macrotrichia on veins beyond cord, basad of cord being found on  $R_1$ , outer three-fourths of  $R_s$ , outer portion of M and basal section of  $Cu_1$ , distal half of 1st A, but virtually lacking on 2d A. Venation:  $Sc_1$  ending opposite fork of  $R_s$ ,  $Sc_2$  some distance from its tip,  $Sc_1$  alone being nearly as long as m-cu;  $R_s$  weakly angulated at origin;  $R_2$  a little longer than  $R_{2+3}$ ; r-m long, gently arcuated; cell  $M_1$  small; m-cu before midlength of cell 1st  $M_2$ ; vein 2d A long.

Abdominal tergites dark brown, the sternites a little paler; hypopygium obscure yellow. Male hypopygium (Plate 3, fig. 44) with the outer face of basistyle, *b*, provided with very long, coarse, black setæ, the longest exceeding one-half the length of style. Outer dististyle, *od*, with two apical teeth, the outermost a little slenderer.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 3,500 feet, August 17, 1931 (*Franck*). Paratopotype, male.

*Adelphomyia latissima* is most nearly allied to *A. flavescens* (Brunetti) (syn., *furcata* Brunetti) of the eastern Himalayas, differing most evidently in the broad wings of the male and the details of coloration, especially of the antennæ, thorax, and halteres. Both species have the macrotrichia of the wing cells so reduced in number as to indicate the probability of their total disappearance in some still undiscovered species of the genus. The structure of the male hypopygium in this genus is rather distinctive and should suffice to correctly assign any species with the cell macrotrichia greatly reduced or lost.

**PHYLLOLABIS PICTIVENA** sp. nov. Plate 1, fig. 14.

General coloration black; knobs of halteres infuscated; wings yellow, with most of the longitudinal veins broadly and conspicuously seamed with brown;  $R_{2+3+4}$  only gently arcuated; m-cu at about two-thirds the lower face of cell 1st  $M_2$ .

*Female*.—Length, about 7 millimeters; wing, 7.6.

Rostrum and palpi black. Antennæ with the scape black, the pedicel light brown; flagellum dark brown; flagellar segments elongate-oval, the verticils a little shorter than the segments. Head brownish black.

Pronotum, mesonotum, and pleura black. Halteres obscure yellow, the knobs infuscated. Legs with the coxæ brownish black; trochanters light brown; femora black; tibiæ brown, the tips narrowly infuscated; tarsi passing to dark brown. Wings (Plate 1, fig. 14) with a yellow tinge; stigma long-oval, dark brown; conspicuous brown seams on certain of the longitudinal veins, as follows: A very broad seam along vein Cu and the cord; somewhat narrower seams along Rs and all outer branches of the radial and medial fields; vein 2d A narrowly bordered by brown; wing margin and axillary border narrowly infuscated; veins brown, somewhat darker in the clouded areas. Macrotrichia of veins abundant but not of excessive length, occurring on all longitudinal veins excepting the basal sixth of M. Venation:  $Sc_1$  ending about opposite one-third the length of Rs,  $Sc_2$  a short distance from its tip;  $R_{2+3+4}$  only gently arcuated; m-cu at about two-thirds the lower face of cell 1st  $M_2$ ; anterior arculus lacking or represented only by a weak clouding.

Abdomen black; cerci deep horn-color, long, nearly straight, their margins smooth; hypovalvæ pale yellow.

*Habitat*.—China (Szechwan).

Holotype, female, Mount Omei, altitude 11,000 feet, July 18, 1931 (*Franck*).

*Phyllolabis pictivena* is very different from the two other described species in the eastern Palæarctic region, *P. beesoni* Alexander and *P. confluenta* Alexander, both of the western Himalayas, in the intense black coloration of the body and in the handsomely patterned wings.

## ERIOPTERINI

**RHABDOMASTIX (PALÆOGONOMYIA) OMEINA** sp. nov. Plate 1, fig. 15.

General coloration brown; antennæ (male) elongate, about two-thirds the length of wing; legs brown, the tarsi whitish; wings with a strong brown tinge; macrotrichia of veins very much reduced in number;  $Sc_1$  ending at near midlength of Rs.

*Male*.—Wing, 3.5 millimeters; antenna, about 2.5.

Rostrum and palpi dark. Antennæ relatively long, being approximately two-thirds the length of wing, dark brown; flagellar segments long-cylindrical, with abundant erect setæ scattered over the whole surface. Head brown.

Mesonotum and pleura pale brown. Halteres broken. Legs with the coxæ and trochanters testaceous-yellow; a single leg (hind) remains; femora brown; tibiæ brown, somewhat paler apically; tarsi whitish. Wings (Plate 1, fig. 15) with a strong brownish tinge, the stigma not indicated; veins slightly darker brown. Macrotrichia of veins, excluding costa, very sparse and restricted, being confined to  $R_1$  beyond cord, distal half of outer section of  $R_5$  and outer portions of distal sections of  $M_{1+2}$  and  $M_3$ . Wings strongly narrowed basally, the anal angle greatly reduced. Venation:  $Sc_1$  ending about opposite mid-length of  $R_s$ ,  $Sc_2$  at near mid-distance between origin of  $R_s$  and tip of  $Sc_1$ ;  $R_s$  about one-half longer than  $R_{2+3+4}$ ; space on costa between  $R_{1+2}$  and  $R_3$  longer than the latter vein.

Abdomen broken.

*Habitat*.—China (Szechwan).

Holotype, a broken male, Mount Omei, altitude 4,000 feet, July 4, 1931 (*Franck*).

I am referring the present fly to the subgenus *Palæogonomyia* Meunier,<sup>2</sup> which has hitherto been known only as fossil in Baltic amber (Lower Oligocene). However, the distinctions between the three proposed subgenera, *Rhabdomastix* Skuse, *Palæogonomyia*, and *Sacandaga* Alexander, are so slight that the value of the present reference from a distributional standpoint must be held as being doubtful. It seems certain that the present species is more closely allied to the fossil species placed in *Palæogonomyia* than it is to any other described recent member of the genus. *Palæogonomyia* has the antennæ of the male elongate but still shorter than the wing, whereas the organ is very much longer in the typical subgenus while being very short in both sexes in *Sacandaga*.

**GNOPHOMYIA COLLATA** sp. nov. Plate 1, fig. 16.

General coloration of mesonotum black; head dark gray; halteres pale, the knobs dark brown; femora brownish yellow, the tips more infuscated; wings with a pale brownish tinge; macro-

<sup>2</sup> Meunier, F., Bull. Soc. Ent. France for 1899 (1899) 359; Ann. des sciences natur., Zoöl. IX 4 (1906) 372.—Alexander, C. P., Bernstein-Forschungen Heft 2 (1931) 111–117.

trichia of basal costal fringe very long and conspicuous; m-cu about one-half its length beyond fork of M; genital shield and cerci dark brown.

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

Rostrum and palpi brownish black. Antennæ with the scape and pedicel dark brown, the flagellum black; flagellar segments long-oval to subfusiform, the longest verticils a little exceeding the segments. Head dark gray.

Pronotum and mesonotum black, the anterior lateral pretergites narrowly light yellow. Pleura with the dorsal sclerites black, the meral region much paler, obscure yellow. Halteres pale, the knobs dark brown. Legs with the fore coxæ dark brown, the middle and posterior coxæ yellow; trochanters brownish yellow; femora and tibiæ brownish yellow, the tips more infuscated; tarsi brownish black. Wings (Plate 1, fig. 16) uniformly tinged with pale brown; veins and macrotrichia dark brown; a very conspicuous oblitative streak crosses the basal sections of  $M_{1+2}$  and  $M_3$  at both ends of cell 1st  $M_2$ . Macrotrichia of costal fringe very long on basal third of wing, becoming shorter and denser on outer portion of costa. Venation:  $Sc_1$  ending just before fork of  $R_{2+3+4}$ ,  $Sc_2$  shortly beyond r-m;  $R_{2+3}$  exceeding two times  $R_2$  alone; r-m connecting with Rs some distance before the fork; cell 1st  $M_2$  small, its proximal end lying distad of that of cell  $R_5$ ; cell 2d  $M_2$  fully three times as long as cell 1st  $M_2$ ; m-cu about one-half its length beyond the fork of M.

Abdominal tergites dark brown, the sternites pale yellow. Ovipositor with the genital shield and cerci dark brown.

*Habitat*.—China (Szechwan).

Holotype, female, Mount Omei, altitude 4,000 feet, August 14, 1931 (*Franck*).

The closest ally of the present species is *G. brevicellula* Alexander (Formosa), which is most readily told by slight differences in the coloration of the body, halteres, legs, and wings, and the details of venation. Both species have r-m connecting with Rs some distance before its fork and with cell 2d  $M_2$  fully three times as long as cell 1st  $M_2$ . *Gnophomyia brevicellula* has a very remarkable hypopygium, and it will be of great interest to discover the male of the present species for comparison.

**DASYMALLOMYIA PERSIGNATA** sp. nov. Plate 1, fig. 17; Plate 3, fig. 45.

Mesonotal præscutum yellow, variegated with shiny black and chestnut areas; wings light yellow, with incomplete crossbands at level of origin of Rs and along cord; a cloud at fork



of  $M_{2+3}$ ; vein  $R_3$  nearly one-half of  $R_4$ ; male hypopygium with the outer dististyle bearing a median rounded tubercle that is set with coarse setæ.

*Male*.—Length, about 5 to 5.5 millimeters; wing, 5.3 to 5.5.

*Female*.—Length, about 6 millimeters; wing, 6.1.

Rostrum brown; palpi black. Antennæ bicolorous, the segments black, the incisures narrowly obscure yellow; flagellar segments oval, becoming more elongate outwardly, the verticils long and conspicuous, exceeding the segments. Head brown.

Mesonotal præscutum polished light yellow, handsomely patterned with black and chestnut, the sublateral areas being two black crossbars alternating with chestnut; median black stripe bordered centrally with chestnut; scutum yellow medially, the lobes polished black; scutellum infuscated, obscure yellow behind; postnotum brownish black. Pluera light yellow, variegated with large black areas. Halteres light yellow, the knobs broken. Legs with the coxæ brown; trochanters obscure yellow; femora yellow, with a narrow black subterminal ring; tibiæ yellow, narrowly tipped with black; tarsi yellow, the outer segments brownish black; legs conspicuously hairy. Wings (Plate 1, fig. 17) light yellow, the prearcular and costal regions somewhat deeper yellow; a sparse brown pattern, including a narrow, darker brown seam that extends from the stigma along the cord; a broader but paler crossband extending from the origin of  $R_s$  across the wing to the outer end of vein 2d A, vaguely and narrowly interrupted in cell M; a dark cloud at fork of  $M_{2+3}$ ; veins yellow, darker in the clouded areas. Venation:  $R_{3+4}$  present as a distinct element, subequal to or longer than  $R_2$ ;  $R_3$  almost one-half the length of  $R_4$ .

Basal abdominal tergites black, the intermediate segments obscure yellow, the lateral margins broadly blackened; subterminal segments more uniformly darkened; hypopygium yellow. Male hypopygium (Plate 3, fig. 45) with the outer dististyle, *od*, having a slender, outer, curved spine and a more-elongate, stouter, inner arm, the median lobe with coarse setæ but without a spine, as in *signata*; inner dististyle a flattened pale blade, somewhat stouter than in *signata*.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 7,000 feet, July 27, 1931 (*Franck*). Allotype, female, altitude 9,000 feet, July 20, 1931. Paratype, male, with the allotype.

The only other described *Dasymallomyia* is the genotype, *D. signata* Brunetti, which has a wide range in the eastern Palæ-

arctic region, from the eastern Himalayas, through western China, to Formosa. It has been taken on Mount Omei but at lower altitudes than the present fly. *Dasymallomyia persignata* is most readily told from *signata* by the basal dark crossband of the wings, the dark cloud at fork of  $M_{2+3}$ , the longer vein  $R_3$ , and the slight distinctions in the male hypopygium.

ERIOPTERA (ILISIA) MEGAURA sp. nov. Plate 1, fig. 18; Plate 3, fig. 46.

General coloration gray, the præscutum with four darker plumbeous stripes; antennæ and legs black; knobs of halteres light yellow; wings obscure whitish, the base more yellow; veins black, coarse; anal veins gently diverging; male hypopygium large and powerful, the tergite extensive; outer dististyle a slender rod; inner style a powerful two-armed structure.

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

Rostrum and palpi black. Antennæ black throughout; basal flagellar segments short-oval, the outer segments becoming slenderer and slightly more elongate outwardly; terminal segment shortest; verticils not or scarcely exceeding the segments in length. Head light gray; anterior vertex broad.

Mesonotum gray, the præscutum with four darker plumbeous stripes, the intermediate pair confluent in front of the level of the pseudosutural foveæ, the latter blackened; no brightening of the pretergal region. Pleura dark gray. Halteres with the stem slightly infuscated, the knobs light yellow. Legs with the coxæ gray; remainder of legs black. Wings (Plate 1, fig. 18) with the ground color obscure whitish, the anterior prearcular region and basal portions of the costal region more yellowish; stigma small, brown; axillary region and vein Cu vaguely infused; veins coarse, black. Venation:  $Sc_1$  ending just before level of  $R_2$ ;  $Sc$  faint, about opposite one-third the length of  $Rs$ ; vein 2d A nearly straight, gradually diverging from 1st A.

Abdomen black, the caudal margins of the segments more grayish; hypopygium black. Male hypopygium (Plate 3, fig. 46) large and powerful, the tergite, *9t*, extensive, arched. Outer dististyle, *od*, a slender, arcuated rod, its surface, except at extreme base, with microscopic appressed setulæ. Inner dististyle, *id*, large and bulky, the outer apical angle produced into a blunt blackened lobe, the inner angle extended into a compressed yellowish blade. Elements of the phallosome, *p*, forming flattened plates that are contiguous on the median line, the outer lateral angles produced into slender arms, the tips a trifle incurved, obtuse.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 9,000 feet, July 20, 1931 (*Franck*). Paratopotype, male.

The closest allied species is *Erioptera (Ilisia) bifurcata* Alexander (Japan), which has an almost identical appearance and venation but differs very notably in the structure of the male hypopygium, especially the elongate outer dististyle, the short, deeply furcate inner style, and the acicular gonapophyses. I consider that these two flies belong to *Ilisia*, where they are aberrant; they may be removed to some other group when allied forms are better known.

ERIOPTERA (TELENEURA) LEUCOPODA sp. nov. Plate 1, fig. 19.

General coloration of mesonotum dark brown; head and pronotum abruptly light yellow; antennæ black throughout; thoracic pleura brown, with a broad black longitudinal stripe; halteres brown; legs brown, the tarsi and tips of posterior tibiæ conspicuously whitened; wings broad, strongly infuscated; Rs fully one-half longer than  $R_{2+3+4}$ ; abdomen black, the valves of the ovipositor abruptly horn yellow.

*Female*.—Length, about 4 millimeters; wing, 3.8.

Rostrum and palpi black. Antennæ black throughout; flagellar segments oval, becoming more elongate-oval outwardly; verticils conspicuous, fully one-half longer than the segments. Head clear light yellow, contrasting abruptly with the mesothorax.

Pronotum yellow, the anterior lateral pretergites light sulphur yellow. Mesonotum dark brown, the humeral portion of the præscutum a trifle brightened. Pleura brown, with a broad black longitudinal stripe, extending from the propleura to the abdomen, passing beneath the root of the haltere; dorsopleural region brownish yellow. Halteres brown, the base of stem narrowly pale. Legs with the coxæ and trochanters brown; femora dark brown; tibiæ brownish black, the tips of the fore and middle tibiæ very narrowly paler, of the posterior tibiæ broadly and conspicuously whitened; tarsi white, the basitarsi of fore and middle legs more or less infuscated on more than basal half. Wings (Plate 1, fig. 19) broad, strongly tinged with brown; veins and macrotrichia darker. Marginal fringes and trichia of veins long and conspicuous. Venation: Rs relatively long, fully one-half longer than  $R_{2+3+4}$ ;  $R_2$  subequal to  $R_{2+3}$ ; m-cu close to fork of M; vein 2d A very gently sinuous.

Abdomen black. Ovipositor with the basal shields blackened, the valves abruptly horn yellow; cerci strongly upcurved to the acute tips, their margins smooth.

*Habitat*.—China (Szechwan).

Holotype, female, Mount Omei, altitude 7,000 feet, July 27, 1931 (*Franck*).

*Erioptera (Teleneura) leucopoda* is readily told from the other described species of the subgenus by the clear yellow head and conspicuously whitened feet. By my key to the species of *Teleneura*<sup>3</sup> the fly runs to *E. (T.) melanotænia* Alexander (Philippines), which differs conspicuously in the smaller size, differently colored head, and darkened feet.

ERIOPTERA (TELENEURA) LUTEICLAVATA sp. nov. Plate 3, fig. 47.

General coloration of mesonotum medium brown, the pleura yellow with a narrow brownish black longitudinal stripe; head light yellow; knobs of halteres light yellow; legs black; wings with a strong brownish tinge; abdominal sternites and hypopygium yellow; male hypopygium with both dististyles slender, the inner acutely pointed; gonapophyses appearing as simple blackened hooks.

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

Rostrum and palpi black. Antennæ with the scape and enlarged pedicel black; flagellum dark brown; flagellar segments becoming slenderer and more attenuate outwardly; verticils long and conspicuous, much exceeding the segments. Head light yellow; vertex broad.

Pronotum yellow. Mesonotum medium brown; the anterior part of præscutum a little darker, the lateral præscutal margins testaceous-yellow. Pleura yellow, with a narrow but conspicuous brownish black longitudinal stripe extending from the fore coxæ caudad, passing just beneath the root of halteres; ventral sternopleurite infuscated. Halteres pale, the knobs, including the setæ, light yellow. Legs with the fore coxæ black, the remaining coxæ and all trochanters obscure yellow; femora and tibiæ black (a single leg, middle, remains, broken beyond tibia); no indication of brightening at apex of tibia, as in *leucopoda*. Wings broad, with a strong brown tinge, the prearcular and costal regions somewhat more yellowish; stigmal area slightly infuscated; veins pale, the macrotrichia somewhat darker. Venation: Vein 2d A gently sinuous, ending opposite m-cu.

<sup>3</sup> Philip. Journ. Sci. 46 (1931) 287.

Abdominal tergites brown, the sternites obscure yellow; hypopygium light yellow. Male hypopygium (Plate 3, fig. 47) with the outer dististyle, *od*, slender, the distal third blackened, the apex flattened and with parallel striæ. Inner dististyle, *id*, a little longer, appearing as a slender pale rod, the tip acutely pointed. Gonapophyses, *g*, appearing as simple curved hooks, the tips blackened, acutely pointed. Apex of ædeagus, *a*, very strongly curved.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 7,000 feet, July 17, 1931 (*Franck*).

*Erioptera (Teleneura) luteiclavata* is most closely allied to *E. (T.) leucopoda* sp. nov., from the same locality. The pale coloration of the thorax and abdomen, the yellow knobs of the halteres, and the unbrightened tips of the tibiæ, all preclude any reference of the present fly to *leucopoda*. It is unfortunate that all tarsi of the type are broken and it is thus impossible to determine whether or not the feet are whitened in any degree.

ORMOSIA PRÆCISA sp. nov. Plate 1, fig. 20; Plate 3, fig. 48.

General coloration of mesonotal præscutum and scutum reddish brown, the posterior sclerites and the pleura darker plumbeous brown; knobs of halteres light yellow; femora black, tibiæ and tarsi pale yellow; wings with a brownish tinge, sparsely variegated with small pale brown spots and whitish discal areas; veins  $R_3$  and  $R_4$  not curved strongly cephalad at tips; vein 2d A strongly sinuous; male hypopygium with three gonapophyses on either side.

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

Head broken.

Pronotum dark brown. Mesonotal præscutum and scutum reddish brown, the posterior sclerites of mesonotum darker plumbeous brown, sparsely pruinose; pseudosutural foveæ and tuberculate pits brownish black. Pleura almost uniform plumbeous brown. Halteres dusky, the knobs light yellow. Legs with the small coxæ plumbeous-brown; trochanters brownish yellow; femora black; tibiæ and tarsi pale yellow. Wings (Plate 1, fig. 20) with a brownish tinge, sparsely variegated with pale brown spots and clouds at cord, fork of  $M_{2+3}$  and as small marginal clouds at ends of longitudinal veins; stigma dark brown, with a somewhat more yellowish area beyond it; disk of wing before cord, in outer ends of basal cells, and beyond cord in medial field, more whitish; veins pale, darker in

the clouded areas. Macrotrichia of cells abundant but pale. Venation:  $Sc_1$  ending opposite  $R_2$ ,  $Sc_2$  about opposite midlength of  $R_s$ ;  $R_2$  just beyond fork of  $R_{3+4}$ , the latter veins not strongly curved cephalad at tips; m-cu just before fork of M; vein 2d A strongly sinuous.

Abdominal tergites dark brown, the sternites somewhat paler; hypopygium dark. Male hypopygium (Plate 3, fig. 48) with the outer dististyle, *od*, small, the surface of apical half with transverse rows of microscopic setæ. Inner dististyle, *id*, broad, the outer apical angle produced into a relatively slender lobe. Gonapophyses, *g*, appearing as three arms or branches on either side, these relatively slender, the stoutest and longest arm with about three subterminal teeth, its branch with a single small subterminal tooth.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 7,000 feet, July 17, 1931 (*Franck*).

*Ormosia præcisa* is most nearly allied to a group of Japanese species, including *O. takahashii* Alexander, *O. takeuchii* Alexander, and *O. tokunagai* Alexander, differing especially in the structure of the gonapophyses of the male hypopygium.

**MOLOPHILUS ARIEL** sp. nov. Plate 1, fig. 21; Plate 3, fig. 49.

Belongs to the *gracilis* group and subgroup; general coloration black, sparsely pruinose to give a leaden appearance; antennæ (male) short; halteres black; male hypopygium with a single dististyle, this appearing as a stout rod that divides at apex into about eight slender branches.

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

Rostrum and palpi black. Antennæ (male) short, black throughout; flagellar segments long-oval, the verticils exceeding the segments. Head dark gray.

Mesonotum and pleura entirely black, sparsely pruinose, to give a dark leaden appearance. Halteres black, the stem variegated by sparse yellow setæ. Legs brownish black. Wings (Plate 1, fig. 21) relatively narrow, strongly suffused with blackish; veins and macrotrichia black. Costal fringe and trichia of veins long and conspicuous. Venation:  $Sc_1$  ending about opposite  $R_2$ ;  $R_2$  about in transverse alignment with r-m; vein 2d A ending opposite m-cu.

Abdomen, including hypopygium, black. Male hypopygium (Plate 3, fig. 49) with only two lobes of basistyle, *b*, developed, the dorsal, *db*, relatively small and slender, with long coarse

setæ distributed over its entire length; ventral lobe, *vb*, large, flattened, at apex further prolonged into a more glabrous outer lobe. A single dististyle, *d*, appearing as a stout rod that divides at apex into eight slender branches to produce a broom-like appearance, the most-basal branch shorter; at base of style a small fingerlike lobule that bears a few setæ. Ædeagus long, slender.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 7,000 feet, July 17, 1931 (*Franck*).

The somewhat remarkable male hypopygium readily distinguishes this species from all others of the genus. *Molophilus albireo* Alexander (China) is very similar in its general appearance but has an entirely different genitalic structure.

**MOLOPHILUS ANTARES** sp. nov. Plate 1, fig. 22; Plate 3, fig. 50.

Belongs to the *gracilis* group and subgroup; mesonotal præscutum and scutum reddish brown, the posterior sclerites of notum and the pleura dark brown; legs and halteres dark brown; wings with a strong brown tinge; male hypopygium with the basistyle elongate, the apical lobes and dististyles relatively short when compared with the body of the style.

*Male*.—Length, about 3 millimeters; wing, 3.5.

Rostrum and palpi brownish black. Antennæ (male) short, brown throughout; flagellar segments cylindrical or nearly so, the verticils much longer than the segments. Head dark brown.

Mesonotal præscutum and scutum light reddish brown, the posterior sclerites of mesonotum and the pleura dark brown. Halteres infuscated, the base of stem restrictedly yellow. Legs with the coxæ and trochanters yellow; remainder of legs dark brown, the femoral bases restrictedly obscure yellow. Wings (Plate 1, fig. 22) with a strong brownish tinge, the prearcular and costal regions somewhat darker; veins pale, the darkest veins pale brown; macrotrichia dark brown. Venation:  $r_2$  lying opposite or just beyond the level of *r-m*; vein 2d A relatively long and gently sinuous, ending shortly beyond *m-cu*.

Abdomen dark brown; hypopygium brownish yellow. Male hypopygium (Plate 3 fig. 50) with the basistyles, *b*, long and slender, the various apical lobes and the dististyles considerably shorter than the main body of the style; dorsal lobe of basistyle short, obtusely rounded at apex, the distal half without macrotrichia; ventral lobe, *vb*, short, with a dense group of coarse setæ at apex. Outer dististyle, *od*, irregular in outline, with

an outer blackened beak and an inner arm that bears two slender points, one being an acute spine. Inner dististyle, *id*, long, bent at near midlength, the apex microscopically roughened. Ædeagus, *a*, long and straight.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 7,000 feet, July 17, 1931 (*Franck*).

*Molophilus antares* is very different from the other regional species of the *gracilis* group in the structure of the male hypopygium, especially the great length of the basistyles in proportion to the apical lobes, and in the structure of the outer dististyle.



## ILLUSTRATIONS

[Legend: *a*, aedeagus; *b*, basistyle; *d*, dististyle; *db*, dorsal lobe of basistyle; *g*, gonapophysis; *i*, interbase; *id*, inner dististyle; *od*, outer dististyle; *p*, phallosome; *s*, sternite; *t*, tergite; *vb*, ventral lobe of basistyle; *vd*, ventral dististyle.]

### PLATE 1

- FIG. 1. *Tipula* (*Trichotipula*) *polytricha* sp. nov., venation.  
2. *Tipula mutiloides* sp. nov., venation.  
3. *Macgregoromyia szechwanensis* sp. nov., venation.  
4. *Macgregoromyia celestia* sp. nov., venation.  
5. *Limonia* (*Limonia*) *francki* sp. nov., venation.  
6. *Limonia* (*Limonia*) *laticellula* sp. nov., venation.  
7. *Limonia* (*Limonia*) *bicornigera* sp. nov., venation.  
8. *Limonia* (*Dicranomyia*) *sublimis* sp. nov., venation.  
9. *Helius* (*Helius*) *infirmus* sp. nov., venation.  
10. *Antocha* (*Antocha*) *constricta* sp. nov., venation.  
11. *Antocha* (*Antocha*) *nigribasis* sp. nov., venation.  
12. *Antocha* (*Antocha*) *bidens* sp. nov., venation.  
13. *Adelphomyia latissima* sp. nov., venation.  
14. *Phyllolabis pictivena* sp. nov., venation.  
15. *Rhabdomastix* (*Palæogonomyia*) *omeina* sp. nov., venation.  
16. *Gnophomyia collata* sp. nov., venation.  
17. *Dasymallomyia persignata* sp. nov., venation.  
18. *Erioptera* (*Ilisia*) *megaura* sp. nov., venation.  
19. *Erioptera* (*Teleneura*) *leucopoda* sp. nov., venation.  
20. *Ormosia præcisa* sp. nov., venation.  
21. *Molophilus ariel* sp. nov., venation.  
22. *Molophilus antares* sp. nov., venation.

### PLATE 2

- FIG. 23. *Tipula* (*Trichotipula*) *polytricha* sp. nov., male hypopygium, lateral aspect.  
24. *Tipula* (*Trichotipula*) *polytricha* sp. nov., male hypopygium, ninth tergite.  
25. *Tipula* (*Trichotipula*) *polytricha* sp. nov., male hypopygium, ninth sternite.  
26. *Tipula* (*Trichotipula*) *polytricha* sp. nov., male hypopygium, styli.  
27. *Tipula mutiloides* sp. nov., male hypopygium, lateral aspect.  
28. *Tipula mutiloides* sp. nov., male hypopygium, ninth tergite.  
29. *Tipula mutiloides* sp. nov., male hypopygium, styli.  
30. *Tipula mutiloides* sp. nov., male hypopygium, eighth sternite.  
31. *Macgregoromyia szechwanensis* sp. nov., basal five flagellar segments, male.  
32. *Macgregoromyia szechwanensis* sp. nov., male hypopygium, dorsal.  
33. *Macgregoromyia celestia* sp. nov., basal five flagellar segments, male.

- FIG. 34. *Macgregoromyia celestia* sp. nov., male hypopygium, inner dististyle.  
35. *Limonia (Limonia) francki* sp. nov., male hypopygium.  
36. *Limonia (Limonia) bicornigera* sp. nov., male hypopygium.  
37. *Limonia (Dicranomyia) sublimis* sp. nov., male hypopygium.

## PLATE 3

- FIG. 38. *Heliu (Heliu) infirmus* sp. nov., male hypopygium.  
39. *Antocha (Antocha) constricta* sp. nov., male hypopygium.  
40. *Antocha (Antocha) multidentata* sp. nov., male hypopygium.  
41. *Antocha (Antocha) spiralis* sp. nov., male hypopygium.  
42. *Antocha (Antocha) nigribasis* sp. nov., male hypopygium.  
43. *Antocha (Antocha) bidens* sp. nov., male hypopygium.  
44. *Adelphomyia latissima* sp. nov., male hypopygium.  
45. *Dasymallomyia persignata* sp. nov., male hypopygium.  
46. *Erioptera (Ilisia) megaura* sp. nov., male hypopygium.  
47. *Erioptera (Teleneura) luteiclavata* sp. nov., male hypopygium.  
48. *Ormosia præcisa* sp. nov., male hypopygium.  
49. *Molophilus ariel* sp. nov., male hypopygium.  
50. *Molophilus antares* sp. nov., male hypopygium.

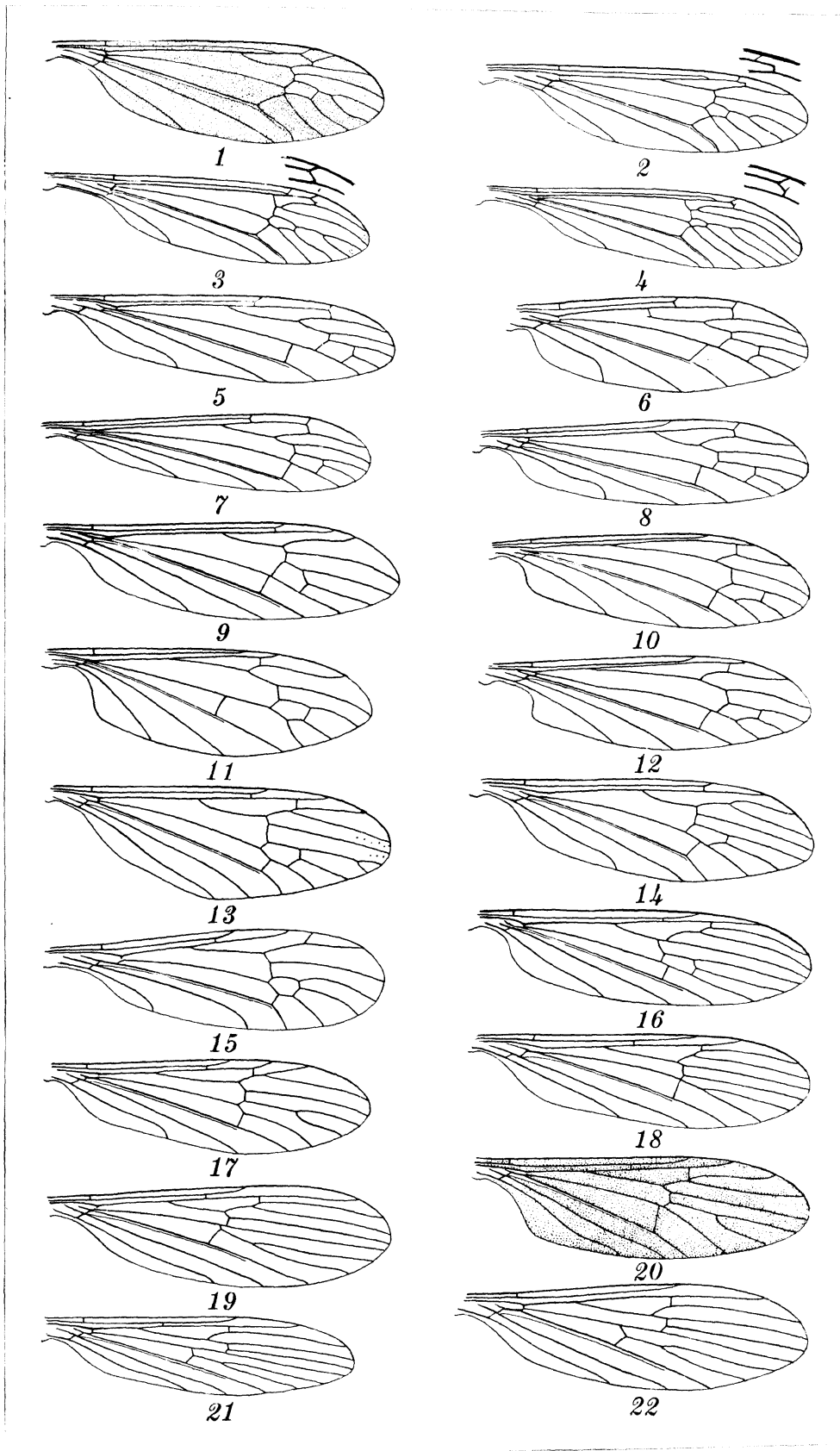


PLATE 1.



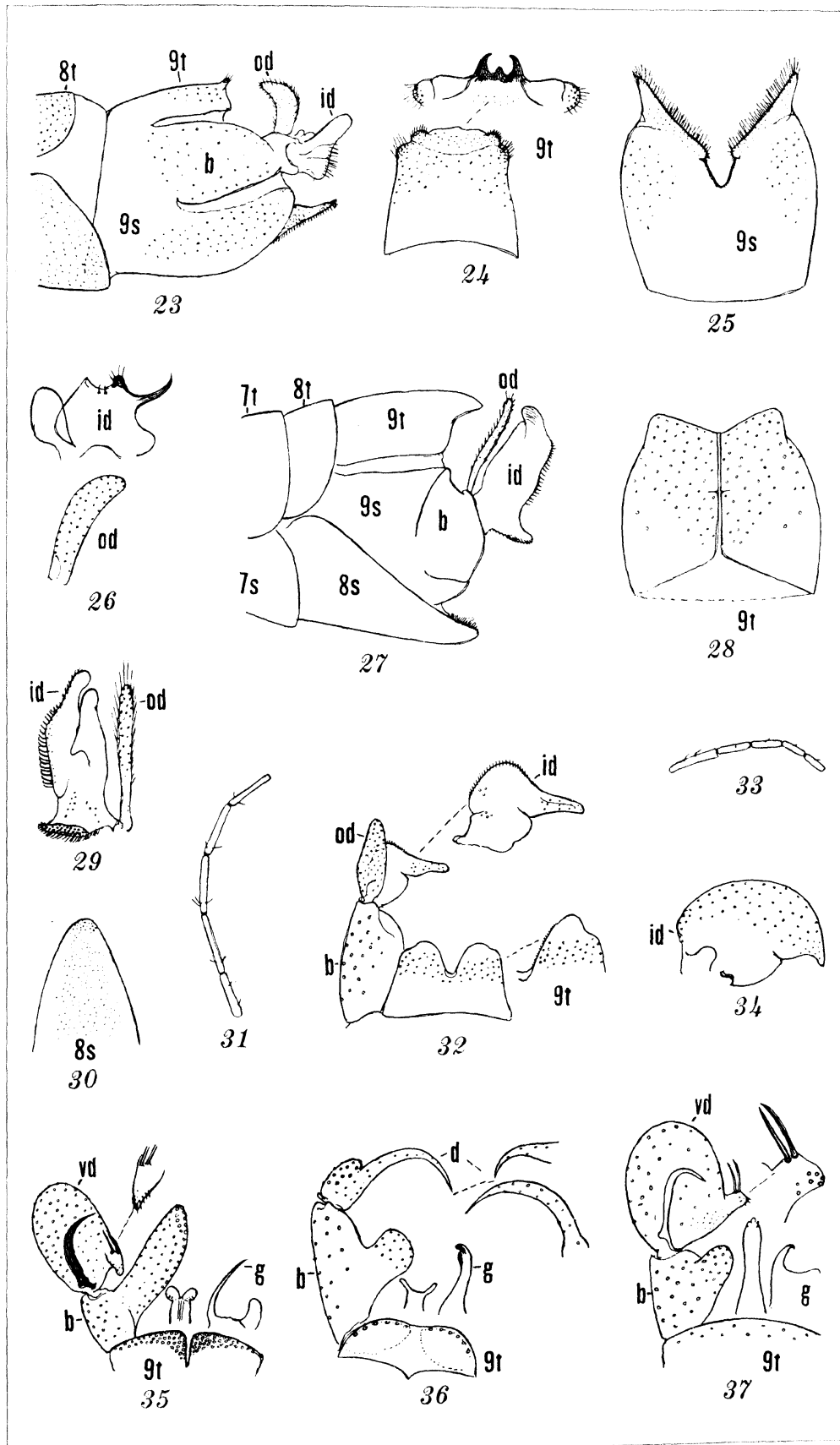


PLATE 2.



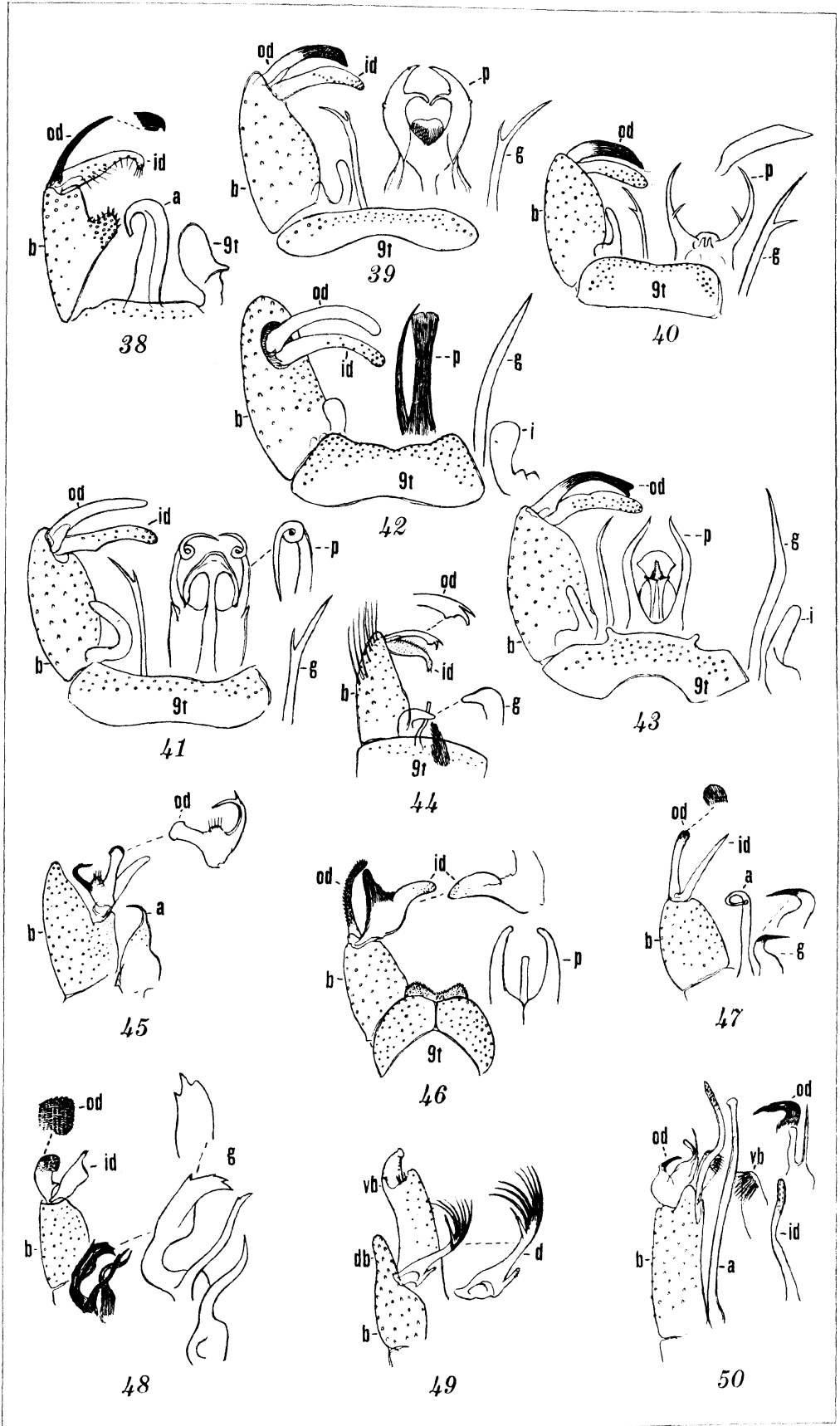


PLATE 3.

