

NEW OR LITTLE-KNOWN TIPULIDÆ FROM EASTERN  
ASIA (DIPTERA), IX

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

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TWO PLATES

The crane flies discussed herein are chiefly from Szechwan Province, western China, where two important lots of material are included, one from Mount Omei, collected by a Canadian missionary and received through the kind interest of my friend Mr. Herbert S. Parish, the second collected by Reverend David C. Graham and now preserved in the United States National Museum. An exceptionally interesting series of crane flies taken in the Japanese Alps, on and near Mount Norikura, were sent to me by Prof. Jiro Machida, to whom I express my deep thanks for continued coöperation in making known the rich tipulid fauna of the Japanese mountains. One further species from Formosa was included in rich collections taken by my friend, Prof. Syuti Issiki. Except where noted to the contrary, the types of the species here discussed are preserved in my collection.

The following records of species taken in July, 1929, on and near Norikuradake, Shinano, Japan, by Prof. Jiro Machida, are of interest.

*Norikuradake, July 26, 1929 (J. Machida).*

- |   |  |
|---|--|
| <i>Tipula depressa</i> sp. nov.         | <i>Dicranoptycha cæsia pallidiba-</i>  |
| <i>Tipula kuzuensis</i> Alex.           | <i>sis</i> subsp. nov.                 |
| <i>Tipula nippoolpina</i> sp. nov.      | <i>Tricyphona pectinata</i> sp. nov.   |
| <i>Tipula politostriata</i> sp. nov.    | <i>Tricyphona seticauda</i> sp. nov.   |
| <i>Tipula sachalinensis</i> Alex.       | <i>Heterangæus laticincta</i> sp. nov. |
| <i>Tipula uenoi</i> Alex.               | <i>Limnophila (Tricholimnophila)</i>   |
| <i>Nephrotoma saghaliensis</i> Alex.    | <i>saitamæ</i> Alex.                   |
| <i>Cylindrotoma japonica</i> Alex.      | <i>Limnophila mundella</i> sp. nov.    |
| <i>Phalacrocerca megacauda</i> sp. nov. | <i>Molophilus ferox</i> sp. nov.       |
| <i>Limonia (Limonia) machidai</i>       |  |
| (Alex.).                                |  |

<sup>1</sup> Contribution from the Department of Entomology, Massachusetts Agricultural College.

Shirahone Hot Springs, near Norikuradake, July 25, 1929 (J. Machida).

*Tipula bubo* Alex.

*Gnophomyia tristis* Alex.

Hirayu, Norikuradake, July 27, 1929 (J. Machida).

*Tipula matsumuriana* Alex.

*Heterangæus laticincta* sp. nov.

*Tipula politostriata* sp. nov.

*Limnophila (Ephelia) dietziana*

*Nephrotoma saghaliensis* Alex.

Alex.

*Limonia (Limonia) subnubeculosa* (Alex.).

*Erioptera (Ilisia) machidai* sp. nov.

#### TIPULINÆ

##### DOLICHOPEZA (NESOPEZA) SUBGENICULATA sp. nov.

Closely allied to *D. (N.) geniculata* (Alexander) but details of male hypopygium quite distinct; outer dististyle slender, constricted and bent at near midlength; lateral portions of ninth sternite strongly produced caudad.

*Male*.—Length, about 6.5 millimeters; wing, 8.

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

Antennal flagellum yellow, the outer segments darkened.

Mesonotal præscutum brown with four darker brown stripes that are little evident against the ground color; scutellum and postnotal mediotergite more testaceous. Pleura chiefly dark brown, the dorsopleural region and pteropleurite abruptly pale. Halteres yellow, the knobs blackened. Legs with the fore coxæ brownish black, the remaining coxæ pale; trochanters yellow; femoral tips broadly blackened, the tibial bases narrowly whitened, the tips more broadly blackened; both femora and tibiæ with a more whitish subterminal ring; tarsi white. Wings with the pattern as in *geniculata*; ground color gray, the costal margin with four brown areas, the largest basal, the third along the cord to M, the fourth apical, interrupted by hyaline droplets in outer ends of cells  $R_3$  and  $R_5$ ; a more whitish border delimiting the brown costal border behind; no conspicuous darkening caudad of the main costal pattern excepting a small cloud at end of  $Cu_1$ . Venation: Medial forks short.

Abdomen dark brown, the tergites variegated with gray areas on lateral margins of basal rings; outer sternites more blackened. Male hypopygium with the caudal margin of the ninth tergite (Plate 2, fig. 21) trilobed, the median lobe shortest, obtuse. Outer dististyle (Plate 2, fig. 22) slender, strongly constricted and strongly bent at just beyond midlength. Inner dististyle (Plate 2, fig. 23) broad, near base on outer face

with several strong setæ, in addition to the usual more delicate ones. Lateral lobes of ninth sternite strongly developed, stouter than in *oberon*.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 4,500 feet, July 31, 1929 (ex Parish). Allotopotype, female, August 14, 1929.

Very closely related to *D. (N.) geniculata* of Japan, differing especially in the structure of the male hypopygium. The production of the lobes of the ninth sternite is much as in *D. (N.) oberon* (Alexander) of Luzon, but the other features of the hypopygium are distinct.

**TIPULA EXUSTA** sp. nov.

Belongs to the *cinereifrons* group; thorax and abdomen entirely reddish orange; head gray; antennæ and legs black;  $R_{1+2}$  atrophied; male hypopygium with only a single complicated dististyle.

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

Frontal prolongation of head gray, the nasus short and stout; palpi black. Antennæ (male) of moderate length, if bent backward scarcely attaining the wing root; black, the second scapal segment a little paler apically; flagellar segments only slightly enlarged basally. Head dark gray.

Thorax entirely reddish orange, without markings. Halteres pale, the knobs dark brown. Legs with the coxæ and trochanters orange; legs black, the femora narrowly obscure yellow at base. Wings (Plate 1, fig. 1) gray, the stigma brown; obliterative areas very restricted; veins black. Venation:  $R_{1+2}$  entirely atrophied; cell 1st  $M_2$  long-pentagonal; petiole of cell  $M_1$  about one-half the cell; cell 2d A relatively wide.

Abdomen, including the hypopygium, reddish orange. Male hypopygium (Plate 2, fig. 24) with the tergite (Plate 2, fig. 25) pale, the caudal margin with a broad, shallow, V-shaped notch, the margins medially narrowly blackened, beneath further produced on either side of the median line into a smooth flattened black plate that is directed caudad and slightly ventrad, the margin obtuse. Basistyle produced caudad into a small obtuse lobule. A single complex flattened dististyle (Plate 2, fig. 26) shaped as in the figure. Notch of the ninth sternite relatively shallow, with a small more or less bifid fleshy lobe jutting caudad, placed close to the suture of the basistyle. Eighth sternite, 8s, unarmed.

*Habitat.*—China (Szechwan).

Holotype, male, Mupin, altitude 3,500 feet, June 30, 1929 (*D. C. Graham*). Type in the collection of the United States National Museum.

*Tipula exusta* is distinct from regional small species of the *cinereifrons* group in the structure of the male hypopygium.

TIPULA NIPPOALPINA sp. nov.

General coloration gray; nasus lacking; head with a median brown vitta; præscutum with four brown stripes; legs reddish, the tips of the femora and tibiæ narrowly blackened; wings whitish yellow, with a gray and brown clouded pattern;  $R_{2+3}$  in direct alignment with the straight  $R_3$ ; abdomen reddish yellow, segments five to nine black; male hypopygium with the tergite with a U-shaped median notch, and having a smaller quadrate median incision at its base; eighth sternite unarmed.

*Male.*—Length, about 15 millimeters; wing, 15.5.

Frontal prolongation of head black, sparsely pruinose; nasus lacking; palpi black. Antennæ with the scapal segments and all but the extreme apex of the first flagellar segment reddish yellow; remainder of antennæ black; flagellar segments moderately incised, the longest verticils a trifle shorter than the segments. Head gray, with a pale brown median vitta.

Mesonotal præscutum gray, with four scarcely indicated brown stripes, the intermediate pair obsolete on anterior portions; scutum gray, the lobes very slightly darkened; scutellum and postnotum gray with a nearly continuous median darker vitta. Pleura gray, the dorsopleural region more buffy. Halteres pale, the knobs infuscated. Legs with the coxæ brownish gray; trochanters reddish; femora and tibiæ reddish yellow, the tips narrowly but conspicuously blackened; tarsi passing into black. Wings (Plate 1, fig. 2) with the ground color whitish yellow, the base and costal region clearer yellow; a handsome clouded brown and gray pattern; the ground color includes areas before and beyond the stigma; at beyond mid-length of cell R; an oblique area beyond the cord, extending from costa into cell  $R_5$  and a second area extending from the outer end of cell R obliquely across cell 1st  $M_2$  almost to the margin in cell  $M_1$ ; other pale areas in bases of cubital and anal cells. Venation: Rs long;  $R_{1+2}$  subobsolete on outer half;  $R_2$  elongate;  $R_{2+3}$  in alignment with the straight  $R_3$ .

Abdomen reddish yellow, the basal tergite more pruinose; lateral and caudal portions of segments insensibly darkened;

posterior half of fifth, and all succeeding segments, black. Male hypopygium (Plate 2, fig. 27) with the tergite, sternite, and basistyle all distinct. Ninth tergite (Plate 2, fig. 28) moderately chitinized, not heavily blackened, the caudal margin with a U-shaped notch, at the base of which is a smaller quadrate median incision. Outer dististyle a dusky subcylindrical lobe, the apex obtuse. Inner dististyle (Plate 2, fig. 27, *id*) flattened, compressed, the base with two small lobes, the apex bidentate. *Ædeagus*, *a*, jutting from genital chamber. Ninth sternite, 9s, with a V-shaped incision that extends to the base of the segment, the surface unarmed with lobes or tufts. Eighth sternite unarmed.

*Habitat*.—Japan (Honshiu).

Holotype, male, Norikuradake, Japanese Alps, Shinano, July 26, 1929 (*J. Machida*).

*Tipula nipponalpina* is distinct from all similar regional species in the lack of a nasus, details of venation, and structure of the male hypopygium.

**TIPULA DEPRESSA** *sp. nov.*

General coloration light brown, the præscutum with almost concolorous stripes that are narrowly margined with darker brown; wings brown and gray, variegated with extensive cream-colored areas; male hypopygium with the ninth tergite tridentate; eighth sternite with a conspicuous median tongue-like lobe.

*Male*.—Length, about 12 millimeters; wing, 14. Described from a somewhat teneral type specimen.

Frontal prolongation of head brownish testaceous. Antennæ with the first scapal segment dark brown, the tip and second scapal segment more reddish brown; flagellum apparently almost uniformly infuscated, the basal enlargements of the segments little if any darker. Head brown.

Mesonotal præscutum light brown, the four usual stripes almost concolorous, the intermediate stripes margined laterally with a conspicuous darker brown line, the mesal edge of the lateral stripes similarly darkened; posterior sclerites of mesonotum light brown, the scutellum more testaceous. Pleura light brown, the ventral pleurotergite darker. Halteres pale, the knobs broken. Legs with the coxæ light brown, trochanters yellow; remainder of legs brown, the femoral bases more brightened. Wings relatively broad, the ground color brown or gray, variegated by extensive cream-colored areas, including a broad crossband beyond the stigma and cord; other areas before stig-

ma, at base and outer end of cell M, outer ends of radial cells, as a broad seam along vein 1st A in cells Cu and 1st A and in the anal cells; veins brown, paler in the creamy areas. Venation:  $R_{1+2}$  entire but with macrotrichia confined to basal two-thirds;  $R_3$  elongate, gently arcuated and thus not in alignment with  $R_{2+3}$ ; cell 1st  $M_2$  small, pentagonal.

Abdomen chiefly reddish yellow. Male hypopygium with the caudal margin of the ninth tergite (Plate 2, fig. 29) conspicuously trifold, the lobes blackened; lateral lobes flattened, slightly incurved, the tips truncated, the outer angles a little decurved; median lobe narrowed outwardly, the ventral surface with a median keel that juts caudad slightly beyond the level of the lobe. Outer dististyle (Plate 2, fig. 30) with the stem narrowed, the apex expanded into a setiferous foot-shaped structure. Inner dististyle (Plate 2, fig. 31) of unusual form, being deeply bilobed, the anterior or cephalic portion being separated from the basal lobe by a conspicuous rounded notch. Eighth sternite (Plate 2, fig. 32) with a conspicuous median depressed lobe, this bearing a small lateral lobule or shoulder on either side; the median tonguelike lobe beyond the lateral lobules is provided with abundant setæ that are directed mesad, these becoming progressively smaller and more delicate away from the margin. Gonapophyses (Plate 2, fig. 33) bifid, the outer arms appearing as acute blackened hooks.

*Habitat.*—Japan (Honshiu).

Holotype, male, teneral, Norikuradake, Japanese Alps, Shinano, July 26, 1929 (*J. Machida*).

The structure of the male hypopygium serves to separate this alpine species from similar forms.

**TIPULA POLITOSTRIATA** sp. nov.

Allied to *T. shomio* Alexander; mesonotal præscutum and scutum gray, variegated with polished black areas; blackened femoral tips narrow, occupying about the distal fourth of the segment, the amount subequal on all legs; wings yellow, especially the base and costal margin, the dark pattern restricted; male hypopygium with the outer dististyle relatively small.

*Male.*—Length, about 13.5 to 14 millimeters; wing, 15.

*Female.*—Length, about 17 to 18 millimeters; wing, 15 to 16.

Frontal prolongation of head black, sparsely pruinose, paler laterally; nasus distinct; palpi black. Antennæ (male) of moderate length, if bent backward extending about to the wing root; scape and basal two flagellar segments yellow; succeeding

segments almost uniformly darkened or with the bases a little darker; outer verticils much longer than the ventral pair. Antennæ of female more uniformly pale. Head gray.

Pronotum blackish gray. Mesonotal præscutum gray, the three usual stripes polished black, distinctly separated by lines of the ground color; scutum gray, the centers of the lobes polished black; scutellum brownish black; postnotum black, sparsely pruinose. Pleura gray. Halteres pale, the knobs weakly infuscated. Legs with the coxæ black, pruinose; trochanters yellow; femora yellow, the tips broadly blackened, the amount subequal on all legs, occupying approximately the distal fourth of the segment; tibiæ yellow, the tips blackened; tarsi black, the proximal ends of basitarsi restrictedly pale. Wings yellow, the base and costal region clearer yellow; a restricted brown pattern, including the stigma and a seam on the anterior cord; narrower brown seams on posterior cord and along vein Cu; a triangular dusky area in outer end of cell 1st A; wing apex more or less darkened, in cases leaving a poorly indicated area of the ground color distad of the stigma and cord. Venation:  $R_{1+2}$  preserved; petiole of cell  $M_1$  subequal to or shorter than second section of  $M_{1+2}$ .

Abdominal tergites yellow, with three nearly entire blackish stripes, the lateral stripes wider than the median one, which is more or less interrupted at the caudal margins of the segments; subterminal segments blackened, this including the entire eighth sternite; sternites pale, with a median black stripe, the outer segments blackened; hypopygium chiefly pale. Male hypopygium with the median lobe of the tergite a nearly circular compressed blade; lateral margins of tergite beneath with a short, slender, blackened point. Outer dististyle (Plate 2, fig. 34) relatively small, the head only slightly dilated. Inner dististyle as figured (Plate 2, fig. 35). Gonapophyses (Plate 2, fig. 36) appearing as bispinous plates.

*Habitat.*—Japan (Honshiu).

Holotype, male, Norikuradake, Japanese Alps, Shinano, July 26, 1929, (*J. Machida*). Allotype, female, Hirayu, July 27, 1929 (*J. Machida*). Paratopotypes, 3 females; paratypes, 4 males and females, with the allotype.

*Tipula politostriata* is most closely allied to *T. shomio* Alexander and *T. strix* Alexander, differing especially in the more nearly unicolorous wings, without infuscation in the costal region, in the more narrowly darkened femoral tips, and in the details of structure of the male hypopygium.



## TIPULA ANGUSTILIGULA sp. nov.

Belongs to the *continuata* group; antennal flagellum entirely black, the segments with a single well-developed verticil; præscutum yellow with three brown stripes, the median stripe prolonged backward onto the median region of the scutum and scutellum; pleura entirely yellow; tips of femora blackened; male hypopygium with the ninth tergite unblackened, the caudal margin with a broad U-shaped emargination; ninth sternite with a narrow median liguliform lobe.

*Male*.—Length, about 9.5 millimeters; wing, 10.

Frontal prolongation of head relatively short, light yellow on dorsal half, more infuscated laterally; nasus conspicuous; palpi black. Antennæ with the first scapal segment yellow, the second tinged with green; flagellum entirely black; verticils of flagellar segments reduced to a single long basal bristle on outer face. Head yellow, the vertex with a linear more-darkened area.

Pronotum darkened medially, more yellowish laterally. Mesonotal præscutum yellow with three brown stripes, the median stripe narrowed behind and traversing both the scutum and scutellum; scutal lobes and parascutella darkened; postnotal mediotergite brownish yellow, with a clearer yellow median line. Pleura yellow. Halteres dusky, the knobs yellowish. Legs with the coxæ and trochanters yellow; femora obscure yellow basally, passing into dark brown; tibiæ black, the extreme base a little brightened; tarsi black. Wings with the ground color whitish, the base and prearcular region more yellowish; stigma oval, dark brown; conspicuous brown washes and seams along most of the veins, more extensive in the outer radial field and in cells R and M, the latter diversified by a single area of the ground color at about the distal fifth; veins black, the basal and costal regions light brown or yellowish brown. Venation: Rs relatively short, gently arcuated;  $R_{1+2}$  entire; cell  $M_1$  very deep, barely sessile to very short-petiolate; second section of  $M_{3+4}$  relatively extensive, subequal to or longer than r-m.

Abdomen yellow, becoming more brownish yellow on the outer segments; subterminal segments more uniformly infuscated. Male hypopygium (Plate 2, fig. 37) with the tergite, 9t, extensive, not blackened, the caudal margin with a broadly rounded U-shaped notch (Plate 2, fig. 38); on ventral margin at near midwidth of the lobes with a small blackened point. Outer dististyle a long cylindrical rod, the base thicker, the surface with long conspicuous setæ. Inner dististyle with the

apex simple. Median notch of the ninth sternite at base with a slender pale lobe (Plate 2, fig. 39), slightly broader at base, gradually narrowed to the blunt tip.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 4,500 feet, August 10, 1929 (ex Parish).

*Tipula angustiligula* is closest to *T. xanthopleura* Edwards (Tibet to Sikkim); it differs in numerous details, as the entirely blackened antennal flagellum and structure of the male hypopygium, especially the emargination of the tergite and the elongate liguliform lobe of the ninth sternite.

TIPULA LATIFLAVA sp. nov.

Belongs to the *mutila* group; general coloration gray, the præscutum with four broken brown stripes, the interspaces with abundant brown setigerous punctures; knobs of halteres infuscated; legs black, all femora with a very broad yellow subterminal ring; wings whitish subhyaline, with a brown pattern that appears as four interrupted crossbands.

*Female*.—Length, about 15 millimeters; wing, 13.5.

Frontal prolongation of head gray, more blackened laterally; palpi black. Antennæ with the scape and basal four flagellar segments yellow, the remaining segments more bicolorous, the base being darkened, the apex pale. Head gray, the central region of the vertex with a more or less distinct dusky line.

Pronotum gray, with three brown lines. Mesonotal præscutum gray with four broken brown stripes, the intermediate pair entire on front half, becoming broken behind, separated from one another by a capillary brown median vitta; lateral stripes nearly obsolete, best represented by delicate margins; interspaces with abundant brown setigerous punctures; scutum gray, each lobe with two brown areas; scutellum gray, with a faint brown median vitta; postnotal mediotergite gray with a dark brown median line. Pleura yellowish gray, more or less variegated with darker, especially on the ventral sternopleurite and meron. Halteres yellow, the knobs infuscated. Legs with the coxæ gray; trochanters brownish yellow; femora black, with a very broad yellowish ring before the tips, this ring approximately three times the black tip; tibiæ and tarsi black. Wings (Plate 1, fig. 3) relatively narrow, whitish subhyaline, with a brown pattern that is chiefly distributed as four broken crossbands; cell C dark brown; Sc more yellowish brown; the most extensive of the crossbands is that at origin of Rs, becoming

wider and more diffuse in the anal cells; apical band confined to the radial field; narrow brown seams at margin and along veins Cu and 2d A; veins yellow, brown in the clouded areas. Venation:  $R_{1+2}$  atrophied; Rs about one-third longer than  $R_{2+3}$ ; cell 1st  $M_2$  small, irregularly pentagonal, the shortest element being m.

Abdominal tergites obscure brownish yellow, with a conspicuous dorsomedian black stripe that is narrowly interrupted at the caudal margin of each segment; sternites similar, the median stripe broad. Ovipositor with the valves yellowish horn color, the bases of all valves blackened; tergal valves straight and slender.

*Habitat*.—China (Szechwan).

Holotype, female, Mount Omei, altitude 4,500 feet, August 7, 1929 (ex Parish).

*Tipula latiflava* is readily told from the two similar regional species, *T. striatipennis* Brunetti and *T. quadrifasciata* Matsu-mura (*aluco* Alexander), by the unusually broad yellow rings on all femora.

#### CYLINDROTOMINÆ

##### CYLINDROTOMA NIGRIPES sp. nov.

General coloration black, the head and thorax more pruinose; dorsopleural region yellow; halteres and legs black; wings with a faint dusky tinge, the small stigma dark brown.

*Male?*—Length, about 8 millimeters; wings, 9.5.

Mouth parts destroyed. Antennæ short, if bent backward not attaining the wing root; flagellar segments short-cylindrical, the terminal segment longer than the penultimate, pointed at apex; flagellum pale brown, the scapal segments destroyed. Head gray.

Thorax blackened, sparsely gray pruinose, the three præscutal stripes and centers of the scutal lobes more blackened, the interspaces gray pruinose. Pleura black, pruinose, the dorso-pleural region conspicuously light yellow; dorsal sternopleurite and ventral pteropleurite a little paler than the remaining pleurites. Halteres blackened. Legs with the coxæ blackish gray, their tips paling to yellow; trochanters obscure yellow; remainder of legs black, only the femoral bases restrictedly obscure yellow. Wings (Plate 1, fig. 4) with a faint dusky tinge, the small oval stigma dark brown; veins dark brown. Venation: Rs long, gently angulated at origin; cell  $M_1$  short-petiolate; m-cu at about two-fifths the lower face of the large cell 1st  $M_2$ ; cell 2d A relatively narrow.

Abdomen, including the hypopygium, black.

*Habitat.*—China (Szechwan).

Holotype, sex male?, Mupin, altitude 3,500 feet, June 30, 1929 (*D. C. Graham*). Type in the collection of the United States National Museum.

The antennæ are detached and the tip of the abdomen so crushed that only fragments remain but the sex certainly seems to be male. The black coloration and unusually short antennæ well suffice to distinguish the present species from other known members of the genus.

**PHALACROCERA MEGACAUDA** sp. nov.

General coloration pale yellow, the mesonotum and pleura variegated with polished black; wings tinged with yellow, the stigma obsolete; basal section of  $R_{4+5}$  longer than m-cu, the latter at near two-fifths the length of cell 1st  $M_2$ ; male hypopygium unusually large, the basistyles apically produced into black earlike plates.

*Male.*—Length, about 11 millimeters; wing, 10.5.

Rostrum testaceous; palpi pale, the outer segments darkened. Antennæ pale, the outer segments passing into brown. Head brownish black, the anterior vertex silvery.

Pronotum yellow. Mesonotal præscutum yellow with three nearly confluent polished black stripes, the median stripe broadest in front; lateral stripes crossing the suture onto the scutal lobes; remainder of mesonotum yellow, the posterior margin of the postnotal mediotergite with two confluent black areas. Pleura testaceous yellow, the sternopleurite extensively blackened; a smaller black area on the ventral pleurotergite. Halteres chiefly pale. Legs with the coxæ and trochanters yellow; femora obscure yellow, the tips weakly darkened; tibiæ brownish yellow; tarsi passing into dark brown. Wings (Plate 1, fig. 5) tinged with yellow, the stigma obsolete; veins brown. Venation:  $Sc_1$  not reaching costa; free tip of  $Sc_2$  nearly perpendicular, the tip obsolete or nearly so; basal section of  $R_{4+5}$  longer than m-cu, the latter gently sinuous, placed at near two-fifths the length of cell 1st  $M_2$ .

Abdominal tergites light brown, the outer segments more darkened; hypopygium chiefly pale; sternites obscure yellow, the subterminal segments more infuscated. Male hypopygium unusually large for a member of the genus, the basistyles produced into conspicuous black earlike plates that are conspicuously fringed with yellow setæ.

*Habitat.*—Japan (Honshiu).

Holotype, male, Norikuradake, Japanese Alps, Shinano, July 26, 1929 (*J. Machida*).

*Phalacrocera megacauda* is generally similar to *P. mikado* Alexander, differing especially in the unusually large male hypopygium.

#### LIMONIINÆ

##### LIMONIINI

##### LIMONIA (DICRANOMYIA) SUBPULCHRIPENNIS sp. nov.

Differs from *L. (D.) pulchripennis* in the darkened wing apex and complete white subapical crossband; darkened areas of costal field extending caudad to vein M.

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

*Female.*—Length, about 9.5 millimeters; wing, 8.5.

Rostrum black, pruinose; palpi black. Antennæ with the scapal segments black, the flagellum yellow, only the outer segments more infuscated; flagellar segments oval, becoming more elongate outwardly, the verticils short. Head black, yellowish gray pruinose.

Pronotum black medially, more grayish pruinose laterally. Mesonotal præscutum with the ground color brownish gray with three black stripes, the median one broad and complete, the lateral stripes remote from the suture; scutal lobes black; median region of scutum and the scutellum more grayish; postnotum black, sparsely pruinose. Pleura heavily gray pruinose, striped longitudinally with a narrow blackish area on the anepisternum. Halteres yellow, the knobs black. Legs with the coxæ and trochanters black, more or less pruinose; femora yellow, the tips broadly black; tibiæ yellow, the bases and tips narrowly blackened; basitarsi brownish yellow, the outer segments blackened. Wings (Plate 1, fig. 6) whitish, with a heavy brown pattern of the general type of *pulchripennis*; areas of costal margin continued back to vein M and only slightly narrowed posteriorly; wing apex uniformly darkened, not interrupted by a pale streak in cell  $R_{5+6}$ , as is the case in *pulchripennis*; a complete white subterminal crossband. Venation: Cell 1st  $M_2$  open or tending to be open by the atrophy or thinning out of the distal section of  $M_3$  (figured as present, though faint).

Abdomen black, the hypopygium obscure yellow. Male hypopygium with the rostral spine shorter than in *pulchripennis*, appressed to the margin of style.

*Habitat.*—China (Szechwan).

Holotype, male, Mount Omei, altitude 4,500 feet, July 31, 1929 (ex Parish). Allotopotype, female.

Closely allied to *pulchripennis* (Brunetti), differing especially in the wing pattern and details of structure of the male hypopygium.

**LIMONIA (EUGLOCHINA) DIGNITOSA sp. nov.**

General coloration dark brown; tarsi entirely snowy white; wings with Rs long, angulated at origin; inner end of stigma not passing far basad of fork of Rs;  $Cu_2$  present as a distinct element that is equal in length to Sc or 2d A.

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

*Female.*—Length, about 7 to 7.5 millimeters; wing, 7 to 8.

Rostrum and palpi brown. Antennæ black, relatively long for a member of the subgenus; flagellar segments long-oval, with a dusky glabrous apical neck; each flagellar segment with one very long verticil, these unilaterally arranged. Head black.

Thorax dark brown. Halteres elongate, testaceous, the knobs dark brown. Legs with the coxæ and trochanters brownish testaceous; femora and tibiæ black; tarsi entirely snowy white. Wings (Plate 1, fig. 7) with a strong brownish tinge, somewhat clearer basally; stigma oval, darker brown; veins brownish black. Venation: Sc relatively long, the distance between the tip of  $Sc_1$  and origin of Rs not exceeding twice Rs;  $Sc_2$  variable in length; Rs long, arcuated or angulated at origin, remote from the inner end of the stigma; cell 1st  $M_2$  closed;  $Cu_2$  present as a distinct element to about opposite the end of veins  $Sc_1$  and 2d A.

Abdomen brownish black, the basal sternites paler.

*Habitat.*—China (Szechwan).

Holotype, male, Mount Omei, altitude 6,000 feet, July 24, 1929 (ex Parish). Allotopotype, female. Paratopotypes, 1 male, 1 female.

*Limonia (Euglochina) dignitosa* is distinct from all known species of the subgenus. The length of Rs and its relation to the proximal end of the stigma is approached by *L. (E.) okinawensis* (Alexander), which differs in the darkened proximal ends of the basitarsi, the loss of vein  $Cu_2$ , and the shorter Sc.

**ANTOCHA (ANTOCHA) MINUTICORNIS sp. nov.**

General coloration ochereous, the præscutum with four brown stripes; antennæ small; wings grayish white, the stigma lacking;

male hypopygium with the outer dististyle blackened, glabrous, here the apex narrowed to an obtuse point.

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

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

Rostrum brownish yellow; palpi brownish black. Antennæ small in both sexes, if bent backward ending some distance before the wing root; basal segments pale, the outer segments passing into dark brown; pubescence and verticils of segments short. Head brownish gray.

Mesonotal præscutum ochreous, with four brown stripes, the approximated intermediate pair darker and better delimited; scutum and postnotum gray, the scutellum more ochreous. Pleura obscure brownish ochreous, more or less variegated with darker. Halteres dirty white. Legs with the coxæ ochreous, the fore coxæ a little darker; trochanters obscure yellow; remainder of legs brownish yellow, the tarsi passing into brown. Wings (Plate 1, fig. 8) grayish white, the costal region more yellowish; no indication of a stigma; veins pale. Anal angle of wing prominent. Venation: Rs of moderate length only; m-cu before fork of M.

Abdominal tergites brown, the sternites and hypopygium yellow; a conspicuous dark brown subterminal ring in male, occupying segments seven and eight. Male hypopygium (Plate 2, fig. 40) with the caudal margin of tergite, 9t, very gently emarginate. Outer dististyle, *od*, blackened, glabrous, near apex gradually narrowed to an obtuse point. Inner dististyle, *id*, a little longer, pale, with conspicuous setæ. Ædeagus slender, subtended by several pale blades and points, as figured.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 4,500 feet, August 2, 1929 (ex Parish). Allotopotype, female, in copula with type.

*Antocha minuticornis* has a hypopygium that suggests *A. indica* Brunetti (Himalayas, western China, Malay States) and *A. satsuma* Alexander (Japan). The species differs from *indica* in the small antennæ of both sexes and from *satsuma* in the immaculate wings and details of the hypopygium.

**ANTOCHA (ANTOCHA) NEBULIPENNIS sp. nov.**

Size large (wing, male, 8 millimeters); general coloration yellowish gray; wings whitish subhyaline, handsomely clouded with gray; male hypopygium with the caudal margin of tergite with a rounded lobe on either side of a small rounded notch;

basistyle with the outer apical angle produced into an obtuse lobe; outer dististyle blackened and acute at tip.

*Male*.—Length, about 7 millimeters; wing, 8.

Rostrum and palpi destroyed. Antennæ relatively short, black; flagellar segments oval, with short verticils. Head yellowish gray.

Mesonotum yellowish gray, crushed in the unique type, the præscutum apparently without stripes. Pleura yellowish gray. Legs with the coxæ brownish gray; legs relatively long, reddish brown, the outer tarsal segments more darkened. Wings (Plate 1, fig. 9) whitish subhyaline, with a clouded gray pattern, including areas in cell R at near midlength of  $R_s$ , along cord and outer end of cell 1st  $M_2$ ; outer end of vein  $R_3$  and as marginal seams along the longitudinal veins beyond the cord; stigma elongate, brownish gray; veins brown, darker in the infuscated areas. Venation:  $R_s$  long; inner end of cell  $R_3$  far basad of cell  $R_5$ ; cell 1st  $M_2$  closed; m-cu shortly before the fork of M.

Abdomen gray. Male hypopygium (Plate 2, fig. 41) with the tergite, 9t, transverse, the caudal margin with a small rounded lobe on either side of a similarly formed median notch. Basistyle, *b*, with the outer apical angle produced caudad into an obtuse lobe, the dististyles thus subterminal in position. Outer dististyle, *od*, strongly bent before apex, the tip blackened, narrowed into an acute spine. Inner dististyle, *id*, arcuated, the apex more dilated into a weak spatula that is densely set with short curved spinous setæ. Each gonapophysis appearing as a slender yellow rod.

*Habitat*.—China (Szechwan).

Holotype, male, Mupin, altitude 3,500 feet, June 30, 1929 (*D. C. Graham*). Type in the collection of the United States National Museum.

*Antocha nebulipennis* is very distinct from regional species in the large size, wing pattern, and structure of the male hypopygium. *Antocha nebulosa* Edwards (Pahang) has a somewhat similarly clouded wing but is a very different fly.

DICRANOPTYCHA CÆSIA PALLIDIBASIS subsp. nov.

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

*Female*.—Length, about 8 millimeters; wing, 9.5.

Generally similar to typical *D. cæsia* Alexander, differing as follows:



Scape of antennæ pale. Abdominal tergites dark brown, the basal sternites paler. Male hypopygium with the outer dististyle gently curved, the outer margin with conspicuous appressed serrations, the apical spine smooth. Inner dististyle stout, angularly bent near midlength, the apex subtruncate. Lateral arms of tergite gently curved, the concave margin microscopically serrulate.

*Habitat.*—Japan (Honshiu).

Holotype, male, Norikuradake, Japanese Alps, Shinano, July 26, 1929 (*J. Machida*). Allotopotype, female.

#### PEDICIINI

##### TRICYPHONA PECTINATA sp. nov.

General coloration reddish brown, the præscutum with three ill-defined blackish stripes; wings faintly suffused with brown; cell  $R_4$  petiolate; medial field of wing beyond cord tending to be pectinate by the atrophy of the basal section of  $M_3$ .

*Male.*—Length, about 5.5 to 6 millimeters; wing, 6.5 to 8.

Rostrum and palpi black. Antennæ brown, 15-segmented; basal flagellar segments small and crowded, the outer segments becoming more attenuate. Head gray; anterior vertex wide, with a circular median depression surrounded by an elevated rim.

Pronotum brownish gray. Mesonotum reddish brown, the præscutum with three ill-defined blackish stripes, the lateral stripes barely indicated; scutellum reddish brown. Pleura blackish gray. Halteres pale, the knobs dusky. Legs with the coxæ and trochanters obscure yellow; femora yellow, the tips passing into brown; tibiæ and tarsi brown. Wings (Plate 1, fig. 10) faintly suffused with brown, the stigmal region diffusely darker brown; veins pale brown. Venation: Cell  $R_4$  petiolate, the petiole subequal to r-m; medial field beyond cord tending to be pectinate by the atrophy of the basal section of  $M_3$ , in a few cases with cell 1st  $M_2$  closed or with a mere spur of  $M_3$ .

Abdomen black, the hypopygium paler. Male hypopygium about as in *T. insulana* Alexander.

*Habitat.*—Japan (Honshiu).

Holotype, male, Norikuradake, Japanese Alps, Shinano, July 26, 1929 (*J. Machida*). Paratopotypes, 3 males.

*Tricyphona pectinata* is obviously allied to *T. insulana* Alexander, differing most evidently in the smaller size, brownish body coloration, tinted wings, and the normally pectinate venation of the medial field of the wing.

**TRICYPHONA SETIPENNIS** sp. nov.

Allied to *T. vetusta* Alexander; general coloration gray, the præscutum with four brown stripes; apical cells of wing, from  $Sc_1$  to  $2d M_2$ , inclusive, with macrotrichia; male hypopygium with the tergite narrowed outwardly, setiferous; mesal lobe of dististyle narrowed outwardly.

*Male*.—Length, about 9 millimeters; wing, 12.

Rostrum black, a little paler ventrally; palpi black. Antennæ black, the first scapal segment a little paler. Head dark gray, the anterior vertex paler gray.

Pronotum light gray. Mesonotal præscutum gray with four brown stripes, the intermediate pair long, more confluent in front; scutum gray, the lobes more blackened; scutellum and postnotum pale brown, sparsely pruinose. Pleura brown, sparsely pruinose, the ventral sternopleurite darker. Halteres pale, the knobs weakly infuscated. Legs with the coxæ pale, sparsely pruinose; trochanters yellow; femora yellow, passing into brownish black; tibiæ brown, the tips darker; tarsi brownish black. Wings (Plate 1, fig. 11) yellow, with a sparse brown pattern arranged about as in *vetusta*. Sparse macrotrichia in outer ends of cells  $Sc_1$  to  $2d M_2$ , inclusive. Venation: Cell  $R_3$  petiolate, the petiole subperpendicular, in alignment with r-m.

Abdominal tergites light brown, paler laterally; outer segments and hypopygium brownish black. Male hypopygium with the general structure of *T. seticauda* Alexander. Ninth tergite extensive, gradually narrowed outwardly, the surface conspicuously setiferous. Mesal lobe of dististyle narrowed outwardly, the blunt apex with a group of spinous setæ. In *seticauda*, the mesal lobe of the dististyle is a nearly circular flattened disk, its margin evenly rounded.

*Habitat*.—Japan (Honshiu).

Holotype, male, Norikuradake, Japanese Alps, Shinano, July 26, 1929 (*J. Machida*).

*Tricyphona setipennis* is most closely related to *T. vetusta* Alexander and *T. seticauda* Alexander, differing most evidently in the macrotrichia in the extreme outer ends of cells  $Sc_1$  to  $2d M_2$ , and the structure of the male hypopygium, especially of the tergite and mesal lobe of the dististyle.

**HETERANGÆUS LATICINCTA** sp. nov.

Size large (wing over 10 millimeters); antennal flagellum yellow; thoracic pleura with the anepisternum and sternopleurite darkened; legs yellow, the tips of the femora and tibiæ darkened;

wings whitish with a heavy, chiefly cross-banded pattern, including three crossbands; cell C uniformly darkened; cell 2d A wide, the margin crenulate; supernumerary crossveins as in the genus, that in cell  $R_3$  placed far distad, in cell  $R_4$  about in alignment with  $R_2$ , in cell  $M_1$  at two-thirds the length of cell.

*Male*.—Length, about 9.5 millimeters; wing, 10.5.

*Female*.—Length, about 10 millimeters; wing, 11.5.

Rostrum and palpi black. Antennæ with the basal segment black, the second segment and flagellum yellow. Head gray; vertical tubercle conspicuous.

Pronotum brown, paler laterally. Mesonotal præscutum grayish brown, the humeral region paler; scutellum and postnotum obscure yellow. Pleura yellow, the sternopleurite and anepisternum darker. Halteres of moderate length, yellow, the knobs only weakly darkened. Legs with the coxæ and trochanters pale yellow; femora yellow, the tips broadly and conspicuously dark brown; tibiæ yellowish white, the tips conspicuously blackened, the amount a little less than the femoral tips; tarsi yellow, the tips of segments one to three and all of the remaining segments black. Wings (Plate 1, fig. 12) whitish, with an unusually heavy, chiefly cross-banded pattern, pale yellowish brown, margined with darker brown; cells C and Sc uniformly dark brown, cell  $Sc_1$  variegated with the ground color; the chief fasciæ are those at origin of  $R_s$ , including cells R and M; the cord; and a more irregular fascia at the level of the outer end of cell 1st  $M_2$ , sending a ray to the apex in cell  $R_5$  and connected with the central fascia in cells  $R_5$  and Cu; fasciæ nearly parallel-sided and unusually wide; a more or less confluent series of spots in cell Cu; a large confluent area in cells 1st A and 2d A, inclosing a circular pale area near the outer end of cell 2d A; veins yellow, darker in the infuscated areas. Wings relatively broad, especially the anal cells; cell 2d A with the margin strongly crenulate to bilobed before the vein. Venation:  $R_s$  square and spurred at origin;  $R_{2+3+4}$  short, less than the perpendicular basal section of  $R_{2+3}$ ; supernumerary crossvein in cell  $R_3$  lying far distad, that of cell  $R_4$  nearly in alignment to just beyond the level of  $R_2$ , that of cell  $M_1$  lying beyond two-thirds the length of the cell and in alignment with the crossvein in cell  $R_3$ ; cell 2d A much wider than in *H. japonicus*.

Abdominal tergites brownish black, a little paler laterally; sternites brighter; male hypopygium dark. Male hypopygium almost as in the other species of the genus, the arm of the dististyle unispinous, the ædeagus capitate.

*Habitat*.—Japan (Honshiu).

Holotype, male, Hirayu, Japanese Alps, Shinano, July 27, 1929 (*J. Machida*). Allotype, female, Norikuradake, Japanese Alps, July 26, 1929 (*J. Machida*).

*Heterangæus laticincta* is evidently most closely allied to *H. japonicus* (Alexander) from which it differs in the large size, darkened areas on pleura, and details of venation and wing pattern. The allotype female has a weak adventitious crossvein in cell  $R_1$  immediately distad of the angulation of  $R_{2+3}$  and another in cell  $R_5$  just beyond the fork of  $M_{1+2}$ .

#### HEXATOMINI

##### LIMNOPHILA MUNDELLA sp. nov.

General coloration black, the mesonotum subnitidous; pleura heavily pruinose; halteres yellow; wings brownish yellow, the base and costal region brighter yellow; cell  $M_1$  about twice its petiole; m-cu beyond midlength of cell 1st  $M_2$ .

*Female*.—Length, about 7.5 millimeters; wing, 6.5.

Rostrum and palpi black. Antennæ with the scapal segments black, the flagellum brown; flagellar segments oval, gradually decreasing in size outwardly. Head black, sparsely pruinose, especially in front.

Pronotum black, pruinose. Mesonotum black, subnitidous, the surface only vaguely pruinose. Pleura heavily pruinose. Halteres yellow. Legs with the coxæ and trochanters gray pruinose; remainder of legs broken. Wings (Plate 1, fig. 13) with a strong brownish yellow tinge, the costal and prearcular regions brighter yellow; stigma oval, pale brown, a little deeper than the ground color; veins brown, brighter in the flavous areas. Venation:  $Sc_1$  ending shortly before fork of  $R_s$ ,  $Sc_2$  near its tip;  $R_2$  a trifle longer than  $R_{1+2}$ ; cell  $M_1$  about twice its petiole; m-cu beyond midlength of cell 1st  $M_2$ .

Abdomen with the tergites black, sparsely pruinose; sternites brownish gray. Ovipositor with the valves elongate, blackened.

*Habitat*.—Japan (Honshiu).

Holotype, female, Norikuradake, Japanese Alps, Shinano, July 26, 1929 (*J. Machida*).

*Limnophila mundella* is generally similar to the Nearctic *L. munda* Osten Sacken. In the absence of the male sex I hesitate to refer the species to the subgenus *Prionolabis* where it will probably be found to belong. It is readily told from all other Japanese species of *Prionolabis* with cell  $M_1$  present by the small size and unpatterned wings.

## LIMNOPHILA NESONEMORALIS sp. nov.

Belongs to the *nemoralis* group; wings gray, in male not evidently widest opposite vein 1st A; male hypopygium with the gonapophyses appearing as spatulate blades.

*Male*.—Length, about 5 millimeters; wing, 6 to 6.5.

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

Rostrum dark brownish gray; palpi black. Antennæ with the basal segment black, the flagellum brown. Head gray, the orbits broadly more whitish gray.

Mesonotum brownish gray, the præscutum with an intermediate pair of darker brown stripes, the lateral stripes scarcely evident. Pleura gray. Halteres relatively elongate, yellow, the knobs very slightly darkened. Legs with the coxæ and trochanters yellow; femora yellow, the tips slightly darkened; remainder of legs yellow, the tarsi deepening to brown; segments of legs rather conspicuously hairy. Wings (Plate 1, fig. 14) of male not noticeably widest opposite vein 1st A, as is the case in *L. subnemoralis*; brownish gray, the stigma a little darker; veins pale brown. Venation: Sc<sub>1</sub> ending about opposite the fork of R<sub>2+3+4</sub>, Sc<sub>2</sub> a variable distance from its tip; R<sub>2</sub> faint; cell M<sub>1</sub> small, as in the group.

Abdomen brown, the subterminal segments of male not suddenly blackened, as is the case in *subnemoralis*. Male hypopygium (Plate 2, fig. 42) with the outer dististyle, *od*, conspicuously bifid at apex. Gonapophyses, *g*, appearing as flattened spatulate blades, the tips obtusely rounded.

*Habitat*.—Formosa.

Holotype, male, Shinten, December 3, 1928 (*S. Issiki*). Allotopotype, female. Paratopotypes, 5 males and females.

*Limnophila nesonemoralis* is very similar to *L. inaequalis* Alexander (Formosa) but has the gonapophyses very different in structure.

## ERIOCERA CÆSAREA sp. nov.

Head black; thorax entirely dark brown, opaque; halteres dark brown; wings suffused with brown, deepest along the outer costal margin; cell M<sub>1</sub> deep; cell 1st M<sub>2</sub> small and nearly square; abdominal segments one and five to nine inclusive black, segments two to four orange-yellow.

*Male*.—Length, about 25 millimeters; wing, 23.5; antenna, about 6.

Rostrum and palpi black. Antennæ 7-segmented, relatively short, as shown by the measurements; flagellar segments de-

creasing in length and diameter outwardly, densely set with semi-erect setæ; scapal segments black; flagellum yellowish brown, the outer segments darker. Head dull black; vertical tubercle entire.

Thorax entirely dull chocolate brown to dark brown, the præscutum with four glabrous stripes that are slightly brighter in color. Halteres dark brown. Legs with the coxæ and trochanters dark brown; remainder of legs brownish black (only a single, posterior, leg remains, tarsi broken). Wings (Plate 1, fig. 15) with a strong brown suffusion, the costal region darker brown, especially on the distal half; extensive paler discal streaks before cord; anal cells pale, especially basally; veins brownish yellow. Venation:  $Sc_1$  angulated and weakly spurred at extreme tip;  $R_s$  very long, about one-third longer than  $R$ ;  $R_{2+3+4}$  subequal to basal section of  $R_5$ ;  $R_{2+3}$  about two-fifths  $R_{1+2}$ ; cell  $M_1$  deep, nearly three times its petiole; cell 1st  $M_2$  small and nearly square; m-cu about one-third longer than the distal section of  $Cu_1$ , some distance beyond the fork of  $M$ .

Abdomen with the basal segment brownish black, its caudal margin narrowly yellow; segments two to four bright orange-yellow; segment five black, the disk suffused with orange; remainder of abdomen, including the hypopygium, velvety black.

*Habitat*.—China (Szechwan).

Holotype, male, Kwanshien, altitude 1,800 to 3,500 feet, 1924 (*D. C. Graham*). Type in the collection of the United States National Museum.

By Edwards's key<sup>2</sup> the present species runs to couplet 41, agreeing most closely with *E. nigripennis* de Meijere, a quite distinct species. The fly appears to be most nearly allied to the later-described *E. præolata* Alexander, differing in the pattern of the body, wings, and legs.

#### ERIOPTERINI

##### NEOLIMNOPHILA PICTURATA sp. nov.

General coloration black, pruinose; halteres yellow; legs black; wings pale cream color, with a heavy dark brown pattern, including broad seams along cord and some of the longitudinal veins, and large rounded clouds at origin of  $R_s$ , fork of  $R_{3+4}$  and fork of  $M_{1+2}$ ; r-m connecting with  $R_s$  before fork;  $R_2$  nearly twice its own length before the fork of  $R_{3+4}$ .

*Male*.—Length, about 6.5 millimeters; wing, 8.5.

<sup>2</sup> Ann. & Mag. Nat. Hist. IX 8 (1921) 70-78.

Rostrum and palpi black. Antennæ black throughout; fusion segment involving four segments and a partial fifth; outer flagellar segments elongate-oval, the verticils shorter than the segments. Head dark gray.

Thoracic dorsum black, with a very sparse gray pollen. Pleura more heavily pruinose. Halteres yellow. Legs with the coxæ pruinose; remainder of legs black. Wings (Plate 1, fig. 16) pale cream color, with a heavy dark brown pattern, arranged as follows: Cell C; cell Sc except base and apex; stigma; broad seams along cord and outer end of cell 1st  $M_2$ ; continuous brown seams along veins  $R_5$ , outer sections of veins  $M_3$ ,  $M_4$ , Cu, and 2d A; large rounded clouds at origin of  $R_s$ , fork of  $R_{3+4}$ , crossing the adjoining cells to vein  $R_3$  and fork of  $M_{1+2}$ ; the following veins are not seamed with dark, except as noted above:  $R_s$ ,  $R_3$ ,  $R_4$ , M and its branches, with the exception of the outer sections of  $M_3$  and  $M_4$ , and 1st A; prearcular region more yellowish; veins pale yellow, darker in the infuscated areas. Venation:  $Sc_1$  ending about opposite r-m,  $Sc_2$  at its tip;  $R_s$  strongly arcuated at origin; r-m connecting with  $R_s$  before the fork of latter;  $R_2$  only about one-half  $R_{3+4}$ ; cell  $R_3$  relatively small, vein  $R_3$  being a little more than one-half  $R_4$ ; cell 1st  $M_2$  elongate; m-cu about two-thirds its own length beyond the fork of M.

Abdomen, including the hypopygium, black. Male hypopygium with the basistyles broken beyond base.

*Habitat*.—China (Szechwan).

Holotype, male, Mupin, altitude 3,500 feet, June 30, 1929 (D. C. Graham). Type in the collection of the United States National Museum.

The only allied species is *N. fuscinervis* Edwards (Yunnan), which differs in the wing pattern and venation. In addition to the seamed veins of *fuscinervis*, the present species has large rounded clouds at origin of  $R_s$ , and at forks of  $R_{3+4}$  and  $M_{1+2}$ ; r-m connects with  $R_s$  before the fork and  $R_2$  is far before the fork of  $R_{3+4}$ .

**TEUCHOLABIS (TEUCHOLABIS) SCITAMENTA sp. nov.**

General coloration yellow and blue-black; three nearly confluent black stripes on præscutum, the lateral pair reaching the margins of the sclerite; wings yellowish with a restricted dark pattern; male hypopygium very simple, the styli terminal in position, the outer dististyle a pale ribbonlike blade.

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

*Female*.—Length, about 6.5 millimeters; wing, 6 to 6.3.

Rostrum brown, a little longer than the remainder of the head; palpi black. Antennæ with the scape yellowish brown; flagellum light brown, the outer segments darker; flagellar segments short-oval, with a dense white pubescence. Head dull black, heavily pruinose, especially in front.

Pronotum orange-yellow. Mesonotal præscutum yellow with three extensive blue-black stripes that are confluent behind or nearly so; lateral stripes reaching the lateral margin of præscutum, leaving a narrow yellow area behind at the suture; humeral region more orange-yellow; median region of scutum and the scutellum testaceous-yellow; scutal lobes blackened; postnotum black. Pleura yellow, the anepisternum, dorsal pteropleurite and the pleurotergite blue-black, the sternopleurite more reddish brown, the two areas separated by a narrow yellow longitudinal stripe that is densely white pubescent. Halteres black, the outer half of knob orange-yellow. Legs with the coxæ and trochanters orange-yellow; fore femora with more than the distal half black, the base yellow; middle femora yellow; posterior femora yellow, the tips narrowly brownish black; fore tibiæ and tarsi black; middle and hind tibiæ yellow, narrowly blackened at bases; tarsi obscure yellow, the apices of segments one and two and all of outer segments blackened. Wings (Plate 1, fig. 17) broad, yellowish, the costal region brighter yellow; stigma brown; a narrow brown seam on anterior cord; a very broad and diffuse slightly darker clouding occupies the central part of the region before the cord; veins yellow, darker in the infuscated areas. Venation:  $Sc_1$  ending at near midlength of  $R_s$ ,  $Sc_2$  far from its tip;  $R_s$  nearly straight on basal half;  $R_{2+3+4}$  subequal to or shorter than  $R_2$ ; vein 2d A curved strongly into the anal margin of wing.

Abdomen black, the bases of the second and succeeding segments in male yellow, the black of the outer tergites sending cephalad a median spur that becomes larger on outer segments so as finally to isolate the yellow to lateral areas on the subterminal segments; hypopygium small, dark brown. Abdominal tergites of female uniformly blackened, only the genital segment orange, the sternites with more yellow. Male hypopygium (Plate 2, fig. 43) unusually small and simple. Basistyle, *b*, short and broad. Outer dististyle, *od*, a pale ribbonlike blade. Inner dististyle, *id*, a flattened blade that terminates in a black-



ened beak, the outer angle with three long setæ. Phallosome in slide mounts large.

*Habitat.*—China (Szechwan).

Holotype, male, Mount Omei, altitude 4,500 feet, August 12, 1929 (ex Parish). Allotopotype, female, August 18, 1929. Paratopotype, female, August 22, 1929.

*Teucholabis scitamenta* is distinct from all regional species in the features above listed. The structure of the male hypopygium is unusually simple, more so than in any regional species known to me.

**ERIOPTERA (ERIOPTERA) BREVIRAMA sp. nov.**

General coloration reddish brown; head black, the orbits narrowly marked with silver; pleura iridescent blue; knobs of halteres darkened; wings brownish yellow; male hypopygium with the tergite emarginate; inner dististyle with two divergent arms.

*Male.*—Length, about 4.6 to 5 millimeters; wing, 4.5 to 5.

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

Rostrum and basal segments of palpi yellow, the outer segments darker. Antennæ brownish black, the basal segments a very little paler. Head black, the orbits with a narrow silvery line.

Mesonotum reddish brown, the median region darker, the humeri brighter; scutellum dark brown, narrowly bordered by pale; postnotum dark gray. Pleura almost entirely covered by an iridescent blue pruinosity. Halteres pale, the knobs infuscated. Legs relatively long and stout; coxæ and trochanters yellow; remainder of legs yellow, the terminal tarsal segments infuscated. Wings (Plate 1, fig. 18) with a strong brownish yellow tinge, the costal region clearer yellow; veins light brown, more yellowish in the costal region. Venation: Distal section of  $Cu_1$  and 2d A strongly sinuous on distal portion.

Abdominal segments chiefly dark brown, the caudal margins somewhat brightened; hypopygium obscure yellow. Male hypopygium (Plate 2, fig. 44) with the tergite shallowly emarginate, the median region not convexly produced as in *E. (E.) ornatifrons*. Dististyles almost as in *ornatifrons*, entirely glabrous, the branches of the inner dististyle, *id*, shorter and more nearly equal, the outer arm not subtended on its basal third by a pale flange but with a conspicuous flattened structure near the fork of the style.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 4,500 feet, July 31, 1929 (ex Parish). Allotopotype, female, August 11, 1929. Paratopotypes, 4 males and females, August 10 to 20, 1929.

Most closely allied to *E. (E.) ornatifrons* Edwards (Ceylon), differing most evidently in the structure of the male hypopygium.

**ERIOPTERA (ILISIA) MACHIDAI sp. nov.**

General coloration brown; antennal flagellum brownish yellow; wings yellowish gray, with a very sparse pale brown pattern, including vague clouds at  $Sc_2$ ,  $R_2$ , tip of  $R_{1+2}$  and along cord;  $Sc_1$  longer than  $Rs$ ; cell 1st  $M_2$  moderately elongate; anal veins gradually diverging.

*Female*.—Length, about 4.5 millimeters; wing, 4.6.

Rostrum and palpi brown. Antennæ with the basal segments dark brown, the flagellum paling to yellow or brownish yellow. Head grayish brown.

Pronotum brown, the anterior lateral pretergites light yellow. Mesonotum brown, the præscutum a little paler laterally. Pleura light brown, the dorsopleural region pale yellow. Halteres pale yellow, the knobs with golden-yellow setæ. Legs with the coxæ and trochanters yellow; femora brownish yellow, the tips a little darkened; tibiæ and tarsi obscure yellow, the latter passing into brown. Wings (Plate 1, fig. 19) yellowish gray, the base and costal region a trifle more yellowish; a very sparse and vague pale brown pattern, including clouds at  $Sc_2$ ,  $R_2$ , and tip of  $Sc_1$ , and tip of  $R_{1+2}$ , the latter two areas delimiting the ends of a yellowish stigmal area; cord vaguely seamed with dusky; veins very pale brown, the macrotrichia darker. Venation:  $Sc_1$  elongate, exceeding  $Rs$ ;  $Sc_2$  about opposite one-sixth the length of  $Rs$ ; cell 1st  $M_2$  moderately elongate; m-cu before the fork of  $M$ ; vein 2d A nearly straight, the anal veins gradually diverging.

Abdomen dark brown. Ovipositor with the valves very long and slender, pale yellow.

*Habitat*.—Japan (Honshiu).

Holotype, female, Hirayu, Japanese Alps, Shinano, July 27, 1929 (*J. Machida*).

I take great pleasure in naming this very distinct species in honor of my friend Dr. Jiro Machida, to whom I am indebted for many Japanese Tipulidæ. *Erioptera machidai* is very different from the remaining species of the subgenus *Ilisia* de-

scribed from eastern Asia. It is more closely allied to *E. maculata* and allies than to the species centering about *E. areolata* Siebke.

**ORMOSIA GRAHAMI** sp. nov.

Size very large (wing, female, 10 millimeters); general coloration gray, the præscutum with three confluent black stripes; halteres light yellow; legs black; wings white, with a heavy dark brown pattern that appears chiefly as seams along the veins; veins  $R_3$  and  $R_4$  deflected strongly cephalad at outer ends; a weak spur at near two-thirds the length of vein  $R_4$ , directed into cell  $R_4$ ; cell 1st  $M_2$  closed; vein 2d A very strongly sinuous.

*Female*.—Length, about 8.5 millimeters; wing, 10.

Rostrum and palpi black. Antennæ black throughout; flagellar segments oval, with relatively short verticils, these becoming smaller and less conspicuous on the outer segments. Head blackish, the orbits gray.

Mesonotal præscutum with the disk chiefly covered by three confluent black stripes, the ground color restricted to the humeral and lateral portions; pseudosutural foveæ black; scutum gray, the lobes chiefly blackened; posterior sclerites of mesonotum black, sparsely pruinose. Pleura black, pruinose. Halteres entirely light yellow. Legs with the coxæ black, pruinose; remainder of legs black. Wings (Plate 1, fig. 20) white, with a heavy dark brown pattern; prearcular region and an oval area in cells C and Sc before the stigma light yellow; the brown areas include most of cells C and Sc and very conspicuous seams along most of the longitudinal veins, in cell  $M_4$  so broad as to restrict the ground color to a long-oval area; a cross-fascia in cell 1st A at about two-thirds the length; veins brown, more flavous in the yellow areas. Macrotrichia of cells corresponding in color to the areas occupied, being white, brown, and golden. Venation:  $R_2$  just before fork of  $R_3$  and  $R_4$ , the two latter veins deflected strongly cephalad at their outer ends; vein  $R_3$  strongly looped on distal half;  $R_4$  with a spur at two-thirds the length, directed into cell  $R_4$ ; cell 1st  $M_2$  closed; vein 2d A very strongly sinuous.

Abdomen grayish black, with sparse yellow setæ. Ovipositor with the valves horn yellow, the tergal valves blackened basally.

*Habitat*.—China (Szechwan).

Holotype, female, Mupin, altitude 3,500 feet, June 30, 1929 (*D. C. Graham*). Type in the collection of the United States National Museum.

*Ormosia grahami* is named in honor of the Reverend David C. Graham, who has added materially to our knowledge of the fauna and flora of Szechwan and eastern Tibet. It is a strikingly distinct fly that requires no comparison with any known species, being the largest and most conspicuously patterned form so far discovered.

**MOLOPHILUS FEROX** sp. nov.

Belongs to the *gracilis* group; general coloration light brown; head gray; male hypopygium with unusually complicated armature, including a spinous rod arising from the outer portion of the basistyle, together with three dististyles, one of which is bifid.

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

Rostrum and palpi black. Antennæ broken. Head gray.

Pronotum blackish. Mesonotum light brown, the pleura somewhat darker, the ventral sternopleurite and meron more testaceous brown. Halteres chiefly pale, the base of the stem restrictedly yellow, the stem dusky, the large knobs yellowish brown. Legs with the coxæ and trochanters yellowish testaceous; remainder of legs pale brown, the tarsi passing into brownish black. Wings grayish, the veins darker; macrotrichia long, dark brown. Venation:  $R_2$  lying distad of r-m; m-cu a little less than one-half the petiole of cell  $M_3$ ; vein 2d A of moderate length.

Abdomen brown, the sternites somewhat paler, the conspicuous genitalic styli black. Male hypopygium (Plate 1, fig. 45) with the outer lobe of the basistyle, *b*, produced into a long sinuous rod that is subequal or longer than the dististyle, on outer margin at near one-third the length with an acute yellow spine; distal two-thirds of the rod narrower, the surface more roughened; ventral surface of basistyle with a slender fingerlike lobe. Three dististyles, *d*, the longest a curved sinuous smooth rod, the distal portion bent at about a right angle into a long straight spine. Second dististyle conspicuously bifid. Third dististyle more basal in position, inserted in the notch of the basistyle, a simple blackened rod, the basal half a little thicker, the gently curved distal half narrower. *Ædeagus* long, narrow, yellow.

*Habitat*.—Japan (Honshiu).

Holotype, male, Norikuradake, Japanese Alps, Shinano, July 26, 1929 (*J. Machida*).

*Molophilus ferox* is very distinct from all other regional species of the genus in the structure of the male hypopygium.

## ILLUSTRATIONS

[Legend: *a*, aedeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *id*, inner dististyle; *od*, outer dististyle; *s*, sternite; *t*, tergite.]

### PLATE 1

- FIG. 1. *Tipula exusta* sp. nov., venation.  
2. *Tipula nippoalpina* sp. nov., venation.  
3. *Tipula latiflava* sp. nov., venation.  
4. *Cylindrotoma nigripes* sp. nov., venation.  
5. *Phalacrocerca megacauda* sp. nov., venation.  
6. *Limonia (Dicranomyia) subpulchripennis* sp. nov., venation.  
7. *Limonia (Euglochina) dignitosa* sp. nov., venation.  
8. *Antocha (Antocha) minuticornis* sp. nov., venation.  
9. *Antocha (Antocha) nebulipennis* sp. nov., venation.  
10. *Tricyphona pectinata* sp. nov., venation.  
11. *Tricyphona setipennis* sp. nov., venation.  
12. *Heterangæus laticincta* sp. nov., venation.  
13. *Limnophila mundella* sp. nov., venation.  
14. *Limnophila nesonemorialis* sp. nov., venation.  
15. *Eriocera cæsarea* sp. nov., venation.  
16. *Neolimnophila picturata* sp. nov., venation.  
17. *Teucholabis (Teucholabis) scitamenta* sp. nov., venation.  
18. *Erioptera (Erioptera) brevirama* sp. nov., venation.  
19. *Erioptera (Ilisia) machidai* sp. nov., venation.  
20. *Ormosia grahami* sp. nov., venation.

### PLATE 2

- FIG. 21. *Dolichopeza (Nesopeza) subgeniculata* sp. nov., male hypopygium, ninth tergite.  
22. *Dolichopeza (Nesopeza) subgeniculata* sp. nov., male hypopygium, outer dististyle.  
23. *Dolichopeza (Nesopeza) subgeniculata* sp. nov., male hypopygium, inner dististyle.  
24. *Tipula exusta* sp. nov., male hypopygium, lateral aspect.  
25. *Tipula exusta* sp. nov., male hypopygium, ninth tergite.  
26. *Tipula exusta* sp. nov., male hypopygium, dististyle.  
27. *Tipula nippoalpina* sp. nov., male hypopygium, lateral aspect.  
28. *Tipula nippoalpina* sp. nov., male hypopygium, ninth tergite.  
29. *Tipula depressa* sp. nov., male hypopygium, ninth tergite.  
30. *Tipula depressa* sp. nov., male hypopygium, outer dististyle.  
31. *Tipula depressa* sp. nov., male hypopygium, inner dististyle.  
32. *Tipula depressa* sp. nov., male hypopygium, lobe of eighth sternite.  
33. *Tipula depressa* sp. nov., male hypopygium, gonapophysis.

- FIG. 34. *Tipula politostriata* sp. nov., male hypopygium, outer dististyle.  
35. *Tipula politostriata* sp. nov., male hypopygium, inner dististyle.  
36. *Tipula politostriata* sp. nov., male hypopygium, gonapophysis.  
37. *Tipula angustiligula* sp. nov., male hypopygium, lateral aspect.  
38. *Tipula angustiligula* sp. nov., male hypopygium, ninth tergite.  
39. *Tipula angustiligula* sp. nov., male hypopygium, lobe of ninth sternite.  
40. *Antocha (Antocha) minuticornis* sp. nov., male hypopygium.  
41. *Antocha (Antocha) nebulipennis* sp. nov., male hypopygium.  
42. *Limnophila nesonemoralis* sp. nov., male hypopygium.  
43. *Teucholabis (Teucholabis) scitamenta* sp. nov., male hypopygium.  
44. *Erioptera (Erioptera) brevirama* sp. nov., male hypopygium.  
45. *Molophilus ferox* sp. nov., male hypopygium.

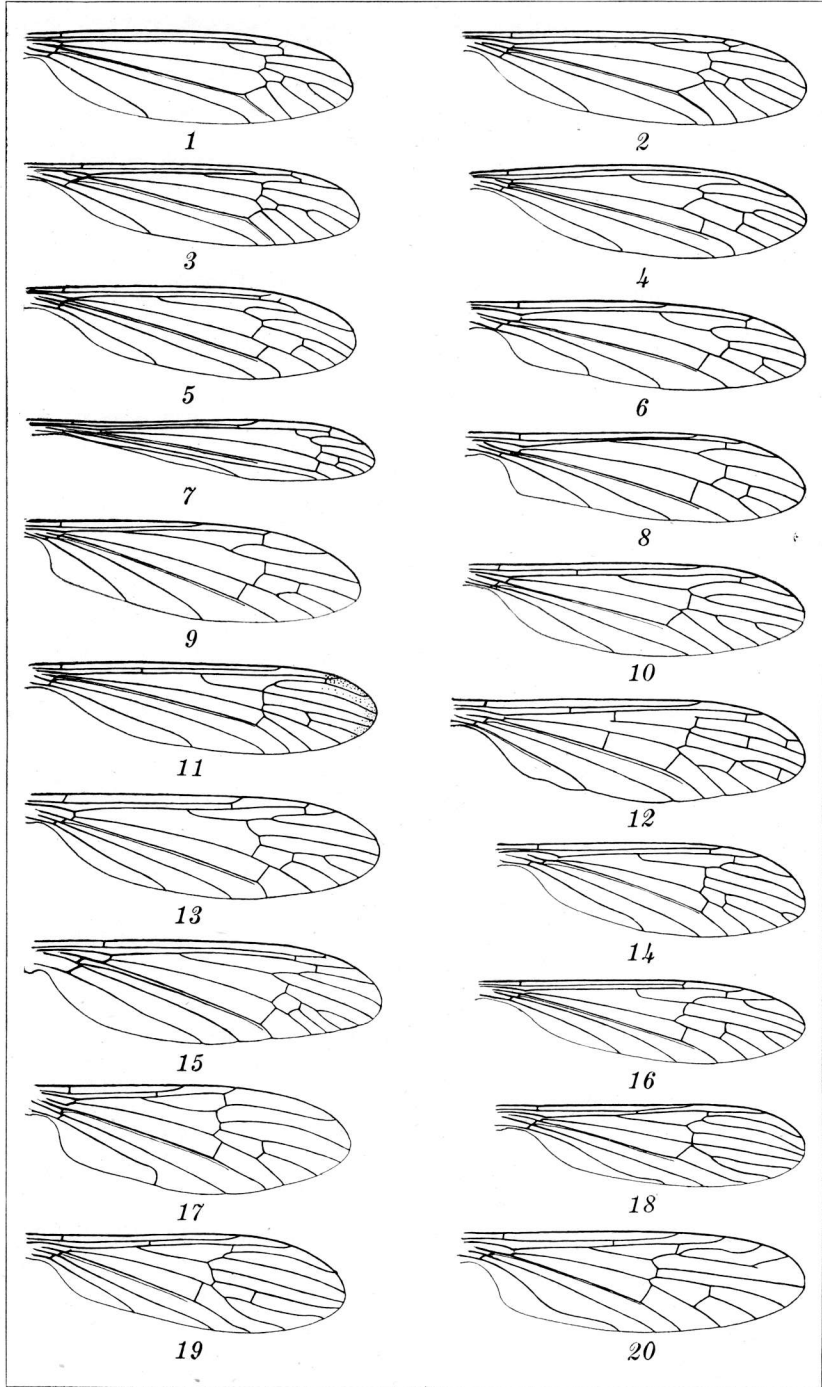


PLATE 1.

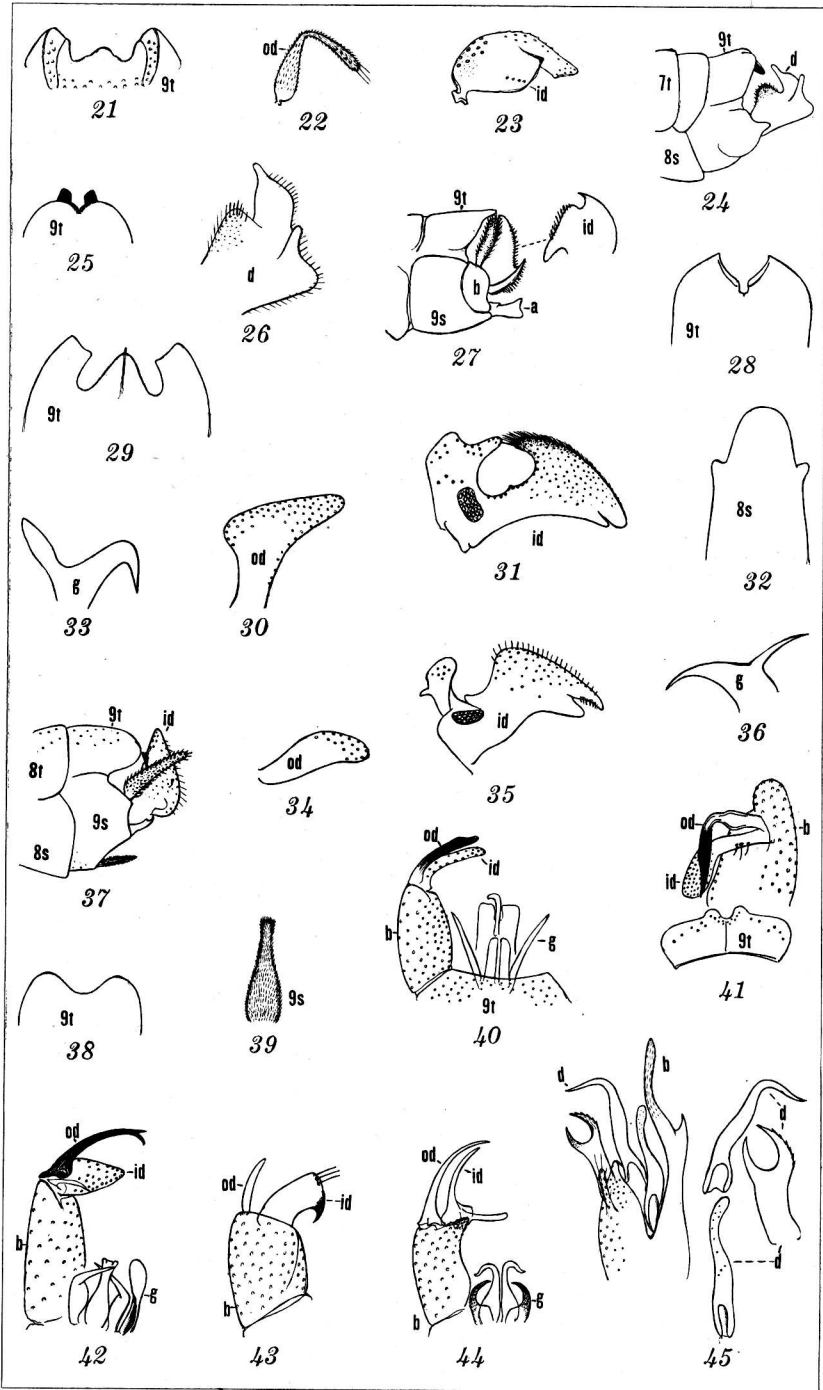


PLATE 2.