

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

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TWO PLATES

The crane flies discussed at this time are almost entirely based on extensive collections made by Prof. Syuti Issiki on Mount Kishima, in southern Kiushiu, Japan; in the rich native forest on the mountains of Yakushima Island, south of Kiushiu; and at Arisan and Chikurin, in the mountains of Formosa. A few additional species were taken in China, kindly submitted by Professor Jacot and Mr. H. S. Parish, and an interesting *Tipula* was sent by Doctor Uéno, taken above 8,500 feet in the Japanese Alps, the highest altitude at which crane flies have been recorded from the main island of Japan. I am very deeply indebted to all of the above, but especially to Professor Issiki, for their kind efforts in making known the rich tipulid fauna of eastern Asia and for the privilege of retaining the types in my collection.

TIPULINÆ

TIPULA UÉNOI sp. nov.

General coloration of head and mesonotum dark, pruinose; wings light brownish, variegated with subhyaline and darker brown areas; abdomen yellow, both tergites and sternites conspicuously trivittate with brown, the outer segments more uniformly darkened; male hypopygium with the median area of the tergite produced into a compressed blackened blade; eighth sternite with the caudal margin unequally trilobed, the lobes setiferous.

*Male*.—Length, about 13 millimeters; wing, 14.5; antenna, about 4.2. Described from an alcoholic specimen.

Frontal prolongation of head dark brown, the nasus conspicuous; maxillary palpi black, the terminal segment exceeding the remaining segments combined. Antennæ with the scapal

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

and first flagellar segments obscure yellow, the remainder of the organ black; flagellar segments strongly incised. Head apparently dark gray in dry specimens; vertical tubercle bifid.

Mesonotal præscutum apparently gray, the margins of the broad median stripe brown; lateral stripes more broadly dark brown; scutal lobes conspicuously blackened; posterior sclerites of mesonotum dark colored in alcohol. Pleura chiefly dark brown, possibly pruinose in fresh specimens. Halteres yellow, the knobs infuscated. Legs with the coxæ dark brown, their tips paler; trochanters obscure yellow; femora brownish yellow basally, passing into dark brown; tibiæ somewhat paler, the tips dark brown; tarsi dark brown. Wings pale brownish, variegated with whitish subhyaline and darker brown; cells C and Sc more yellow; the subhyaline areas are especially broad and conspicuous before the cord, there forming an incomplete cross-band; other more-restricted pale areas beyond the stigma in cells  $R_2$  and  $R_3$  and in the bases of the anal cells. Venation: Rs relatively long and straight;  $R_{1+2}$  entire but without macrotrichia; cell 1st  $M_2$  very small, pentagonal; petiole of cell  $M_1$  relatively long, approximately three times m.

Abdominal tergites yellow, trivittate with brown, the median stripe being continuous and especially conspicuous; outer segments, including the hypopygium, more infuscated; sternites more evidently trivittate with dark brown. Male hypopygium, (Plate 2, fig. 19) with the tergite, 9t, and sternite, 9s, extensively fused; median portion of the tergal region (Plate 2, fig. 20) produced caudad into a broad lobe, the apex blackened; viewed from above, the apex is weakly carinate; viewed laterally, the lobe is developed beneath into a compressed blade. Outer dististyle a flattened pale blade, a little dilated apically. Inner dististyle, *id*, bidentate, the outer margin at base again toothed. Eighth sternite (Plate 2, fig. 21) pale, the caudal margin broadly notched, forming wide lateral lobes that bear longer setæ; median region beneath further produced into a smaller lobule.

*Habitat*.—Japan (Honshiu).

Holotype, alcoholic male, Mount Kiso, Komagatake, Shinano, altitude 2,700 meters, on snow, August, 1928 (*M. Uéno*).

I take great pleasure in naming this interesting *Tipula* in honor of the collector, Dr. Masuzo Uéno. *Tipula uénoi* is allied and generally similar to *T. shomio* Alexander (Japan), differing in the diagnostic features indicated, especially the coloration of the body and wings.

## LIMONIINÆ

## LIMONIINI

## LIMONIA (LIBNOTES) RECURVINERVIS sp. nov.

General coloration greenish yellow, the præscutum with a median brownish black stripe; antennal scape black, the flagellum greenish; knobs of halteres dark brown; femora yellow, the tips rather narrowly blackened; wings hyaline, with a restricted brown pattern; vein 2d A bent at a right angle into the margin; male hypopygium with the ventral dististyle large and fleshy, the rostral prolongation short, blackened apically, the two spines unequal, divergent.

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

Rostrum and palpi black. Antennæ with the scape black, the flagellar segments green, long-oval. Head dark, pruinose.

Pronotum black, paling to yellow on the sides. Mesonotal præscutum yellow with a broad brownish black median stripe that is a little constricted before midlength, thence widened to the suture; scutal lobes conspicuously brownish black, the median area broadly pale yellow; scutellum dark brown, split by a narrow median yellow vitta; postnotum chiefly darkened. Pleura, including the pleurotergite, pale yellow. Halteres of moderate length, pale yellow, the knobs dark brown. Legs with the coxæ and trochanters greenish yellow; femora yellow, the tips blackened; tibiæ obscure brownish yellow, the tips very narrowly darkened; basitarsi brownish yellow, the distal third and remainder of tarsi blackened; claws long and slender, with a single basal spine. Wings hyaline, iridescent, the prearcular and costal region more yellowish; a restricted dark brown pattern, as follows: At arculus; a narrow seam at origin of Rs; Sc<sub>2</sub>; a circular stigma; very narrow seams on the cord and outer end of cell 1st M<sub>2</sub>; the extreme wing tip in cells R<sub>2</sub> to R<sub>5</sub>; narrow marginal seams on the medial, cubital, and anal veins, large and conspicuous on the 2d anal vein; axillary region in cell 2d A narrowly darkened; veins yellow, darker in the infuscated areas. Venation: Sc long, Sc<sub>1</sub> extending to some distance beyond the fork of Rs, Sc<sub>2</sub> just beyond this fork; Rs strongly arcuated to feebly angulated; m-cu more than one-half its length beyond the fork of M; vein 2d A bent at a right angle into the margin.

Abdominal tergites dark brown, the caudal margins of the segments very narrowly pale; sternites pale greenish yellow; hypopygium pale. Male hypopygium (Plate 2, fig. 22) with the tergite, 9t, parallel-sided, the caudal margin with a very broad

V-shaped notch. Basistyle, *b*, small, the ventromesal lobe low and relatively inconspicuous. Ventral dististyle, *vd*, large and fleshy, much larger than the basistyle, the rostral prolongation short and stout, blackened apically and with a longitudinal blackened ridge the entire length; the two rostral spines are basal in position, the outer stouter but only a little longer than the inner, the spines divergent. Dorsal dististyle a slightly curved rod that terminates in a long acute spine. Gonapophyses, *g*, with the mesal apical lobe slender, the tip acute, the margin microscopically serrulate. Ædeagus, *a*, terminating in two divergent flaps. Anal tube with a marginal series of long powerful setæ almost to the apex.

*Habitat*.—Western China.

Holotype, male, Kwanhsien, Sze-chwan, June 7, 1928, through Mr. Herbert S. Parish.

I would have identified the present species as *L. trimaculata* Brunetti of the eastern Himalayas, except for the fact that neither Brunetti nor Edwards mentions the recurved 2d anal vein, nor is it figured by Bagchi. In any case, the name *Limnobia trimaculata* Brunetti (1912) is preoccupied by *Limnobia trimaculata* Zetterstedt (1838). The present species and related forms, although most conveniently placed in *Libnotes*, show certain venational features of *Limonia* and hypopygial and unguinal characters that cannot be distinguished from those of numerous species of *Dicranomyia*.

LIMONIA (GERANOMYIA) RADIALIS sp. nov.

General coloration obscure yellow, the rostrum and antennæ black; head black with a median gray line; legs yellow; wings grayish yellow, with a very restricted brown pattern that is confined to the veins; *Sc* long, *Sc*<sub>1</sub> extending to just before the fork of *Rs*; male hypopygium with the ventral dististyle bearing two long divergent rostral spines that arise from enlarged bases.

*Male*.—Length, excluding rostrum, about 5.5 to 6.5 millimeters; wing, 6.5 to 7.5; rostrum, 2.4 to 2.6.

Rostrum and palpi black. Antennæ black throughout; flagellar segments suboval, gradually decreasing in size outwardly, with short inconspicuous verticils. Head black, with a dorso-median silvery gray line extending the entire length of the head.

Pronotum obscure yellow, restrictedly darkened on sides. Mesonotal præscutum obscure yellow, sparsely pruinose, with a narrow brown median line; scutal lobes conspicuously and extensively dark brown, weakly pruinose; median region of scutum

and scutellum yellow, with a capillary dark line; postnotal mediotergite pruinose, darker posteriorly and laterally, each anterolateral angle with a small yellow spot. Pleura testaceous-yellow, the dorsal pleurites more infuscated to form an ill-defined brown stripe. Halteres yellow, the knobs weakly infuscated. Legs with the coxæ and trochanters yellow; femora obscure yellow, slightly darker toward tips; tibiæ brown, the tips and the tarsi slightly paler, more yellowish brown. Wings (Plate 1, fig. 1) grayish yellow; cells Sc and Cu<sub>1</sub> clearer yellow; a very sparse brown pattern that is chiefly in the costal and radial fields, including spots at the supernumerary crossvein in cell Sc, origin of Rs, tip of Sc, the stigma, tip of vein R<sub>3</sub> and as narrow seams along the cord, outer end of cell 1st M<sub>2</sub> and as very vague marginal clouds at ends of the anal veins; veins pale brown, veins Cu, 1st A, and 2d A more yellowish. Venation: Sc unusually long, Sc<sub>1</sub> ending just before the fork of Rs, Sc<sub>2</sub> at its tip; a supernumerary crossvein in cell Sc; cell 1st M<sub>2</sub> closed; m-cu before the fork of M, the distance variable.

Abdominal tergites brownish yellow, indistinctly variegated with darker; sternites chiefly clear yellow. Male hypopygium (Plate 2, fig. 23) with the basistyle, *b*, relatively small. Ventral dististyle, *vd*, very large and fleshy, the rostral prolongation with two long divergent spines arising from enlarged basal tubercles. Gonapophyses, *g*, with the mesal-apical lobe very short. One dististyle of the holotype shows three rostral spines instead of the apparently normal number of two.

*Habitat*.—Japan (Kiushiu).

Holotype, male, Kosugidani, Yakushima, altitude 2,500 feet, April 29, 1929 (*S. Issiki*). Paratopotype, a teneral male.

*Limonia* (*Geranomyia*) *radialis* is most closely allied to *L. (G.) avocetta* (Alexander), differing especially in the unusually long Sc, the more-restricted brown wing pattern, and the structure of the male hypopygium.

LIMONIA (GERANOMYIA) ALPESTRIS sp. nov.

General coloration dark gray, the humeral region of the præscutum and the scutellum more yellowish; ventral thoracic pleura pale; femora with a dark subterminal ring; wings grayish, the costal region more yellowish; a heavy dark brown pattern that is chiefly costal in position, the third and fourth areas above Rs very extensive, confluent or nearly so; abdominal tergites dark brown, the sternites obscure yellow.

*Female*.—Length, excluding rostrum, about 5.5 millimeters; wing, 7.2; rostrum, about 2.

Rostrum moderately elongate, black; palpi black. Antennæ black throughout; flagellar segments oval. Head dark, pruinose, the anterior vertex paler gray.

Pronotum dark brownish gray. Mesonotal præscutum dark gray, the humeral region restrictedly pale yellow, the disk with four narrow darker lines, the more lateral pair representing the interspaces; scutal lobes dark gray, the median region and the scutellum conspicuously pale yellow; postnotum dark, heavily pruinose. Pleura dark gray, the sternopleurite, meron, and pteropleurite pale yellow. Halteres yellow at base, the remainder infuscated. Legs with the coxæ and trochanters pale yellow; femora obscure yellow, brighter basally, deepening to a subterminal dark brown ring, the tips again narrowly yellow; tibiæ and tarsi pale brown, the outer segments of the latter passing into black. Wings (Plate 1, fig. 2) grayish, the prearcular and costal regions more yellowish; a heavy, chiefly costal brown pattern, including seven major areas, the third and fourth, placed above the origin of Rs and at end of Sc confluent in cell G or nearly so; those portions of the second and third areas in cell R paler, with narrow darkened margins; stigmal area largest; a vague paler cloud between the first and second areas; interrupted seams along cord and outer end of cell 1st M<sub>2</sub>; small marginal areas at ends of veins Cu<sub>1</sub>, 1st A, and 2d A, the last-named larger; veins pale yellow, those in the clouded areas more infuscated. Costal fringe (female) short. Venation: Sc long, Sc<sub>1</sub> ending about opposite midlength of Rs, Sc<sub>2</sub> at its tip; R<sub>2</sub> and free tip of Sc<sub>2</sub> in alignment; cell 1st M<sub>2</sub> long and narrow, rectangular, subequal to the longest vein beyond it; m-cu at fork of M, shorter than the distal section of Cu<sub>1</sub>.

Abdominal tergites dark brown, the sternites obscure yellow; ovipositor with the valves relatively short, yellowish horn color, the tergal valves unusually slender and nearly straight, their bases darkened.

*Habitat.*—Formosa.

Holotype, female, Heigansan, altitude 5,800 feet, October 24, 1928 (*S. Issiki*).

*Limonia (Geranomyia) alpestris* is apparently most closely allied to *L. (G.) septemnotata* (Edwards), which is similarly a late fall species from the higher mountains of Formosa. The latter species differs in the reddish brown coloration of the thorax, uniformly brown legs, and the distribution of the wing pattern.

**LIMONIA (THRYPTICOMYIA) APICALIS MAJUSCULA** subsp. nov.

*Male*.—Length, about 7 to 7.5 millimeters; wing, 6.5 to 7.3.

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

Generally similar to typical *Limonia* (*Thrypticomylia*) *apicalis* (Wiedemann), differing especially in the larger size, which approximates that of *L. (T.) brevicuspis* Alexander. Legs with the proximal fifth (forelegs) to third (hind legs) of the basitarsi blackened. Wings nearly hyaline, with iridescent reflections, the wing tip broadly and distinctly infumed; stigma elongate-oval, dark brown; veins black. Venation:  $Sc_1$  long;  $R_1$  relatively long, more than two and one-half times  $R_2$  alone; m-cu at near two-thirds to three-fourths the length of cell 1st  $M_2$ . Male hypopygium with the rostral prolongation of the ventral dististyle unusually long and slender, as in *apicalis*; spines nearly equal in size and slightly separated, the more proximal arising from a basal tubercle.

*Habitat*.—Formosa.

Holotype, male, Tozan, near Rato, November 5, 1928 (*S. Is-siki*). Allotopotype, female. Paratopotypes, three males.

**HELIUS (HELIUS) CHIKURINENSIS** sp. nov.

General coloration dark brown; rostrum approximately as long as the remainder of the head; wings with a brownish tinge; male hypopygium with the outer dististyle produced into a curved apical point, with a small subapical tooth; gonapophyses appearing as pale flattened blades that are produced laterad into long acute points.

*Male*.—Length, about 4.8 millimeters; wing, 5.

Rostrum approximately as long as the remainder of head, black; palpi black. Antennæ black, the outer segments paling to brown; basal flagellar segments short and crowded, the outer segments more elongate, with long conspicuous verticils. Head dark brownish gray.

Thorax dark brown, the anterior lateral pretergites and adjoining regions more yellowish. Pleura dark brown, the dorsal pleurotergite paler. Halteres dusky, the base of the stem narrowly yellow. Legs with the coxæ and trochanters yellowish testaceous; remainder of legs brownish yellow, especially the tarsi. Wings (Plate 1, fig. 3) with a brownish tinge, the stigmal region darker but ill-delimited; veins darker brown. Costal fringe (male) relatively long. Venation:  $Sc_1$  ending shortly before the fork of  $R_s$ ,  $Sc_2$  near its tip; veins  $R_3$  and  $R_{4+5}$  strongly

diverging; inner end of cell 1st  $M_2$  more or less pointed; m-cu opposite r-m or nearly so.

Abdomen brownish black, the sternites paler. Male hypopygium (Plate 2, fig. 24) with the outer dististyle, *od*, a slender blackened rod, narrowed to the curved acute apex, before the tip with a smaller denticle. Gonapophyses, *g*, appearing as flattened plates that are produced laterad into long apical spines. *Ædeagus*, *a*, relatively short, straight, parallel-sided.

*Habitat*.—Formosa.

Holotype, male, Chikurin, altitude 3,000 feet, July 31, 1928 (*S. Issiki*). Paratopotype, one male.

**HELIUS (HELIUS) CHIKURINENSIS MINUSCULUS** subsp. nov.

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

Generally similar to typical *chikurinensis*, differing especially in the structure of the male hypopygium, where the gonapophyses (Plate 2, fig. 25) are of quite different appearance, the apical point being bent across the blade.

*Habitat*.—Formosa.

Holotype, male, Chikurin, altitude 3,000 feet, July 31, 1928 (*S. Issiki*).

#### PEDICIINI

**TRICYPHONA BAIKALICA** sp. nov.

Large (wing, male, 15 millimeters); general coloration gray, the præscutum with three darker gray stripes; wings grayish, with a heavy brown pattern distributed chiefly along the costal border and along the cord; cell 1st  $M_2$  present.

*Male*.—Length, about 17 millimeters; wing, 15.

Rostrum and palpi black. Antennæ black, the basal segment more pruinose; antennal segments apparently not exceeding fourteen; flagellar segments short and crowded, the basal nine segments broader than long, the remainder small and poorly differentiated, provided with long conspicuous verticils. Head dark, pruinose; vertical tubercle conspicuous.

Mesonotal præscutum light gray, with three darker gray stripes; remainder of mesonotum dark gray, more or less discolored in the type. Pleura dark gray, pruinose; dorsopleural region dark. Halteres yellow. Legs with the coxæ dark, pruinose; trochanters dark, the posterior trochanters paler; femora brownish yellow, the tips broadly blackened; tibiæ dark brown, the tips blackened; tarsi black. Wings (Plate 1, fig. 4) grayish with a heavy brown pattern that is chiefly costal, with a very broad, irregular seam along the cord; the darkened areas include the prearcular region; cells C and Sc; about the basal third of



cells R and M; a large area at origin of Rs, including most of cell  $R_1$ ; most of outer radial cells; seam along cord unusually wide, including all of cell 1st  $M_2$ ; anal cells less distinctly suffused with brown; veins brown. Venation:  $Sc_2$  just basad of the origin of Rs, the latter strongly angulated and spurred; r-m just before the fork of Rs;  $R_2$  transverse;  $R_{4+5}$  shorter than the gently sinuous r-m; cell 1st  $M_2$  closed; m-cu before the fork of M.

Abdomen dark, heavily pruinose; extreme margins of the segments paler; hypopygium black. Male hypopygium (Plate 2, fig. 26) with the interbasal hook of the basistyle, *b*, a flattened cultriform blade. Dististyle, *d*, large and complex in form, roughly bilobed.

*Habitat*.—Siberia.

Holotype, male, Turan, Baikal, through Staudinger and Bang-Haas.

*Tricyphona baikalica* is very distinct from all described regional species.

**TRICYPHONA YAKUSHIMANA** sp. nov.

Size small (wing, male, not exceeding 6 millimeters); general coloration brown; wings grayish yellow, clouded with pale brown;  $R_2$  oblique, sinuous, longer than  $R_{1+2}$ ;  $R_4$  captured by  $R_{2+3}$ ,  $R_{2+3+4}$  being nearly one-third  $R_{2+3}$ ; cell 1st  $M_2$  closed.

*Male*.—Length, about 4.2 to 4.5 millimeters; wing, 5.6 to 6.

Rostrum and palpi brown. Antennæ 16-segmented, the basal segments dark brown, the outer half of the flagellum paling to brownish yellow; antennæ of moderate length, if bent backward extending approximately to the wing root; basal flagellar segments short and crowded, the outer segments elongate, with more-conspicuous verticils. Head dark grayish brown.

Thorax high and gibbous. Mesonotum brown, very vaguely pruinose, without stripes. Pleura more brownish yellow, especially the anepisternum and sternopleurite in cases. Halteres obscure yellow to dusky, the base of the stem restrictedly pale. Legs with the coxæ and trochanters brown; remainder of legs light brown, the tarsal segments somewhat darker. Wings (Plate 1, fig. 5) with a grayish yellow ground color, vaguely clouded with pale brown, the stigmal region darker brown; the dusky clouds include all crossveins and deflections of veins. Venation:  $Sc_2$  nearly midway between arculus and origin of Rs;  $R_2$  oblique, sinuous, longer than  $R_{1+}$ ;  $R_{2+3+4}$  nearly one-third  $R_{2+3}$ ; cell  $M_1$  subequal to its petiole; cell 1st  $M_2$  closed; m-cu about its own length beyond the fork of M; anal veins elongate.

Abdominal tergites dark brown, including the hypopygium; basal sternites paler, especially on the basal rings. Male hypopygium (Plate 2, fig. 27) with caudal margin of tergite, 9t, transverse, the lateral angles produced into very large conspicuous hooks that terminate in a long straight spine. Basistyle, *b*, bearing a fingerlike glabrous lobe on face at near two-thirds the length; apex of style terminating in two low spinous lobes, the small, ribbonlike dististyle, *d*, arising between these lobes.

*Habitat*.—Japan (Kiushiu).

Holotype, male, Kosugidani, Yakushima, altitude 2,500 feet, April 29, 1929 (*S. Issiki*). Paratopotype, male.

*Tricyphona yakushimana* is a very distinct species with no known close allies. The venation of the radial field, especially the position and course of vein  $R_2$ , is intermediate between that of *T. formosana* Alexander and of the normal pedicine type, where  $R_2$  is straight and has assumed a transverse or slightly oblique position.

#### HEXATOMINI

##### ULA FLAVIDIBASIS sp. nov.

General coloration of thorax dark gray, the mesonotal præscutum with three dark brown stripes; coxæ blackened, pruinose; wings brownish yellow, the base and costal region light yellow; a restricted dark pattern, chiefly along the cord; basal abdominal sternites light yellow.

*Female*.—Length, about 7 millimeters; wing, 8.4.

Rostrum and palpi black. Antennæ black throughout, relatively elongate, the flagellar segments fusiform, with verticils that only slightly exceed the segments in length. Head dark gray, the anterior vertex and narrow posterior orbits clearer gray.

Pronotum gray. Mesonotal præscutum gray with three dark brown stripes that are dusted with a sparse yellow pollen; remainder of mesonotum chiefly dark gray. Pleura black, heavily gray pruinose, the dorsopleural membrane dusky. Halteres yellow, the knobs infuscated. Legs with the coxæ blackened, pruinose, the extreme tips and inner faces pale; trochanters infuscated; femora black, the bases narrowly yellow, the amount on the forelegs including about the basal fifth; tibiæ and tarsi dark brown. Wings (Plate 1, fig. 6) brownish yellow, the base and costal region light yellow; a restricted brown pattern includes both ends of the light yellow stigma, the cord, origin of  $R_s$ , and outer end of cell 1st  $M_2$ ; veins brown, more yellowish in the flavous areas. Venation:  $R_s$  angulated at origin; basal section of  $R_5$  reduced.

Abdominal tergites dark brown, blackened laterally, the terminal segments uniformly darkened; basal sternites uniformly light yellow; ovipositor with the valves dark horn-brown.

*Habitat*.—Formosa.

Holotype, female, Arisan, altitude 6,500 to 8,000 feet, July 7, 1929 (*S. Issiki*).

*Ula flavidibasis* is most closely allied to *U. perelegans* Alexander (northern Japan), differing especially in the coloration of the thorax, legs, and wings. The almost uniformly blackened, heavily pruinose coxæ of the present species are very conspicuous.

**ADELPHOMYIA ARIANA** sp. nov.

General coloration black; antennal flagellum pale; wings with a strong brown suffusion; male hypopygium with the apex of the basistyle produced into a slender point.

*Male*.—Length, about 4 millimeters; wing, 5.2.

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

Rostrum and palpi brownish black. Antennæ relatively long and slender for a member of the genus, if bent backward extending to slightly beyond the wing root; basal segments brownish black, the flagellum passing into pale yellow. Head black.

Thorax black, including the dorsopleural region. Halteres dusky, the base of the stem narrowly whitened. Legs with the coxæ dark; trochanters obscure whitish; remainder of legs pale brown. Wings (Plate 1, fig. 7) with a strong brown suffusion, the stigmal region slightly darker; veins dark brown. Macrotrichia of cells relatively abundant, occupying the outer ends of cells  $R_2$  to 1st A inclusive. Venation:  $Sc_1$  relatively long, exceeding m-cu;  $R_s$  strongly angulated at origin;  $R_{2+}$  two to three times  $R_2$  alone; cell  $M_1$  present; m-cu at near mid-length of cell 1st  $M_2$ .

Abdomen black, including the genitalia of both sexes. Male hypopygium (Plate 2, fig. 28) with the apex of the basistyle, *b*, produced into a slender point that is microscopically roughened. Outer dististyle, *od*, slender, dilated at apex, provided with three slender denticles.

*Habitat*.—Formosa.

Holotype, male, Arisan, altitude 6,500 to 8,000 feet, July 7, 1929 (*S. Issiki*). Allotopotype, female, altitude 7,300 feet.

*Adelphomyia ariana* is readily separated from *A. nipponensis* Alexander (Japan: Honshiu) by the black body coloration and darkened wings. The genus *Adelphomyia* is new to the fauna of Formosa.

## PSEUDOLIMNOPHILA CHIKURINA sp. nov.

General coloration brownish gray; antennæ black throughout; wings with a grayish tinge, the stigma vaguely darker;  $R_{2+3+4}$  relatively short, about one-fourth longer than  $R_{1+2}$ ; m-cu shortly beyond the fork of M and before the level of r-m; male hypopygium with the outer dististyle very slender and entirely blackened.

*Male*.—Length, about 4.5 millimeters; wing, 5.6.

Rostrum and palpi brown. Antennæ (male) black throughout, of moderate length, if bent backward extending about to the root of the halteres; flagellar segments cylindrical, gradually shortened outwardly, with long conspicuous verticils that much exceed the segments. Head brownish gray, the relatively broad anterior vertex clearer gray.

Pronotum brownish gray. Mesonotal præscutum brownish gray, the median stripe darker brown, the lateral stripes less distinct; pseudosutural foveæ black; tuberculate pits distinct; posterior sclerites of mesonotum grayish brown. Pleura brownish gray. Halteres obscure testaceous, the knobs dusky, the base of the stem brighter. Legs with the coxæ pale, slightly pruinose, especially the fore coxæ; trochanters testaceous, remainder of legs broken. Wings (Plate 1, fig. 8) with a grayish tinge, the stigma only vaguely darker; veins pale brown. Costal fringe short. Venation:  $Sc_1$  ending shortly before the fork of Rs,  $Sc_2$  near its tip;  $R_{2+3+4}$  relatively short, only about one-fourth longer than  $R_{1+2}$ ;  $R_{2+3}$  subequal to  $R_2$ ; cell  $M_1$  present, longer than its petiole; m-cu shortly beyond the fork of M, before the level of r-m; anterior arculus present.

Abdominal tergites dark brown, the sternites paler. Male hypopygium with the outer dististyle very slender and entirely blackened, gradually narrowed to the simple acute apex. Inner dististyle a little shorter, entirely pale, with abundant coarse setæ. Gonapophyses bispinous.

*Habitat*.—Formosa.

Holotype, male, Chikurin, altitude 3,000 feet, July 31, 1928 (*S. Issiki*).

*Pseudolimnophila chikurina* is allied to *P. inconcussa* (Alexander), differing especially in the venation and the structure of the outer dististyle of the male hypopygium.

## Genus NIPPOLIMNOPHILA novum

Characters generally as in *Limnophila* Macquart, differing as follows: Antennæ 11-segmented (Plate 2, fig. 29), both scapal segments elongate and approximately equal in size; flagellar seg-

ments with relatively short verticils, not or only slightly longer than the segments themselves. Anterior vertex wide; head short and broad, not narrowed behind. No tuberculate pits. Halteres very elongate, exceeding the length of the thorax. Tibial spurs present. Wings (Plate 1, figs. 9, 10) with Sc relatively short, Sc<sub>1</sub> ending before the fork of Rs, Sc<sub>2</sub> near its tip; cell M<sub>1</sub> lacking; anterior arculus preserved; anal angle lacking. Veins pale, the macrotrichia much reduced in size and number. Male hypopygium (Plate 2, fig. 30) with both dististyles simple; tergal region evenly convex; eighth sternite produced ventrad, the ædeagus, *a*, strongly decurved, the tip recurved and directed toward the notch of the eighth sternite.

Genotype, *Nippolimnophila kiusiuensis* sp. nov. (Palæarctic Region).

*Nippolimnophila yakushimensis* sp. nov. likewise belongs here. The chief generic characters lie in the structure of the antennæ which are here reduced to an 11-segmented organ, with the second scapal segment (pedicel) of an unusual length. The only other crane flies with an elongate pedicel are found in the eriopterine genus *Chionea* Dalman and allied forms. The fact that the entire series of specimens of the two species referred to this genus, totaling more than a score of individuals, included only males may indicate that the female is subapterous.

NIPPOLIMNOPHILA KIUSIUENSIS sp. nov.

General coloration brownish gray; antennæ short; cell 2d A relatively long and narrow.

*Male*.—Length, about 3.5 to 4.5 millimeters; wing, 4.5 to 6.

Rostrum and palpi black. Antennæ black throughout, short (Plate 2, fig. 29), if bent backward not extending far beyond the pronotum; flagellar segments oval, with short verticils that slightly exceed the segments in length. Head brownish gray, the orbits clearer gray.

Mesonotum brownish gray, the præscutal stripes lacking or ill-defined. Pleura brownish gray. Halteres pale, the knobs dusky. Legs with the coxæ and trochanters brown, pruinose; remainder of legs dark brown, the femoral bases very restrictively pale. Wings (Plate 1, fig. 9) milky white, the stigma and vague seams at origin of Rs, along cord and outer end of cell 1st M<sub>2</sub> pale brown; veins brown. Venation: R<sub>2+3+4</sub> nearly twice the basal section of R<sub>5</sub>; veins issuing from cell 1st M<sub>2</sub> somewhat divergent; m-cu at near midlength of cell 1st M<sub>2</sub>; vein 2d A relatively elongate, the cell narrow.

Abdomen, including the hypopygium, dark brown. Male hypopygium (Plate 2, fig. 30) with the outer dististyle *od*, bearing a series of conspicuous setæ along the outer face, the darkened apex simple, glabrous. Inner dististyle a shorter rod, heavily blackened, terminating in a slightly dilated head.

*Habitat*.—Japan (Kiushiu).

Holotype, male, Mount Kirishima, altitude 2,500 feet, May 3, 1929 (*S. Issiki*). Paratopotypes, 1 male; 5 additional males at 3,000 to 3,500 feet, May 4, 1929 (*S. Issiki*).

*NIPPOLIMNOPHILA YAKUSHIMENSIS* sp. nov.

*Male*.—Length, about 4 to 4.4 millimeters; wing, 4.5 to 5.3.

Generally similar to *N. kiusiuensis* sp. nov., differing especially in the elongate antennæ of the male which are here approximately as long as the thorax, if bent backward extending about to the root of the halteres; flagellar segments fusiform. Wings (Plate 1, fig. 10) with cell 2d A somewhat shorter.

*Habitat*.—Japan (Kiushiu).

Holotype, male, Kosugidani, Yakushima, altitude 2,500 feet, April 29, 1929 (*S. Issiki*). Paratopotypes, 20 males.

*ULOMORPHA POLYTRICHA* sp. nov.

General coloration polished black; halteres yellow; wings tinged with brownish, scarcely variegated with darker; macrotrichia of membrane very numerous; cell  $M_1$  lacking.

*Male*.—Length, about 7.5 millimeters; wing, 7.6.

Rostrum shiny black, the mouth parts paler; palpi brownish black. Antennæ relatively long and slender, the scape black, the flagellum pale brown; flagellar segments elongate-cylindrical, with verticils that exceed the segments. Head shiny black.

Pronotum and mesonotum shiny polished black. Pleura black, the sternopleurite paling to brown. Halteres pale, the knobs light yellow. Legs with the coxæ obscure yellow, the fore coxæ more darkened basally; trochanters yellow; femora obscure yellow, the tips narrowly infuscated, more broadly so on the fore femora; tibiæ and tarsi brown; legs conspicuously hairy. Wings (Plate 1, fig. 11) tinged with brownish, the base and costal region clear yellow; a scarcely indicated darker clouding along the cord; stigma small, darker than the ground color; veins brown, light yellow in the luteous areas. Conspicuous macrotrichia in almost all cells of wing, lacking only in the extreme bases of the chief basal cells and in the prearcular and subcostal cells. Venation: Rs angulated but scarcely spurred

at origin;  $R_{2+3+4}$  shorter than the basal section of  $R_3$ , the veins beyond it longer and less divergent than in *nigricolor*; cell  $M_1$  lacking; m-cu at near midlength of cell 1st  $M_2$ .

Abdomen reddish brown, trivittate with black; hypopygium black.

*Habitat*.—Japan (Kiushiu).

Holotype, male, Kosugidani, Yakushima, altitude 2,500 feet, April 29, 1929 (*S. Issiki*).

*Ulomorpha polytricha* is readily distinguished from *U. nigricolor* Alexander (Japan: Honshiu) by the nearly immaculate wings with more-abundant macrotrichia. In both wings of the unique type there is a short marginal spur in cell 2d  $M_2$  that presumably represents the partly atrophied vein  $M_2$ .

**ERIOCERA PLATYSOMA** sp. nov.

Abdomen of male dilated and flattened; general coloration velvety black, the basal four segments of abdomen orange; wings, legs, and halteres black.

*Male*.—Length, about 16 millimeters; wing, 14, width of abdomen, 4.5.

Rostrum, palpi, and antennæ black, the last 7-segmented, the flagellar segments decreasing in size outwardly, the terminal segment abruptly smaller, about one-fifth the penultimate. Head velvety black.

Thorax deep velvety black, the scutellum dull orange. Halteres and legs entirely black. Wings blackish, the outer half of the wing more suffused, the medial, cubital, and anal cells more streaked with dusky; veins dark brown. Venation:  $R_s$  long, weakly angulated at origin;  $Sc_1$  elongate, exceeding  $R_{2+3+4}$ ;  $R_{2+3}$  subequal to  $R_{2+3+4}$ ; cell  $M_1$  lacking.

Abdomen broadly dilated and flattened, as shown by the measurements; segments one to four dull orange, the caudal margins of segments two to four narrowly and evenly blackened, the lateral flanges of the segments slightly infuscated; remainder of abdomen deep velvety black, the hypopygium brown.

*Habitat*.—Western China.

Holotype, male, Kwanhsien, Sze-chwan, October 7, 1928, through Mr. Herbert S. Parish.

*Eriocera platysoma* is allied to *E. abdominalis* Alexander, likewise from western China, in the great lateral development of the abdomen of the male (though presumably not of the female). It is readily told by the blackened wings and entirely black legs.

## ELEPHANTOMYIA (ELEPHANTOMYIA) SEROTINA sp. nov.

Rostrum nearly as long as the remainder of the body; mesonotal præscutum obscure yellow, with a broad median dark brown stripe that widens behind; a dark transverse girdle on the pleura; halteres dusky; femora extensively blackened, especially the fore femora; wings grayish yellow, the stigma long-oval, dark brown; abdominal tergites obscure brownish yellow, darker medially, the caudal margins of the segments narrowly but completely bordered by dark brown.

*Female*.—Length, excluding rostrum, about 8 millimeters; wing, 9.8; rostrum, about 7.

Rostrum elongate, only a little shorter than the remainder of the body, black throughout. Antennæ yellowish brown. Head buffy brown; anterior vertex narrow.

Mesonotal præscutum obscure yellow, with a broad median dark brown stripe that widens behind; scutal lobes extensively dark brown; median region of scutum and the scutellum more testaceous-brown; postnotal mediotergite brownish black. Pleura yellow, the sternopleurite and anepisternum dark brown to produce a more or less distinct girdle. Halteres dusky, the extreme base of the stem yellow. Legs with the coxæ yellow, the outer face of the middle coxæ darker; trochanters yellow; femora chiefly brownish black, the bases more yellowish, narrowest on the forelegs where about the basal fourth is included, broadest on the posterior legs where only the tips are blackened; tibiæ dark brown, the tarsi paling to obscure brownish yellow. Wings with the ground color grayish yellow, the prearcular and costal regions more yellowish; stigma long-oval, dark brown; distinct paler brown seams along the cord and outer end of cell 1st  $M_2$ ; wing apex narrowly seamed with brown; veins dark brown. Venation: Cell 1st  $M_2$  large, subrectangular; m-cu more than one-half its length beyond the fork of M, longer than the distal section of  $Cu_1$ ; cell 2d A relatively narrow.

Abdominal tergites obscure brownish yellow, the median region darker, including the dark brown caudal margins of the segments; sternites yellowish, the caudal margins of the segments narrowly dark brown; ovipositor yellowish horn color, the tips of the slender upturned tergal valves narrowly darkened.

*Habitat*.—Formosa.

Holotype, female, Yūsho, altitude 6,000 feet, October 24, 1928 (*S. Issiki*). Paratype, teneral female, Shōrei, altitude 7,000 to 8,000 feet, October 25, 1928 (*S. Issiki*).



*Elephantomyia serotina* is allied to *E. hokkaidensis* Alexander (northern Japan), differing especially in the coloration of the body and legs.

## ERIOPTERINI

## CERATOCHEILUS TINCTIPENNIS sp. nov.

General coloration black, pruinose, the præscutal shield darkened; rostrum, antennæ, and legs black; knobs of halteres infuscated; wings strongly tinged with brown.

*Female*.—Length, excluding rostrum, about 7.5 millimeters; wing, 6.5; rostrum, about 4.5.

Rostrum black. Antennæ black throughout. Head light gray, the posterior vertex darker gray; anterior vertex nearly twice as wide as the diameter of the fusion segment of the antenna.

Mesonotum blackened, the humeral region of the præscutum somewhat more pruinose; median region of the scutum and the scutellum a trifle more pruinose. Pleura black, pruinose. Halteres dusky, the knobs infuscated. Legs with the coxæ obscure brownish yellow, the outer face more infuscated; trochanters obscure yellow; remainder of legs black. Wings (Plate 1, fig. 12) with a strong brown suffusion, the veins dark brown. Macrotrichia of veins relatively numerous, there being a series of about four or five on each of Rs and the basal section of R<sub>5</sub>; none on anterior branch of Rs. Venation: Anterior branch of Rs relatively long and sinuous; m-cu before the fork of M.

Abdomen black, pruinose. Ovipositor brownish horn color.

*Habitat*.—Formosa.

Holotype, female, Arisan, altitude 6,500 to 8,000 feet, July 7, 1929 (*S. Issiki*).

*Ceratocheilus tinctipennis* is readily distinguished from the known regional species by the coloration of the body and the strongly tinted wings.

## LIPSOTHRIX YAKUSHIMÆ sp. nov.

General coloration dark brown; halteres dusky, the knobs dark brown; legs brown, the tarsi extensively whitened; wings with a strong dusky suffusion; Rs and R<sub>2+3+4</sub> nearly equal in length, pale, with few or no macrotrichia.

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

Mouth parts much reduced. Antennæ black throughout; flagellar segments oval, with long verticils; terminal segment reduced. Front yellowish testaceous, the posterior portion of the head darker, the disk of the vertex dark brown.

Thorax dark brown, the median region of the scutum more yellowish; dorsopleural region pale. Halteres dusky, the knobs

dark brown. Legs with the coxæ and trochanters brownish testaceous; femora and tibiæ brown, the genua and narrow tips of the tibiæ paler; tarsi with the outer segments conspicuously whitened. Wings (Plate 1, fig. 13) with a strong dusky suffusion; a conspicuous whitish streak in cell M, crossing m-cu into the base of cell  $M_4$ ; veins brown. Veins Rs and  $R_{2+3+4}$  pale and without macrotrichia or nearly so. Venation: Rs only a trifle longer than  $R_{2+3+4}$ ; inner end of cell 1st  $M_2$  slightly arcuated; m-cu a short distance beyond the fork of M.

Abdomen brownish black, the genital segment obscure brownish yellow. Ovipositor with the valves blackened.

*Habitat*.—Japan (Kiushiu).

Holotype, female, Kosugidani, Yakushima, altitude, 2,500 feet, April 29, 1929 (*S. Issiki*).

*Lipsothrix yakushimæ* is most closely related to *L. taiwanica* Alexander (southern Formosa), differing in the large size and details of coloration and venation. The glabrous veins Rs and  $R_{2+3+4}$  are conspicuous features.

GONOMYIA (PTILOSTENA) CURTICELLULA sp. nov.

General coloration of body dark gray; rostrum and antennal scape dark brown; thoracic pleura abruptly pale yellow; wings with a grayish tinge, the stigma pale; cell  $R_3$  very small; male hypopygium with the ædeagus pale, not markedly chitinized; four dististyles or branches of the same.

*Male*.—Length, about 4 to 4.5 millimeters; wing, 4.8 to 5.5.

Rostrum and palpi dark brown. Antennæ with the scape brownish black, the flagellum paler brown; flagellar segments elongate-fusiform, with a dense erect pubescence. Head dark gray.

Pronotum and mesonotum dark gray, the præscutum with the interspaces even darker brownish gray; pseudosutural foveæ conspicuous; centers of the scutal lobes darkened. Pleura abruptly pale yellow, the dorsal sclerites more dusky. Halteres dusky. Legs with the coxæ and trochanters pale yellow; femora yellow, the tips narrowly dark brown; tibiæ obscure yellow, the tips infuscated; tarsi passing into dark brown. Wings (Plate 1, fig. 14) relatively narrow, with a grayish tinge, the entire costal margin to the apex light yellow; stigma very pale, only a little darker than the ground color; no distinct dark clouds on membrane, but the origin of Rs, cord, and m-cu darker in color than the remaining veins; veins pale brown, the costal veins yellowish. Venation:  $Sc_1$  ending shortly beyond origin of Rs,  $Sc_2$  far from its tip, just before midway between arculus

and origin of Rs;  $R_3$  nearly perpendicular; cell  $R_3$  very small; m-cu more than its own length before the fork of M;  $Cu_2$  extending to opposite or beyond m-cu.

Abdominal tergites brownish gray, the sternites obscure yellow; hypopygium yellow. Male hypopygium (Plate 2, fig. 31) with four arms to the dististyles,  $d$ , of which three are quite glabrous; outermost a slender rod, its apex darkened; longest style with the margin darkened, the apex obtuse; third branch bifid, one arm shorter and obtusely rounded. The fourth style or branch is slender, terminating in a curved apical spine, the surface of the style with about eight setæ.  $\text{\AA}$ edeagus,  $a$ , long and slender, entirely pale.

*Habitat*.—Formosa.

Holotype, male, Giran, November 2, 1928 (*S. Issiki*). Paratype, male, Taihoku, May 8, 1929 (*S. Issiki*).

*Gonomyia curticellula* differs rather conspicuously from *G. pruinosa* Alexander (Formosa) in the nearly immaculate wings (Plate 1, fig. 15) and unusually small cell  $R_3$ . The paratype has the wings narrower, with correlated differences in venation, as a shorter Rs and cell 2d  $M_2$  and with m-cu a greater distance before the fork of M. Despite these differences, I cannot separate the material from the type.

GONOMYIA (PTILOSTENA) SHANTUNGENSIS sp. nov.

General coloration of notum brown, pruinose; basal segments of antennæ pale, the outer segments black; pleura yellow, the dorsal region darker; wings pale brownish yellow, the stigma a little darker; Rs angulated at origin; abdominal tergites dark brown, the caudal margin of the segments narrowly ringed with yellow; sternites yellow; male hypopygium with the  $\text{\AA}$ edeagus entirely pale, straight, at apex curved into a gentle crook.

*Male*.—Length, about 4.5 millimeters; wing, 5.4 to 5.5.

Rostrum and palpi black. Antennæ with the scape obscure yellow; basal segments of flagellum likewise pale, the outer segments passing into brown. Head dark gray.

Pronotum dark brown, sparsely pruinose. Mesonotal præscutum with the ground color reddish, the humeral and lateral regions more yellowish, with a broad conspicuous dark brown stripe, the surface of the sclerite a little pruinose; pseudosutural foveæ large, reddish brown; scutum brown, the centers of the lobes vaguely darker; scutellum and postnotum dark, sparsely pruinose. Pleura pale yellow, the dorsal region infuscated. Halteres dusky. Legs with the coxæ and trochanters pale yellow, the fore coxæ a little darker; femora and tibiæ yellow, the

tips of the latter narrowly darkened; basitarsi obscure yellow, the tips narrowly darkened; terminal tarsal segments broken. Wings very pale brownish yellow, the base, costal region, and outer ends of the radial cells clearer yellow; stigma small, brown, only a little darker than the ground color; veins brown, the cord and basal portion of Rs darker. Venation:  $Sc_1$  ending shortly beyond the origin of Rs,  $Sc_2$  far from its tip; Rs angulated at origin; petiole of cell  $R_3$  angulated before midlength;  $R_3$  about one-third its length from  $R_{1+2}$  at margin; m-cu more than its length before the fork of M.

Abdominal tergites dark brown, the segments narrowly and indistinctly ringed caudally with pale yellow; sternites pale yellow. Male hypopygium (Plate 2, fig. 32) with the basistyle, *b*, lobed at apex, including a broad obtuse ventral lobe and a small mesal lobule. Three dististyles, *d*, the longest U-shaped, both arms acute and glabrous, the shorter inner arm more blackened at apex; second dististyle broadest, the apex bifid, both arms blackened, the outer longer and slenderer, the inner obtuse; third dististyle a short simple pale rod that is narrowed at apex into a blackened spine. Ædeagus, *a*, entirely pale, appearing as a straight rod, the apex curved at more than a right angle.

*Habitat*.—Eastern China.

Holotype, male, Lau Stan, east of Tsingtao, Shantung, June 17, 1927, taken in evening (*A. P. Jacot*).

*Gonomyia shantungensis* is closest to the Japanese *G. subpruinosa* Alexander and *G. pallens* Alexander, differing from all regional species in the structure of the male hypopygium.

**ERIOPTERA (ERIOPTERA) ENSIFERA sp. nov.**

General coloration yellow; thoracic pleura with a bluish sheen; knobs of halteres infuscated; legs yellow with only the terminal tarsal segments darkened; wings brownish yellow, with a restricted darkening along the cord; macrotrichia of veins long and conspicuous; male hypopygium with the gonapophyses long and ensiform, entirely pale in color.

*Male*.—Length, about 2.8 millimeters; wing, 3.8.

*Female*.—Length, about 3.5 to 4.5 millimeters; wing, 3.8 to 4.5.

Rostrum brownish yellow; palpi black. Antennæ pale brown. Head cinnamon brown.

Mesonotal præscutum light cinnamon brown, with scarcely indicated markings, the humeral region more yellowish; scutellum and postnotum more yellowish, with a narrow brown median line in the male, this not indicated in the female. Pleura pale,

with a distinct bluish sheen, most evident when viewed from above and behind. Halteres pale, the knobs infuscated. Legs yellow, the terminal two segments dark brown. Wings (Plate 1, fig. 16) tinged with brownish yellow, the costal region clearer yellow; a vague dusky seam along the cord; veins yellow, the cord infuscated. Macrotrichia of veins long and conspicuous. Venation: Vein 2d A strongly sinuous.

Abdomen, including the hypopygium, yellow. Male hypopygium (Plate 2, fig. 33) with the median lobe of the tergite, 9t, quadrate, transverse. Outer dististyle, *od*, with the inner blackened setiferous arm small, the outer arm unusually long and slender, subequal in length to the main axis of the style. Gonapophyses appearing as long, entirely pale, sword-shaped blades that narrow to acute points.

*Habitat*.—Formosa.

Holotype, male, Taihoku, May 8, 1929 (*S. Issiki*). Allotopotype, female. Paratopotype, female.

*Erioptera ensifera* belongs to a large group of Oriental species that are allied to *E. notata* de Meijere. It seems probable that this is the species recorded by Riedel as *E. flava* Brunetti,<sup>2</sup> from Taihoku. This species, which was later renamed *E. bengalensis* Alexander, is emphasized as having the halteres entirely pale and I cannot accept Brunetti's later conception that it is identical with *E. halterata* Brunetti, a Himalayan species with darkened halteres. The present species is certainly different from all other regional forms from low altitudes in the Malayan islands (*E. javanensis* de Meijere, *E. notata* de Meijere, *E. luzonica* Alexander).

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

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

Closely allied to *E. (I.) asymmetrica* Alexander (Japan), differing especially in the structure of the male hypopygium.

Antennæ with the outer four or five segments infuscated. Mesonotal præscutum with the intermediate dark stripes narrow, entire. Dorsal pleural region more darkened. Legs with the fore and middle femora chiefly blackened, the subterminal yellow ring much reduced. Wings (Plate 1, fig. 17) with the pattern restricted to dark spots and dots along the veins. Male hypopygium (Plate 2, fig. 34) with the apical hooks of the ninth tergite, 9t, very long and slender, strongly recurved, very gradually narrowed into long acute points. Gonapophyses, *g*, heavily

<sup>2</sup> Archiv für Naturgeschichte 82, Abt. A (1917) 113.

blackened, gradually narrowed to acute points, the mesal face not dilated.

*Habitat.*—Formosa.

Holotype, male, Arisan, altitude 7,300 feet, July 7, 1929 (*S. Issiki*).

The subgenus *Ilisia* is new to the fauna of Formosa.

**ERIOPTERA (EMPEDA) MICROTRICHIATA sp. nov.**

General coloration gray; halteres pale yellow throughout; legs brown; wings tinged with gray, the diffuse stigmal region darker;  $Sc$  long,  $Sc_1$  ending beyond midlength of  $Rs$ ; macrotrichia of veins relatively short; male hypopygium with both dististyles pale.

*Male.*—Length, about 3 millimeters; wing, 3.4 to 3.7.

*Female.*—Length, about 3.5 to 3.8 millimeters; wing, 4 to 4.2.

Rostrum and palpi brown. Antennæ dark throughout, in the male with very long verticils, as usual in the subgenus. Head dark gray.

Mesonotum gray, the anterior lateral pretergites restrictedly yellow. Halteres pale yellow. Legs with the coxæ and trochanters obscure yellow; remainder of legs brown, the terminal tarsal segments darker. Wings with a grayish tinge, the large diffuse stigma darker; veins brown. Macrotrichia of veins short and inconspicuous. Venation:  $Sc$  long,  $Sc_1$  ending just beyond midlength of the relatively long  $Rs$ ;  $Sc_1$  subequal to  $r-m$ ;  $R_2$  subequal to or a little shorter than  $R_{2+3+4}$ ; cell  $R_3$  relatively deep for a member of the subgenus.

Abdomen dark brown, including the hypopygium. Male hypopygium (Plate 2, fig. 35) with the dististyles pale, the outer dististyle, *od*, deeply bifid, the outer arm longest, curved to an acute point, the outer surface roughened; inner arm expanded at apex, the outer angle produced into a point. Gonapophyses, *g*, blackened.

*Habitat.*—Japan (Kiushiu).

Holotype, male, Mount Kirishima, altitude 2,500 feet, May 3, 1929 (*S. Issiki*). Allotopotype, female; paratopotypes, 2 males, females. Paratypes, 3 males, Kosugidani, Yakushima, altitude 2,500 feet, April 29, 1929 (*S. Issiki*).

*Erioptera (Empeda) microtrichiata* is distinguished from *E. (E.) japonica* Alexander by the short macrotrichia of the wing veins and the uniformly pale halteres. It differs from *E. (E.) angustistigma* sp. nov. in the grayish wings and paler legs.

## ERIOPTERA (EMPEDA) ANGUSTISTIGMA sp. nov.

General coloration gray; mouth parts and antennæ black; halteres pale yellow; legs black; wings light yellow with a narrow brown stigma; Sc long, Sc<sub>1</sub> extending to beyond midlength of Rs.

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

Rostrum and palpi black. Antennæ short, black throughout. Head gray.

Anterior lateral pretergites dusky, the lateral margins clearer yellow. Mesonotum gray, the humeral region of the præscutum more reddish gray; pseudosutural foveæ reddish brown, the tuberculate pits darker. Pleura dark plumbeous gray, including the dorsopleural region. Halteres pale yellow throughout, clothed with silken golden setæ. Legs with the coxæ brown, the fore coxæ darker brown; trochanters brownish testaceous; remainder of legs brownish black. Wings (Plate 1, fig. 18) light yellow, with a narrow but well-defined brownish stigma; veins darker yellow than the ground color. Macrotrichia of veins relatively short and inconspicuous, brown. Venation: Sc long, Sc<sub>1</sub> ending beyond midlength of Rs, relatively short; R<sub>2+3+4</sub> a little longer than R<sub>2</sub> and approximately three times R<sub>2+3</sub>; cell M<sub>2</sub> open by the atrophy of m; m-cu at fork of M.

Abdomen dark brown; tergal valves of ovipositor broken; sternal valves blackened, long and straight.

*Habitat*.—Formosa.

Holotype, female, Arisan, altitude 7,300 feet, July 7, 1929 (*S. Issiki*).

*Erioptera (Empeda) angustistigma* differs from the known Formosan species in the coloration and wing venation. It is more closely allied to a small group of species known from the main islands of Japan, differing in the diagnostic features listed above.

## MOLOPHILUS NIGRITUS sp. nov.

General coloration black; halteres dark brown; wings strongly tinged with blackish.

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

Rostrum, palpi, and antennæ entirely black; flagellar segments subcylindrical, passing into long-oval; terminal segment smaller than the penultimate; verticils somewhat longer than the segments. Head black, sparsely gray pruinose, especially in front and on the posterior orbits.

Mesonotum black. Pleura black, sparsely pruinose. Halteres dark brown throughout. Legs black. Wings with a blackish tinge, the base not brightened; veins and macrotrichia darker. Venation: Vein 2d A gently sinuous, ending about opposite the caudal end of m-cu.

Abdomen black, the bases of the valves of the ovipositor similarly colored, the remainder of the long slender valves yellowish horn color.

*Habitat*.—Formosa.

Holotype, female, Arisan, altitude 7,300 feet, July 7, 1929 (*S. Issiki*). Paratopotypes, 1 female with type; 1 female, altitude 6,500 to 8,000 feet, July 7, 1929 (*S. Issiki*).

*Molophilus nigritus* is readily distinguished from regional species by the coloration. It is most similar to *M. trifilatus* Alexander (Japan), differing in the coloration of the wings and legs.

**MOLOPHILUS NIGRITARSIS** *sp. nov.*

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

Closely allied to *M. costalis* Edwards (Formosa), differing especially in the coloration of the body and legs.

Rostrum and palpi black. Basal segments of antennæ yellow, the remainder darkened. Head yellow, the center of the vertex with a conspicuous brown area. Anterior lateral pretergites and extreme lateral margins of the præscutum sulphur yellow. Mesonotum plumbeous brown. Pleura chiefly dark brown, the pleurotergite more yellow, bearing a group of long yellow setæ. Halteres yellow. Legs with the fore coxæ darker than the middle and hind coxæ; forelegs brownish black; middle femora and tibiæ yellow, the tips of the latter and all tarsi blackened; posterior femora extensively infuscated, the narrow tips and broader bases yellowish; tibiæ bright yellow, the tips and all of tarsi blackened. Wings grayish, the prearcular and costal regions light yellow, this coloration including the veins and macrotrichia; remaining veins and macrotrichia dark, excepting vein Cu which is yellow. Abdomen brown, the caudal margins of the segments narrowly and indistinctly more yellowish.

*Habitat*.—Formosa.

Holotype, female, Arisan, altitude 7,300 feet, July 7, 1929 (*S. Issiki*).

The pattern of the legs is distinctive of more than a single species in the Formosan fauna.



## ILLUSTRATIONS

[Legend; *a*, aedeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *id*, inner dististyle; *od*, outer dististyle; *s*, sternite; *t*, tergite; *vd*, ventral dististyle. Hypopygial terminology used, Crampton.]

### PLATE 1

- FIG. 1. *Limonia (Geranomyia) radialis* sp. nov., wing.  
2. *Limonia (Geranomyia) alpestris* sp. nov., wing.  
3. *Helius chikurinensis* sp. nov., wing.  
4. *Tricyphona baikalica* sp. nov., wing.  
5. *Tricyphona yakushimiana* sp. nov., wing.  
6. *Ula flavidibasis* sp. nov., wing.  
7. *Adelphomyia ariana* sp. nov., wing.  
8. *Pseudolimnophila chikurina* sp. nov., wing.  
9. *Nippolimnophila kiusiuensis* sp. nov., wing.  
10. *Nippolimnophila yakushimensis* sp. nov., wing.  
11. *Ulomorpha polytricha* sp. nov., wing.  
12. *Ceratocheilus tinctipennis* sp. nov., wing.  
13. *Lipsothrix yakushimae* sp. nov., wing.  
14. *Gonomyia (Ptilostena) curticellula* sp. nov., wing.  
15. *Gonomyia (Ptilostena) pruinosa* Alexander, wing.  
16. *Erioptera (Erioptera) ensifera* sp. nov., wing.  
17. *Erioptera (Ilisia) tenuisentis* sp. nov., wing.  
18. *Erioptera (Empeda) angustistigma* sp. nov., wing.

### PLATE 2

- FIG. 19. *Tipula uénoi* sp. nov., male hypopygium, lateral.  
20. *Tipula uénoi* sp. nov., male hypopygium, ninth tergite.  
21. *Tipula uénoi* sp. nov., male hypopygium, eighth sternite.  
22. *Limonia (Libnotes) recurvinervis* sp. nov., male hypopygium.  
23. *Limonia (Geranomyia) radialis* sp. nov., male hypopygium.  
24. *Helius chikurinensis* sp. nov., male hypopygium.  
25. *Helius chikurinensis minusculus* subsp. nov., male hypopygium, gonapophysis.  
26. *Tricyphona baikalica* sp. nov., male hypopygium.  
27. *Tricyphona yakushimana* sp. nov., male hypopygium.  
28. *Adelphomyia ariana* sp. nov., male hypopygium.  
29. *Nippolimnophila kiusiuensis* sp. nov., antenna.  
30. *Nippolimnophila kiusiuensis* sp. nov., male hypopygium.  
31. *Gonomyia (Ptilostena) curticellula* sp. nov., male hypopygium.  
32. *Gonomyia (Ptilostena) shantungensis* sp. nov., male hypopygium.  
33. *Erioptera (Erioptera) ensifera* sp. nov., male hypopygium.  
34. *Erioptera (Ilisia) tenuisentis* sp. nov., male hypopygium.  
35. *Erioptera (Empeda) microtrichiata* sp. nov., male hypopygium.

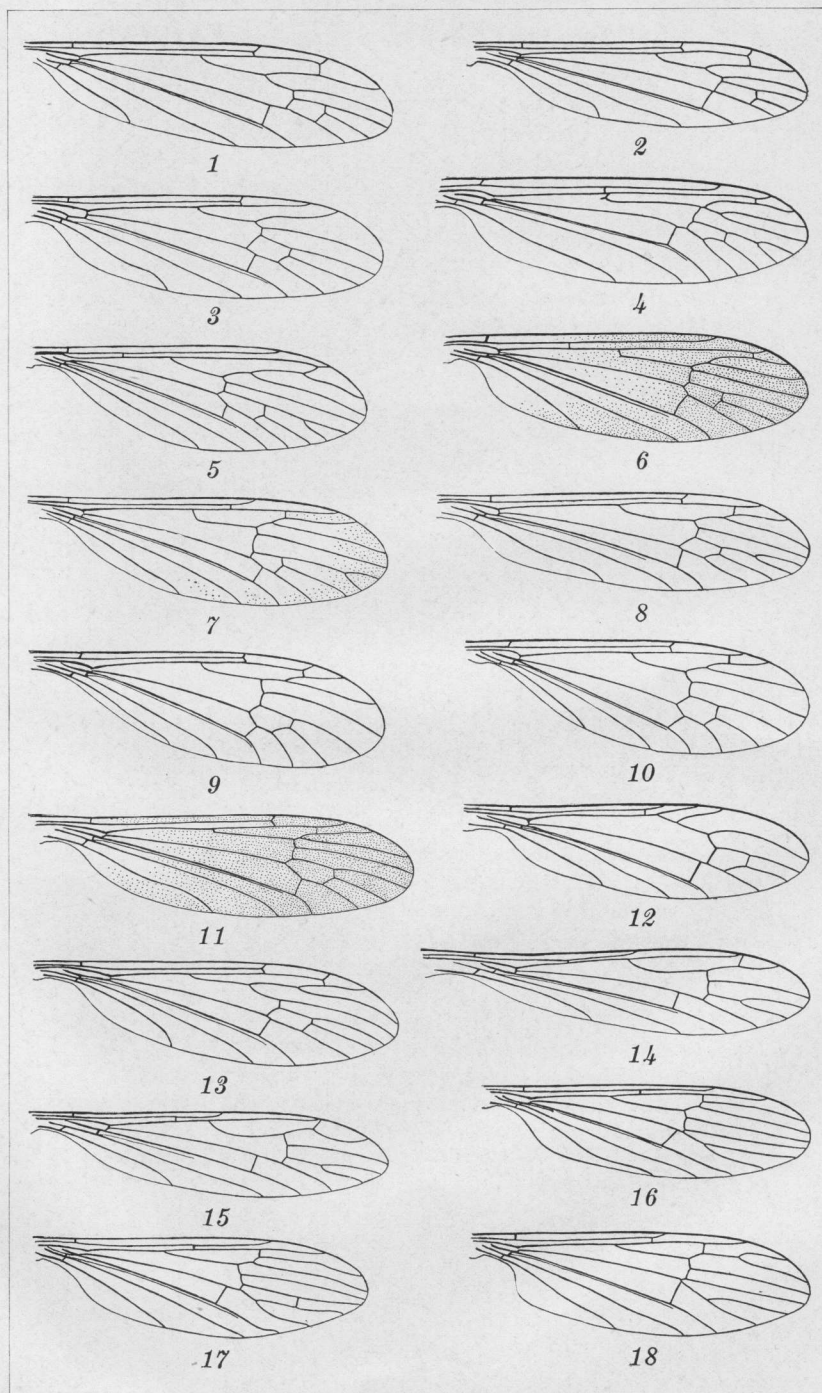


PLATE 1.

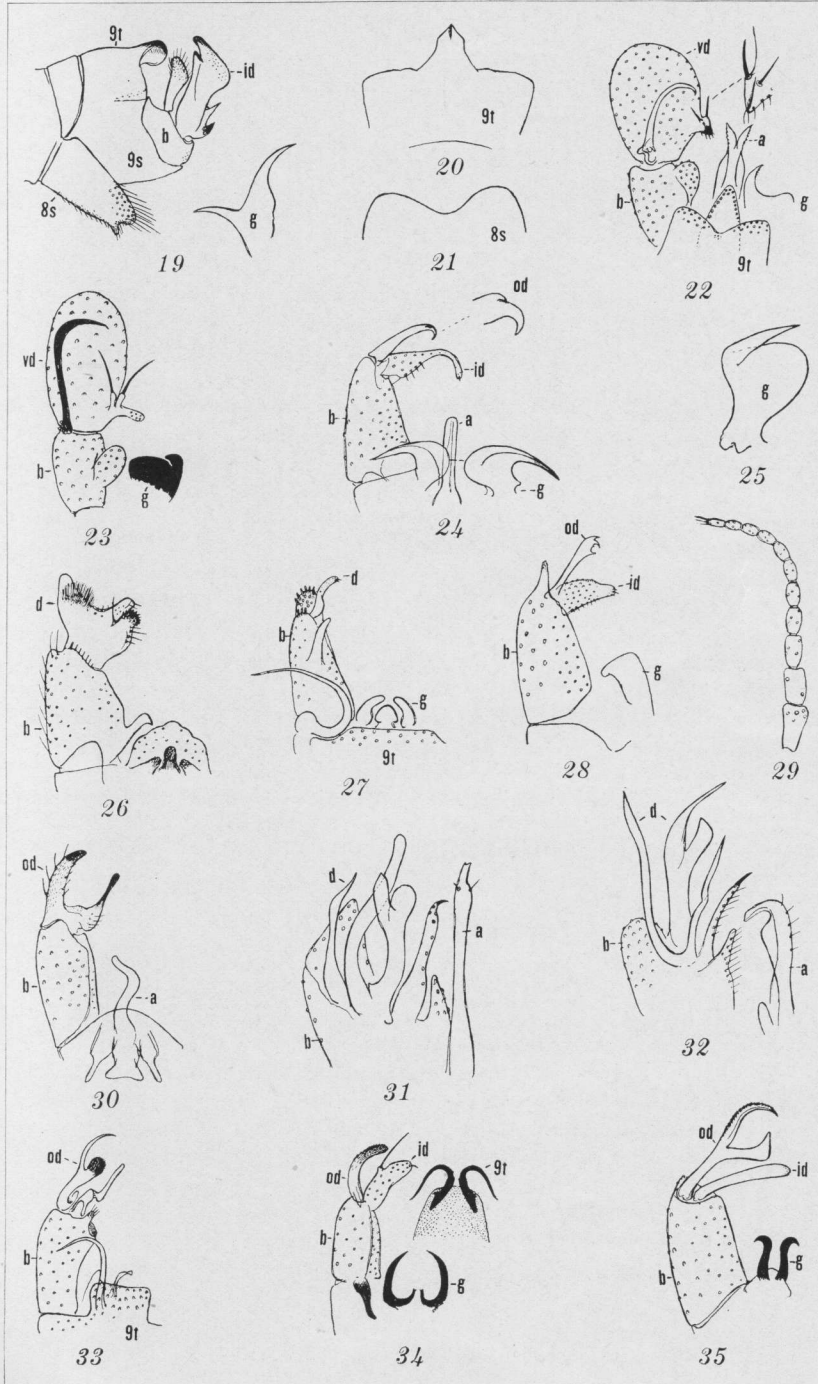


PLATE 2.