

# Undescribed species of Japanese crane-flies (Tipulidae, Diptera). Part II

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UNDESCRIBED SPECIES OF JAPANESE CRANE-FLIES  
(TIPULIDÆ, DIPTERA).

Part II.

By CHARLES P. ALEXANDER.

The present paper is a continuation of the first part published under this title (Ann. Ent. Soc. Amer., vol. 12, pp. 327-348; 1919). The material upon which this report is based was received from many different sources. Dr. Kuwana has sent material collected in various parts of Honshu by his assistant inspectors, Mr. Tanaka and Mr. Teranishi. Dr. Machida has collected numerous crane-flies in the vicinity of Tokio and near Tamagawa in the province of Saitama. Mr. Takeuchi sent an interesting series from Gifu. Mr. Kuwayama supplied a series of Tipulinæ from Hokkaido, mostly from the immediate vicinity of Sapporo. One additional species was included in extensive collections of exotic crane-flies belonging to the Paris Museum and sent to me for naming by Mons. Séguy. I express my great indebtedness to all of the gentlemen named for this important series of Japanese Tipulidæ. Unless stated otherwise, the types are preserved in the writer's collection.

**Limnobia** Meigen.

**Limnobia tanakai** sp. n.

General coloration yellow; pronotum and anterior portion of mesonotal praescutum with a median brown line; antennæ yellow; vertex with a brown crossband; legs yellow, the tips of the femora and tibiæ narrowly dark brown; wings with a yellowish tinge, sparsely variegated with brown; *r* removed from the tip of  $R_1$ ; basal deflection of  $Cu_1$  before the fork of  $M$ .

*Male*—Length, 8 mm.; wing, 8.7 mm. *Female*—Length, 9 mm.; wing, 8.8 mm.

Rostrum and palpi dark brown. Antennæ uniformly pale yellow; flagellar segments with long verticils. Anterior part of vertex yellow with a sparse whitish pubescence; a dark brown band extending across vertex between the posterior margins of eyes; remainder of vertex and occiput obscure yellow.

Pronotum dark brown, passing into yellow on the sides. Mesonotal praescutum reddish yellow, the anterior median area slightly infuscated; remainder of mesonotum light yellow. Pleura reddish yellow. Halteres obscure yellow. Legs with the coxæ and trochanters yellow; femora

yellow, the tips narrowly dark brown; tibiae obscure yellow, the tips very narrowly dark brown; metatarsi obscure yellow, the tips brown; remainder of tarsi brown. Wings with a strong grayish yellow tinge, clearer yellow in cells *C* and *Sc*; stigma brown; narrow brown clouds at origin of *Rs*; *Sc*<sub>2</sub>; along cord and outer end of cell 1st *M*<sub>2</sub> and less distinctly along the other longitudinal veins; veins dark brown, paler in the costal area. Venation: *Sc* long, *Sc*<sub>2</sub> ending about opposite two-thirds *Rs*; *Sc*<sub>2</sub> much longer than *Sc*<sub>1</sub>; *Rs* angulated and spurred at origin; *r* far from tip of *R*<sub>1</sub>, about one-half the latter; basal deflection of *Cu*<sub>1</sub> far before the fork of *M*, the distance about one-half of the deflection.

Abdomen obscure yellow; in the male, the hypopygium is more infuscated.

*Habitat*: Japan. Holotype, ♂, Ikaho, Gumma-Ken, July 7, 1920 (K. Tanaka). Allotopotype, ♀, in copula with the type.

*Limnobia tanakai* is named in honor of its collector. It is more closely related to *L. stigma* Meigen (Europe) than to any other described Palaearctic species.

#### Dicranomyia Stephens.

##### *Dicranomyia paupercula* sp. n.

Antennal flagellum dark brown; head dusted with gray; mesonotum pale, covered with a sparse yellow pollen; wings with a faint yellowish tinge; *Sc* short, *Sc*<sub>2</sub> apparently lacking.

*Male*—Length about 4.5 mm.; wing 4.6 mm.

Rostrum brown, dusted with gray; palpi obscure brownish yellow. Antennae with the scapal segments brown; flagellum dark brownish black; flagellar segments oval. Head dark, dusted with gray.

Mesonotum pale with a sparse yellow pollen, without darker markings; scutellum and postnotum sparsely pruinose. Pleura with a yellowish gray pollen, becoming more yellowish on the mesosternum. Halteres pale, the knobs darker. Legs with the coxae and trochanters concolorous with the pleura; remainder of the legs yellowish testaceous, the tarsi slightly darker. Wings with a faint yellowish tinge, the stigma entirely lacking; veins pale. Venation: *Sc* short, *Sc*<sub>2</sub> apparently entirely lacking; *Rs* nearly twice the deflection of *R*<sub>4+5</sub>; cell 1st *M*<sub>2</sub> closed, about as long as the outer section of *Cu*<sub>1</sub>; basal deflection of *Cu*<sub>1</sub> at or slightly before the fork of *M*.

Abdominal tergites light brown, the sternites brownish yellow.

*Habitat*: Japan. Holotype, ♂, Koiwai Farm, near Morioka, September 2, 1920 (C. Teranishi).

*Dicranomyia paupercula* is allied to *D. depauperata* Alex., but is much smaller and with the details of coloration distinct.

**Dicranomyia machidai** sp. n.

General coloration brownish yellow, the mesonotum marked with darker; a broad, longitudinal dark brown stripe on pleura; antennæ entirely dark; wings brown, stigma oval, dark brown; *Sc* long, *Sc*<sub>2</sub> at tip of *Sc*<sub>1</sub>; cell *1st M*<sub>2</sub> closed; abdominal tergites dark brown, sternites indistinctly bicolorous; male hypopygium with a single pleural appendage, the terminal beak unprovided with spines.

*Male*—Length, about 5 mm.; wing, 6.5 mm. *Female*—Length, 6.6 mm.; wing, 5.5–7.2 mm.

Rostrum and palpi dark brownish black. Antennæ dark brownish black throughout; flagellar segments cylindrical, each with a short pedicel. Head dark brownish gray.

Pronotum dark brown, the lateral margins of the scutellum obscure yellow. Mesonotal praescutum brownish yellow with a broad, dorso-median darker brown stripe that is greatly widened before the suture; lateral margins of praescutum narrowly infuscated; scutal lobes dark brown, the median area obscure yellow; scutellum and postnotum dark brown. Pleura obscure yellow with a very broad and conspicuous dark brown longitudinal stripe extending from the cervical sclerites to the base of the abdomen, passing immediately beneath the halteres; dorsal pleurites darker than the ventral sclerites; mesosternum a little darkened. Halteres dark brown, the base of the stem more yellowish. Legs with coxæ and trochanters yellowish; remainder of the legs brown. Wings with a strong brownish tinge; stigma oval, darker brown; very indistinct seams along the cord and outer end of cell *1st M*<sub>2</sub>; veins dark brown. Venation: *Sc* long, *Sc*<sub>1</sub> extending to about opposite one-half the length of *Rs*, *Sc*<sub>2</sub> at its tip; *Rs* long, arcuated to feebly angulate at origin; *r* at tip of *R*<sub>1</sub>; basal deflection of *R*<sub>4+5</sub> almost straight; cell *1st M*<sub>2</sub> elongate rectangular, subequal to or a little shorter than the ultimate section of *M*<sub>1+2</sub>; basal deflection of *Cu*<sub>1</sub> beyond the fork of *M*; *Cu*<sub>2</sub> a little shorter than the deflection of *Cu*<sub>1</sub>; vein *2nd A* slightly extended.

Abdominal tergites dark brown; sternites with the basal half of the segments yellowish, the apices dark brown; genital segment in the female brighter. Male hypopygium with the pleurites relatively slender, with a conspicuous fleshy lobe on the proximal face; a single pleural appendage, the tip of which is produced into a curved chitinized beak that bears a few delicate bristles near its apex, but is unarmed with spines. Gonapophyses flattened, broad-based, suddenly narrowed to the slender apex, this latter with a blunt blackened tubercle on the outer side some distance before the tip.

*Habitat*: Japan. Holotype, ♂, Nakano, May 28, 1920 (H. Machida). Allotype, ♀, Shibuya, October 12, 1920 (H. Machida). Paratopotype, ♀; paratypes, 5 ♂ ♀, Shibuya, June 24–September 29, 1920.

This interesting and very distinct *Dicranomyia* is named in honor of its collector, Dr. Hachiro Machida.

**Dicranomyia unispinosa** sp. n.

General coloration light brown; antennæ dark brown; wings with a strong brownish tinge; stigma oval, dark brown; *Sc* long; basal deflection of  $R_{4+5}$  arcuated; abdomen dark brown; male hypopygium with two pleural appendages; inner face of the ventral pleural appendage with a fleshy lobe that bears a single long spine before its tip.

*Male*—Length about 4 mm.; wing, 4.3 mm.

Rostrum and palpi dark brown. Antennæ moderately elongate for a member of this genus, if bent backward extending beyond the base of the abdomen; dark brown, flagellar segments suboval, covered with a dense white pubescence. Head dark brown, the anterior part sparsely pruinose.

Mesonotum light brown without distinct darker stripes or other markings. Pleura testaceous, the dorsal region very slightly darker. Halteres testaceous, the knobs brown. Legs with the coxæ and trochanters testaceous, concolorous with the ventral sclerites of the pleura; remainder of legs dark brown. Wings with a strong brownish tinge; stigma oval, darker brown; veins dark brown. Venation: *Sc* long,  $Sc_1$  ending about opposite two-fifths the long *Rs*,  $Sc_2$  at tip of  $Sc_1$ ; *Rs* long, gently angulated near base, in alignment with  $R_{2+3}$ ; tip of  $R_1$  and *r* pale, subobsolete; basal deflection of  $R_{4+5}$  strongly arcuated; inner end of cell *1st M*<sub>2</sub> gently arcuated; basal deflection of *Cu*<sub>1</sub> immediately before the fork of *M*.

Abdomen dark brown. Male hypopygium with the pleurites stout, provided with a large, conspicuous lobe on the proximal face; two pleural appendages; dorsal hook straight basally, gently curved on the outer half, the tip acute; ventral pleural appendage a large fleshy lobe whose proximal face near the base is produced into a fleshy rostrum that narrows gradually to the blunt apex; far before the tip on the caudal or outer face a single powerful spine that is about as long as the fleshy tip beyond it. Gonapophyses appearing as broad-based flattened plates that gradually narrow to the apices, the latter slender, with the tips feebly notched. Penis-guard slightly shorter than the apophyses.

*Habitat*: Japan. Holotype, ♂, Gifu, October 9, 1920 (K. Takeuchi).

*Dicranomyia unispinosa* bears a strong superficial resemblance to *D. machidai*, but is readily distinguished by the very different structure of the male hypopygium and other smaller characters.

**Geranomyia** Haliday.**Geranomyia (Geranomyia) gifuensis** sp. n.

General coloration light gray; rostrum and antennæ dark brown; humeral angles of praescutum testaceous yellow; pleura yellowish; legs dark brown; wings gray, stigma oval, dark brown; very narrow

seams along the cord and outer end of cell *1st M*<sub>2</sub>; *Sc* long; cell *1st M*<sub>2</sub> long and narrow.

*Female*—Length (excluding rostrum), 6.6 mm.; wing, 7.8 mm.; rostrum alone, 3–3.5 mm.

Rostrum and palpi black. Antennæ black; flagellar segments cylindrical. Anterior part of the vertex light gray pruinose; remainder of the head dark brown.

Pronotum brown medially, gray pruinose. Mesonotal praescutum brown with a conspicuous light gray bloom, the interspaces darker; humeral angles light testaceous yellow to flesh color, this color continued around the anterior margin of the praescutum as a narrow seam; lateral margins of the praescutum caudad of the pseudosutural foveæ dark brown; scutum light gray, the proximal edge of the lobes with a longitudinal dark line; scutellum brownish testaceous, gray pruinose; postnotum dark, gray pruinose. Pleura testaceous yellow anteriorly, sparsely pruinose, especially on the posterior pleurites. Halteres yellow, the knobs and outer end of the stem dark brown. Legs with the coxæ and trochanters yellowish testaceous; remainder of the legs dark brown, bases of the femora paler. Wings with a gray tinge; stigma oval, dark brown; very narrow and indistinct brown seams at the supernumerary crossvein in cell *Sc*; origin of *Rs*; *Sc*<sub>2</sub>; along the cord and outer end of cell *1st M*<sub>2</sub>; a narrow seam along the wing-apex in cells *2nd R*<sub>1</sub> and *R*<sub>3</sub>; veins dark brown. Venation: *Sc* long, *Sc*<sub>1</sub> ending about opposite two-thirds *Rs*, *Sc*<sub>2</sub> at the tip of *Sc*<sub>2</sub> deflection of *R*<sub>2+3</sub> shorter than the basal deflection of *Cu*<sub>1</sub>; cell *1st M*<sub>2</sub> long and narrow, rectangular, slightly widened outwardly, about as long as vein *M*<sub>1+2</sub> beyond it; basal deflection of *Cu*<sub>1</sub> before or beyond the fork of *M*.

Abdominal tergites dark brown, sternites paler brownish testaceous. Ovipositor reddish horn-color.

*Habitat*: Japan. Holotype, ♀, Gifu, October 10, 1920 (K. Takeuchi). Paratopotype, ♀.

#### Erioptera Meigen.

##### **Erioptera (Erioptera) dictenidia** sp. n.

General coloration brown, the thoracic pleura gray; femora brownish yellow with a narrow brown subterminal ring; wings faintly brownish; a narrow and very indistinct brown seam along the cord; male hypopygium with the outer pleural appendage stout, chitinized, the apex densely set with parallel rows of small chitinized spinules; inner pleural appendage pale, an acute point on cephalic margin at about two-thirds the length; gonapophyses two, appearing as flattened blades, the outer margin with a comb of about a dozen teeth.

*Male*—Length about 3.8 mm.; wing, 4.5 mm. *Female*—Length about 4.5 mm.; wing, 5.7 mm.

Rostrum obscure brownish yellow; palpi dark brown. Antennæ dark brown. Head dark gray, paler adjoining the eyes.

Pronotum pale laterally. Mesonotum uniformly light brown, the dorso-median area darker. Pleura light gray pruinose. Halteres pale, the knobs and apices of stem dark brown. Legs with the coxæ concolorous with pleura; trochanters obscure yellow; femora brownish yellow, a narrow dark brown subterminal ring; tibiae and tarsi obscure brownish yellow, the latter darkened towards the tip. Wings with a faint brown tinge; a narrow and very indistinct brown seam along the cord; veins dark brown. Venation: Vein *2nd A* only moderately sinuous, the distal quarter bent towards the *1st Anal* vein.

Abdominal tergites dark brown; sternites obscure brownish yellow; pleurites of male hypopygium obscure reddish brown. Male hypopygium with the pleurites stout, the inner angle produced into a short, stout lobe provided with several setigerous tubercles; outer pleural appendage a large, stout chitinized arm, densely provided with parallel rows of small, chitinized spinules; inner pleural appendage a pale blade with an acute point on the cephalic or inner margin at about two-thirds the length. Gonapophyses two in number, appearing as flattened chitinized blades, the proximal edge straight, the outer edge with a comb of about a dozen small, acute teeth, the outermost tooth largest, chitinized.

*Habitat:* Japan. Holotype, ♂, Shibuya, August 7, 1920 (H. Machida). Allotopotype, ♀. Paratopotypes, ♀, June 30, 1920; ♂, October 10, 1920. Paratypes, 7 ♂ ♀, Keijo, Korea, September 6, 1920 (K. Doi.)

**Erioptera (Erioptera) bicornifer** sp. n.

General coloration brown; pleura sparsely gray pruinose; wings pale gray, veins pale brown; male hypopygium with the inner pleural appendage recurved into an elongate point; gonapophyses appearing as two slender curved horns, blackened at their tips.

*Male*—Length about 3 mm.; wing, 4.2 mm.

Rostrum and palpi dark brown. Antennæ dark brown. Head brown, discolored in the type.

Mesonotum brown, without distinct markings; pseudosutural foveæ elongate, shiny brown. Pleura brown, sparsely gray pruinose. Halteres obscure yellow, knobs brown. Legs with the coxæ, trochanters and femora light brown; tarsi dark brown. Wings pale gray, unmarked; stigma lacking; veins pale brown. Venation: *2nd Anal* vein very strongly bisinuous.

Abdominal tergites dark brown; sternites slightly paler. Male hypopygium with the pleurites moderately stout; two pleural appendages; outer appendage subclavate, the apex blackened; inner appendage a pale flattened blade, the outer angle of which is recurved into an elongate acute point. Gonapophyses appearing as two slender curved horns, contiguous basally, diverging apically, the tips heavily blackened.

*Habitat:* Japan. Holotype, ♂, Nakano, May 27, 1920 (H. Machida).

**Ormosia Rondani.****Ormosia nantaisana** sp. n.

General coloration light gray; mesonotal praescutum with a median brown stripe; halteres golden-yellow; wings brownish gray, stigma and wing-tip darkened; cell *1st M*<sub>2</sub> closed, *m* short, Anal veins convergent; male hypopygium with the inner pleural appendage stout, subclavate, the apex set with microscopic black points.

*Male*—Length, 6 mm.; wing, 7.3 mm.

Rostrum and palpi dark brown. Antennæ with the scapal segments dark brown, the remainder broken. Head light gray, the vertex provided with numerous setæ, those of the disk yellow, the lateral bristles longer, dark brown.

Pronotum dark gray, provided with very long and conspicuous yellow setæ. Mesonotal praescutum light gray with a broad, indistinct, brown median stripe; lateral stripes indistinct; pseudosutural foveæ conspicuous, elongate, black; remainder of mesonotum gray pruinose. Pleura clear light gray, provided with groups of long yellow setæ on the mesepisternum and on the mesosternum. Halteres golden-yellow. Legs with the coxæ dark, sparsely pruinose, provided with conspicuous yellow setæ; trochanters dull yellow; remainder of the legs broken. Wings with a brownish gray tinge; stigma darker brown; wing-tip and the cord narrowly margined with brown; veins dark brown, *Sc* yellow. Venation: *Sc*<sub>1</sub> longer than *Rs*; *R*<sub>2+3</sub> a little longer than the basal deflection of *Cu*<sub>1</sub>; *r* on *R*<sub>2</sub> shortly beyond its origin; cell *1st M*<sub>2</sub> closed; *m* short, between one-third and one-fourth the outer deflection of *M*<sub>3</sub>; basal deflection of *Cu*<sub>1</sub> slightly sinuous, beyond the fork of *M*; Anal veins strongly convergent.

Abdomen dark brown with conspicuous yellow setæ. Male hypopygium stout; two pleural appendages, inner appendage subclavate, the tip truncated, densely set with microscopic blackened points; outer appendage a slender flattened yellow blade, the apex subacute.

*Habitat*: Japan. Holotype, ♂, Nantaisan, August 16, 1909. Type in the Collection of the Paris Museum.

**Ormosia takeuchii** sp. n.

Related to *O. takahashii*; general coloration pale brownish testaceous; thoracic pleura and abdomen darker; wings pale gray; cell *1st M*<sub>2</sub> open by the atrophy of the outer deflection of *M*<sub>3</sub>; Anal veins convergent; male hypopygium with the outer gonapophyses simple.

*Male*—Length about 4 mm.; wing, 4.3 mm. *Female*—Length about 3.8 mm.; wing, 4.4 mm.

Rostrum and palpi dark brown. Antennæ short in both sexes, pale brownish testaceous; flagellar segments with a conspicuous pale pubescence. Head pale with abundant yellow setæ.

Mesonotal praescutum pale brownish testaceous, unmarked with darker, the interspaces with conspicuous erect yellow setæ, lateral margins paler; remainder of the mesonotum brownish testaceous.



Pleura brown, very sparsely pruinose. Halteres pale yellow. Legs with the coxæ and trochanters obscure yellow; femora pale brown with yellow appressed setæ; tarsi brown. Wings pale gray, the stigma brown; veins pale brown; cells with an abundant pubescence. Venation: Cell *1st M*<sub>2</sub> open by the atrophy of the outer deflection of *M*<sub>3</sub>; Anal veins convergent, the outer half of the *2nd Anal* vein bent towards the *1st Anal*.

Abdomen dark brown, the genital segment brighter; valves of the ovipositor horn-color. Male hypopygium very similar to that of *O. takahashii*, but the outer gonapophyses simple, conical, there being only six points surrounding the genital field.

*Habitat*: Japan. Holotype, ♂, Gifu, October 1, 1920 (K. Takeuchi). Allotopotype, ♀, October 10, 1920.

This interesting species is named in honor of its collector, Mr. K. Takeuchi, to whom I am indebted for much valuable material.

#### Gonomyia Meigen.

##### *Gonomyia (Ptilostena) teranishii* sp. n.

General coloration light gray; mesonotal praescutum with two narrow brown lines; pleura yellow, the dorsal pleurites brown; legs yellow; wings yellowish gray, the costal region yellowish; brown spots at arculus; origin of *Rs*; along the cord; tips of the radial veins and near the tip of vein *2nd A*; *Sc*<sub>1</sub> about equal to *R*<sub>2+3</sub>; *R*<sub>3</sub> strongly recurved at its tip; abdominal tergites dark brown, the caudal margins of the segments very narrowly grayish.

*Female*—Length, 7.2 mm.; wing, 6 mm.

Rostrum and palpi dark brown. Antennæ with the first scapal segment light gray pruinose; second segment light yellow; flagellum dark brown, the segments oval. Head brown, the front and anterior part of the vertex light gray pruinose.

Pronotum dark brown, obscure yellow laterally. Mesonotal praescutum dark brown, gray pruinose, on either side of the broad median gray line a narrow brown line extending to the suture; humeral angles and lateral margins obscure yellow; scutum light gray, the centers of the lobes brown; scutellum and postnotum dark, gray pruinose. Pleura light yellow, the dorsal half dark brown, deepest anteriorly. Halteres obscure yellow, the knobs dark brown. Legs with the coxæ and trochanters light yellow; remainder of the legs yellow, the terminal tarsal segments brown. Wings yellowish gray, the costal and subcostal cells clearer yellow; brown spots at the arculus; stigma; along the cord; basal deflection of *Cu*<sub>1</sub>; tips of veins *R*<sub>2</sub>, *R*<sub>3</sub> and near the tip of the *2nd Anal* vein; extreme wing-tip cream-color, preceded by a faint brown suffusion; veins brown, *C* and *Sc* more yellow. Venation: *Sc*<sub>1</sub> extending to just beyond the origin of *Rs*, *Sc*<sub>2</sub> far from the tip of *Sc*<sub>1</sub>, the latter alone about equal to *R*<sub>2+3</sub>; *Rs* very strongly angulated

and slightly spurred at origin;  $R_{2+3}$  gently arcuated;  $R_2$  short, straight, subperpendicular, nearly its own length beyond the end of  $R_1$ ;  $R_3$  curved strongly cephalad before its tip; inner ends of cells  $R_3$ ,  $R_5$  and  $1st M_2$  in alignment; petiole of cell  $2nd M_2$  a little shorter than  $R_{2+3}$ ; basal deflection of  $Cu_1$  far before the fork of  $M$ , about one and one-half times its length before the fork of  $M$ .

Abdominal tergites dark brown, the caudal margins very narrowly grayish; genital segment obscure brownish yellow; basal sternite yellow; intermediate sternites black, variegated with black, this coloration probably due to eggs beneath the surface; caudal margins of the segments narrowly yellowish.

*Habitat:* Japan. Holotype, ♀, Koiwai Farm, near Morioka, August 17, 1920 (C. Teranishi).

This handsome crane-fly is named for its collector.

#### Trentepohlia Bigot.

##### **Trentepohlia (Trentepohlia) septemtrionalis** sp. n.

General coloration brownish yellow; mesonotal praescutum with an indistinct brown stripe; femora yellow, the tips dark brown; tibiae yellowish white, the bases and tips blackened; wings yellowish gray, stigma and the wing-axil darkened;  $R_s$  about two-thirds the deflection of  $R_{4+5}$ ; petiole of cell  $R_5$  short, about equal to  $R_s$ .

*Female*—Length, 8.4 mm.; wing, 6.5 mm.

Rostrum, maxillary and labial palpi dark brown. Antennae dark brown, the second scapal segment paler, obscure yellow. Head dark brown, sparsely grayish.

Pronotum dark brown. Mesonotum obscure brownish yellow, the praescutum with an indistinct darker brown median line; scutal lobes darkened; postnotum testaceous. Pleura yellowish testaceous, sparsely dusted with yellowish pollen. Halteres pale. Legs with the coxae concolorous with pleura; trochanters testaceous; femora yellow, the tips broadly but gradually dark brown; tibiae yellowish white, the bases and tips narrowly darkened; metatarsi pale yellow; terminal tarsal segments brown. Wings yellowish gray; a small brown stigmal spot at  $r$ ;  $Cu$  and branches narrowly seamed with brown; a conspicuous brown cloud in the anal angle of the wing; veins pale brown,  $C$ ,  $Sc$  and  $R$  pale yellow. Venation:  $R$  straight, about two-thirds the deflection of  $R_{4+5}$ ; basal section of  $R_{2+3}$  about one-half longer than the second section; petiole of cell  $R_5$  about as long as  $R_s$  or the basal deflection of  $Cu_1$ , the latter immediately before the fork of  $M$ ; fusion of  $Cu_1$  and  $1st A$  about equal to the basal deflection of  $R_{4+5}$ .

Abdomen light brown, more yellowish basally. Ovipositor horn-colored.

*Habitat:* Japan. Holotype, ♀, Nakano, June 2, 1920 (H. Machida).

*Trentepohlia septentrionalis* is the most northerly species of the genus yet discovered. Its closest relative is *T. nigroapicalis* (Brunetti) of British India, which differs in the size, body-coloration and, especially, the coloration and venation of the wings.

#### **Limnophila** Macquart.

##### **Limnophila (Phylidorea) melanommata** sp. n.

General coloration shiny reddish yellow; antennæ with the basal segment dark brown, the remainder yellow; mesonotal praescutum with a narrow, dark brown median line that is narrowed behind; legs brownish yellow; wings light yellow, the wing-tip narrowly darkened; cord and inner end of cell *1st M*<sub>2</sub> narrowly darkened; *r* at the tip of *R*<sub>1</sub>; cell *M*<sub>1</sub> present.

*Female*—Length, 9 mm.; wing, 8.2 mm.

Rostrum and palpi dark brown. Antennæ with the first scapal segment dark brown; remainder of the antennæ conspicuously and abruptly light yellow. Head dark brown, conspicuously silvery pruinose.

Pronotum obscure yellow, dark brown medially. Mesonotal praescutum shiny reddish yellow, with a narrow, dark brown median stripe, broadest in front, gradually narrowed behind, becoming obsolete before the suture; remainder of the mesonotum obscure yellow. Pleura reddish yellow. Halteres yellow, the knobs faintly darkened. Legs with the coxæ and trochanters yellow; femora obscure yellow, the tips very narrowly and indistinctly darkened; tibiæ obscure brownish yellow; tarsi darkening into brown. Wings with a uniform light yellow tinge; wing-tip narrowly margined with dark brown, this color extending from cell *2nd R*<sub>1</sub> to cell *R*<sub>5</sub>, and thence more narrowly and less distinctly to cell *M*<sub>3</sub>; narrow and indistinct brown seams at the origin of *R*<sub>s</sub>; along cord and outer end of cell *1st M*<sub>2</sub>; forks of *R*<sub>2+3</sub> and *M*<sub>1+2</sub>; stigma appearing as a narrow seam along *r* and the tip of *R*<sub>1</sub>; veins yellow, darkened in the infuscated areas. Venation: *Sc* long, *Sc*<sub>2</sub> extending to about opposite one-half to two-thirds *R*<sub>2+3</sub>, *Sc*<sub>2</sub> much longer than *Sc*<sub>1</sub>; *R*<sub>s</sub> moderately long, nearly twice *R*<sub>2+3</sub>, strongly angulated at origin; *r* at the tip of *R*<sub>1</sub>; inner ends of cells *R*<sub>3</sub>, *R*<sub>5</sub> and *1st M*<sub>2</sub> nearly in alignment; petiole of cell *M*<sub>1</sub> a little shorter than the cell; cell *1st M*<sub>2</sub> rectangular, widened distally; basal deflection of *Cu*<sub>1</sub> shortly beyond midlength of cell *1st M*<sub>2</sub>.

Abdomen yellowish testaceous.

*Habitat*: Japan. Holotype, ♀, Koiwai Farm, near Morioka, September 4, 1920 (C. Teranishi).

*Limnophila melanommata* is a strikingly beautiful member of the *ferruginea* (*adusta*) group.

**Rhaphidolabina** Alexander.**Rhaphidolabina gibbera** sp. n.

General coloration pale brownish yellow; antennal scape dark brown, flagellum brownish yellow; mesonotum exceedingly gibbous; mesonotal praescutum with a median brown line that splits at the suture into two parallel branches which continue to the abdomen; legs pale yellow; wings relatively broad, yellowish gray, sparsely marked with dark brown; cell *1st M*<sub>2</sub> open by the atrophy of *m*.

*Male*—Length about 5.5 mm.; wing, 6.9 mm. *Female*—Length about 5 mm.; wing, 6 mm.

Rostrum and palpi brownish black. Antennæ 15-segmented; scape brownish black, flagellum conspicuously light brownish yellow; basal flagellar segments short-cylindrical, the terminal segments more attenuated. Head dark brown, sparsely pruinose.

Pronotum brown, darker medially. Mesonotum exceedingly gibbous, pale brownish yellow, the insect appearing hump-backed; praescutum with a median brown line that divides at the suture, each branch continued to the abdomen, the pale area enclosed including the centers of the scutum, scutellum and postnotum. Pleura whitish testaceous. Halteres brownish testaceous, the knobs dark brown. Legs with the coxæ whitish testaceous, the fore coxæ a little darkened; remainder of the legs pale yellow, only the tarsal segments a little darkened. Wings relatively broad, with a yellowish gray tinge, sparsely variegated with dark brown spots, arranged as follows: At *Sc*<sub>2</sub>; a large area at the origin of *Rs*; along the cord; outer deflection of *R*<sub>2</sub> and along *R*<sub>1+2</sub>; tips of all the longitudinal veins at the wing-margin; forks of *M*<sub>1+2</sub> and *M*<sub>3+Cu</sub><sub>1</sub>; stigma feebly indicated; veins pale yellow, darker brown in the infuscated areas. Venation: *Sc*<sub>2</sub> some distance before the origin of *Rs*, the distance about one-half longer than the basal deflection of *Cu*<sub>1</sub>; *Rs* relatively long, strongly angulated at origin; *R*<sub>2+3+4</sub> shorter than the basal deflection of *Cu*<sub>1</sub>, a little longer than *r-m*; deflection of *R*<sub>2</sub> close to the tip of *R*<sub>1</sub>; cell *1st M*<sub>2</sub> open by the atrophy of *m*; petiole of cell *M*<sub>1</sub> a little more than twice the length of the cell; petiole of cell *M*<sub>3</sub> a little shorter than the cell; basal deflection of *Cu*<sub>1</sub> at the fork of *M*.

Abdominal tergites brown, the basal segments paler; sternites pale brown. Ovipositor elongate, dark brown, the tips of the valves bright horn-yellow.

*Habitat*: Japan. Holotype, ♂, Gifu, October 10, 1920 (K. Takeuchi). Allotopotype, ♀, October 2, 1920.

*Rhaphidolabina gibbera* is to be referred to *Rhaphidolabina* although cell *1st M*<sub>2</sub> is open and there are other slight differences between this fly and the genotype, *R. flaveola* (Osten Sacken) of Northeastern North America.

**Oropeza** Needham.**Oropeza candidipes** sp. n.

Antennæ pale basally, intermediate segments bicolorous, terminal segments dark; general coloration buffy gray, praescutum with three darker gray stripes; pleura testaceous gray, striped longitudinally with dark gray; legs yellow, tibiæ and tarsi snowy-white; wings yellowish; stigma conspicuous, dark brown; abdominal sternites testaceous yellow, each segment with a small, triangular median dark brown spot at the caudal margin.

*Female*—Length, 14–14.5 mm.; wing, 12–14 mm.

Frontal prolongation of head short, pale above, slightly darker laterally palpi with the basal two segments pale, the terminal segments dark brown. Antennæ very pale, almost white, terminal segments darker, the intermediate segments bicolorous, the base of each segment being darkened. Head gray, darker gray behind.

Mesonotal praescutum buffy gray, with three broad darker gray stripes, the intermediate stripe narrowly split by a pale line; scutal lobes dark, pale medially; scutellum pale testaceous, dark brown basally; postnotum buffy gray. Pleura testaceous gray, longitudinally striped with darker gray along the ventral margin of the mesepisternum; mesosternum dark gray; dorso-pleural membrane almost whitish. Halteres pale, the knobs dark brown. Legs with the coxæ testaceous, the fore coxæ darker; trochanters whitish; femora yellow; remainder of legs snowy-white. Wings with a strong yellowish tinge; stigma dark brown; veins dark brown, those in the costal region more yellowish. Venation: *Rs* pale, without macrotrichia, one-half longer than the deflection of  $R_{4+5}$ ; cell *1st M*<sub>2</sub> long and narrow; basal deflection of  $M_{1+2}$  longer than *m*; petiole of cell *M*<sub>1</sub> about two-thirds as long as cell *1st M*<sub>2</sub>.

Abdominal tergites dark brown, about the basal third or less of each segment paler; sternites one to six pale testaceous yellow, the posterior median area of each segment with a small dark brown triangle. Ovipositor with the slender tergal valves dark brown; sternal valves flattened, pale.

*Habitat*: Japan. Holotype, ♀, Tamagawa, Saitama-Ken, August 30, 1920 (H. Machida). Paratype, ♀, Ikaho, Gumma-Ken, July 7, 1920 (K. Tanaka).

**Tipula** Linnaeus.**Tipula shomio** sp. n.

Head dark gray; antennæ of male moderately elongate, indistinctly bicolorous; thorax gray, the praescutal stripes and scutal lobes shiny black; fore femora black, except the basal fourth, hind femora yellow with the apical fourth black; wings pale yellowish, the base and subcostal cell brighter yellow; disk variegated with brown and gray; abdomen yellow, with a subterminal brownish black ring; male hypopygium large, the ninth tergite produced into a hood-like median lobe; ninth pleurite complete.

*Male*—Length, 13 mm.; wing, 16 mm.

Frontal prolongation of the head dark brown above, paler laterally, black ventrally; palpi dark brown. Antennæ of the male moderately elongated, if bent backward extending a little beyond the wing-root; scape and basal two segments of the flagellum reddish yellow; remaining flagellar segments brown, the basal enlargement of each segment darker to give to the flagellum an indistinctly bicolorous appearance; terminal segments uniformly dark brown. Head dark gray pruinose.

Pronotum dark gray. Mesonotum with the praescutal stripes and scutal lobes shiny black, the former confluent or nearly so; median area of the scutum, scutellum and postnotum dark gray pruinose. Pleura dark, gray pruinose, an indistinct longitudinal stripe paler gray. Halteres obscure yellow, the knobs dark brown. Legs with the coxæ dark brown, gray pruinose, the tips of the posterior coxæ pale; trochanters obscure yellow; fore femora black with about the basal fourth abruptly brownish yellow; middle femora with the apical third black; hind femora with a little more than the apical fourth black; tibiæ obscure brownish yellow, the apical half brown; tarsi brownish black. Wings pale yellowish subhyaline, the wing-base and subcostal cell conspicuously light yellow; costal cell dark brown, pale at the base and apex; stigma dark brown, continued as a slightly paler brown seam along the cord to the posterior margin; wing-tip faintly darkened, this including the outer halves of cells  $R_2$ ,  $R_3$  and  $R_5$ , and as a very narrow seam around the wing-tip to  $Cu_1$ ; a faint brown seam at the origin of  $R_s$ ; brown seams along  $Cu$  and its branches and vein *2nd A*; grayish brown clouds in the ends of the Anal cells and as a faint cloud across the basal cells, beginning at the origin of  $R_s$ ; the subhyaline color beyond the cord appears as a broad band in the basal half of cells  $R_2$ ,  $R_3$ ,  $R_5$  and all of cell *1st M*<sub>2</sub>; very narrow brown seams along the veins beyond the cord; veins dark brown, yellow in the yellowish areas. Venation:  $r$  joining  $R_{2+3}$  at its fork;  $R_2$  oblique;  $R_s$  longer than  $R_3$ ; cell *1st M*<sub>2</sub> small, pentagonal, about as long as cell  $M_1$ .

Abdomen obscure yellow, the tergites with three very indistinct capillary dark brown lines; a subterminal dark brownish black ring occupying segments six to eight, these segments broadly margined with obscure yellow; hypopygium yellowish brown. Male hypopygium large. Ninth tergite extensive, the median area produced caudad into a blunt black median lobe; viewed from beneath this lobe is seen to be hollowed out into a hood-shaped structure; dorsal-median area of the tergite sunken. Ninth pleurite complete, large; outer pleural appendage flattened, angularly bent, provided with a fringe of long yellow bristles; inner pleural appendage flattened, heavily chitinized; from the inner margin of the pleurite juts a small flattened blade, with a powerful chitinized spine along the margin. Ninth sternite feebly notched. Eighth sternite broad, the caudal margin broadly and very shallowly notched, the lateral angles with a sparse fringe of long, pale bristles.

*Habitat:* Japan. Holotype, ♂, Koiwai Farm, near Morioka, September 8, 1920 (C. Teranishi).

**Tipula flavocostalis** sp. n.

General coloration of the head and thorax gray, mesonotal praescutum trivittate with dark brown; halteres and legs yellow; wings subhyaline, wing-base and costal region conspicuously light yellow; stigma brown; sparse gray clouds on the wing; tip of  $R_2$  atrophied; abdomen yellow, tergites trivittate with dark brown; a subterminal brown ring; male hypopygium cylindrical, tilted at an angle to the remainder of the abdomen; ninth tergite tridentate, the median blade very compressed.

*Male*—Length about 11 mm.; wing, 12.4 mm. *Female*—Length, 13–15 mm.; wing, 13–14.5 mm.

Frontal prolongation of the head dark brown above and beneath, brownish yellow laterally; palpi dark brown, terminal segment elongate. Antennæ of moderate length; scapal segments obscure yellow, the basal segment darkened basally; first flagellar segment brownish yellow; remaining flagellar segments dark brown, covered with a dense white pubescence; basal enlargement of each segment relatively small; in the female, the antennæ are more uniformly yellowish. Head light gray.

Pronotum obscure gray, indistinctly trinotate with brown. Mesonotal praescutum light gray with three indistinct dull brownish gray stripes, the intermediate stripe conspicuously margined with darker brown and split by a capillary dark brown line to appear trilineate cuneiform; remainder of mesonotum light gray, the centers of the scutal lobes darkened. Pleura uniformly gray. Halteres pale, the knobs yellow. Legs with the fore coxæ dark gray, the other coxæ obscure yellow, darkened basally, less extensive on the hind legs; trochanters and femora yellow; tibiae and tarsi brownish yellow, the terminal tarsal segments passing into dark brown. Wings subhyaline, the base, costal and subcostal cells yellowish; stigma dark brown; vein *Cu* and branches seamed with dark brown; very pale gray clouds in the medial and anal cells; wing-tip slightly darkened, occupying the apices of cells  $R_2$ ,  $R_3$  and  $R_5$ ; the subhyaline band beyond the stigma is broad and conspicuous; veins dark brown, *C*, *Sc* and *R* conspicuously light yellow. Venation: *Rs* long, a little shorter than  $R_3$ , about one-half longer than  $R_{2+3}$ , the extreme base indistinct; tip of  $R_2$  beyond *r* atrophied in the male, in the female only the distal half of the outer section atrophied; cell 1st  $M_2$  relatively small, pentagonal; second section of  $M_{1+2}$  about twice the first section; *m* about one-third the outer deflection of  $M_{3+4}$ ; petiole of cell  $M_1$  about equal to cell 1st  $M_2$ ; *m-cu* distinct.

Abdomen dull yellow, the tergites narrowly trivittate with dark brown; a brown subterminal ring occupying segments six to eight, with the exception of the apex of the eighth sternite; hypopygium brownish yellow. In the female the abdomen is yellow, the tergites trilineate with dark brown, the fifth to seventh segments dark brown. Ovipositor chitinized, acicular. Male hypopygium cylindrical, tilted at an angle to the remainder of the abdomen, as in the *unca* (*hebes*) group, to which, however, the species does not appear to belong. Ninth tergite extensive, the caudal margin tridentate, the lateral lobes heavily

chitinized, the apices truncated and directed slightly proximad; median lobe a highly compressed blade; viewed from above appearing as an acute edge that is a little shorter than the lateral lobes; the notches between the lateral and median lobes are subcircular. Ninth pleurite complete; outer pleural appendage very short and stout; inner pleural appendage relatively small, the interior ends produced into curved, blackened hooks, the caudal angles produced caudad and slightly ventrad into slightly expanded blades. Ninth sternite extensive. Eighth sternite with the broad median lobe rounded, provided with a fringe of long setæ.

*Habitat:* Japan. Holotype, ♂, Tamagawa, Saitama, September 25, 1920 (H. Machida). Allotopotype, ♀, September 26, 1920. Paratypes, ♀, Gifu, October 1, 1920 (K. Takeuchi); ♀, October 10, 1920.

**Tipula taikun** sp. n.

General coloration gray; mesonotal praescutum with a narrow, brown median line; thoracic interspaces with small brown punctures; antennæ of the male moderately elongated; intermediate flagellar segments indistinctly bicolorous, the base of each segment yellowish; femora brownish yellow with a narrow subterminal brown ring; wings faintly brownish, the base yellow; costal and subcostal cells dark brown; subhyaline areas before and beyond the stigma; cell 1st  $M_2$  small, pentagonal; abdomen yellow, narrowly trivittate with dark brown; a brown subterminal ring; male hypopygium with the ninth tergite having a small median notch.

*Male*—Length, 11.5 mm.; wing, 13 mm.

Frontal prolongation of the head dark brown; palpi dark brown, the basal segment a little brighter. Antennæ of the male rather elongate, if bent backward extending about to the base of the abdomen; scape and first flagellar segment yellow; remainder of the antennæ dark brown, the basal half of the knobs of the intermediate segments yellow, producing an indistinct bicolorous appearance; terminal flagellar segments uniformly dark brown. Head gray.

Pronotum buffy, with a dark brown median mark. Mesonotal praescutum brownish gray with three nearly concolorous stripes; intermediate stripe narrowly margined for most of its length with dark brown, split medially by a narrow dark brown line; thoracic interspaces with brown setigerous punctures; remainder of the mesonotum brown, sparsely pruinose, split by a slightly interrupted capillary brown line. Pleura light gray pruinose, the dorso-pleural areas more brownish. Halteres light brown. Legs with the coxæ and trochanters obscure yellow; femora brownish yellow with a very narrow and indistinct dark brown subterminal ring; tibiæ brownish yellow, passing into dark brown at the tip; tarsi dark brown. Wings with a faint brownish tinge, variegated with subhyaline areas; wing-base yellow; cells *C* and *Sc* dark brown; stigma dark brown; brown seams along *Cu* and its



branches, the *2nd Anal* vein and the wing-tip; the subhyaline areas appear before the stigma in cell *1st R*<sub>1</sub>, as a broad seam beyond the stigma, occupying the bases of cells *R*<sub>2</sub> and *R*<sub>3</sub>; a small area near the end of cell *M* adjoining vein *Cu*; a small blotch in the *1st Anal* cell near vein *2nd A*; veins dark brown. Venation: *Sc*<sub>2</sub> ending beyond two-thirds the length of *Rs*; tip of *R*<sub>2</sub> pale, subatrophied; cell *1st M*<sub>2</sub> small, pentagonal; first section of *M*<sub>1+2</sub> about one-half the second section; *m* about two-fifths of the outer deflection of *M*<sub>3</sub>; petiole of cell *M*<sub>1</sub> about one-half the cell and about equal to cell *1st M*<sub>2</sub>; *m-cu* short.

Abdomen yellow, the tergites narrowly trivittate with dark brown; caudal lateral angles of tergites two to six paler brown; an indistinct dark brown subterminal ring, including segment seven, and the adjoining parts of tergites six and eight; hypopygium obscure yellow. Male hypopygium with the ninth tergite extensive, the dorsal surface densely covered with long yellow hairs, the caudal margin with a small circular median notch, the broad lateral lobes thus formed produced into short, blackened, lateral points, the caudal margin of the tergite narrowly chitinized. Ninth pleurite relatively small, complete; outer pleural appendage flattened, moderately broad, narrowed basally. Caudal margin of the eighth sternite with a broad median notch, the margins provided with tufts of long bristles.

*Habitat*: Japan. Holotype, ♂, Koiwai Farm, near Morioka, September 8, 1920 (C. Teranishi).

***Tipula autumnna* sp. n.**

Related to *T. pluriguttata* Alexander (Formosa); coloration of thorax, including the pleura, clear gray; femora unicolorous brownish yellow; male hypopygium with the caudal margin of the ninth tergite broadly notched, with a small median tooth in the notch.

*Male*—Length about 12 mm.; wing, 13 mm. *Female*—Length, 15–16 mm.; wing, 13.8–15 mm.

Frontal prolongation of the head yellowish brown, above dusted with gray; palpi dark brown. Antennæ of the male relatively short; scape and first flagellar segment obscure yellow; remainder of the flagellum indistinctly bicolorous, the basal enlargement of each segment dark brown, the remainder of the segment paler brown; terminal segments uniformly darkened; basal enlargement of each segment relatively conspicuous. Head gray; vertical tubercle between the eyes relatively prominent, indistinctly bifid.

Pronotum light yellowish gray. Mesonotal praescutum yellowish gray with three clear gray stripes, the intermediate stripe margined and split by a capillary brown line; lateral stripes faintly darkened; thoracic interspaces with brown setigerous punctures; humeral region and lateral margins of praescutum paler; scutum gray, each lobe with two small brown areas; remainder of mesonotum gray with a very indistinct median brown line. Pleura gray. Halteres pale yellow, the knobs a little darker. Legs with the coxæ pale, sparsely pruinose;

trochanters yellow; femora and tibiae brownish yellow, the tips not darkened; tarsi brown. Wings with a faint yellowish gray tinge, the base, costal and subcostal cells brownish yellow; stigma relatively small; wing-tip in cells  $R_2$ ,  $R_3$ ,  $R_5$ ,  $M_1$ , 2nd  $M_2$ ,  $M_4$  and  $Cu_1$  slightly darkened;  $Cu$  and branches indistinctly seamed with brown; small oblitative areas before and beyond the stigma and across cell 1st  $M_2$ . Venation:  $Sc_2$  extending to about opposite three-fourths the length of  $R_5$ , the latter relatively long and straight; tip of  $R_2$  pale; cell  $R_2$  relatively small; cell 1st  $M_2$  pentagonal;  $m$  about one-third the outer deflection of  $M_3$ ; petiole of cell  $M_1$  a little shorter than cell 1st  $M_2$ ;  $m-cu$  short.

Abdomen obscure yellow, the tergites trivittate with dark brown, the dorsal stripe interrupted, on each segment appearing as a roughly triangular mark that is narrowed behind, scarcely attaining the posterior margins of the segments; lateral stripes relatively narrow and indistinct; a narrow subterminal brown ring, most evident on segment eight; hypopygium reddish yellow. In the female, the dorsal abdominal stripe is broad, in some cases continuous, in others interrupted at the posterior margins of the segments. Male hypopygium relatively incrassated. Ninth tergite having the caudal margin with a conspicuous median notch as in the related *T. taikun* sp. n., but in the present species there is a small, acute tooth at the base of the notch; lateral lobes terminating in small, truncated, chitinized points. Ninth pleurite complete; outer pleural appendage broad, flattened; proximal face of pleurite near the ventral caudal angle produced into a small, digitiform lobe. Ninth sternite with a broad V-shaped median notch. Eighth sternite narrowed posteriorly, the caudal margin with a broad V-shaped notch, each side of which bears a flattened sheaf of long, reddish bristles, decussate across the median line.

*Habitat*: Japan. Holotype, ♂, Gifu, October 1, 1920 (K. Takeuchi). Allotopotype, ♀, October 19, 1920. Paratopotypes, 2 ♀'s, October 19, 1920; paratype, ♀, Shibuya, Tokio, September 29, 1920 (H. Machida).

***Tipula subcunctans* sp. n.**

Allied to *T. cunctans* Say (Eastern North America); general coloration gray, praescutal stripes brown; tips of femora and tibiae brownish black; abdomen brownish gray, the tergites with an indistinct, capillary, brown median line.

*Female*—Length about 20 mm.; wing, 18 mm.

Frontal prolongation of the head obscure yellowish laterally, broadly gray above; palpi dark brown. Antennae with the first scapal segment dark brown; second segment obscure reddish brown; first flagellar segment brownish yellow; intermediate flagellar segments indistinctly bicolorous, the base of each segment darker than the remainder of the segment; terminal flagellar segments uniformly dark brown. Front surrounding the antennal bases ochreous; remainder of the head buffy gray with a conspicuous brownish black line.

Mesonotal praescutum gray with three rather indistinct brown stripes, the intermediate pair narrowly separated by a pale line; lateral stripes paler, narrowly margined with darker brown; scutal lobes gray with two brown marks; scutellum and postnotum light gray pruinose. Pleura gray, the dorso-pleural membranes brownish yellow. Halteres dark brown. Legs with the coxæ gray, concolorous with the pleura; trochanters brownish yellow; femora brownish yellow, the tips broadly brownish black, broadest on the fore legs, narrowest on the hind legs; tibiæ light brown, soon passing into dark brown; tarsi dark brown. Wings brownish gray, the costal margin darker brown, this including the costal and subcostal cells and the stigma; veins dark brown. Venation: Cell *1st M*<sub>2</sub> short, a little longer than the petiole of cell *M*<sub>1</sub>.

Abdominal tergites brownish gray, the basal tergites clearer gray; a narrow, interrupted, capillary, dark brown, median stripe extending from tergite to caudad, becoming indistinct at about segment six; caudal and lateral margins of the tergites rather narrowly pale, ochreous. Ovipositor with the dorsal shield black; the valves castaneous.

*Habitat:* Japan. Holotype, ♀, Sapporo, October 3, 1920 (S. Kuwayama).

***Tipula latemarginata* sp. n.**

General coloration gray; antennæ of male elongate, black; mesonotum gray, the praescutum with three dark gray stripes that are indistinctly margined with brown; femora yellow, the tips broadly dark brown; wings comparatively long and narrow, with a strong brownish yellow tinge; stigma and a faint seam along the cord darker brown; abdominal tergites gray with a broad brown sublateral stripe; lateral margins of the tergites broadly buffy yellow; male hypopygium with the tergites fused with the pleurites; tergal region with a short, broad median lobe.

*Male*—Length, 13.5 mm.; wing, 15.4 mm.

Frontal prolongation of the head gray; nasus very long and slender; palpi dark brown. Antennæ of the male somewhat elongated, if bent backward extending about to the base of the abdomen; basal segment of the scape gray pruinose; second scapal segment reddish brown; flagellum black, the intermediate and terminal segments rather deeply incised, the basal enlargements of each segment subglobular. Head gray with a capillary black median line.

Mesonotal praescutum gray with three darker gray stripes that are very indistinctly margined with brownish; a capillary dark brown median line; scutellum and postnotum clear gray. Pleura gray, the dorso-pleural membrane light yellow. Halteres brown, the base of the stem brighter, the knobs darker brown. Legs with the coxæ gray pruinose; trochanters obscure yellow; femora yellow, the tips broadly dark brown, broadest on the fore legs, somewhat narrower on the posterior femora; remainder of the legs brownish black. Wings comparatively long and narrow, with a strong brownish yellow tinge; wing-base and cell *Sc* more yellowish; stigma brown; narrow brown seams along the cord and

at the origin of *Rs*; veins dark brown. Venation: *Rs* about one-half longer than  $R_{2+3}$ ; cell 1st  $M_2$  comparatively long and narrow; petiole of cell  $M_1$  shorter than *m*; *m-cu* distinct.

Basal tergite gray; second tergite reddish on basal half, sparsely gray pruinose; remaining abdominal tergites with a broad dorso-median gray line that is narrowly interrupted at the posterior margins of the segments; a broad dark brown sublateral stripe; lateral margins of segments one to seven broadly buffy yellow; caudal margins of tergites very narrowly pale; sternites gray pruinose; hypopygium dark, the outer pleural appendage pale. Male hypopygium with the sclerites fused into a ring, the suture between the pleurite and sternite indicated. Region of the ninth tergite with a short, broad median lobe, the caudal margin narrowly blackened, truncate or feebly bilobed. Outer pleural appendage short and broad, covered with a mixed short and long pubescence. Ninth sternite with a deep and very narrow median notch, the tumid lobes slightly pointed outwardly. Eighth sternite unarmed.

*Habitat:* Japan. Holotype, ♂, Kairakuyen, Sapporo, May 27, 1916 (S. Kuwayama). Paratype, ♂, Fukagawa, Ishikara-Ken, August 30, 1916 (S. Kuwayama).

***Tipula trifida* sp. n.**

*Male*—Length 13.5 mm.; wing, 15.6 mm.

Generally similar to *T. latemarginata*, from which it differs in the following regards.

The type is badly discolored by moisture and the coloration of the body can be discussed in general terms only. Antennæ of the male shorter, the flagellar segments not so distinctly binodose. Wings slightly broader, the cord not seamed with darker. Venation:  $R_{2+3}$  shorter, less than the ultimate section of  $R_2$ ; cell 1st  $M_2$  shorter and broader. Abdominal tergites with the pale lateral margins narrower. Male hypopygium of the general type of *T. latemarginata*, the tergite being entirely fused with the pleurite; median lobe of the tergite subtended on either side by a more slender, pointed lobe that is a little longer than the truncate median lobe. Ninth sternite not tumid as in *T. latemarginata*. Eighth sternite narrowly margined with pale, unarmed.

*Habitat:* Japan. Holotype, ♂, Sapporo, May 17, 1919 (S. Kuwayama).

***Tipula nikkoensis* sp. n.**

Closely related to *T. insulicola*, but much darker colored throughout.

*Female*—Length, 12 mm.; wing, 11 mm.

Closely related to *Tipula insulicola* Alexander (Japan).

Frontal prolongation of the head dark; palpi brownish testaceous, the terminal segment dark brown. Antennæ indistinctly bicolorous, the basal enlargement of each segment dark brown, the color continued onto the pedicel. Head pale brownish testaceous.

Thorax badly crushed, dark brown, praescutal stripes not apparent in the unique type. Pleura dark brown. Halteres pale yellow, the base of the knobs a little darkened. Legs with the femora brownish yellow, the tips dark brown; tibiae and tarsi dark brown. Wings with a brownish yellow tinge, cells *C* and *Sc* more yellowish; stigma oval, dark brown; wing-tip in cells *R*<sub>2</sub> and *R*<sub>3</sub> indistinctly darkened; branches of *Cu*, the cord and most of the veins beyond the cord indistinctly seamed with brown; an obliterative area before and beyond the stigma; another obliterative area crossing cell *1st M*<sub>2</sub> from the end of cell *M* into the base of cell *M*<sub>4</sub>; veins dark brown, more yellowish in the costal region. Venation: *Rs* short, arcuated; *R*<sub>2</sub> straight, the distal section in alignment with the basal section; cell *1st M*<sub>2</sub> irregularly pentagonal; *m* punctiform or nearly so; petiole of cell *M*<sub>1</sub> longer than cell *1st M*<sub>2</sub>; *m-cu* obliterated by the long fusion of *Cu*<sub>1</sub> and *M*<sub>3+4</sub>.

Abdominal tergites obscure yellow, conspicuously margined laterally and caudally with dark brown; sternites obscure yellow, the margins indistinctly darker.

*Habitat*: Japan. Holotype, ♀, Nikko, Tochigi-Ken, July 9, 1920 (K. Tanaka).

***Tipula kuwayamai* sp. n.**

Allied to *T. serricauda* Alex.; antennæ of male moderately elongate, the intermediate flagellar segments bicolored; mesonotal praescutum with four gray stripes that are narrowly margined with dark brown; wings whitish subhyaline, variegated with light and dark brown; abdomen reddish brown, the terminal segments dark brown; male hypopygium with the ninth tergite a chitinized saucer; female ovipositor with the tergal valves serrated.

*Male*—Length, 16 mm.; wing, 18–20 mm. *Female*—Length, 29 mm.; wing, 25 mm.

Frontal prolongation of the head grayish pruinose; palpi dark brown. Antennæ of male moderately elongate, if bent backward extending about opposite or slightly beyond the wing-root; first flagellar segment yellowish orange, the base pruinose; second and third segments yellowish orange; fourth and fifth segments bicolorous, the basal enlargement black, the remainder of each segment brownish yellow; the succeeding segments gradually darken into uniform brown; flagellar segments rather deeply incised beneath. Head gray with a capillary dark brown median line; vertical tubercle with an impressed line.

Mesonotal praescutum clear gray, the interspaces behind more buff-brown; four clear gray praescutal stripes, the intermediate pair more brownish except at their anterior ends, these stripes widely separated behind by a median stripe of the ground color; praescutal stripes narrowly margined with dark brown; scutum clear gray, each lobe with two brown circles, the anterior one with a clear gray center, the posterior one with a darker gray center; scutellum and postnotum gray, the latter with a capillary dark brown line. Pleura dark gray; dorso-pleural membrane obscure yellow. Halteres testaceous, the base

of the knobs dark brown. Legs with the coxæ dark gray; trochanters yellowish; femora and tibiæ yellowish, broadly tipped with dark brown; tarsi dark brown. Wings whitish subhyaline, variegated with light and dark brown; base of the wing, costal and subcostal cells more yellowish; stigma dark brown, this marking extending onto the fork of *Rs*; the white areas appear as a zigzag crossband beyond the wing-base, extending from cell *R* to the posterior margin of the wing in cell *2nd A*; an oblique line in cell *M* near midlength of the cell; a conspicuous white band beyond the cord; cells *R*<sub>1</sub> and *R*<sub>5</sub> largely whitish subhyaline; veins dark brown. Venation: Tip of *R*<sub>2</sub> preserved.

Abdomen with the basal five segments light reddish brown, the first segment more grayish laterally; segments six to nine dark brown, appearing as a subterminal dark ring; hypopygium more or less pale apically. Male hypopygium as in *T. centralis* Lw. and allied forms; ninth tergite appearing as a heavily chitinized saucer, the posterior lateral angles jutting caudad and dorsad as subacute blades; from each of these blades a narrow, oblique black ridge extends proximad near the median line deflected towards the caudal margin of the sclerite and becoming obsolete; anterior margin of the saucer a high ridge with a low, obtuse elevation near each end.

Female larger and much heavier bodied than the male. Lateral margins of the tergites narrowly pale. Ovipositor of the *arctica* type, the five basal teeth subacute, the outer teeth fused into a sinuous blade.

*Habitat*: Japan. Holotype, ♂, Maruyama, Sapporo, June 1, 1919 (S. Kuwayama). Allotype, ♀, Sapporo, 1916. Paratype, ♂, Sapporo, 1916.

This interesting fly is named in honor of its discoverer.

#### *Nephrotoma* Meigen.

##### *Nephrotoma stygia* sp. n.

General coloration shiny black; vertical tubercle orange; pleura with a whitish yellow spot before the base of the halteres and on the dorso-pleural membrane; halteres yellow; femora yellow with the tips blackened, broadest on the fore legs, narrowest on the posterior legs; wings hyaline, stigma dark brown, a narrow brown seam along the cord; abdomen entirely black.

*Male*—Length about 12 mm.; wing, 10.5 mm. *Female*—Length, 15 mm.; wing, 11.5 mm.

Frontal prolongation of the head shiny black; palpi black. Antennæ with the scapal segments reddish brown; first flagellar segment dark brown; remaining flagellar segments obscure brownish yellow, on the terminal segments passing into brown. In the female, the flagellar segments are uniformly brownish black. Head black, the vertical tubercle conspicuous, orange.

Pronotum black, the lateral margins of the scutellum yellow, confluent with the dorsal pleural spot. Mesonotum entirely shiny black.

Pleura black; a small whitish yellow spot immediately cephalad of the halteres; a second spot of the same color on the dorso-pleural membrane. Halteres with the stem pale brown, the knobs light yellow. Legs with the coxæ black; fore trochanters brown; middle and hind trochanters black; femora yellow, the tips broadly blackened, on the fore femora including the apical two-thirds; on the mid-femora, about the apical fifth; on the hind femora only the apical eighth, or thereabouts; tibiæ obscure brownish yellow, the tips blackened; tarsi black. Wings hyaline, the base and subcostal cell more yellowish; stigma dark brown, conspicuous, continued along the cord as a conspicuous seam to cell *1st M*<sub>2</sub>; extreme tip of the wing darkened; veins black. Venation: *Rs* short, about one-half longer than the deflection of *R*<sub>4+5</sub>; cell *M*<sub>1</sub> narrowly sessile.

Abdomen shiny black. In the female, the basal half of the abdominal segments are shiny black, the apical half deep velvety-black. Outer pleural appendage of the male hypopygium elongate, tapering to the narrow point. Ovipositor reddish horn-color.

*Habitat:* Japan. Holotype, ♂, Ikaho, Gumma-Ken, July 7, 1920 (K. Tanaka). Allotopotype, ♀. Paratype, ♀, Chujenji, Tochigi-Ken, July 9, 1920 (K. Tanaka); ♂, Nikko, Tochigi-Ken, July 9, 1920 (K. Tanaka).

***Nephrotoma neoprattensis* sp. n.**

General coloration black; antennal scape orange-yellow, flagellum dark brown; anterior part of vertex orange-yellow; a dark brown spot adjoining the inner margin of eye; general coloration of thorax dull black; femoral bases yellow; wings grayish yellow, the cord and wing-tip infuscated; cell *M*<sub>1</sub> broadly sessile; abdominal tergites brown, the lateral margins of the segments obscure yellow.

*Female*—Length about 17 mm.; wing, 15.4 mm.

Frontal prolongation of the head obscure brownish yellow, black above. Antennal scape orange-yellow; flagellum dark brown. Head orange-yellow, the occiput and posterior part of the vertex dark brown, this color extending cephalad onto the vertical tubercle; a conspicuous brown blotch on either side of the vertical tubercle adjoining the inner margin of the eye; a narrow pale ring surrounding the eyes.

Pronotum dark brownish black, the scutellum yellow. Mesonotal praescutum dull black, the interspaces between the praescutal stripes gray pruinose; extreme humeral regions narrowly and obscurely yellow; scutum and central lobe of scutellum dull black; lateral sclerites of scutellum obscure yellow; postnotum black. Surface of mesonotum in fresh specimens probably pruinose. Pleura almost entirely dark, very sparsely variegated with obscure yellow. Halteres yellow, the knobs a little darker. Legs with the coxæ concolorous with the ground-color of the pleura; trochanters obscure yellow; femora yellow basally, the tips broadly blackened, broadest on the fore legs where they include about the distal two-thirds, narrowest on the hind legs where about

the distal third is darkened; tibiae and tarsi brownish black. Wings with a faint grayish yellow tinge, more saturated at the wing-base and in cell *Sc*; stigma oval, dark brown; distinct brownish gray seams along the cord; faint gray seams along the cubital and median veins; wing-tip broadly darkened, this including the outer ends of cells *R*<sub>2</sub>, *R*<sub>3</sub>, *R*<sub>5</sub>, *M*<sub>1</sub>, 2nd *M*<sub>2</sub>, *M*<sub>4</sub> and *Cu*<sub>1</sub>. Venation: Cell *M*<sub>1</sub> very broadly sessile.

First abdominal tergite brown, light gray pruinose, the lateral margins broadly yellow; remaining abdominal tergites dark brown, only the anterior lateral margins obscure yellow; posterior segments uniformly dark brown; sternites brown, pale caudally. Ovipositor with the basal shields shiny black, the valves light horn-yellow.

*Habitat*: Japan. Holotype, ♀, Maruyama, Sapporo, May 26, 1916 (S. Kuwayama).

*Nephrotoma neoprattensis* is allied to *N. pratensis* (L.) of Europe. It resembles *N. pullata* (Alex.) but has the dark coloration even more extensive and with the venational details distinct; *R*<sub>2+3</sub> considerably longer than *Rs*; cell 1st *M*<sub>2</sub> larger and with *m-cu* at the fork of *M*.

#### ***Nephrotoma microcera* sp. n.**

Antennae short in both sexes; flagellar segments unicolorous; mesonotal praescutum with three shiny reddish stripes; a velvety black mark at the ends of the transverse suture; a capillary brown line on the scutellum and postnotum; legs pale brownish yellow, tarsi darker; veins yellow, costal region more saturated; stigma pale; abdomen yellow, tergites trilineate with black; sternites with a capillary black median line.

*Male*—Length, 13–13.5 mm.; wing, 12–12.5 mm. *Female*—Length, 19 mm.; wing, 14.5–15 mm.

Frontal prolongation of head pale yellow above, brownish laterally; palpi brown. Antennae short, in the male, if bent backward, not attaining the wing-root; scapal segments pale yellow, flagellum passing into dark brown before the tip. Head pale testaceous yellow, shiny; occipital mark not distinct.

Pronotum pale yellow. Mesonotal praescutum yellow with three shiny reddish to reddish brown stripes that are sometimes only faintly indicated; scutal lobes reddish, the median area yellow; a semilunate velvety-black line at the ends of the suture above the wing-root; scutellum reddish yellow with a capillary dark brown median line; postnotum yellow, with a conspicuous elongate triangular dark brown mark, the point directed caudad and not attaining the posterior margin of the sclerite. Pleura yellow, indistinctly variegated with reddish. Halteres pale brown. Legs with the coxae shiny yellow; trochanters yellow; remainder of the legs pale brownish yellow; tarsi darker. Wings with a yellowish tinge, more saturated in the costal region, this color continued to the wing-tip; extreme wing-apex very narrowly margined



with dark brown; stigma pale yellow; veins dark brown, more yellowish in the costal region. Venation: Cell  $M_1$  very short petiolate to narrowly sessile.

Abdominal tergites dull yellow, trilineate with black, the median line broader, very narrowly interrupted at the posterior margins of the segments; lateral margins narrower, very indistinctly interrupted at about one-third the length of each segment; sternites yellow with a capillary black median line that is slightly interrupted. Male hypopygium having the ninth tergite with a very deep U-shaped median notch. Outer pleural appendage elongate, tapering to the slender apex. Ninth sternite deeply incised, each half tumid. Eighth sternite with the margin feebly notched, without lobes or conspicuous bristles, the basal half of the sternite dark brown.

*Habitat:* Japan. Holotype, ♂, Komaba, Tokio, June 6, 1920 (H. Machida). Allotopotype, ♀, May 29, 1920. Paratopotypes, 3 ♂'s, 2 ♀'s, May 29 to June 6, 1920. Paratypes, ♂, Maruyama, Sapporo, July 18, 1916 (S. Kuwayama); ♂, Sapporo, August 25, 1916 (S. Kuwayama).

***Nephrotoma minuticornis* sp. n.**

Generally similar to *N. microcera*, differing as follows: Lateral regions of the frontal prolongation of the head not conspicuously darkened. Mesonotal praescutum with the stripes black, the median stripe split by a capillary reddish line; each scutal lobe with two confluent black marks; no dark mark at the ends of transverse suture; scutellum and postnotum without a dark median vitta. Legs with the tips of femora and tibiae narrowly darkened. Wings with cell  $M_1$  subsessile to very short-petiolate. Abdomen obscure yellow; tergites with three very narrow black lines, the dorsal stripe much narrower than in *N. microcera*. Tergites seven to nine dark brown, with the caudal margins yellow; sternites with the capillary dark line more interrupted; eighth sternite dark brown basally. Male hypopygium with the notch of the ninth tergite much broader U-shaped. Eighth sternite with a deep notch, the margins of which are clothed with long, conspicuous, yellow bristles that are contiguous or decussate across the median line of the body.

*Habitat:* Japan. Holotype, ♂, Sapporo, (S. Kuwayama).