

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

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FOUR PLATES

The crane flies discussed herein are chiefly from eastern Siberia, where they were included in the very large and valuable collections belonging to the Russian Academy of Sciences, Leningrad, having been sent to me for determination through the kindly intervention of Drs. Theodore Pleske and A. von Stackelberg. All types resulting from this series are preserved in the collection of the Russian Academy. A few other specimens were taken in Szechwan, China, by Messrs. George M. Franck and David C. Graham, the types of the latter collector being contained in the United States National Museum, of the former in my own collection. I am greatly obliged to the above-mentioned scientists for their appreciated interest in sending me these specimens.

TIPULINÆ

TIPULA (TIPULA) STACKELBERGI sp. nov. Plate 1, fig. 1; Plate 2, fig. 25.

Belongs to the *tricolor* group, allied to *sulphurea*; general coloration gray, the præscutum with four brown stripes; mediotergite yellow, with a large light gray area on either side of median line; antennal segments beyond the third almost uniformly darkened; wings with a nearly uniform brownish yellow tinge, with no darker areas excepting the yellowish brown stigma; abdominal tergites yellowish, the outer segments, including hypopygium, more brownish black; male hypopygium with the tergal region produced into a triangular point at each outer angle; notch of ninth sternite with two small clavate lobes.

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

Frontal prolongation of head yellowish white above, light brown on sides beneath; nasus distinct; palpi with basal seg-

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

ment testaceous, the outer segments passing into dark brown. Antennæ broken at the ninth segment; relatively long, if complete extending about to base of abdomen or slightly beyond; scape and pedicel obscure yellow; first flagellar segment clear light yellow, the succeeding segments very vaguely bicolorous, the basal enlargement brownish black, the remainder of segment dark brown, outermost segments more uniformly brownish black; segments much longer than the verticils. Head light gray, with a capillary blackish median vitta.

Pronotum gray. Mesonotal præscutum light gray, with four brown stripes, the intermediate pair nearly contiguous, separated by a capillary blackish vitta; scutum light gray, the lobes variegated with more brownish gray; scutellum buffy, the color continued laterad along the posterior border of the scutal lobes to wing root; mediotergite yellow with a light gray area on either side of the median line, occupying about the distal three-fourths of the sclerite on either side of the midline; a very delicate impressed median line on distal third of mediotergite. Pleura with the anepisternum, sternopleurite, and meron clear light gray; posterior sclerites of pleura obscure yellow, sparsely pruinose, especially the pleurotergite; dorsopleural region light yellow. Halteres relatively long, the stem pale yellow, the knobs weakly darkened. Legs with the coxæ light gray pruinose, the posterior coxæ much paler, more yellowish gray; trochanters yellow; femora yellow, the tips narrowly blackened, the amount subequal on all legs; tibiæ brown, the tips darker; tarsi black. Wings (Plate 1, fig. 1) with an almost uniform brownish yellow tinge, the costal and prearcular regions brighter yellow; stigma pale yellowish brown; restricted obliterate areas before stigma and across base of cell 1st  $M_2$ ; veins brown. Venation: Rs long, about two and one-half times m-cu; cell 1st  $M_2$  long, parallel-sided; fork of  $M_{3+4}$  lying before level of r-m.

Abdominal tergites chiefly yellow, with scarcely darker more brownish yellow areas on sides; tergites with transverse blackened areas; outer segments, including hypopygium, brownish black. Male hypopygium with the caudal margin of tergite (Plate 2, fig. 25, 9t) terminating in two slender darkened lobes that are separated only by a linear slit, the apices of the lobes set with conspicuous blackened spicules; lateral angles of tergite further produced into subacute points. Ninth sternite, 9s, notched medially, at extreme base of incision with a pair of dusky clavate lobes that are densely covered with small setæ; these lobes do not jut caudad beyond the general level of the

sternite, as is the case in *sulphurea* Doane and *subsulphurea* sp. nov., but lie deep in the notch of the sternite. Inner dististyle, *id*, deeply bifid, the outer part more elongate and tipped with erect spines. Gonapophyses, *g*, appearing as pale spatulate blades with very slender stems.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, male, Tigrovaja, Suchan district, June 16, 1927 (*Stackelberg*), No. 81.

I take great pleasure in naming this very distinct crane fly in honor of the collector, Dr. A. von Stackelberg, custodian of the Diptera in the Russian Academy of Sciences. The nearest regional ally is *Tipula* (*Tipula*) *subsulphurea* sp. nov., which differs in the general coloration of the body, including the clear yellow mediotergite, darkened cubital seam, brightened hypopygium, and details of structure of the male hypopygium.

The reference of the species of the *tricolor* (*lateralis*) group to the typical subgenus may not prove to be justified. The members of the group as known form a compact unit that shows certain definite characters, as the short  $M_{3+4}$  and the paddlelike gonapophyses of the male hypopygium. In case these and other lesser characters are deemed sufficient to warrant a separate subgeneric term for the members of the group, the name *Yamatotipula* Matsumura (1916) is available.

TIPULA (TIPULA) SUBSULPHUREA sp. nov. Plate 1, fig. 2; Plate 2, fig. 26.

Belongs to the *tricolor* group, allied to *sulphurea*; antennæ (male) elongate, if bent backward extending to beyond base of abdomen; mesonotal præscutum light gray with four dark brown stripes; posterior sclerites of pleura, together with mediotergite, abruptly pale sulphur yellow; wings pale brownish yellow; a conspicuous brown seam along vein Cu; Rs elongate; cell 1st  $M_2$  narrow; male hypopygium with the two lobes of the tergite slender, set with blackened points, separated by a deep and narrow median incision; ninth sternite slightly produced caudad on either side of midline into a slender fingerlike lobe that is tufted with setæ.

*Male*.—Length, about 12 millimeters; wing, 11; antenna alone, 4.

*Female*.—Length, about 16 millimeters; wing, 12.5; abdomen, 12.

Frontal prolongation of head brownish yellow to light yellow; nasus distinct; palpi dark brown. Antennæ (male) elongate, if bent backward extending to beyond the base of abdomen; basal

three segments yellow, succeeding two or three segments bicolorous, yellow, with the basal enlargement brownish black; outer segments more uniformly infuscated; flagellar segments elongate, much exceeding the small verticils. Head gray, the vertex with a capillary dark brown median line.

Pronotum dark gray. Mesonotal præscutum light gray, with four dark brown stripes; pseudosutural foveæ punctiform; scutum light gray, the lobes vaguely marked with darker; scutellum and mediotergite abruptly light yellow, the former a very little darker than the latter. Pleura with the anepisternum, sternopleurite, and ventral meral region light gray, the posterior sclerites of pleura, including pleurotergite, abruptly light sulphur yellow; dorsopleural membrane ochereous. Halteres dusky, the extreme base of stem yellow, the knobs dark brown. Legs with the fore and middle coxæ light gray, the posterior coxæ abruptly pale yellow; trochanters yellow; femora yellow, the tips narrowly blackened; tibiæ obscure yellow, infuscated on outer third, the tips blackened; tarsi black. Wings (Plate 1, fig. 2) pale brownish yellow, the prearcular and costal regions clearer yellow; stigma small, pale brown; a conspicuous brown seam occupies the space between the cubital branches, only vaguely crossing  $Cu_1$  into posterior border of cell M; oblitative areas reduced to two small separated spots, one before stigma, the second across base of cell 1st  $M_2$ ; veins brown, more yellowish in costal flavous areas. Venation: Rs long, nearly two and one-half times m-cu; cell 1st  $M_2$  narrow; m-cu oblique, on  $M_4$  just beyond the fork of the short  $M_{3+4}$ , the latter point lying proximad of level of r-m.

Abdominal tergites (male) yellow with a sublateral brown stripe on either side, the lateral margins of segments broadly yellow; hypopygium yellow; sternites yellow, very narrowly darkened laterally, the eighth sternite more uniformly darkened. In female, abdomen elongate; tergites darkened sublaterally, beyond the second segment so extensively so as to reduce the ground color to a narrow median line and pale margins. Male hypopygium (Plate 2, fig. 26) with the sclerites fused into a continuous ring. Ninth tergite, 9t, with the median region of caudal margin produced into a depressed lobe that is further extended into two lobes that are narrowly but deeply separated, densely set at tips with microscopic blackened points. Outer dististyle, *od*, a very short pale club, provided with long pale setæ. Inner dististyle, *id*, small, ear-shaped, with a darkened spinous lobe on face. Median region of sternite, 9s, delimited by sutures, each lateral angle produced slightly caudad into



a slender lobe that is tipped with a few long setæ. Eighth sternite unarmed.

*Habitat.*—Eastern Siberia (Ussuri).

Holotype, male, Spassk, June 4, 1928 (*Obolenskij*), No. 591. Allotype, female, Maiche region, near Shkotovo, June 7, 1927 (*Sokolov*), No. 572.

The closest ally of the present fly appears to be *Tipula* (*Tipula*) *quadrivittata* Staeger, of northern Europe, which has a similar darkened cubital seam but may be readily told by the shorter male antennæ with the flagellum entirely blackened and with the scape and pedicel more or less suffused, together with differences in wing venation and in coloration of the posterior sclerites of the thorax, including both pleura and notum. The fly is likewise allied to *T. (T.) sulphurea* Doane, of northern North America, which differs in the shorter male antennæ, with more uniformly darkened flagellum, the barely indicated cubital darkening, and slight differences in structure of the male hypopygium.

**TIPULA (TIPULA) MORIGERA** sp. nov. Plate 1, fig. 3; Plate 2, fig. 27.

Belongs to the *tricolor* group, allied to *lateralis*; general coloration gray, the præscutum with four darker stripes that are narrowly bordered by dark brown; antennæ (male) moderately long, if bent backward extending to shortly beyond base of abdomen, the basal four or five segments pale, the remainder dark brown; pleura whitish; femora yellow, the tips narrowly blackened; wing pattern much as in *lateralis*;  $M_{3+4}$  very short to lacking; male hypopygium with the blades of the gonapophyses longer than wide.

*Male.*—Length, 12 to 13 millimeters; wing, 14 to 15; antenna, about 5.

*Female.*—Length, about 15 millimeters; wing, 14.

Frontal prolongation of head light yellow; nasus distinct; palpi black. Antennæ (male) relatively long, if bent backward extending to beyond base of abdomen; scape and pedicel light yellow, flagellar segments one to three a little more obscure yellow; succeeding segments passing into dark brown; flagellar segments moderately nodulose, the verticils shorter than the segments. Head light gray, the center of vertex more infuscated, the front pale.

Mesonotal præscutum gray with four darker gray to brown stripes that are narrowly bordered by dark brown, including a capillary median brown vitta; in cases the dark borders of

the stripes, with the exception of the median line, are obsolete or nearly so; scutum light gray, the lobes variegated by darker brownish gray areas; scutellum paler than mediotergite, both with a very delicate median brown line. Pleura whitish, the pleurotergite very pale yellow. Halteres yellow, the knobs dark brown. Legs with the coxæ whitish; trochanters yellow; femora yellow, the tips narrowly and conspicuously blackened; tibiæ brownish yellow, the tips blackened; tarsi black. Wings (Plate 1, fig. 3) tinged with brown, patterned about as in *eluta* or *lateralis*; prearcular region yellow; cell M and an oblitative area before cord more whitish; stigma, cell Sc, and seams on anterior cord and m-cu darker brown. Venation:  $M_{3+4}$  very short to obsolete, its maximum length about equal to  $R_2$ .

Abdominal tergites obscure yellow, with a very broad dark brown sublateral stripe, narrowly interrupted at caudal margins of segments; lateral borders of tergites broadly pale; sternites yellow, the subterminal segments darkened; hypopygium yellow. Male hypopygium with the median tergal plate (Plate 2, fig. 27, 9t) with a small U-shaped notch, the lateral lobes truncated and set with dense black setæ, these continued as a line down the ventral face of lobe. Outer dististyle, *od*, long, obtuse at tip, the posterior margin on basal half a little dilated. Inner dististyle, *id*, of characteristic shape, with a semicircular blackened armature at base of beak; group of sensory areas above this blackened collar numbering about 14 or 15; marginal fringe of setæ numerous, the outermost short and strongly curved. Setal brushes of ninth sternite in two separate groups. Gonapophyses *g*, with the blades longer than broad.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, male, Kamen-Rybolov, Lake Chanka, July 8, 1927 (*Stackelberg*), No. 266. Allotype, female, Vladivostok, August 5, 1903 (*Gavronski*), No. 498. Paratopotype, male, July 8, 1927, No. 265. Paratypes, 1 male, Devitza station, Lake Chanka, July 14, 1927 (*Stackelberg*), No. 242; 4 females, Jakovlevka, Spassk district, August 31, 1926 (*Djakonov and Filippjev*), Nos. 115, 116, 125; September 12, 1926, No. 124; 1 male, Spassk, June 4, 1928 (*Obolenskij*).

In the elongate blades of the gonapophyses and nature of the ninth tergite of the male hypopygium, the present fly is closest to *Tipula* (*Tipula*) *couckeii* Tonnoir (*gracilentata* Lackschewitz), of Europe, differing conspicuously in the structure of the outer dististyle, which is here more like that of the otherwise distinct *T. (T.) lateralis* Meigen. The pale basal segments of the fla-

gellum are as in *lateralis* and *montium* Egger, being entirely darkened in the other European members of the group, *cærulescens* Lackschewitz, *couckeii* Tonnoir, and *solstitialis* Westhoff.

**TIPULA (TIPULA) PARVINCISA** sp. nov. Plate 2, fig. 28.

Belongs to the *tricolor* group, allied to *lateralis*; general coloration of præscutum blue-gray, with four slightly darker gray stripes that are narrowly bordered by bright brown; antennæ (male) moderately long, if bent backward extending to slightly beyond base of abdomen; basal three segments obscure brownish yellow, the succeeding segments dark brown; wings pale yellowish white, cells C and Sc, stigma, and seams on m-cu and distal section of vein Cu<sub>1</sub> darker brown; abdominal tergites with sublateral brown stripes that are narrowly cross-connected before caudal margins; male hypopygium with the median notch of tergite very small, the lateral lobes lacking; blades of gonapophyses broader than long, the stem slender.

*Male*.—Length, 12 to 14 millimeters; wing, 14.5 to 16.5; antenna, about 5.

*Female*.—Length, about 18 to 19 millimeters; wing, 18; antenna, about 2.5.

Frontal prolongation of head above light gray pruinose, darker on sides beneath; palpi brownish black. Antennæ of male moderately long, if bent backward extending to shortly beyond the base of abdomen; basal three or four segments obscure brownish yellow, succeeding segments black; flagellar segments strongly incised, with verticils that are shorter than the segments; antennæ of female short, the basal seven or eight segments pale, the outer ones darkened; segments very weakly incised to subcylindrical. Head light blue-gray, with a capillary blackish median vitta.

Mesonotal præscutum with ground color light blue-gray, with four slightly darker gray stripes that are narrowly bordered by bright brown, the intermediate pair on outer margin sending a small spur toward the pseudosutural foveæ; scutum light gray, each lobe with two darker gray areas; posterior sclerites of mesonotum light gray, with vague indications of a capillary darker line. The paratopotype has the median præscutal vitta unusually distinct. Pleura clear light gray; dorsopleural membrane pale yellow. Halteres with stem yellow, knobs darkened. Legs with the coxæ whitish gray; trochanters yellow; femora yellow, the tips blackened; tibiæ obscure yellow, the tips more broadly blackened; tarsi black. Wings with the ground color pale yellowish white; cells C and Sc with stigma infuscated; broad and

conspicuous brown seams on anterior cord, m-cu, and distal section of  $Cu_1$ ; a conspicuous pale yellow antestigmal area in cell C; veins brown.

Abdominal tergites with the dorsomedian line ochreous, sparsely pruinose; sublateral stripes broad, on intermediate and outer segments narrowly connected before caudal margins of segments; lateral borders of tergites broadly pale, the caudal margins narrowly so; sternites pale, the subterminal segments infuscated. Male hypopygium with the median plate of tergite (Plate 2, fig. 28, 9*t*) broad, its margin convexly rounded, with a small U-shaped median incision. Outer dististyle, *od*, small, obtusely rounded at tip, the cephalic border near base with long coarse black setæ. Inner dististyle, *id*, with the terminal beaklike portion unusually broad and flattened, the apex obtusely truncated. Gonapophyses, *g*, with the stem long and slender, the blade broader than long. Hair brushes of ninth sternite in four distinct groups.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, male, Tigrovaja, Suchan district, June 9, 1927 (*Stackelberg*), No. 53. Allotopotype, female, June 16, 1927, No. 80. Paratopotype, male, June 9, 1927, No. 54. Paratypes, 1 male, 1 female, Jakovlevka, Spassk district, September 4, 1926 (*Djakonov and Filippjev*), Nos. 123, 176; 1 female, Vladivostok, July 16, 1903 (*Gavronsky*); 1 female, Tiger Mountain, Vladivostok, July 21, 1912 (*Sycheff*), No. 694; 1 female, Maiche region, near Shkotovo, June 4, 1927 (*Sokolov*), No. 576.

The present fly differs conspicuously from *Tipula* (*Tipula*) *morigera* sp. nov. in the structure of the male hypopygium, as shown by the comparative figures. The species is similarly quite distinct in the structure of the male hypopygium from the European *T. (T.) lateralis* Meigen and *T. (T.) montium* Egger, which likewise have the basal segments of the flagellum pale. The paratypes have the præscutal stripes more brownish gray and the ground color of the wings more infumed, but certainly appear to belong here.

TIPULA (TIPULA) PROTRUSA sp. nov. Plate 1, fig. 4; Plate 2, fig. 29.

Belongs to the *tricolor* group, allied to *aino*; general coloration gray, the præscutum with four grayish brown stripes that are narrowly bordered by darker brown; antennæ short, scape and pedicel brownish black, the former a little reddish at base; basal flagellar segments with the proximal ends reddish, remainder of organ black; wings strongly infumed, with a conspicuous obliterate area before cord; outer radial cells unbright-



ened; abdominal tergites unequally trivittate with dark brown; male hypopygium with the tergite produced into a median black plate that is convexly rounded above to appear more or less like a portion of a cylinder.

*Male*.—Length, 23 to 25 millimeters; wing, 20 to 22; antenna, 3 to 3.3.

*Female*.—Length, about 25 millimeters; wing, 22 to 23.

Frontal prolongation of head relatively short, reddish brown, pruinose above; palpi black. Antennæ short, if bent backward not attaining the wing root; scape and pedicel brownish black, the former a little reddish at base; first flagellar segment reddish, the succeeding segments black, with the basal enlargements of the proximal segments a little reddish; flagellar segments short and crowded, the verticils subequal to or exceeding the segments. Head gray, the region of the vertical tubercle with a median impressed line.

Mesonotal præscutum gray, with four grayish brown stripes that are narrowly bordered by darker brown, the mesal edges of intermediate stripes a little divided at near midlength to expose a strip of the ground color; scutum blackish gray, the mesal portion of each scutal lobe paler; scutellum brownish gray, bordered by reddish; in cases the scutellum more uniformly gray, with a weak median brown line; mediotergite clear light gray. Pleura with the anterior sclerites clear light gray, the posterior sclerites light yellow, the latter including the pteropleurite, excepting a gray spur at dorsocephalic angle, the dorsal meron, base of halteres, and a stripe across the pleurotergite; dorso-pleural membrane more buffy yellow. Halteres pale, the knobs dark brown. Legs with the coxæ light gray, the posterior coxæ a little brightened at bases; trochanters yellow; femora and tibiæ yellow, the tips narrowly black; tarsi black. Wings (Plate 1, fig. 4) strongly infumed, the stigma and costal region somewhat darker; proximal end of stigma yellow; anterior and posterior cord narrowly bordered with brown; obliterative streak before cord conspicuous, extending from before stigma into extreme base of cell  $M_3$ ; no evidence of paling in outer radial cells, as is the case in *aino*; bases of anal cells a little brightened; veins dark. Venation: Rs from two and one-half to three times m-cu;  $M_{3+4}$  from one-third to nearly one-half the basal section of  $M_3$ ; petiole of cell  $M_1$  about one-half m.

Abdominal tergites broadly buffy dorsomedially, with a broken pale brown median vitta, broadly broken on basal ring, more narrowly so at caudal border of each segment; sublateral stripes

darker and more nearly continuous; lateral margins of segments broadly pale; tergal plate of hypopygium dark basally, more reddish outwardly, the median lobe polished black; basal sternites chiefly pale, the subterminal segments heavily gray pruinose. Male hypopygium with the region of tergite (Plate 2, fig. 29, 9*t*) produced medially into a relatively narrow, heavily blackened plate that is convexly arched or rounded so as to appear somewhat like a portion of a cylinder; apex of lobe with a small notch, the lobes thus formed truncated, their outer angles acute; the figure shows the tergal lobe as being more or less flattened and indicates obtuse lateral shoulders. Outer dististyle, *od*, pale, obtuse at apex, the outer margin dilated near base. Inner dististyle, *id*, very complex in structure; on mesal face a sclerotized plate that bears a comb of long reddish spines that are unequally tridentate at tips.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, male, Jakovlevka, Spassk district, June 25, 1927 (A. Martynov), No. 214. Allotype, female, in poor condition, Tigrovaja, Suchan district, June 11, 1927 (Stackelberg), No. 5. Paratypes, 1 broken male, with allotype, June 8, 1927, No. 59; 1 male, Sedanka River, near Vladivostok, April 20, 1927 (Martynov), No. 191; 1 male, Ugodinza River, near Jakovlevka, July 4, 1927 (Martynov and Rezvoj), No. 583.

The nearest regional ally of the present fly is *Tipula* (*Tipula*) *aino* Alexander (Japan to Ussuri), which is well-distinguished by the more elongate antennæ, with the basal segments pale, the increased amount of white on the wings, and, especially, the structure of the male hypopygium, notably of the tergal plate.

TIPULA (VESTIPLEX) TUMULTA *sp. nov.* Plate 1, fig. 5; Plate 2, fig. 30.

Allied to *grahami*; size smaller (wing, male, less than 20 millimeters); mesonotal præscutum dull gray, with four brown stripes, the median line narrowly dark brown; apices of knobs of halteres pale; femora yellow, the tips narrowly black; wings pale brown, variegated by darker brown and whitish areas; basal abdominal segments yellow, narrowly trivittate with dark brown; terminal segments black; male hypopygium with the tergite divided; basistyle with an acute spine.

*Male*.—Length, about 17 millimeters; wing, 19.5.

Frontal prolongation of head light brown; nasus stout; palpi brown. Antennæ relatively short, ending before wing root; basal four segments obscure yellow, succeeding segments weakly bicolorous, the basal enlargements brown, the remainder brown-

ish yellow; outer segments more uniformly darkened. Head buffy, with a conspicuous brown median line on vertex.

Mesonotal præscutum dull gray, with four brown stripes that are only narrowly and insensibly bordered by darker; a median capillary dark brown line; scutellum grayish yellow, with a median brown line; mediotergite grayish yellow. Pleura chiefly destroyed by crushing, apparently extensively gray. Halteres brownish yellow, the knobs dark brown with pale apices. Legs with the coxæ brownish gray; trochanters yellow; femora yellow, the tips narrowly but conspicuously black; bases of tibiæ obscure yellow, the apices and all tarsi broken. Wings (Plate 1, fig. 5) with the ground color pale brown, variegated by darker brown and whitish areas; prearcular and costal regions light yellow; the darker brown markings include a conspicuous area in the bases of cells R and M, the stigma and a confluent spot on anterior cord, origin of Rs and narrow seams on m-cu and outer end of vein Cu<sub>1</sub>; the pale areas are distinctly less yellowish than in *grahami*, being whitish subhyaline, including the axillary region, a broad and nearly complete fascia at near one-third the wing length; other similar areas before stigma, near outer end of cell M and in outer end of cell 1st A; a broad, incomplete, pale crossband beyond cord, extending into base of cell M<sub>3</sub>; veins brown, more yellowish in the costal region. Venation: Rs exceeding twice the length of m-cu; vein R<sub>3</sub> gently upcurved at tip, not extended outwardly as in *grahami*, cells R<sub>2</sub> and R<sub>3</sub> at margin being subequal in extent.

Abdomen with the basal segments yellow, the tergites with a median brown line that is narrowly interrupted at the sutures; basal tergites with a similar narrow dark brown sublateral stripe that becomes obsolete beyond the second segment; extreme lateral borders of tergites grayish; segments seven to nine, inclusive, black. Male hypopygium much as in *grahami*. Spines of ninth tergite slender, straight, the surface microscopically roughened. Spine of basistyle, *b*, slender, narrowed to the acute tip. Inner dististyle as shown (Plate 2, fig. 30, *id*).

*Habitat*.—China (Szechwan).

Holotype, male, Mupin, altitude 3,500 feet (*Graham*).

The nearest ally is *Tipula (Vestiplex) grahami* Alexander (China-Tibet border) which differs especially in the large size and more yellowish areas of the wing disk. The details of the male hypopygium are slightly different in the two flies, yet so similar as to indicate a close relationship.

TIPULA (VESTIPLEX) JAKUT sp. nov. Plate 1, fig. 6.

General coloration gray, the præscutum with four darker gray stripes that are narrowly bordered by brown; legs relatively short and stout, femora yellowish brown, the tips weakly darkened; wings pale brown, variegated by whitish areas, including all of cells beyond cord excepting the outer radial field; outer medial field pale; m-cu on  $M_4$  some distance beyond origin; abdomen broadly depressed, the tergites obscure yellow, trivittate with dark brown.

*Female*.—Length, about 22 millimeters; wing, 16.5; hind leg, femur, 7; tibia, 8.8; tarsus, 6.5.

Frontal prolongation of head gray; nasus distinct; palpi dark brown. Antennæ with basal segments obscure yellow, the outer segments darker; outer flagellar segments short and crowded; basal enlargements scarcely developed; verticils a little longer than the segments; terminal segment long. Head light gray; vertical tubercle lacking.

Mesonotal præscutum gray, with four darker gray stripes that are narrowly bordered by brown; interspaces with erect pale setæ; scutal lobes chiefly darkened; posterior sclerites of mesonotum gray. Pleura gray, the dorsopleural region more buffy. Halteres pale, the knobs darkened. Legs with the coxæ pale gray; trochanters reddish yellow; remainder of legs relatively short and stout; femora and tibiæ yellowish brown, their tips weakly darkened; tarsi passing to brownish black. Wings (Plate 1, fig. 6) pale brown, variegated with whitish areas, the ground color including the basal third of wing; stigma a little darker than the ground; the pale areas include the cells beyond cord, excepting the outer half of radial field which is darkened; cell M dark except for a white spot opposite origin of Rs; outer ends of cells Cu and 1st A white, the bases darkened; cell 2d A entirely darkened, veins pale brown. Macrotrichia of veins beyond cord very small and sparse; a scattered series on outer two-thirds of  $R_{4+5}$ ;  $M_1$ ,  $M_2$ , and  $M_3$  with only a few small trichia; other veins beyond cord glabrous. Venation: Cell  $M_1$  long-petiolate; m-cu on  $M_4$  a considerable distance beyond base;  $M_{3+4}$  less than one-half basal section of  $M_3$ .

Abdomen broad, depressed, the genital segment abruptly narrowed; ground color of tergites obscure yellow, broadly trivittate with dark brown, the median stripe narrower and more interrupted than the sublaterals; caudal margins of intermediate and outer tergites narrowly pale yellow; sternites reddish brown, sparsely pruinose, the caudal margins of the segments yellow;



dorsal shield of ovipositor blackened; cerci with ill-defined and obtuse teeth, interspersed with setæ.

*Habitat*.—Eastern Asia (Jakutsk).

Holotype, female, between Ajan and Nelkan, valley of the Tongi River, 137° 30' east longitude, 56° 40' north latitude, June 9 to 15, 1903 (*Popov*), No. 442.

The present fly is well distinguished from the other described regional species of *Vestiplex* by the wing pattern, in conjunction with the venation and the depressed abdomen. The latter condition strongly suggests the condition found in certain species of the *besselsi* group occupying this same general region.

TIPULA (ACUTIPULA) OMEIENSIS sp. nov. Plate 1, fig. 7; Plate 2, fig. 31.

General coloration of thorax clear gray, without greenish or olive tints; mesonotal præscutum with four narrow brown stripes, the intermediate pair obsolete in front; femora extensively blackened; wings brown, with broad and conspicuous pale areas along cord and across bases of outer medial cells; male hypopygium with apex of outer lobe of inner dististyle produced at apex into a slender spine.

*Male*.—Length, about 14 millimeters; wing, 16.5.

*Female*.—Length, about 21 millimeters; wing, 19.5.

Frontal prolongation of head above reddish yellow, sparsely pruinose, darkened ventrolaterally; nasus stout; palpi black. Antennæ with the scape and pedicel yellow; flagellum black, the first segment brightened at extreme base; verticils of moderate length only, subequal to the segments. Head dark gray.

Mesonotum clear light gray, with no signs of olive or greenish suffusions; præscutum with four narrow brown stripes, the intermediate pair obsolete on cephalic fourth or fifth of sclerite, separated by a median line of the ground color that is subequal to or wider than one stripe; lateral stripes diffuse, best indicated by a slightly darker mesal edge; scutal lobes with darkened areas. Pleura gray; dorsopleural membrane buffy. Halteres black. Legs with the coxæ gray; trochanters yellow; femora of male yellow basally, the tips broadly blackened, the proximal fifth or sixth being brightened; in female, the posterior and middle femora obscure yellow with the tips more narrowly darkened, especially of the hind legs; tibiæ and tarsi brownish black to black. Wings (Plate 1, fig. 7) with a strong brown tinge, the prearcular and costal regions somewhat more brownish yellow; cell Cu on either side of the darkened area and a spot near outer end of cell M light yellow; a distinct, more whitish, obli-

terative area extending from before the stigma deep into cell  $M_4$ , with a continuous brightening that involves the bases of cells  $M_1$ , 2d  $M_2$ , and  $M_3$ , together with the extreme adjoining portion of cell  $R_5$ ; stigma brown; veins brown. Venation: Rs a little exceeding m-cu, especially in female.

Abdomen with the basal four tergites obscure yellow, trivittate with brown, the remaining segments, including hypopygium, more uniformly darkened; basal sternites yellow. Male hypopygium with the median lobe of tergite entire, set with abundant blackened spicules. Dististyle as shown (Plate 2, fig. 31, *id*, *od*): Setæ at vertex of inner style very abundant, forty to fifty in number; apex of style produced into a slender spine, with approximately fifteen pendant setæ at and near this spine. Eighth sternite medially not produced into a lobe but provided with abundant long erect yellow setæ.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 11,000 feet, July 19, 1931 (*Franck*). Allotopotype, female, July 18, 1931.

The nearest ally of this fly is *Tipula* (*Acutipula*) *atuntzuensis* Edwards (Yunnan), which differs in the more greenish gray coloration of the head and mesonotum, the distinct nature of the præscutal stripes, and the wing pattern. In the present fly, the outer pale band is very conspicuous, extending from cells  $R_5$  to  $M_4$ , inclusive.

**TIPULA (ACUTIPULA) VANA** sp. nov. Plate 1, fig. 8; Plate 2, fig. 32.

General coloration yellow to pale brown, the præscutum with four brown or reddish brown stripes; pleura yellow; femora yellow, the tips narrowly and weakly darkened; wings with the ground color yellowish, the usual dark pattern relatively pale and ill-defined; spot in cell Cu present; male hypopygium with the median lobe of tergite relatively broad and depressed; eighth sternite at apex produced into a small tubercle, the median region behind this with long erect pale setæ.

*Male*.—Length, 14 to 15 millimeters; wing, 14.5 to 15.

*Female*.—Length, 22 to 24 millimeters; wing, 17 to 18.

Frontal prolongation of head light brown; nasus distinct. Antennæ varying from almost uniformly pale yellow to light brownish yellow, with the outer segments passing into brown. Head brownish gray.

Pronotum yellow. Mesonotal præscutum light brown, sparsely pruinose, with four darker brown stripes; in the paratype, the mesonotum has a pale yellow ground, with four more reddish

brown stripes; scutum with lobes variegated with reddish brown to pale brown; posterior sclerites of mesonotum chiefly pale. Pleura yellow. Halteres pale yellow, the knobs weakly darkened. Legs with the coxæ and trochanters yellow; femora yellow, the tips narrowly and rather weakly darkened; tibiæ yellow, the tips narrowly darkened; tarsi passing into brown. Wings (Plate 1, fig. 8) with a yellow or pale brownish yellow ground, the prearcular and costal regions light yellow; stigma pale brown; bases of outer radial cells weakly darkened; outer end of cell M and the spot in cell Cu pale brown, relatively indistinct; oblitative band narrow, extending from before stigma into base of cell M<sub>3</sub>; veins brown, yellow in the flavous areas. Macrotrichia relatively numerous on veins beyond cord; R<sub>1+2</sub> with a few trichia near base, in cases almost destitute of same. Venation: Rs and m-cu subequal in length.

Abdomen yellow, the basal tergites narrowly darkened sublaterally; segment five and succeeding segments more uniformly darkened, the caudal margins of segments, especially of the sternites, narrowly but conspicuously ringed with pale. Male hypopygium with the median lobe of tergite (Plate 2, fig. 32, 9t) as viewed from above relatively broad and depressed, the apex weakly notched, set with blackened spicules. Outer dististyle pale, narrowed at base, with scattered pale setæ only, with no group of elongate setæ near base, as in *kuzuensis*. Inner dististyle, *id.*, with the outer lobe extended into an acute spinous point, before which, on lower face, is a series of about fifteen spines; vertex or crown of style with about forty long erect coarse setæ. Eighth sternite, 8s, very moderately sheathing, the apex at midline produced into a small erect to slightly retrorse tubercle that is nearly naked; immediately behind this, the median region of sternite for more than one-half the entire length bears a fringe of long erect pale setæ.

*Habitat.*—Eastern Siberia (Ussuri).

Holotype, male, Slavianski Bay, Tulamu River, July 12, 1911 (*Rydzevski and Kuznetzov*), No. 436. Allotopotype, female, with type, No. 437. Paratopotype, male, with type, No. 438; paratype, 1 female, Vladivostok, June 20, 1903 (*Gavronski*), No. 502.

In the unusually pale pattern of the wings, the present fly somewhat resembles the larger *Tipula (Acutipula) kuzuensis* Alexander, of Japan, which differs in several important features of the male hypopygium, such as the differently shaped outer dististyle, with a brush of elongate setæ on outer margin near base; the obtusely rounded apex of the outer lobe of the inner

dististyle; and the lack of a median tubercle on the eighth sternite. This last peculiar feature serves to separate the present fly from other regional generally similar species of *Acutipula*.

**TIPULA (ACUTIPULA) COCKERELLIANA** Alexander. Plate 3, fig. 33.

*Tipula cockerelliana* ALEXANDER, Proc. U. S. Nat. Mus. 68, art. 4 (1925) 14-15.

Described from a single female, taken at Okeanskaja station, near Vladivostok, Ussuri, in August, 1923, by Prof. T. D. A. Cockerell. A few additional specimens now available show that the species is very distinct from all other generally similar described forms.

Okeanskaja, July 27, 1911 (*Shavinskaja*), No. 412; July 31, 1911, No. 410; August 6, 1911, No. 411. Tiger Mountain, Vladivostok, July 21, 1912 (*Sycheff*), No. 692.

The single male from the above series is described as allotype. *Male*.—Length, about 20 millimeters; wing, 20.

Characters as in the female, with but few exceptions. Obliterative streak of wing less conspicuous than in type female, but still of unusual width and distinctness. Abdominal segments beyond the third strongly darkened. Male hypopygium with the outer dististyle (Plate 3, fig. 33, *od*) large, narrowed to the subacute apex, the margin, especially near the base, with long conspicuous setæ, those on outer margin before apex very small and sparse; setæ of disk very few and scattered, as is common in the subgenus. Inner dististyle, *id*, as shown; crown or vertex of style with forty or more erect coarse setæ; outer lobe produced at apex into an acute spine that is surrounded by other slightly shorter, more-appressed setæ of similar coarseness; lower lobe or beak blackened, simple. Eighth sternite produced medially and bearing a dense fringe of long yellow setæ that become smaller back from margin.

*Allotype*.—Okeanskaja station, July 27, 1911 (*Shavinskaja*), No. 412.

The superficial resemblance of this fly to *Tipula (Acutipula) acanthophora* sp. nov. is surprisingly close, but there is no question of the distinctness and validity of both species.

**TIPULA (ACUTIPULA) ACANTHOPHORA** sp. nov. Plate 1, fig. 9; Plate 3, fig. 34.

Allied to *Tipula (Acutipula) cockerelliana*; antennæ relatively short, bicolorous; præscutum gray with four very slightly darker gray stripes; wings pale yellow, with a dark and whitish pattern; obliterative streak broad; pale area across bases of outer median cells not or scarcely entering cell R<sub>5</sub>; dark spot in cell



Cu conspicuous; cell 1st  $M_2$  relatively small; male hypopygium with the median lobe of tergite simple, unusually slender; inner dististyle with the outer lobe produced into a long slender spine; eighth sternite with short inconspicuous setæ.

*Male*.—Length, 17 to 19 millimeters; wing, 20 to 21.

*Female*.—Length, 22 to 28 millimeters; wing, 20 to 23.

Frontal prolongation of head light brown; nasus conspicuous; palpi brown. Antennæ (male) of moderate length, if bent backward extending to mid-distance between bases of wings and halteres; basal three segments yellow, the remainder bicolorous, chiefly yellow, with the small basal enlargements infuscated; verticils long. Head gray; anterior vertex with a narrow brown line.

Pronotum yellow. Mesonotum light gray, the præscutum with four very slightly darker gray stripes; centers of scutal lobes similarly darkened. Pleura light yellow, the dorsopleural region more buffy. Halteres pale, the bases of knobs dark brown, the tips restrictedly pale. Legs yellow, the tips of femora narrowly brown, of tibiæ even more narrowly infuscated; terminal tarsal segments infuscated. Wings (Plate 1, fig. 9) with the ground color pale yellow, the prearcular and costal regions more saturated yellow; bases of outer radial cells, outer half of cell 1st  $M_2$ , and outer end of cell M more darkened; dark spot in cell Cu conspicuous; oblitative streak broad and conspicuous, extending deep into cell  $M_3$  and including the narrow outer border of cell  $M_4$ ; pale band across bases of outer medial cells not or scarcely invading cell  $R_5$ ; veins brown, yellow in the flavous areas. Venation:  $R_s$  a little longer than m-cu; cell 1st  $M_2$  smaller than in *cockerelliana*.

Abdomen yellow, the outer abdominal segments weakly infumed; basal tergites with scarcely indicated pale brown sub-lateral stripes. Male hypopygium with the apical point of tergite (Plate 3, fig. 34, 9t) unusually slender, simple. Outer dististyle much smaller than in *cockerelliana*. Inner dististyle, *id.*, with the outer lobe produced into a slender acute spine; basal lobe compressed, the apex weakly emarginate, the more basal point or beak blackened; crown or vertex of style with approximately eighteen to twenty coarse spinous setæ. Eighth sternite not produced, with short inconspicuous setæ only.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, male, Tigrovaja, Suchan district, August 2, 1927 (*Stackelberg*), No. 6. Allotopotype, female, August 2, 1927, No. 48. Paratopotype, male, August 4 or 5, 1927, No. 83; para-

types, 2 males, Sidemi, July 19, 1897, No. 483; August 18, 1897, No. 451 (*Jankovski*); 1 female, Okeanskaja station, near Vladivostok, July 31, 1911 (*Shavinskaja*), No. 409; 1 female, Kedrovaja Padj, Posjet district, southwest of Vladivostok, June 15, 1926 (*Mordvilko*), No. 616; 1 female, same as last, August 5, 1927 (*Rezvoj*), No. 596.

In its general appearance, the present fly is very similar to *Tipula (Acutipula) cockerelliana* Alexander, differing most evidently in the structure of the male hypopygium, notably the smaller, less hairy outer dististyle, the acute outer spine of the inner dististyle, and the much shorter and inconspicuous setæ of the eighth sternite. The pale ground color of the wings is less yellowish and the area across the bases of the outer medial cells scarcely invades cell R<sub>5</sub>.

TIPULA (LUNATIPULA) VALIDICORNIS sp. nov. Plate 1, fig. 10; Plate 3, figs. 35 to 37.

Belongs to the *fascipennis* group; size large (wing, over 18 millimeters); general coloration of mesonotum yellowish gray, the præscutum with four dark gray stripes; legs yellow, the tips of femora and tibiæ undarkened; wings grayish yellow, the oblitative area very conspicuous; male hypopygium large, the lateral angles of tergite produced caudad into powerful horns; inner dististyle a very narrow blade that is produced into a long spine; eighth sternite sheathing, each lateral angle produced into a tubercle that is tipped with a long reddish spine.

*Male*.—Length, about 17 to 18 millimeters; wing, 19 to 20.

*Female*.—Length, about 16 millimeters; wing, 19.

*Male*.—Frontal prolongation of head brownish yellow, the sides on ventral half somewhat darker; nasus short and stout, with a tuft of long yellow setæ; palpi pale brownish yellow, the terminal segment dark brown. Antennæ moderately long, if bent backward extending to shortly beyond base of abdomen; basal three segments yellow, the outer flagellar segments passing into brown; flagellar segments moderately incised, a little shorter than the longest verticils. Head gray.

Mesonotal præscutum yellowish gray, with four dark gray stripes, the intermediate pair narrowed behind; interspaces with conspicuous yellow setæ; scutal lobes chiefly dark gray; posterior sclerites of mesonotum yellowish gray. Pleura chiefly pale yellow, the ventral anepisternum and ventral sternopleurite gray; dorsopleural region light yellow. Halteres pale, the knobs darkened. Legs with the coxæ yellow, very sparsely pruinose; trochanters yellow; femora and tibiæ obscure yellow, the tips

undarkened; tarsi obscure yellow, passing into black. Wings (Plate 1, fig. 10) with the ground color grayish yellow, the prearcular and costal regions, together with cell Cu, clear light yellow; stigma bicolorous, the proximal end yellow, the outer portion brown; outer radial field slightly infumed; narrow dusky clouds on m-cu and distal section of vein Cu<sub>1</sub>; a very conspicuous oblitative streak extending from before stigma across cell 1st M<sub>2</sub> almost to wing margin in cells M<sub>3</sub> and M<sub>4</sub>, the veins traversed, especially the anterior cord, unusually pale and indistinct; veins brown, more yellowish in the flavous areas. Venation: Cell 1st M<sub>2</sub> slightly more elongate than in the group.

Abdominal tergites yellow, the outer segments, including the hypopygium, more yellowish brown to brown; no distinct stripes on abdomen. Male hypopygium (Plate 3, fig. 35) large and conspicuous; tergite, 9t, and eighth sternite, 8s, large, the basistyle and ninth sternite, 9s, correspondingly reduced; suture between tergite and sternite only faintly indicated. Ninth tergite (Plate 3, fig. 36, 9t) with each lateral angle produced caudad into a powerful reddish horn, the tip flattened and deflected slightly laterad; base of horn with conspicuous yellow setæ. Basistyle not separated from sternite. Outer dististyle, a tiny lobe, with very long conspicuous setæ. Inner dististyle, *id*, a narrow sclerotized blade that is extended into a slender acute point. Eighth sternite (Plate 3, fig. 36, 8s) large, the eighth tergite correspondingly reduced; sternite sheathing, each lateral angle of caudal margin produced into a lobe that is tipped with a long reddish spine, these spines decussate across the midline; midventral region of sternite, between lobes, with a brush or fringe of long yellow setæ.

*Female*.—Characters as in male, differing in sexual features only. Antennæ short, if bent backward scarcely attaining the wing root. Abdominal tergites with a broken median brown line, the sixth and succeeding segments chiefly darkened; sternites pale. Ovipositor with all valves, including cerci, short and blunt (Plate 3, fig. 37, c).

*Habitat*.—Eastern Siberia (Amur, Ussuri).

Holotype, male, Sedanka River, near Vladivostok, Ussuri, April 20, 1927 (*Martynov*), No. 197. Allotopotype, female, with type, No. 196. Paratopotype, male, with type, No. 198. Paratypes, 1 male, Tigrovaja, Suchan district, Ussuri, June 16, 1927 (*Stackelberg*), No. 85; 1 male, Osernaja, mouth of Amur River, June 26 to 28, 1915 (*Chernavin*), No. 711.

The present fly is very distinct from all other Holarctic members of the *fascipennis* (*bicornis*) group in the major size and details of structure of the male hypopygium. The fly is most similar to species such as *affinis* Schummel (Europe) or *bicornis* Forbes, *megaura* Doane, or *parshleyi* Alexander (northeastern North America), but the powerful tergal horns are quite different in position, shape, and direction from the horns of all other described species of the group. It would appear that a new subgeneric group will eventually be required for the members of the group, to be based primarily on the structure of the ovipositor.

TIPULA (LUNATIPULA) PSEUDOGYNE sp. nov. Plate 1, fig. 11; Plate 3, fig. 38.

Belongs to the *fascipennis* group; general coloration gray; antennæ with scape and pedicel yellow, flagellum black; femora yellow, the tips narrowly blackened; wings pale grayish yellow, the costal region clearer yellow;  $R_{1+2}$  entire; cell 1st  $M_2$  small; m-cu on  $M_{3+4}$  before fork; ovipositor with unusually short cerci, the genital chamber open.

*Female*.—Length, about 12 millimeters; wing, 12.5.

Frontal prolongation of head relatively short, brown; nasus short and stout; palpi light brown, the terminal segment dark brown. Antennæ with the scape obscure yellow, weakly darkened at base; pedicel light yellow; flagellum black, the basal enlargements poorly defined, the verticils subequal in length to the segments. Head dark brownish gray, the occipital region a little brighter; the area surrounding antennal fossæ pale.

Mesonotum gray, the præscutum without well-defined darker stripes. Pleura gray pruinose, the dorsopleural membrane ochereous. Halteres pale, the knobs weakly infuscated. Legs with the coxæ light gray pruinose; trochanters obscure yellow; femora yellow, the tips narrowly blackened; tibiæ and basitarsi testaceous brown, the outer tarsal segments blackened; tibial spur formula ?-2-2, the fore tibiæ broken. Wings (Plate 1, fig. 11) pale grayish yellow, the prearcular and costal regions clearer yellow; stigma small, pale brown; obliterative areas not conspicuous, lying before stigma and across cell 1st  $M_2$ ; veins brown. Venation:  $R_{1+2}$  entire;  $R_2$  about one-half the last section of  $R_1$ ; cell 1st  $M_2$  small; m-cu on  $M_{3+4}$  before fork.

Abdominal tergites obscure yellow; a conspicuous median black vitta that is narrowly broken at caudal border of segments; sublateral stripes poorly indicated; sternites beyond midlength of second light gray pruinose. Ovipositor (Plate 3, fig. 38) very short and obtuse, at first sight closely simulating the hypopy-



gium of a male; cerci, *c*, short and blunt, as in group. Immediately ventrad of the cerci protrudes a median, depressed, tongue-shaped lobe that is densely clothed with setulæ. A pair of compressed yellow blades, obliquely truncated and coarsely toothed at tips, lie at the outer angles of the ventral region of the genital chamber.

*Habitat.*—Eastern Siberia (Kamchatka).

Holotype, female, Kamchatka River, 159° east longitude, 56° north latitude, August 11, 1914 (*Bjeloussov*), No. 556. (Hydrographic Expedition to the Pacific.)

In the females of the *fascipennis* (*bicornis*) group, the ovipositor is greatly reduced and but feebly sclerotized, the cerci being blunt and obtusely triangular in outline. The present fly shows this condition unusually developed, the ovipositor thus being of an unusually primitive type. No near ally is known to me, unless, perhaps, it is *Tipula* (*Lunatipula*) *turanensis* sp. nov., which is most readily told by the yellowish ground color of the thorax and the very small cell 1st  $M_2$  of the wings.

TIPULA (LUNATIPULA) TURANENSIS sp. nov. Plate 1, fig. 12; Plate 3, figs. 39-41.

Belongs to the *fascipennis* group; general coloration yellow, the præscutum with three darker stripes that are sometimes poorly indicated; antennæ (male) moderately long, if bent backward extending about to base of abdomen; wings pale grayish yellow, the prearcular and costal regions pale yellow; cell 1st  $M_2$  small, pentagonal; male hypopygium with the ninth tergite bearing conspicuous ventral spines; eighth sternite with lateral tubercles that are tipped with elongate spinous setæ.

*Male.*—Length, about 12 to 14 millimeters; wing, 13 to 15; antenna, about 4 to 4.5.

*Female.*—Length, about 13 millimeters; wing, 14.

*Male.*—Frontal prolongation of head brownish yellow, a little darker laterally beneath; nasus distinct; palpi light brown, the terminal segment dark brown. Antennæ (male) relatively long, if bent backward extending about to the base of abdomen; scape and pedicel yellow; flagellar segments beyond the first almost uniformly brownish black, the basal enlargements a trifle darker; all verticils basal in position, subequal to the segments. Head yellowish brown.

Mesonotal præscutum brownish yellow, with three dark stripes that are dull brownish and, in cases, ill-delimited, the median stripe more or less divided by a capillary pale line; scutal lobes similarly variegated with brown; remainder of notum obscure brownish yellow. Pleura chiefly pale, the sternopleurite and

anepisternum somewhat darker. Halteres pale, the central ring of each knob more darkened. Legs with the coxæ and trochanters obscure yellow; femora yellow, the tips weakly darkened; tibiæ and tarsi obscure yellow, the outer tarsal segments a little darker. Wings (Plate 1, fig. 12) pale grayish yellow, the prearcular and costal regions, together with a line between branches of Cu, clear light yellow; stigma bicolorous, the proximal half yellow, the distal half pale brown, the division between the two oblique; oblitative area along cord not unusually wide or conspicuous but involving an unusual number of veins, including all those inclosing cell 1st  $M_2$  with the exception of  $M_{3+4}$ , in addition to the anterior cord, outer end of Rs, and the extreme bases of  $R_{2+3}$ ,  $R_{4+5}$ , and outer section of  $M_{1+2}$ ; veins brown, yellow in the luteous areas. Macrotrichia of veins beyond cord abundant; squama with long conspicuous setæ. Venation: Cell  $R_2$  deep; cell 1st  $M_2$  small, pentagonal; m-cu at or very close to fork of  $M_{3+4}$ .

Abdominal tergites brownish yellow, the median line infuscated; sternites more uniformly pale. Male hypopygium (Plate 3, fig. 39) with the tergite, *9t*, entirely separated from the sternite, *9s*; basistyle, *b*, separated from sternite only by a broadly membranous ventral incision. Ninth tergite (Plate 3, fig. 40, *9t*) pale, longer than broad, gently widened outwardly, the caudal margin with a V-shaped notch that is further produced at base into a small rounded incision; lobes of tergite acute or nearly so; ventral-lateral angles of tergite produced caudad into conspicuous sclerotized horns, the blunt tips slightly upcurved. Ninth sternite broadly incised and membranous medially, with two curved hornlike spines in the membrane; dorsocaudal angle of sternite with a stout fingerlike lobe that is tufted with abundant long pale setæ. Dististyle (Plate 3, fig. 40, *d*) single, with a broad flattened blade at posterior angle that is probably the homologue of the outer dististyle. Eighth sternite (Plate 3, fig. 41, *8s*) broad and moderately sheathing, each lateral angle produced into a slender fingerlike lobe that is tipped with a long bristle, this being approximately twice as long as the tubercle itself; besides this spine each tubercle bears additional long pale setæ; median area of sternite between tubercles transverse, fringed with pale setæ that are shorter near the midline, forming two dense groups at this place. The lateral lobes and median fringe are loosely connected by membrane with the actual body of the sternite.

*Female*.—Characters as in the male, differing in the sexual features. Antennæ much shorter and more nearly unicolorous yellow. Ovipositor with cerci small, roughly triangular in outline; hypoalvæ compressed. Between the valves an acute spine that is directed outwardly.

*Habitat*.—Eastern Siberia (Amur, Baikal).

Holotype, male, Turan, Baikal; in my collection through purchase from Staudinger-Bang Haas. Allotype, female, Seja River, Amur Province, June 27 to 29 (*Rittig*), No. 640. Paratype, male, Samnjur River, Habarovsk district, Amur, 135° east longitude, 48° 30' north latitude, July 7 to 11, 1910 (*Stackelberg*).

The unusually small cell 1st  $M_2$  would indicate that this species is highly specialized in the *fascipennis* (*bicornis*) group. It may be readily told from all other regional members, excepting *pseudogyne* sp. nov., by the small size. The yellowish ground color of the thorax and the details of venation, especially the shape of cell 1st  $M_2$ , readily separate the present species from *pseudogyne*.

TIPULA MITOPHORA sp. nov. Plate 1, fig. 13; Plate 4, figs. 42, 43.

General coloration gray; præscutum yellowish gray, with four narrow brown stripes; antennæ (male) very long, approximately three-fourths the length of the body; wings tinged with brownish, with a very vague darker and paler pattern that is so diffuse as to give the wing an almost unicolorous appearance;  $R_2$  long, erect;  $R_{1+2}$  atrophied beyond the basal spur; male hypopygium with the ninth tergite pale, notched medially.

*Male*.—Length, 12 to 13 millimeters; wing, 15 to 16; antenna, 9 to 10.

Frontal prolongation of head yellow; nasus distinct; palpi brownish black. Antennæ (male) of unusual length, approximately three-fourths or more of the entire body; basal three segments yellow, succeeding segments bicolorous, the basal enlargements black, the remainder brownish yellow; outer segments passing into brownish black; flagellar segments elongate; verticils much shorter than the segments, those at near midlength of the segments longer than the basal ones; terminal segment reduced to a tiny thimble-shaped structure. Head gray.

Mesonotal præscutum yellowish gray with four narrow brown stripes; intermediate pair widely separated by a line of the ground color, their mesal edges very narrowly and indistinctly bordered by blackish; scutum yellowish gray, the lobes variegated by two confluent brown areas; scutellum dark gray, with

a vague blackish median vitta; mediotergite light gray. Pleura gray, the propleura, anepisternum, and sternopleurite clearer gray, the posterior sclerites a little more whitish gray. Halteres pale yellow, the knobs weakly darkened. Legs with the coxæ light gray; trochanters pale yellow; femora obscure yellow, the tips blackened, somewhat more extensively so on forelegs; tibiæ light brown; tarsi black; tibial spur formula 1-2-2; claws small, simple. Wings (Plate 1, fig. 13) tinged with brownish; stigma darker brown; vague brown seams along vein Cu and on anterior cord; a very vague whitish area near outer end of cell M; oblitative area before stigma small and ill-defined; that area across cell 1st  $M_2$  clearly defined. Macrotrichia of veins small but abundant, on all veins beyond cord, including  $R_2$ , but excluding m and basal section of  $M_3$ . Venation: Tip of  $R_{1+2}$  atrophied, only a tiny basal spur being preserved;  $R_2$  unusually long so that  $R_1$  and spur of  $R_{1+2}$  are almost in longitudinal alignment; m longer than petiole of cell  $M_1$ ; m-cu on  $M_4$  some distance beyond origin; cell 2d A of moderate width.

Abdominal tergites orange-yellow to yellow, narrowly trivittate with black, the sublateral stripes very narrow and indistinct on basal half of organ; median stripe continuous and very conspicuous; fifth and succeeding segments more uniformly blackened; basal sternites more uniformly yellowish. Male hypopygium (Plate 4, fig. 42) with the tergite, 9t, and basistyle, b, entirely distinct from the sternite, 9s. Ninth tergite (Plate 4, fig. 43, 9t) entirely pale; caudal margin with a V-shaped notch, the base of which is further incised by a smaller quadrate opening; lobes thus formed sublateral in position, obliquely truncated to subacute. Outer dististyle relatively long and slender. Inner dististyle, id, with two blackened, beaklike points. Basistyle, b, with a group of scattered yellow setæ at ventromesal angle. Ninth sternite rather shallow, incised medially. Eighth sternite unarmed, not projecting.

*Habitat.*—Eastern Siberia (Amur, Ussuri).

Holotype, male, Cape Dshaore, mouth of Amur River, June 19, 1910 (*Derbeck*), No. 307. Paratopotypes, 5 males, June 17 to 19, 1910, Nos. 306, 308 to 311. Paratype, male, Nikolajevsk, Naleo River, Ussuri, 143° 30' east longitude, 53° 30' north latitude, May 1 to 14, 1908 (*Soldatov*), No. 659.

The unusually elongate antennæ of the male sex, together with the atrophied  $R_{1+2}$ , mark the present insect as being very distinct from all other regional species. By keys to the European



members of the genus, the fly runs to *hortulana* Meigen, an entirely different fly with a distinct wing pattern, short male antennæ, and with the radial venation quite unlike that of the present species.

**TIPULA APICISPINA** sp. nov. Plate 1, fig. 14; Plate 4, fig. 44.

General coloration of head and thorax light ashy gray, the four præscutal stripes a very little darker gray; antennal flagellum black; halteres yellow, the knobs dark brown; legs black, the femoral bases very narrowly yellow; wings pale brown, the prearcular and costal regions strongly yellow, the disk conspicuously variegated with whitish, including a complete transverse fascia beyond cord;  $R_{1+2}$  entire; basal segments of abdomen yellow, the outer segments blackened; male hypopygium with the inner dististyle having the outer basal angle produced ventrad into a conspicuous black spine.

*Male*.—Length, about 14 millimeters; wing, 15.5; antenna, about 4.

Frontal prolongation of head light brown; nasus distinct; palpi black. Antennæ moderately long, if bent backward extending about to the root of halter; scape and pedicel light yellow; flagellum black, the proximal end of the basal segment a little brightened; basal enlargements of flagellar segments small, the longest verticils subequal to the segments; terminal segment small, thimblelike. Head gray, with a narrow brown median vitta; vertical tubercle distinct.

Mesonotal præscutum light ashy gray, with four scarcely evident darker gray stripes; setæ of interspaces very small, pale; scutum ashy gray, the centers of the lobes vaguely darker gray; scutellum testaceous-brown; mediotergite light gray. Pleura gray, the mesepisternum clearer gray than the posterior sclerites; sternopleurite glabrous. Halteres pale yellow, the knobs dark brown. Legs with the fore and middle coxæ light gray pruinose; posterior coxæ yellow; trochanters yellow; remainder of legs black, the femoral bases very narrowly yellow. Wings (Plate 1, fig. 14) with the ground color pale brown, the prearcular and costal regions strongly yellow; stigma darker brown; disk of wing variegated by whitish, including a complete crossband beyond cord; other conspicuous white areas before cord in cell  $R_1$  and outer end of cell R, near outer end of cell M, base of cell M, most of Cu, and before midlength of 1st A; veins brown. Macrotrichia on most longitudinal veins beyond level

of cord; on  $R_{1+2}$  only on basal half; lacking on all but last section of vein  $M_{1+2}$  and on basal section of  $M_3$ ; squama naked. Venation;  $R_{1+2}$  entire;  $m$  subequal to petiole of cell  $M_1$ ;  $M_{3+4}$  subequal to  $m$ .

Basal segments of abdomen yellow, the tergites with a narrow darkened median line; fourth and succeeding segments blackened. Male hypopygium (Plate 4, fig. 44) with the tergite,  $9t$ , entirely separate from the sternite,  $9s$ ; basistyle relatively large, cut off from sternite only by a dorsal suture that is more than one-half complete. Ninth tergite,  $9t$ , quadrate, the caudal margin nearly transverse, with a small U-shaped median notch that bears a small acute spine at base; dorsal surface of tergite with a median depressed groove back from the spine, this area devoid of trichia. Outer dististyle relatively narrow at base, more expanded at near one-fourth the length, conspicuously setiferous. Inner dististyle,  $id$ , bidentate at apex, the outer basal angle produced into a long straight spine that is directed ventrad when the style is in a position of rest; outer margin of style below midlength with two, blackened, coarsely toothed plates. Gonapophyses,  $g$ , blackened, at tips with two unequal black spines that extend in a straight line. *Ædeagus* stout.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, male, Sedanka, Vladivostok, July, 1913 (*Sycheff*), No. 700. Paratype, a fragmentary specimen, Tigrovaja, Suchan district, August 5, 1927 (*Stackelberg*), No. 61.

*Tipula apicispina* is most nearly allied to *T. matsumuriana* Alexander (Japan), differing conspicuously in the peculiar structure of the inner dististyle of the male hypopygium, as well as in colorational details, notably the almost unicolorous light gray præscutum and the almost completely blackened femora.

TIPULA MUPINENSIS sp. nov. Plate 1, fig. 15; Plate 4, fig. 45.

General coloration gray, the præscutum with four darker gray stripes, the intermediate pair narrowly margined by dark brown to appear trivittate; antennal scape and pedicel light yellow; femora yellow, the tips not darkened; wings with the ground color brown, variegated by whitish areas, including a narrow, nearly complete fascia beyond cord;  $R_{1+2}$  entire;  $Rs$  nearly twice as long as  $m-cu$ ; basal abdominal segments orange-yellow, the outer segments darkened; male hypopygium with the eighth sternite produced medially and densely fringed with yellow setæ.

*Male*.—Length, about 14 millimeters; wing, 15.5.

Frontal prolongation of head yellowish gray above, darker laterally; nasus lacking or virtually so; basal two segments of

palpi brown, the outer segments black. Antennæ of moderate length, if bent backward extending about to wing root; scape and pedicel yellow; flagellum brownish black, the ends of the basal segment paler; longest verticils subequal to the segments. Head brownish gray.

Mesonotal præscutum light gray, with four darker gray stripes, the intermediate pair of which are narrowly bordered by brown, their margins presenting a brown trilineate appearance on the interspaces; posterior sclerites of notum dark gray. Pleura gray, indistinctly variegated with darker gray. Halteres pale yellow, the knobs dark brown. Legs with the coxæ gray; trochanters yellow; femora yellow, the tips not darkened; tibiæ brownish yellow; tarsi passing into brown; tibial spur formula 1-2-2. Wings (Plate 1, fig. 15) with the ground color brown, the prearcular and costal regions strongly yellow; stigma and a confluent cloud on anterior cord darker brown; disk with conspicuous white areas, including a narrow, nearly complete crossband beyond cord, extending from costa nearly to midlength of cell  $M_3$ ; a broader band before cord, extending from before stigma to vein Cu; a whitish spot in base of cell M; cell Cu chiefly pale, the extreme base and a spot at near midlength remaining of the ground color; anal cells of the ground color; cell 1st A variegated by whitish near base and at margin close to vein 2d A; veins brown, more yellowish in the flavous areas. Venation:  $R_{1+2}$  entire, the distal two-thirds without trichia; m and petiole of cell  $M_1$  nearly equal; m-cu on  $M_4$  shortly beyond origin; Rs a little less than twice m-cu.

Basal abdominal segments orange-yellow, the outer segments blackened. Male hypopygium (Plate 4, fig. 45) with the tergite,  $9t$ , and basistyle,  $b$ , entirely distinct from the sternite,  $9s$ . Ninth tergite,  $9t$ , extensive, the posterior half more narrowed; caudal margin subtruncate to very feebly emarginate, the central portion blackened and produced into a minute median black tooth. Outer dististyle very narrow at base, gradually widened to a triangularly flattened blade. Inner dististyle,  $id$ , with the outer portion bearing a conspicuous spinous lobe. Membrane of ninth sternite with a group of about a dozen elongate setæ. Gonapophyses,  $g$ , bispinous. Eighth sternite,  $8s$ , produced medially into an entire lobe, the caudal margin densely fringed with long yellow setæ, many of which are borne on dorsal surface of sternal plate, remote from margin.

*Habitat.*—China (Szechwan).

Holotype, male, Mupin, altitude 3,500 feet (*Graham*).

The nearest regional allies of the present fly are *Tipula pedicellaris* Alexander and *T. vivax* Alexander, both from the high mountains of the China-Tibet border. The former has the antennal scape darkened and the femora chiefly black; the latter has the pattern of the præscutum differently arranged and the tips of the femora narrowly and very abruptly blackened.

**TIPULA MACROLABIS** Loew.

*Tipula macrolabis* LOEW, Berlin. Ent. Zeitschr. 8 (1864) 58.

This is a common and very widely distributed crane fly in Boreal North America, being known from the Hudsonian and lower Arctic-Alpine zones of Canada from Labrador to Alaska, following southward along the Rocky Mountains to New Mexico (altitude 8,000 to 11,000 feet). Herewith recorded for the first time from the Palæarctic Region.

Kamchatka, Petropavlovsk, 1898 (*Gondatti*). Russian Academy of Sciences No. 588.

**TIPULA FORTISTYLA** sp. nov. Plate 1, fig. 16; Plate 4, fig. 46.

Belongs to the *flavolineata* group, allied to *curvicauda*; general coloration gray pruinose, the median præscutal stripe polished black; antennæ (male) about one-half the length of body, the basal five segments light yellow, the succeeding segments light brown; femora and tibiæ yellow, the tips narrowly darkened; wings brownish yellow, the prearcular and costal regions bright yellow; stigma brown, its proximal end yellow; male hypopygium with the outer dististyle unusually powerful in structure, strongly curved, its apex weakly notched.

*Male*.—Length, about 17 millimeters; wing, 19; antenna, about 8.

Frontal prolongation of head light brown; palpi pale yellowish brown to yellow, the apex of basal segment a little darker. Antennæ (male) relatively long, nearly one-half the length of body; basal five segments light yellow, the succeeding segments passing into light brown; flagellar segments elongate, with strong verticils at near midlength, in addition to the basal set, all verticils much shorter than the segments. Head gray, more yellowish on front.

Pronotum gray, more infuscated medially. Mesonotal præscutum with the ground color brownish yellow, pruinose, with three dark stripes, the broad median one black, highly polished, the lateral stripes obscured by pruinosity; posterior sclerites of mesonotum black, heavily gray pruinose. Pleura with anepisternum and sternopleurite light blue-gray, the posterior sclerites



much paler, more whitish; dorsopleural membrane pale yellow. Halteres with slender stems and small knobs, pale yellow, the knobs infuscated. Legs with the coxæ light gray; trochanters yellow; femora yellow, the tips very narrowly but conspicuously brownish black; tibiæ yellow, the tips very narrowly darkened; tarsi black, the basitarsi darker at proximal ends; claws (male) with a small basal spine. Wings (Plate 1, fig. 16) tinged with brownish yellow, the costal and prearcular regions bright yellow; stigma brown, its proximal end light yellow; a poorly defined brown cloud on anterior cord; oblitative areas restricted, lying before stigma and across base of cell 1st  $M_2$ , interrupted at junction of r-m with  $R_5$ ; veins brown, brighter in the yellow areas. Venation:  $R_{1+2}$  and  $R_3$  divergent; fork of  $M_{3+4}$  lying proximad of r-m; cell 2d A narrow.

Abdominal tergites yellow, becoming more obscure and slightly pruinose beyond basal third of organ; outer segments more infuscated; intermediate tergites with caudal and sublateral portions slightly darkened, the lateral borders pale; second tergite with a brown ring beyond midlength; sternites more infuscated, brighter caudally and laterally; hypopygium brownish black. Male hypopygium (Plate 4, fig. 46) with the tergite entirely separate from the sternite; basistyle, *b*, very large, chiefly fused with sternite, indicated by a ventral suture. Ninth tergite, *9t*, with the lateral lobes obtuse; submedian teeth slender, directed slightly toward one another, separated only by a narrow notch. Outer dististyle, *od*, constructed much as in *curvicauda* but shorter and stouter, more strongly curved; at apex with a weak notch that is densely set with erect pale setulæ. Inner dististyle, *id*, as shown. Ninth sternite tumid, the two sides separated by a narrow V-shaped notch, each half with abundant erect setulæ. Eighth sternite unarmed.

*Habitat.*—Eastern Siberia (Ussuri).

Holotype, male, Vladivostok, June 27, 1907 (*Smirnov*), No. 651.

The present fly belongs to the *flavolineata* group, being closest to *Tipula curvicauda* and *T. issikii*, from both of which it is readily told by the shorter antennæ of the male, with the basal flagellar segments extensively pale, and by the structure of the male hypopygium, especially the very short and stout, strongly curved, outer dististyle.

The *flavolineata* group includes, besides *flavolineata* Meigen (Europe), four Japanese species (*curvicauda* Alexander, *dichroistigma* Alexander, *issikii* Alexander, and *nigrosignata* Alex-

ander), together with the present fly. The various members of the group agree in the unusually elongate antennæ of the male and in the general structure of the ninth tergite of the male hypopygium, the caudal margin of which is emarginate and provided with two small submedian blackened teeth at base of notch. *Tipula flavolineata* and *T. dichroistigma* have the præscutum pruinose, but the other species have it more or less polished black, sometimes very conspicuously so. *Tipula flavolineata*, *T. dichroistigma*, and *T. nigrosignata* have the outer dististyle small and relatively insignificant, but still more or less arcuate and differing in conformation from the organ in the other members of the genus; *T. curvicauda*, *T. issikii*, and *T. fortistyla* have the outer dististyle very large and powerfully constructed.

Edwards<sup>2</sup> did not assign *flavolineata* to any of the subgenera that he defined, and I hesitate to attempt such an assignment at this time, though with more numerous species before me. All species have the nasus elongate; R<sub>1+2</sub> entire; fork of M<sub>3+4</sub> unusually close to the base of cell 1st M<sub>2</sub>, as in the *tricolor* group of the subgenus *Tipula*, lying slightly proximad of r-m; macrotrichia of veins beyond cord small and relatively sparse; squama naked. Tibial spur formula 1-2-2. Male hypopygium with the tergite entirely separate from the sternite; basistyle large, cut off only by a ventral suture.

The somewhat similar but not closely allied *juncea* (*pribilofensis*) group is likewise eminently characteristic of the boreal portions of the Holarctic region. Its affinities seem to lie closer to *Vestiplex*, but it seems highly probable that a new subgeneric group will be required for the reception of the included species.

#### LIMONIINÆ

##### PEDICIINI

**PEDICIA (TRICYPHONA) USSURICA** sp. nov. Plate 1, fig. 17; Plate 4, fig. 47.

Allied to *unicolor*; general coloration gray, the præscutum with four conspicuous blackish stripes; antennæ black throughout, 14- or 15-segmented, the flagellar segments short and crowded; halteres uniformly pale yellow; femora obscure yellow basally, the tips brownish black, broadest on forelegs; wings pale yellow, the prearcular region clear light yellow; pale brown seams along cord; venation very variable, r-m connecting at or beyond fork of Rs; cell 1st M<sub>2</sub> elongate, closed; male hypopygium with the lateral angles of tergite produced into short glabrous arms; interbase weakly notched at apex.

<sup>2</sup> Ann. & Mag. Nat. Hist. X 8 (1931) 82.

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

*Female*.—Length, about 8 to 9 millimeters; wing, 8 to 8.5.

Rostrum and palpi black. Antennæ short, black throughout; segments varying in number from fourteen to fifteen, the outer ones very short and crowded. Head dark gray; vertical tubercle small.

Pronotum dark gray. Mesonotal præscutum light gray, with four conspicuous blackish stripes, the intermediate pair nearly confluent at anterior ends; scutum gray, each lobe variegated by two blackish areas; posterior sclerites of mesonotum dark gray. Pleura dark gray; dorsopleural membrane brown. Halteres uniformly pale yellow. Legs with the coxæ dark gray; trochanters yellow; femora obscure yellow basally, the tips brownish black, broadest on the forelegs where about two-thirds to three-fourths is included, very narrow on the middle and posterior legs where only the distal fourth or fifth is darkened; tibiæ dark brown, the posterior tibiæ much brighter, narrowly tipped with dark brown; tarsi black. Wings (Plate 1, fig. 17) with the ground color pale yellow, the prearcular region clear light yellow; narrow but conspicuous pale brown seams on anterior and posterior cords, narrowly interrupted at the fork of M; stigma very pale to lacking; veins brown, light yellow in the prearcular region. Venation:  $Sc_2$  before origin of Rs a distance about equal to one-third to one-half the length of Rs, the latter somewhat variable in length, angulated at origin; petiole of cell  $R_4$  variable, in cases exceeding r-m, in other instances shorter than this element; r-m connecting with  $R_{4+5}$  before midlength, sometimes as far proximad as the end of Rs; cell 1st  $M_2$  elongate; m variable in position, from opposite the fork of  $M_{1+2}$  to some distance before this fork, in the latter case (as figured) m being shorter than the petiole of cell 1st  $M_2$ ; m-cu likewise variable in position, from being placed at the fork of  $M_{3+4}$  to some distance before this fork, in cases before midlength of  $M_{3+4}$ .

Abdominal tergites dark brown, the caudal margins of the intermediate segments very narrowly yellow; basal sternite dark, the intermediate ones pale brown, the outer segments again darkened. In female, abdomen more uniformly dark brownish gray; ovipositor large, powerfully constructed, horn yellow. Male hypopygium (Plate 4, fig. 47) with the tergite, 9t, broad, the caudal margin very shallowly emarginate, the lateral angles produced caudad and laterad into short glabrous horns; median region of tergite densely setiferous. Basistyle, b, divided at apex into two lobes, the broader one densely set with very nu-

merous small blackened pegs that present an unusually uniform arrangement; inner lobe of basistyle very small, slender, pale, with coarse setæ. A single dististyle, *d*, which is subequal in length and size to the inner apical lobe of basistyle; lower margin at base fringed with about six elongate setæ, with smaller setæ near apex. Interbase, *i*, a powerful curved rod, light yellow, the apex shallowly and unequally bidentate, the surface near base with numerous fine setæ.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, male, Maiche region, near Shkotovo, June 5, 1927 (*Martynov*), No. 208. Allotype, female, Tigrovaja, Suchan district, June 16, 1927 (*Stackelberg*), No. 34. Paratopotypes, one of each sex, with type, Nos. 204, 209.

The present fly is most nearly related to Japanese species such as the much larger *Pedicia* (*Tricyphona*) *optabilis* (Alexander), differing most evidently in the wing pattern and details of structure of the male hypopygium. Among the European species, it is more distantly allied to species such as *P. (T.) schummeli* (Edwards) and *P. (T.) unicolor* (Schummel), differing from both in the diagnostic features listed, the most evident being the closed cell 1st  $M_2$  and the pale brown but distinct clouding along cord of wing.

#### HEXATOMINI

LIMNOPHILA (LIMNOPHILA) SOLDATOVI sp. nov. Plate 1, fig. 18.

General coloration light gray, the præscutum with scarcely indicated darker gray stripes; halteres uniformly pale yellow; legs yellow, the tips of femora narrowly blackened, the amount subequal on all legs; wings with the ground color whitish, heavily patterned with dark brown, including four broken fasciæ and scattered smaller dots in interspaces; m-cu at near mid-length of cell 1st  $M_2$ .

*Female*.—Length, 15 to 17 millimeters; wing, 10.5 to 11.5.

Rostrum gray; palpi brownish black. Antennæ with the scape and pedicel black, heavily dusted with gray; flagellum pale yellowish brown, the outer segments darker; basal segments large, the outer segments more slender, with long conspicuous verticils. Head clear light gray, prolonged behind.

Pronotum massive, light gray. Mesonotal præscutum clear gray with four scarcely evident darker gray stripes, the extreme cephalic portions of the intermediate pair blackened, appearing as if the pruinosity were denuded, but the appearance is quite the same in all specimens of the series; pseudosutural foveæ



black, triangular, large and conspicuous; tuberculate pits lacking; posterior sclerites of notum clear light gray, the centers of the scutal lobes very vaguely darkened. Pleura gray, the dorsopleural region light brown. Halteres uniformly pale yellow. Legs with the coxæ light gray; trochanters yellow; femora yellow, the tips narrowly blackened, the amount subequal on all legs and including about the outer sixth or less; tibiæ obscure yellow, the bases narrowly, the tips a little more broadly, blackened; tarsi black; legs conspicuously hairy. Wings (Plate 1, fig. 18) with the ground color whitish, with a heavy brown pattern arranged as four more or less broken crossbands, with scattered smaller brown dots in the interspaces; basal fascia postarcular, extending from C to Cu; second band at level of origin of Rs, broadly broken at cell M; third fascia at cord, forking at costa and inclosing a small yellow area beyond Sc<sub>2</sub>; last band including the narrow wing apex, in cases extending from tips of veins R<sub>3</sub> to M<sub>4</sub>, in other instances the two latter areas separate from the main apical mass; dots in interspaces sparse, lacking in the basal radial field, elsewhere more or less restricted to the vicinity of the veins; veins brown, more yellowish in the interspaces. Macrotrichia of veins relatively sparse, lacking on R<sub>2+3+4</sub>, R<sub>2+3</sub>, R<sub>3</sub>, or R<sub>4</sub>; a scattered series on distal section of R<sub>5</sub>, more crowded at outer end; outer medial branches with sparse scattered trichia. Venation: R<sub>2+3+4</sub> short to very short; fork of cell M<sub>1</sub> short; m-cu at or close to midlength of cell 1st M<sub>2</sub>; anterior arculus preserved.

Abdomen clear light gray, the extreme caudal portions of the segments ringed with pale brown; narrow black transverse impressions on basal rings of segments, with more widely separated oblique dashes on posterior rings. Ovipositor dark reddish brown, the tips of cerci narrowly pale.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, female, Osernaja, mouth of Amur River, June 12 to 25, 1910 (*Soldatov*), No. 666. Paratopotypes, 1 female, with the type; 1 female, May 31, 1910, Nos. 665, 667.

This interesting crane fly is named in honor of Mr. W. Soldatov, who has collected numerous Tipulidæ near the mouth of the Amur and on Saghalien Island. The nearest ally is *Limnophila* (*Limnophila*) *martynovi* Alexander, which agrees in the general features of structure and coloration, as the uniformly pale halteres and the reduced trichiation of the wings. Apart from the venational peculiarities of *martynovi*, as the loss of crossveins m and m-cu, features which may prove to represent

abnormalities of the unique type, the present fly differs in the pale antennal flagellum; indistinct tuberculate pits; narrowly blackened femora, with the degree of darkening nearly equal on all legs; and the more fully developed wings. These two species differ from the other regional members of the subgenus in the uniformly pale halteres.

LIMNOPHILA (LIMNOPHILA) POLITOSTRIATA sp. nov. Plate 1, fig. 19; Plate 4, fig. 48.

General coloration of thorax light gray, the præscutum more yellowish gray, with four, narrow, polished, black stripes; knobs of halteres dark brown; femora yellow, the tips narrowly blackened; tibiæ yellow, the extreme bases and tips darkened; wings whitish subhyaline, heavily patterned with brown; abdomen black, sparsely pruinose; male hypopygium with the outer angle of basistyle produced into a smooth blackened spine.

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

*Female*.—Length, about 11 to 14 millimeters; wing, 9.5 to 11.

Rostrum gray; palpi black. Antennæ black throughout; in male relatively short, if bent backward ending some distance before wing root; verticils long and conspicuous. Head light gray.

Pronotum massive, light gray. Mesonotal præscutum yellowish gray with four, intense black, highly polished stripes, the intermediate pair narrowly separated by a capillary line of the ground color, not attaining the suture; lateral stripes crossing the suture and covering almost all of scutal lobes; pseudosutural foveæ conspicuous, black, triangular in outline; remainder of mesonotum light gray, the scutellum broad. Pleura light gray; dorsopleural region brown. Halteres pale yellow, the knobs infuscated. Legs with the coxæ light gray pruinose; trochanters dark brown; femora yellow, the tips narrowly blackened, the amount subequal on all legs, involving the outer sixth or seventh; tibiæ light yellow, the very narrow bases and very little wider tips blackened; tarsi light brown, the outer segments darker. Wings (Plate 1, fig. 19) whitish subhyaline, the costal region concolorous; a heavy dark brown pattern, appearing as about four or five major costal areas, marginal spots at ends of all longitudinal veins and numerous small dots in all cells, almost lacking in the radial field; the two largest costal areas, lying at origin of Rs and in stigmal region, are more or less Y-shaped, the fork inclosing a tiny pale costal spot; veins yellow, darker in the clouded areas. Macrotrichia on outer ends

of veins beyond cord, including  $R_4$ , all of  $R_5$ , and distal ends of outer medial veins; anterior branch of Rs without trichia. Venation: Rs elongate, arcuated to angulated and spurred at origin;  $R_{2+3+4}$  very short;  $R_{1+2}$  and  $R_2$  subequal; cell  $M_1$  shorter than its petiole; m-cu at or close to fork of M; anterior arculus preserved.

Abdomen black, the surface sparsely pruinose; hypopygium black. Male hypopygium (Plate 4, fig. 48) with the outer apical angle of basistyle, *b*, produced into a slender smooth blackened spine. *Æ*deagus, *a*, and gonapophyses, *g*, elongate, the latter pale in color.

*Habitat*.—Eastern Siberia (Ussuri, Saghalien).

Holotype, male, Osernaja, mouth of Amur River, Ussuri, June 24, 1915 (*Chernavin*), No. 716. Allotype, female, Kuegda, Saghalien Island, July 10, 1908 (*Soldatov*), No. 687. Paratopotype, female, Osernaja, June 28, 1908 (*Soldatov*), No. 671. Paratype, female, Cape Pronge, mouth of Amur River,  $141^{\circ} 15'$  east longitude,  $53^{\circ}$  north latitude, June 24, 1910 (*Derbeck*), No. 314.

*Limnophila* (*Limnophila*) *politostriata* is very different from the other known members of the typical subgenus *Limnophila* (*Pæcilstola*) in the very distinct præscutal stripes and acute blackened spine of the basistyle of male hypopygium. The other generally similar regional members either have the basistyle unarmed (*japonica* Alexander, *varicornis* Coquillett) or else have the outer lobe of basistyle pale and not constructed as a glabrous spine (*pictipennis* Meigen).

HEXATOMA (ERIOCERA) *ÆQUINIGRA* sp. nov. Plate 1, fig. 20.

Belongs to the *spinosa* group; mesonotal præscutum yellowish gray, with four narrow dark brown stripes, the intermediate pair separated by a grayish line that is slightly wider than the stripes; setæ of thorax unusually long and pale for the female sex; knobs of halteres dark brown; femora yellow, with the distal sixth or less blackened, the amount subequal on all legs; wings brownish yellow; stigma small, dark brown; macrotrichia on veins  $R_{2+3}$ ,  $R_3$ , and distal two-thirds of  $R_4$ ; cell  $M_1$  present; abdomen dark brown, the tergites margined laterally with orange.

*Female*.—Length, about 33 millimeters; wing, 23.

Rostrum light brown; palpi dark brown. Antennæ with the scape and pedicel dark brown above, paler beneath; flagellum broken. Head brownish gray, reddish on either side of midline of vertical tubercle; setæ long and dense.

Mesonotal præscutum yellowish gray, the lateral interspaces suffused with light brown; four narrow dark brown stripes, the intermediate pair separated by a grayish line that is a little wider than either stripe; pubescence of notum white, unusually long and dense for the female sex; scutum grayish, each lobe with a large dark area; scutellum dark, the margin fringed with long yellow setæ; mediotergite gray, darker caudally. Pleura clear light gray, the dorsopleural region variegated with dark brown and buffy; setæ of propleura long and conspicuous, pale. Halteres light yellow, knobs dark brown. Legs with the coxæ light gray, clothed with long pale setæ; trochanters yellow; femora yellow, the tips of all legs narrowly blackened, the amount subequal on all legs, including approximately the distal sixth or less; tibiæ reddish brown, the tips narrowly blackened; tarsi reddish brown, the outer segments black. Wings (Plate 1, fig. 20) tinged with brownish yellow; stigma small, dark brown; vague dusky washes along Rs, Cu, and 2d A; veins chiefly dark brown, Sc and most of M more yellowish. Macrotrichia of veins unusually abundant for a member of this group; series of trichia on entire length of  $R_{2+3}$  and  $R_3$ , and on about the distal two-thirds of outer section of  $R_4$ , the latter series including from twenty-five to thirty punctures; trichia on  $R_5$  sparse and scattered; no trichia on outer medial veins. Venation:  $R_{2+3}$  a little shorter than  $R_3$ ; Rs in alignment with  $R_5$ ; m-cu before midlength of cell 1st  $M_2$ .

Abdomen dark brown, the sternites sparsely pruinose; lateral margins of tergites narrowly but conspicuously orange; tergites each with four transverse blackened impressions on basal ring. Ovipositor with the elongate valves deep cherry red.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, female, Tigrovaja, Suchan district, August 2, 1927 (*Stackelberg*).

The nearest ally of this fly is *Hexatoma (Eriocera) stricklandi* (Edwards), of Japan, which differs in the much paler wings, three dark præscutal stripes, and unequally blackened femora, the posterior femora being much more extensively darkened than are the other two pairs. The present fly further differs from most of the other regional members of the group in the rather unusual degree of trichiation of the wing veins, there being a series on more than the distal half of vein  $R_4$ , which, in most of the other species of the *spinosa* group, is quite glabrous.



## HEXATOMA (ERIOCERA) ATRIPES sp. nov. Plate 1, fig. 21.

Belongs to the *spinosa* group; general coloration brownish black; antennæ and legs black throughout; mesonotal præscutum with the lateral stripes narrow, polished; wings tinged with brown; macrotrichia on radial veins beyond cord.

*Female*.—Length, about 25 millimeters; wing, 18.3 by 5; antenna, 6.

Rostrum brownish black; palpi black. Antennæ 11-segmented, black throughout; flagellar segments gradually decreasing in length to end. Head broadly blackened on vertex, the lateral portions behind eyes paling to brown.

Mesonotal præscutum with the interspaces heavily pollinose with buffy; three stripes, the broad median one dull black, further divided by a deeper black median vitta that narrows to a point behind at suture; lateral stripes narrow, polished black; scutum brown, the lobes variegated by subnitidous darker brown areas; scutellum and mediotergite dark brown, very sparsely yellow pollinose. Pleura chiefly dark brown, the dorsal sternopleurite and most of pleurotergite paler. Halteres with the stem obscure yellow, the knobs blackened. Legs with the coxæ black, gray pruinose; trochanters reddish brown; remainder of legs entirely black. Wings (Plate 1, fig. 21) with a strong brown tinge, the costal region slightly darker; stigma oval, darker brown; veins dark brown. Macrotrichia on all radial veins beyond cord excepting  $R_{1+2}$  and  $R_2$ . Venation:  $R_{1+2}$  nearly three times  $R_2$ ;  $R_{2+3+4}$  shorter than  $R_{2+3}$ ; cell  $M_1$  shorter than its petiole.

Abdominal tergites brownish black, the sternites a little paler; genital segment brownish gray pruinose. Cerci elongate, blackened, basally, paling to reddish at tips.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, female, Vinogradovka,  $133^{\circ} 50'$  east longitude,  $43^{\circ} 20'$  north latitude, August 5, 1929 (*Djakonov*), No. 531.

*Hexatoma (Eriocera) atripes* is readily distinguished from all other described members of the *spinosa* group by the uniformly blackened legs.

## HEXATOMA (ERIOCERA) USSURIENSIS sp. nov. Plate 1, fig. 22; Plate 4, fig. 49.

Belongs to the *verticalis* group; size large (wing, male, 15 millimeters or more); general coloration gray, the præscutum with four more-blackened stripes; antennæ (male) elongate;

vertical tubercle obscure yellow, polished black at summit; femora yellow, the tips very narrowly blackened, the amount subequal on all legs; wings with a faint brownish tinge, the oval stigma darker brown; m-cu close to fork of M.

*Male*.—Length, 11 to 12 millimeters; wing, 15 to 16; antenna, about 44 to 46; length of flagellar segment 1, 6 millimeters; segment 2, 7.6; segment 3, 7.5.

*Female*.—Length, 14 to 15 millimeters; wing, 13 to 14.5; antenna, about 3.8.

Rostrum pale brown; palpi black. Antennæ of male with the scape very large, yellow beneath, darker above; pedicel very small, brown; flagellum black; segments with conspicuous erect spines that are arranged in two rows; first flagellar segment with about twenty spines in each row, second segment with about twenty-eight, third segment with about twenty-one such spines, on outer segments becoming more scattered but fully as large and strong. Antennæ of female 11-segmented, the basal three or four segments pale, the remainder black. Head brownish gray, the conspicuous vertical tubercle yellow, its summit polished black.

Mesonotal præscutum gray, with four more-blackish stripes, the intermediate pair being widely separated by the ground color; thorax with dense erect white pubescence in male, nearly glabrous in female; posterior sclerites of notum, together with the pleura, gray. Halteres pale yellow, the knobs dark brown. Legs with coxæ darkened and sparsely pruinose, paler at tips; trochanters obscure yellow; femora yellow, the extreme tips blackened, the amount subequal on all legs; tibiæ obscure yellow, the tips narrowly dark brown, subequal in degree to the femoral darkening; basitarsi light brown, the tips and remainder of tarsi passing into dark brown. Wings (Plate 1, fig. 22) larger and broader in male, with a very faint brown tinge, the costal portion more yellowish; stigma darker brown, oval, conspicuous; cord narrowly seamed with brown, the longitudinal veins less distinctly so; veins dark brown, Sc more yellowish. Venation:  $R_{2+3}$ ,  $R_2$ , and  $R_{1+2}$  all subequal; m-cu close to fork of M, in cases a trifle before or beyond this point.

Abdominal tergites dark brown, the caudal margins of segments more blackened; sternites more variegated, obscure brownish yellow basally and laterally, the caudal margins of the segments darker. Male hypopygium (Plate 4, fig. 49) with the

inner dististyle, *id*, broad. Gonapophyses, *g*, bifid, one arm spinous, the other unusually broad and flattened. Ovipositor with the genital shield and elongate valves reddish horn-color.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, male, Bikin, River Bikin, 134° 10' east longitude, 46° north latitude, July 10, 1927 (*Martynov*), No. 563. Allotopotype, female, No. 568. Paratopotypes, 3 of both sexes, July 8 to 12, 1927, Nos. 564, 565, 602. Paratype, female, River Zeja, near town of Blagoveshtshensk, June 3, 1927 (*Martynov*), No. 599.

*Hexatoma (Eriocera) ussuriensis* is most closely allied to *H. (E.) gifuensis* Alexander (Japan), from which it differs in the conspicuously larger size in both sexes, the more broadly darkened femoral tips, and slight hypopygial distinctions.

#### ERIOPTERINI

RHABDOMASTIX (SACANDAGA) USSURICA sp. nov. Plate 1, fig. 23.

General coloration light yellow, the præscutum with three pale brown stripes, the median one darker in front; antennæ with the scape yellow, the remaining segments black; wings pale yellow, the veins pale brown;  $R_{1+2}$  and  $R_3$  not widely separated at margin.

*Male*.—Length, about 3.5 millimeters; wing, 3.8.

Rostrum yellow; palpi brown. Antennæ with the scape light yellow; pedicel and flagellum dark brown; antennæ relatively long, if bent backward ending some distance before wing root. Head light yellow.

Mesonotum yellow, the præscutum with three pale brown stripes, the median one darker in front. Pleura clear yellow. Halteres pale, the knobs weakly darkened. Legs yellow throughout. Wings (Plate 1, fig. 23) pale yellow, the costal margin a little more suffused; veins pale brown. About six macrotrichia on central half of vein  $R_4$ ; a series on almost entire length of outer section of  $R_5$ ; outer branches of *M* with macrotrichia except on basal ends; *Cu* and anal veins naked. Venation:  $Sc_1$  ending at near three-fourths the length of  $R_s$ ;  $R_3$  separated from  $R_{1+2}$  along costa by a distance less than its length; outer section of  $M_{1+2}$  unusually flaring as it leaves cell 1st  $M_2$ ; *m-cu* beyond midlength of lower face of cell 1st  $M_2$ ; basal section of  $M_{3+4}$  short to very short; cell 2d *A* relatively narrow.

Abdomen obscure yellow, the hypopygium clearer yellow.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, male, Tigrovaja, Suchan district, August 4, 1927 (Stackelberg), No. 24.

*Rhabdomastix* (*Sacandaga*) *ussurica* is very different from the only other member of the genus so far recorded from eastern Siberia, *R. (S.) usuriensis* Alexander,<sup>3</sup> which is black, with strongly infumed wings and with bright yellow knobs to the halteres. Other Holartic species that are generally similar in coloration to the present fly—such as *R. (S.) læta* (Loew), of Europe; *R. (S.) japonica* Alexander, of Japan; and *R. (S.) flava* Alexander, of North America—are all readily told by the much larger size. The present fly is one of the smallest species of the genus so far made known.

ORMOSIA CHANKANA sp. nov. Plate 1, fig. 24; Plate 4, fig. 50.

Belongs to the *bivittata* group; general coloration brown, the præscutum with two dark brown submedian stripes that cross the suture onto the scutal lobes; antennæ short in both sexes, black throughout; knobs of halteres dark brown; wings with a strong brown tinge, with a small, slightly darker cloud on anterior cord; male hypopygium with both dististyles elongate, the inner one subacute at tip.

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

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

Rostrum and palpi dark brown. Antennæ brownish black throughout, short in both sexes but a little longer in male; flagellar segments oval. Head dark brown.

Mesonotal præscutum light brown with two dark brown submedian stripes that are only narrowly separated by a ground vitta, a little divergent behind and crossing the suture onto the mesal edge of the scutal lobes; lateral stripes of præscutum represented only by dusky suffusions near suture; pseudosutural fovæ and tuberculate pits black, conspicuous; setæ of interspaces black, erect; scutum with median area broadly light brownish testaceous; scutellum pale, with a small brown median spot; mediotergite brownish gray. Pleura chiefly brown, more yellowish on posterior portion. Halteres pale, the knobs dark brown. Legs with the coxæ pale grayish brown; trochanters yellow; remainder of legs light brown or brownish yellow, the femoral tips weakly darkened; outer tarsal segments brown; in the male the legs are somewhat darker brown. Wings (Plate 1, fig. 24) with a strong brown tinge; stigma lacking; a slightly darker

<sup>3</sup> Proc. U. S. Nat. Mus. 68, art. 4 (1925) 13.



brown cloud on anterior cord; veins and macrotrichia darker brown. Venation:  $Sc_1$  ending beyond fork of  $R_{2+3+4}$ ,  $Sc_2$  shortly before midlength of  $R_s$ ; cell 1st  $M_2$  small, widened outwardly, the second section of  $M^{1+2}$  from about two-fifths to one-third the last section; m-cu at fork of  $M$ .

Abdomen dark brown. Male hypopygium (Plate 4, fig. 50) with the basistyle, *b*, relatively long. Both dististyles long and slender, the outer, *od*, microscopically roughened at apex and along outer margin almost to base; inner dististyle, *id*, pale, narrowed to the subacute tip, the outer margin with a pale bituberculate flange.

*Habitat*.—Eastern Siberia (Ussuri).

Holotype, female, Kamen-Rybolov, Lake Chanka,  $132^\circ$  east longitude,  $44^\circ 15'$  north latitude, July 8, 1927 (*Stackelberg*). Allotopotype, a damaged male.

The only closely allied species known to me are the western Palæarctic *Ormosia bivittata* (Loew) and the Nearctic *O. hubbelli* Alexander. The type of hypopygium, which is very distinct from all other *Ormosia* species known to me in the elongate dististyles and lack of a modified tergal plate, is very similar in all three species, even to the bituberculate flange on the inner dististyle. The subacute inner dististyle, armature of the outer dististyle, and the details of venation of the present fly are sufficiently distinct. I have selected the well-preserved female specimen as type in preference to the badly damaged male.

## ILLUSTRATIONS

[*a*, Ædeagus; *b*, basistyle; *c*, cercus; *d*, dististyle; *g*, gonapophysis; *i*, interbase; *id*, inner dististyle; *od*, outer dististyle; *p*, phallosome; *s*, sternites; *t*, tergites.]

### PLATE 1

- FIG. 1. *Tipula* (*Tipula*) *stackelbergi* sp. nov., venation.  
2. *Tipula* (*Tipula*) *subsulphurea* sp. nov., venation.  
3. *Tipula* (*Tipula*) *morigera* sp. nov., venation.  
4. *Tipula* (*Tipula*) *protrusa* sp. nov., venation.  
5. *Tipula* (*Vestiplex*) *tumulta* sp. nov., venation.  
6. *Tipula* (*Vestiplex*) *jakut* sp. nov., venation.  
7. *Tipula* (*Acutipula*) *omeiensis* sp. nov., venation.  
8. *Tipula* (*Acutipula*) *vana* sp. nov., venation.  
9. *Tipula* (*Acutipula*) *acanthophora* sp. nov., venation.  
10. *Tipula* (*Lunatipula*) *validicornis* sp. nov., venation.  
11. *Tipula* (*Lunatipula*) *pseudogyne* sp. nov., venation.  
12. *Tipula* (*Lunatipula*) *turanensis* sp. nov., venation.  
13. *Tipula* *mitophora* sp. nov., venation.  
14. *Tipula* *apicispina* sp. nov., venation.  
15. *Tipula* *mupinensis* sp. nov., venation.  
16. *Tipula* *fortistyla* sp. nov., venation.  
17. *Pedicia* (*Tricyphona*) *ussurica* sp. nov., venation.  
18. *Limnophila* (*Limnophila*) *soldatovi* sp. nov., venation.  
19. *Limnophila* (*Limnophila*) *politostriata* sp. nov., venation.  
20. *Hexatoma* (*Eriocera*) *æquinigra* sp. nov., venation.  
21. *Hexatoma* (*Eriocera*) *atripes* sp. nov., venation.  
22. *Hexatoma* (*Eriocera*) *ussuriensis* sp. nov., venation.  
23. *Rhabdomastix* (*Sacandaga*) *ussurica* sp. nov., venation.  
24. *Ormosia* *chankana* sp. nov., venation.

### PLATE 2

- FIG. 25. *Tipula* (*Tipula*) *stackelbergi* sp. nov., male hypopygium, details.  
26. *Tipula* (*Tipula*) *subsulphurea* sp. nov., male hypopygium, details.  
27. *Tipula* (*Tipula*) *morigera* sp. nov., male hypopygium, details.  
28. *Tipula* (*Tipula*) *parvincisa* sp. nov., male hypopygium, details.  
29. *Tipula* (*Tipula*) *protrusa* sp. nov., male hypopygium, details.  
30. *Tipula* (*Vestiplex*) *tumulta* sp. nov., male hypopygium, details.  
31. *Tipula* (*Acutipula*) *omeiensis* sp. nov., male hypopygium, details.  
32. *Tipula* (*Acutipula*) *vana* sp. nov., male hypopygium, details.

## PLATE 3

- FIG. 33. *Tipula* (*Acutipula*) *cockerelliana* Alexander, male hypopygium, details.
34. *Tipula* (*Acutipula*) *acanthophora* sp. nov., male hypopygium, details.
35. *Tipula* (*Lunatipula*) *validicornis* sp. nov., male hypopygium, lateral aspect.
36. *Tipula* (*Lunatipula*) *validicornis* sp. nov., male hypopygium, details.
37. *Tipula* (*Lunatipula*) *validicornis* sp. nov., ovipositor, details.
38. *Tipula* (*Lunatipula*) *pseudogyne* sp. nov., ovipositor, details.
39. *Tipula* (*Lunatipula*) *turanensis* sp. nov., male hypopygium, lateral aspect.
40. *Tipula* (*Lunatipula*) *turanensis* sp. nov., male hypopygium, details.
41. *Tipula* (*Lunatipula*) *turanensis* sp. nov., male hypopygium, details.

## PLATE 4

- FIG. 42. *Tipula* *mitophora* sp. nov., male hypopygium, lateral aspect.
43. *Tipula* *mitophora* sp. nov., male hypopygium, ninth tergite.
44. *Tipula* *apicispina* sp. nov., male hypopygium, details.
45. *Tipula* *mupinensis* sp. nov., male hypopygium, details.
46. *Tipula* *fortistyla* sp. nov., male hypopygium, details.
47. *Pedicia* (*Tricyphona*) *ussurica* sp. nov., male hypopygium.
48. *Limnophila* (*Limnophila*) *politostriata* sp. nov., male hypopygium.
49. *Hexatoma* (*Eriocera*) *ussuriensis* sp. nov., male hypopygium.
50. *Ormosia* *chankana* sp. nov., male hypopygium.

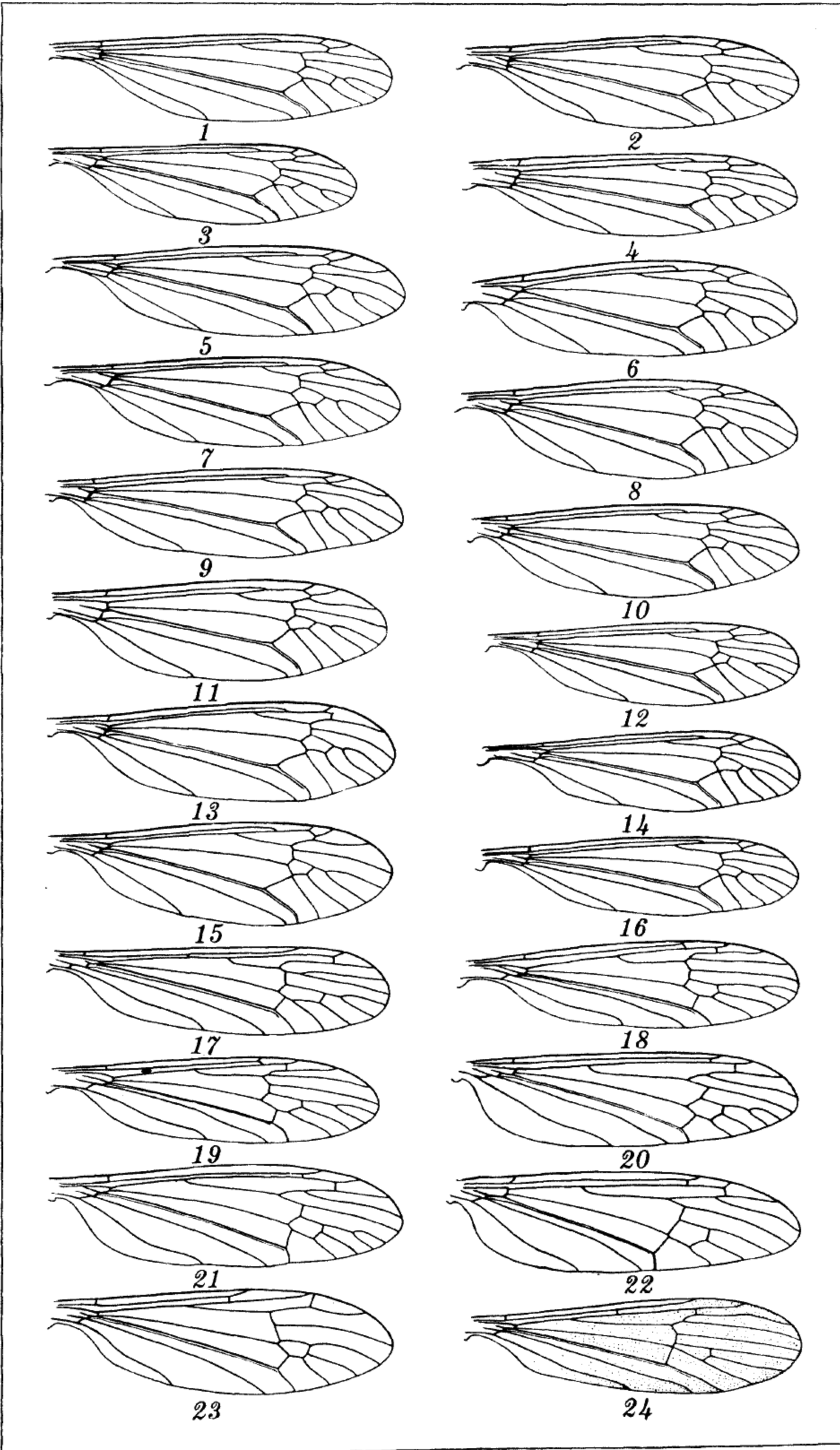


PLATE 1.



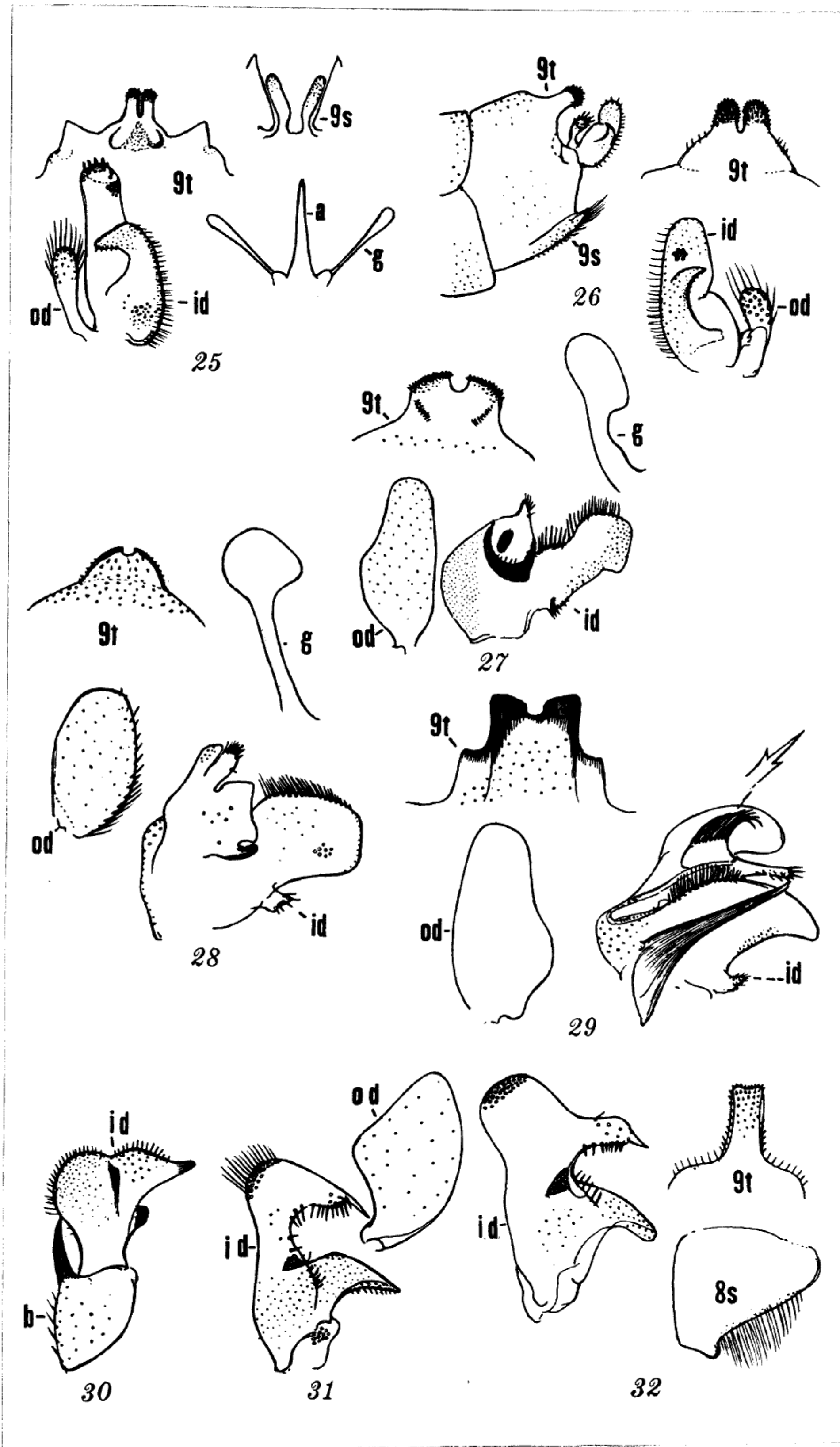


PLATE 2.

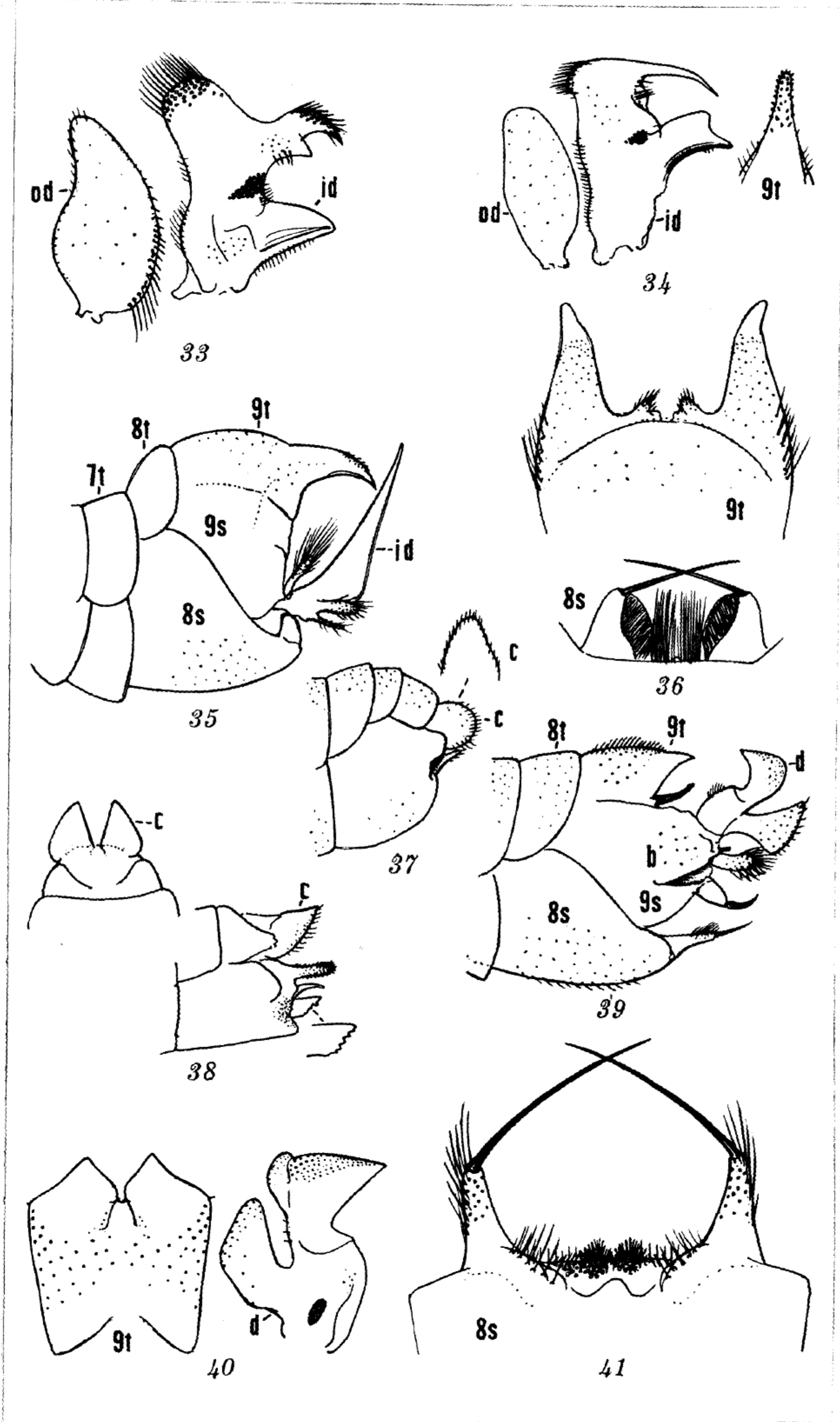


PLATE 3.



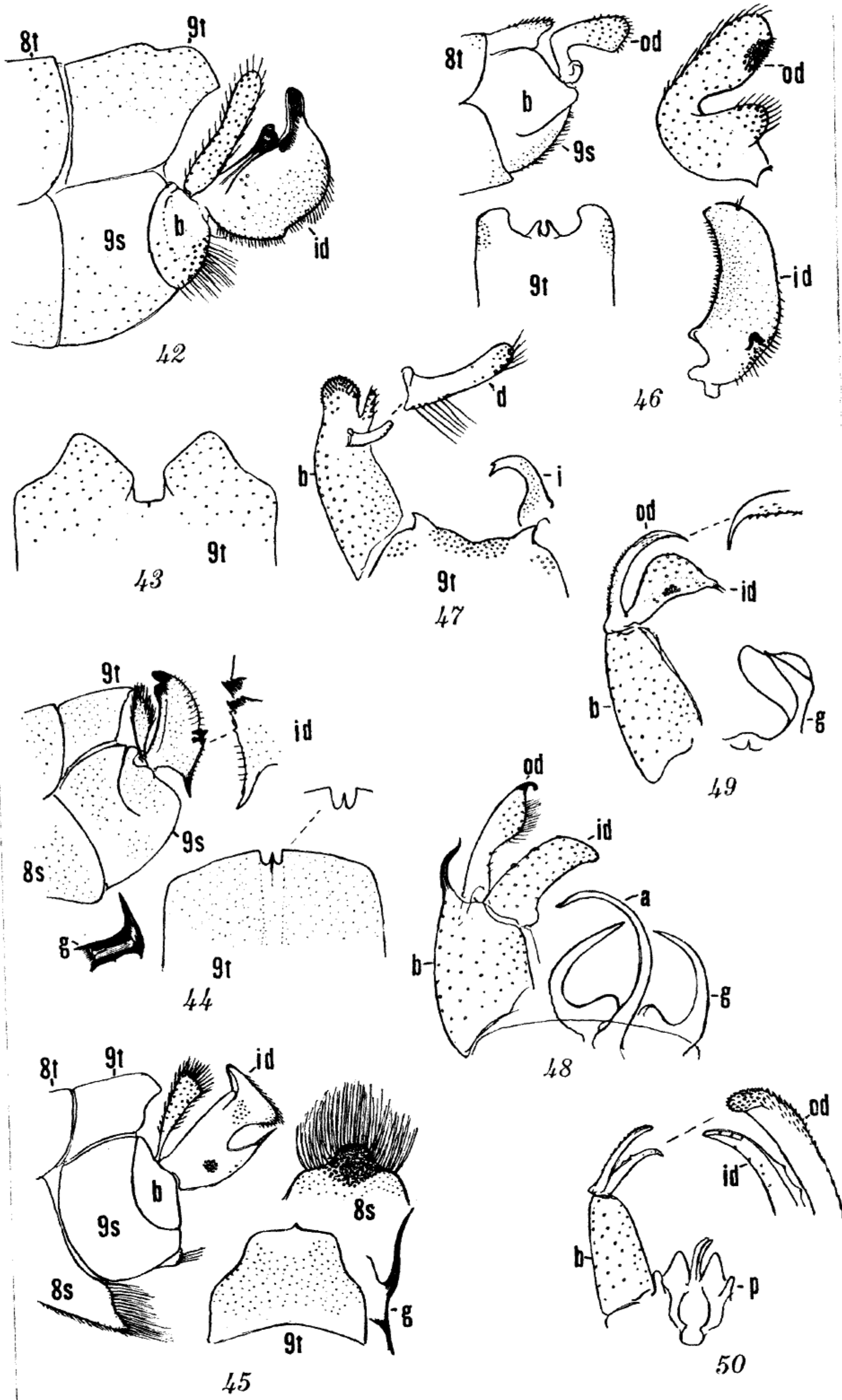


PLATE 4.

