

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

By CHARLES P. ALEXANDER

*Of Amherst, Massachusetts*

## FOUR PLATES

The great majority of the species of crane flies discussed herein were taken in Mount Omei, Szechwan, western China, by Mr. Tsen Bao-chi, native collector for the Reverend Mr. George Meredith Franck. A few others from sources discussed in the text are described. Except where noted to the contrary, the types of the novelties are preserved in my personal collection.

## TIPULINÆ

*TIPULA GRACILIROSTRIS* sp. nov. Plate 1, fig. 1; Plate 2, figs. 25 and 26.

Large (wing, male, over 20 millimeters); frontal prolongation of head very long and slender, without nasus; mesonotal præscutum gray, with three darker brownish gray stripes that are bordered by dark brown; pleura variegated dark brown and yellow; halteres yellow, base of knob extensively darkened; femora back, bases and a broad subterminal ring yellow; tibiæ brownish black, bases yellow; wings light yellow, prearcular and costal portions more saturated; a restricted zigzag light-brown pattern before cord, and darker brown seams and clouds beyond cord; cell 1st  $M_2$  relatively small; male hypopygium with caudal margin of tergite slightly produced into a bifid depressed plate, dorsal surface with black hair brushes; outer dististyle a flattened paddlelike blade; inner dististyle with posterior portion or "heel" produced backward into a point, outer margin with conspicuous black teeth.

*Male*.—Length, about 21.5 to 22 millimeters; wing, 22 to 23; antenna, about 5; rostrum alone, about 3.

Frontal prolongation of head unusually long and slender, about one and one-half as long as remainder of head, without nasus; front and its prolongation in almost direct alignment with vertex, interrupted only by the very low vertical tubercle;

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

front dark brownish gray; palpi black. Antennæ with scape obscure yellow, darkened basally; pedicel yellow; flagellum weakly bicolored, brown, bases dark brown; verticils unusually long, exceeding segments; terminal segment a little more than one-third penultimate. Head dark gray, with a narrow, vague, median, brown vitta; anterior vertex a little brightened.

Thorax gray, præscutum with three darker brownish gray stripes that are bordered by dark-brown, median stripe vaguely split by a dusky line, lateral stripes with outer margin darkened; humeral region more yellow-pollinose; lateral margin of præscutum darkened; each scutal lobe with two separate brown areas; mediotergite with a dark central line. Pleura chiefly dark brown, dorsopleural membrane and areas on dorsal sternopleurite and ventral pleurotergite light yellow. Halteres light yellow, base of knob extensively darkened. Legs elongate; coxæ gray; trochanters infuscated, fore pair brighter; femora black, bases narrowly but conspicuously yellow; a broad (2 to 2.5 millimeters) yellow subterminal ring, tips narrowly black; tibiæ brownish black, bases yellow; tarsi black; tibial spur formula 1 : 1 : 2; claws with a small tooth before midlength. Wings (Plate 1, fig. 1) light yellow, prearcular and costal portions deeper yellow; a relatively sparse dark and light brown pattern, producing a zigzag appearance; areas before cord paler, appearing as narrow angular clouds in cells R to 2d A inclusive, cells C and Sc unmarked; beyond cord the pattern darker brown, appearing as narrow seams and marginal darkenings at ends of veins, including a narrow oblique band across radial field from outer end of cell R<sub>2</sub>, through cell R<sub>5</sub>, becoming confluent behind with seams along medial field; veins yellow, darker in the clouded areas. Squama with a few setæ; trichia of veins beyond cord small and sparse. Venation: R<sub>1+2</sub> strongly preserved, elongate; vein R<sub>3</sub> sinuous, constricting cell R<sub>3</sub> at about midlength; cell 1st M<sub>2</sub> small; petiole of cell M<sub>1</sub> subequal to m.

Abdomen dark brown, lateral borders of both tergites and sternites narrowly light gray; outer segments uniformly brownish gray. Male hypopygium massive; suture between ninth tergite and ninth sternite incomplete. Ninth tergite (Plate 2, fig. 25, 9t) massive, median area slightly produced into a bifid glabrous plate, dorsal surface of lobes virtually concealed by brushes of black setæ. Dististyles of peculiar conformation, as shown (Plate 2, fig. 26); outer dististyle, *od*, a flattened paddle-

like blade. Inner dististyle, *id*, with heel portion produced backward into a slender lobe, outer margin with conspicuous black teeth. Ninth sternite with a small darkened knob on mesal margin beneath. Eighth sternite unarmed.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, White Cloud Temple, altitude 9,000 feet, June 12, 1937 (*Tsen*). Paratopotype, male, White Cloud Temple to summit, 11,000 feet, June 9, 1937 (*Tsen*).

I am inclined to believe that this very distinct and remarkable fly is correctly placed in the subgenus *Sinotipula* Alexander<sup>2</sup> but this is not entirely certain. The very long and slender frontal prolongation of the head, without nasus, is very different from the condition found in other species of *Tipula* known to me, being rather suggestive of the genus *Clytocosmus* Skuse, of eastern Australia.<sup>3</sup> Moreover, the inner dististyle of the male hypopygium is not very dissimilar from that of *Clytocosmus*, but the antennæ, with unusually long flagellar verticils, show that the present fly is a true *Tipula* though very distinct.

TIPULA (SCHUMMELIA) BILOBULA *sp. nov.* Plate 1, fig. 2; Plate 2, fig. 27.

Mesothorax orange to yellow, unmarked; femora brown, tips narrowly brownish black; wings weakly tinged with brown, cells C and Sc, with stigma, abruptly dark brown; Sc<sub>1</sub> indicated by a weak spur, Sc<sub>2</sub> long; cell 1st M<sub>2</sub> small; cell 2d A long and narrow; abdominal tergites yellow, segments six to eight, inclusive, blackened; male hypopygium with tergite deeply notched medially; eighth sternite with posterior margin bearing two widely separated, slender lobes; ædeagus profoundly trifold on distal two-thirds.

*Male*.—Length, about 13 millimeters; wing, 15; antennæ, about 3.2.

Frontal prolongation of head obscure yellow, darker on sides; nasus distinct; palpi with basal two segments pale, outer segments darker. Antennæ relatively short, if bent backward extending nearly to wing root; basal three segments yellow, succeeding two or three segments vaguely bicolored, basal enlargement black, remainder brown, outer segments uniformly black. Front and anterior vertex buffy, posterior vertex abruptly gray; a capillary brown median vitta on vertex, extending from low vertical tubercle to occiput.

<sup>2</sup> Philip. Journ. Sci. 57 (1935) 94–100.

<sup>3</sup> Alexander, Proc. Linn. Soc. New South Wales 57 (1932) 13–23, figs. 1, 2.

Pronotum infuscated, lateral portions, with propleura, light yellow. Mesonotum almost uniformly orange, præscutal stripes not or scarcely differentiated against ground; præscutum with vestiture exceedingly reduced to virtually lacking. Pleura yellow. Halteres elongate, yellow, knobs dark brown. Legs long and slender; coxæ and trochanters yellow; femora brown, bases restrictedly yellow, tips narrowly brownish black; tibiæ and tarsi pale brown; tibial spur formula 1 : 2 : 2; claws small, with a reduced spine. Wings (Plate 1, fig. 2) with a weak brown tinge, cells C and Sc, together with stigma, abruptly dark brown; prearcular field paler brown; longitudinal veins narrowly and vaguely seamed with darker; veins brown; oblitative areas restricted. Wings long-petiolate; veins beyond cord with dense macrotrichia of moderate length, virtually lacking on  $R_{1+2}$ ; squama with setæ. Venation;  $Sc_1$  indicated by a weak spur and approximation of veins Sc and C,  $Sc_2$  long-extended beyond this spur; Rs about one-half longer than m-cu; cell 1st  $M_2$  small; cell  $M_1$  deep, exceeding three times its petiole;  $M_{3+4}$  nearly as long as basal section of  $M_3$ ; cell 2d A long and narrow.

Abdominal tergites yellow, outer segments more obscure, narrowly darkened medially; sternites clear yellow; subterminal three segments blackened; hypopygium obscure yellow. Male hypopygium (Plate 2, fig. 27) with tergite, 9t, separated from sternite, 9s; basistyle, *b*, entire, outer margin produced into a blade that is obtusely rounded at tip. Ninth tergite, 9t, extensive, about as long as wide, caudal margin with a deep median notch; lateral lobes obtusely truncated, outer lateral angles produced into subacute blades. Outer dististyle small, subcylindrical. Inner dististyle, *id*, extensive, posterior portion at base produced into a slender pale lobe. Eighth sternite, 8s, narrowed outwardly, apex with a pair of slender, fingerlike lobes, widely separated on midline. Ædeagus simple on basal third, thence split into three long slender rods.

*Habitat*.—Siam.

Holotype, male, Chiangmai (Mrs. McKean); through Professor T. D. A. Cockerell.

*Tipula* (*Schummelia*) *bilobula* is quite distinct from all other regional species so far made known. The condition of the ædeagus, which is divided into three branches for more than one-half the entire length, provides a character not hitherto known to me in the genus though equalled or approached in the subfamily Cylindrotominæ.



TIPULA (SCHUMMELIA) CUMULATA sp. nov. Plate 1, fig. 3; Plate 2, fig. 28.

General coloration yellow, præscutum with three reddish brown stripes that are narrowly bordered by darker brown, median stripe split by a capillary brown vitta; flagellum black; nasus small to subobsolete; mediotergite weakly infuscated, with a pale median line; femora obscure yellow, passing into brown; tibiæ and tarsi black; wings cream-yellow, heavily clouded with pale brown; Rs subequal to m-cu; abdomen yellow, outer tergites darkened; hypopygium black; male hypopygium with tergite heavily blackened on posterior border; outer dististyle elongate, weakly dilated at near midlength; inner dististyle long-oval, beak very slender; eighth sternite with abundant long yellow setæ on posterior border.

*Male*.—Length, about 12 millimeters; wing, 14; antenna, about 3.5.

Frontal prolongation of head relatively long, nearly equal in length to remainder of head, yellow above, darker on sides; nasus small to subobsolete; basal three palpal segments obscure yellow, terminal segment black. Antennæ with basal two segments yellow, flagellum black. Head orange, paling to yellow in front.

Pronotum infuscated, more yellow on sides. Mesonotal præscutum yellow, with three reddish brown stripes that are narrowly bordered by darker brown, median stripes further divided by a brown median vitta; scutum yellow, lobes variegated with reddish brown; scutellum obscure yellow, parascutella slightly more darkened; mediotergite weakly infuscated, with a vague broad median yellow line. Pleura yellow, slightly variegated with darker, including a small dark-brown spot on extreme dorsal anepisternum; paler brown washes on ventral anepisternum, dorsal pteropleurite, and meron; ventral pleurotergite swollen, whitish. Halteres with stem weakly infuscated, knob light yellow. Legs with coxæ light yellow; trochanters testaceous yellow; femora obscure yellow at bases, passing into brown, tips broadly black; tibiæ and tarsi black. Wings (Plate 1, fig. 3) with ground color cream-yellow, heavily clouded with pale brown; prearcular field and cells C and Sc more saturated yellow; stigma dark brown; brown washes before cord, in outer end of cell R<sub>2</sub>, cell 1st M<sub>2</sub> and beyond, most of cell R, and extensive areas in cells M, Cu, 1st A, and 2d A; the pale ground areas contrast conspicuously with the brown, the chief being before and beyond stigma; outer medial cells and base of cell 1st M<sub>2</sub>; cell M<sub>1</sub> more whitened;

base and apex of cells M and Cu; major areas at base and apex of both anal cells, tip of vein 1st A surrounded by pale, tip of vein 2d A subtended on either side by pale, actual tip darkened; veins dark, restrictedly pale in certain of ground areas. Macrotrichia on basal half of vein  $R_{1+2}$ ; squamal setæ few. Venation: Rs subequal to or a little longer than m-cu; cell  $M_1$  deep, its petiole a little longer than m.

Abdomen yellow, outer tergites more obscure; hypopygium blackened. Male hypopygium with tergite (Plate 2, fig. 28, 9t) transverse, caudal margin broadly emarginate, very heavily blackened and sclerotized both on caudal and ventral faces; a sublateral spine on either side beneath and a blunt lobe on either side of median incision. Basistyle with a blackened lobe on mesal face. Outer dististyle, *od*, unusually long, slightly dilated and angularly bent at near midlength. Inner dististyle, *id*, long-oval, beak very slender; a long pale dorsal flange. Gonapophyses appearing as slender, gently curved, black spines. Eighth sternite, 8s, extensive, caudal margin very gently emarginate, with abundant long yellow setæ, these lacking only on extreme median area.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, White Cloud Temple, altitude 9,000 feet, June 12, 1937 (*Tsen*). Paratopotype, male.

*Tipula* (*Schummelia*) *cumulata* is very distinct from its nearest described ally, *T. (S.) honorifica* Alexander, of the Szechwan-Tibet Border, differing in the coloration, wing, and leg pattern, and in the structure of the male hypopygium.

TIPULA (TIPULODINA) CANTONENSIS sp. nov.

General coloration light gray, præscutum with three conspicuous brown stripes; flagellum weakly bicolored; pleura yellow, sparsely pruinose; tibiæ black, midtibiæ with a broad white ring on distal half, posterior tibiæ with two broad white rings; tarsi chiefly white; wings narrow, grayish, costal and subcostal cells brown; a relatively heavy brown pattern, including conspicuous wing tip in outer radial field; cell  $M_1$  relatively shallow, outer end of cell 1st  $M_2$  truncate, cell  $M_4$  wide at base.

*Female*.—Length, about 16 millimeters; wing, 14.2.

Frontal prolongation of head moderately long, obscure brownish yellow; nasus short and stout; palpi black. Antennæ with scape pale yellow, pedicel very little darker; flagellum weakly bicolored, bases brown, apices more broadly paler brown; outer segments uniformly brownish black; segments longer than in

*hopiensis* (male). Head brownish gray, clearer gray in front; anterior vertex wide, with a tiny median tubercle and lower, less distinct roughenings behind each antennal fossa.

Pronotum obscure yellow, conspicuously dark brown medially. Mesonotal præscutum with ground color light gray, with three conspicuous brown stripes, median stripe with a faintly darker median vitta on anterior half; posterior interspaces obscured; scutal lobes grayish; posterior sclerites of notum clear dark gray, mediotergite lighter gray on sides. Pleura yellow, sparsely pruinose. Halteres brown, base of stem paler. Legs with coxæ yellow, sparsely pruinose; trochanters yellow; fore-legs broken; middle femora obscure yellow, tips narrowly brownish black; tibiæ black, with a broad white ring on distal half, this exceeding twice black tip; basal half of basitarsi black, apical half and succeeding three segments white, terminal segment broken; posterior femora brown, base paler, apex passing into brownish black; tibiæ black, with a broad white ring on both basal and apical half, basal ring subequal to intervening black ring, outer white annulus about one-half wider, exceeding four times blackened apex; basitarsi blackened on proximal fourth or less, remainder and succeeding segments white, terminal segment broken. Wings narrow, long-petiolate at base; ground color grayish, prearcular field and an area just beyond cord a little more whitish hyaline; a heavy brown pattern, as follows: Wing tip in outer radial field, basal third of cell  $R_2$  pale; broad seams on anterior and posterior cords and along distal section of vein  $Cu_1$ , this band along cord broken at M; outer end of cell 1st  $M_2$  and veins issuing from it more narrowly seamed; cells C and  $Sc_2$  brown, cell Sc and stigma dark brown; veins dark brown, paler in ground areas. Venation: Cell  $M_1$  relatively shallow, less than three times its petiole; m transverse so cell 1st  $M_2$  is truncate at outer end; m-cu long, cell  $M_4$  wide at base; cell 2d A reduced to a narrow strip, shorter than in *hopiensis*.

Abdominal tergites brown, somewhat darker medially; caudal and lateral borders of segments narrowly pale; outer tergites more pruinose; sternites obscure yellow; cerci relatively stout, upcurved, black, obtuse tips narrowly reddish.

*Habitat*.—China (Kwangtung).

Holotype, female, Canton, Honam Island, P'an-yu District, on wooded hill, July 26, 1933 (*Tinkham*). Type in collection of Lingnan University, Canton.

*Tipula (Tipulodina) cantonensis* is closest to *T. (T.) hopiensis* Alexander (northeastern China), differing especially in the coloration of the antennæ, legs, and wings, and in the details of venation.

**TIPULA (VESTIPLEX) INQUINATA** sp. nov. Plate 1, fig. 4; Plate 2, fig. 29.

General coloration yellowish gray, præscutum with three brown stripes, median stripe divided by a paler central vitta; antennæ short, scape and pedicel yellow, flagellum black; legs black, femoral bases yellow; wings dark brown, patterned with yellow, beyond cord the latter including only an incomplete fascia distad of stigma and anterior cord; basal abdominal segments reddish brown, outer segments black; male hypopygium with ninth tergite divided medially, blackened sublateral lobes large; basistyle unarmed.

*Male*.—Length, about 12 millimeters; wing, 15; antenna, about 2.5.

Frontal prolongation of head black, pruinose; nasus short and obtuse; basal segment of palpus obscure yellow, outer segments black. Antennæ short, as shown by measurements, if bent backward not reaching wing root; scape and pedicel light yellow, flagellum black; first flagellar segment unusually long, about equal in length to combined scape and pedicel, cylindrical; succeeding segments short, gradually decreasing in length, basal enlargement feebly indicated; terminal segment oval, about one-third penultimate; longest verticils subequal in length to segments. Head yellowish gray, center of vertex more darkened.

Mesonotal præscutum yellowish gray, with three brown stripes, median stripe divided by a paler central vitta, stripes not bordered by darker; scutum yellowish gray, each lobe with two darker brown areas; posterior sclerites of notum dark, pruinose. Pleura gray. Halteres dark brown, base of stem narrowly yellow. Legs with coxæ gray; trochanters yellow; femora black, bases broadly yellow, narrowest on forelegs; tibiæ and tarsi black; claws with short basal spur. Wings (Plate 1, fig. 4) dark brown, handsomely patterned with yellow; prearcular field and cell Sc light yellow, cell C darker except at outer end; darker brown areas in bases of cells R and M and at stigma; pale yellow areas over surface, beyond cord and stigma appearing as a short band extending from C to  $R_{4+5}$ , with a vague brightening in base of cell  $R_5$ ; basad of cord yellow areas more extensive, subequal in area to ground color, including two marginal areas in each of cells 1st A and 2d A; conspicuous,



more whitened obliterative areas before stigma and across cell 1st  $M_2$  from cell R into base of cell  $M_3$ ; veins brown, paler in yellow areas. Venation: Rs exceeding twice length of m-cu; petiole of cell  $M_1$  a little longer than m.

Basal abdominal segments reddish brown, basal tergite more pruinose, lateral margins of succeeding tergites gray, segments variegated with darker; fifth and succeeding segments, including hypopygium, more uniformly blackened. Male hypopygium of general type of *divisotergata*. Ninth tergite divided medially, blackened sublateral lobes much larger than in latter species, margins microscopically roughened. Basistyle unarmed. Outer dististyle flattened. Inner dististyle (Plate 2, fig. 29, *id*); posterior margin with a low darkened setiferous tubercle; a long dorsal crest.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, altitude 10,000 feet, June 10, 1937 (*Tsen*).

The nearest ally is *Tipula (Vestiplex) divisotergata* Alexander, which has the general plan of structure of the male hypopygium somewhat similar but with the details entirely distinct, and with the coloration of the body and wings different.

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

General coloration of thorax yellow, præscutum with four reddish brown stripes; antennæ (male) elongate, exceeding one-half length of body, scape and pedicel yellow, flagellum black; legs black, femoral bases paler; wings pale brown, variegated by whitish subhyaline areas; prearcular field light yellow, cell Sc dark brown; several macrotrichia in outer ends of cells  $R_3$  to  $M_1$ , inclusive; basal abdominal tergites yellow, narrowly trilineate with black, outer segments uniformly blackened; male hypopygium with basistyle produced into a strong black spine; tergite with caudal margin deeply emarginate, blackened, crenulate; ventral surface of tergite with two lobes that are black and tufted with setæ at tips.

*Male*.—Length, about 12 to 12.5 millimeters; wing, 15 to 16; antenna, about 8 to 8.5.

Frontal prolongation of head yellow; nasus distinct; basal segment of palpus obscure yellow, other segments dark brown. Antennæ (male) unusually long, if bent backward extending nearly to base of fifth abdominal segment; scape, pedicel, and basal half of first flagellar segment yellow, remainder black; basal enlargement of flagellar segments feeble, outer portion cylindrical; ver-

ticils a little more than one-half segments; terminal segment greatly reduced. Head fulvous-yellow; vertical tubercle low, simple.

Thorax yellow pollinose, præscutum with four darker reddish brown stripes, intermediate pair narrowly separated by a pale vitta that is scarcely indicated in front; scutal lobes weakly infuscated. Halteres dark brown, stem more yellow, especially at base and along lower face. Legs with coxæ and trochanters yellow; femora obscure yellow at base, soon passing into brown, tips blackened; remainder of legs black; claws small, simple. Wings (Plate 1, fig. 5) with ground color pale brown, variegated by whitish subhyaline areas; prearcular field abruptly light yellow; cell C light brown, stigma medium brown, cell Sc dark brown; whitish areas most extensive before cord, especially in basal cells, beyond cord appearing as an incomplete band beyond stigma and as restricted oblitative areas across cell 1st  $M_2$ ; veins dark brown, brightened in prearcular field. Squama naked; rather numerous macrotrichia in outer ends of cells  $R_3$ ,  $R_5$ , and  $M_1$  (indicated in figure by stippling). Venation:  $R_{2+3}$  relatively long, subequal to m-cu, latter about one-half  $R_s$ ;  $R_{1+2}$  entire; cell  $M_1$  a little longer than its petiole.

Basal three abdominal tergites yellow, narrowly trilineate with black, fourth segment more yellowish brown; outer segments uniformly black; basal four sternites uniformly yellow, outer segments more obscure. Male hypopygium (Plate 2, fig. 30) with tergite, 9t, and sternite, 9s, separate; basistyle, b, entire, caudal margin produced into a strong, gently curved, black spine, tip acute. Ninth tergite, 9t, narrowly divided medially, caudal margin with a conspicuous V-shaped median notch, margin blackened, microscopically roughened, prolonged outwardly into blackened lobes; ventral face of tergite with conspicuous, hairy-tipped lobes, the longer outer pair directed caudad and mesad (in slide mounts swinging to a lateral position, as figured), the shorter posterior lobes directed mesad. Dististyles as figured; outer dististyle, od, clavate, darkened; inner style, id, compressed, with a flattened beak, apex obtuse; dorsal crest very narrow, blackened.

*Habitat*.—China (Szechwan).

Holotype, male Mount Omei, Chu Lao Tong Temple, altitude 6,500 feet, June 5 and 6, 1937 (*Tsen*). Paratopotype, male.

*Tipula (Vestiplex) subtestata* is closest to *T. (V.) testata* Alexander, likewise from Szechwan, which agrees in the general

coloration and elongate antennæ of the male, differing conspicuously in the lack of macrotrichia of the wing cells and the very differently constructed male hypopygium.

**TIPULA (OREOMYZA) INTERRITA** sp. nov. Plate 1, fig. 6; Plate 2, fig. 31.

Large (wing, male, over 25 millimeters); general coloration gray, præscutum with four dark-gray stripes, interspaces and humeral region velvety black; antennæ relatively short, black; halteres with knobs brownish black; legs black, femoral bases yellow, tibiæ brown basally, passing into black; wings yellowish brown, prearcular region and cell Sc yellow; two major cream-colored areas on disc, one in outer portion of cell M, other more basal in cells Cu and 1st A; stigma darker than ground; abdomen blackened, pruinose; male hypopygium with caudal margin of tergite four-lobed; basistyle produced into a flattened truncate blade; inner dististyle very complex; eighth sternite produced caudad into a broad shovel-shaped median lobe, apex truncated or very weakly emarginate.

*Male*.—Length, about 23 millimeters; wing 25.5; antenna, about 4.5.

Frontal prolongation of head relatively long, nearly as long as remainder of head, dark gray throughout; nasus distinct; palpi black. Antennæ relatively short, black, scape pruinose, pedicel more brownish at apex; flagellar segments with basal swellings moderately developed; longest verticils a trifle exceeding segments. Head gray, lighter gray on anterior vertex; a narrow, dark-brown, median vitta, slightly widened behind.

Pronotum gray, with conspicuous black setigerous punctures. Mesonotal præscutum with four dark-gray stripes that are narrowly bordered by darker; ground color light gray, very restricted by intense velvety black areas that occupy posterior interspaces, curving laterad around cephalic ends of lateral stripes; outer humeral region similarly intense velvety black, lateral borders of præscutum more brownish black; median area of scutum light gray, with a few black setigerous punctures, outer portions of lobes dark gray, bordered in front by velvety black, suture similarly blackened; scutellum gray, with a brown median vitta; postnotum gray. Pleura gray, dorsopleural region buffy, bordered beneath on anepisternum by more dusky. Halteres elongate, stem obscure yellow, knob brownish black. Legs with coxæ and trochanters gray; remainder of legs long, especially tarsi; femora black, bases narrowly but conspicuously light yellow, amount subequal on all legs; tibiæ brown basally,

passing into black; tarsi black; claws small, simple. Wings (Plate 1, fig. 6) yellowish brown, prearcular region and cell Sc yellow; stigma medium brown; paler brown clouds at origin of Rs and on anterior cord; whitish oblitative areas before stigma and across cell 1st  $M_2$ ; two major cream-colored areas, one at about two-thirds length of cell M, other in subbasal portions of cells Cu and 1st A; a less distinct pale area over Rs; cells beyond cord uniformly darkened; veins brown, more yellowish in brightened areas. Macrotrichia of veins beyond cord sparse; squama naked. Venation: Rs about one and one-third to one and one-half as long as m-cu; petiole of cell  $M_1$  short; cell 1st  $M_2$  elongate.

Abdomen blackened, dark gray pruinose; hypopygium dark, styli and other appendages paling to yellow. Male hypopygium (Plate 2, fig. 31) with tergite,  $9t$ , entirely separated from sternite,  $9s$ . Ninth tergite,  $9t$ , with caudal border broadly yellow, apical margin four-lobed; outer lobes divergent, directed caudad and slightly ventrad, slender, subglabrous; inner lobes shorter, more triangular in outline, separated by a V-shaped notch, directed caudad. Basistyle,  $b$ , entire, caudal margin produced into a broad flattened lobe, apex truncated, surface with long coarse setæ. Outer dististyle flattened. Inner dististyle,  $id$ , very complex; on its posterior border and apparently arising from ventromesal face of basistyle a conspicuous pale lobe, stem slender, apex expanded into an irregular head. Ninth sternite,  $9s$ , with a narrow line of pale membrane on midline beneath. Eighth sternite,  $8s$ , slightly projecting in a broad lobe, apex truncated or very weakly emarginate.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, White Cloud Temple, altitude 9,000 feet, June 12, 1937 (*Tsen*).

There is no species known to me with which the present striking fly may be profitably compared.

**TIPULA (OREOMYZA) PERLATA** sp. nov. Plate 1, fig. 7; Plate 2, fig. 32.

General coloration gray, præscutum with four scarcely differentiated plumbeous-gray stripes; antennæ (male) moderately long, if bent backward extending to shortly beyond base of abdomen; legs black, femoral bases yellow; wings broad, yellowish brown, cells C and Sc uniformly dark brown;  $R_{1+2}$  atrophied; male hypopygium with tergite notched medially; caudal border of eighth sternite with a pale median incision, on either side with a lobe bearing decussate setæ.



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

*Female*.—Length, about 15 millimeters; wings, 16.

Frontal prolongation of head black, more or less pruinose; nasus distinct; palpi black. Antennæ (male) moderately long, if bent backward extending to shortly beyond base of abdomen; black, pedicel a little paler; flagellar segments moderately incised; verticils subequal in length to segments; thirteenth segment reduced to a mere button. Head gray; vertical tubercle low.

Mesonotum dark gray, præscutum with four scarcely differentiated, plumbeous-gray stripes. Pleura light gray; dorsopleural membrane dark. Halteres relatively long, obscure yellow, knobs weakly darkened. Legs with coxæ light gray; trochanters obscure yellow; remainder of legs black, femoral bases obscure yellow, on forelegs involving about proximal fourth, on posterior legs about proximal half; tibial spur formula 1 : 2 : 2; claws (male) simple. Wings (Plate 1, fig. 7) broad, almost uniformly tinged with yellowish brown, cells C and Sc beyond arculus dark brown; stigma pale, scarcely differentiated from ground; very restricted oblitative areas on membrane before stigma and on either side of cord in cells R and 1st M<sub>2</sub>, adjoining veins much more extensively obliterated; veins dark. Squama naked; abundant macrotrichia on all longitudinal veins beyond cord. Venation: R<sub>1+2</sub> entirely atrophied or represented by a tiny spur only; Rs about one and one-third to one and one-half as long as oblique m-cu; cell 1st M<sub>2</sub> variable in shape; petiole of cell M<sub>1</sub> varying from much shorter than m to longer than this element; cell 2d A relatively narrow.

Abdomen black, surface sparsely pruinose; lateral margins of outer segments grayish. Male hypopygium (Plate 2, fig. 32) relatively small, tergite, 9t, and sternite, 9s, separated. Ninth tergite, 9t, with a narrow median notch, lateral lobes subcontiguous, obtuse, their margins microscopically crenulate. Outer dististyle, *od*, unusually small, cylindrical, with sparse long setæ. Inner dististyle, *id*, shaped as in many species of *Nephrotoma*; both apical and lateral lobes blunt, heavily blackened. Eighth sternite, 8s, with a median notch that is filled with pale membrane, on either side with a small marginal lobe that bears long decussate setæ. Ovipositor with slender, straight cerci.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, White Cloud Temple, altitude 9,000 feet, June 12, 1937 (*Tsen*). Allotopotype, female. Para-

topotypes, 8 males, altitude 9,000 to 11,000 feet, June 9 to 12, 1937 (Tsen).

*Tipula (Oreomyza) perlata* is readily told from other regional species by the broad, strongly tinted wings, with the costal border narrowly but conspicuously dark brown.

TIPULA (OREOMYZA) LÆTISSIMA sp. nov. Plate 1, fig. 8; Plate 3, fig. 33.

General coloration gray, præscutum with four darker gray stripes, intermediate pair separated by a capillary dark-brown median vitta; antennal flagellum beyond basal segment black; pleura light gray; knobs of halteres dark brown; legs black, femoral bases broadly yellow; wings brown, variegated with darker brown and whitish hyaline, latter including a complete crossband beyond cord; prearcular region and base of costal field beyond h bright yellow; a major dark marking beyond arculus and surrounding h;  $R_{1+2}$  entire; outer abdominal segments blackened; male hypopygium with caudal border of tergite with a U-shaped notch, lateral lobes truncate; basistyle not produced; inner dististyle with a conspicuous fleshy lobe on outer margin at base.

*Male*.—Length, about 15 millimeters; wing, 16.5; antennæ, about 5.

*Female*.—Length, about 20 to 22 millimeters; wing, 18 to 19.

Frontal prolongation of head relatively long, dark gray; nasus short but distinct; palpi black. Antennæ (male) moderately long; basal three segments brown, first more or less pruinose; succeeding segments black, moderately incised, longest verticils a trifle longer than segments; in female, antennæ shorter, incisures slightly pale. Head dark gray, sides of posterior vertex and a vague median line slightly darkened; vertical tubercle of moderate size.

Mesonotum light gray, with four darker gray stripes, intermediate pair separated by a capillary dark-brown median vitta that becomes obsolete behind; setigerous punctures of humeral region conspicuous, dark brown, of posterior interspaces much less distinct; scutum gray, lobes variegated with brown; scutellum and postnotum much darker gray. Pleura light gray, dorsopleural membrane more buffy. Halteres yellow, knobs dark brown. Legs with coxæ light gray; trochanters obscure yellow; femora black, bases broadly yellow, involving approximately basal third of segment; tibiæ and tarsi black; claws (male) with a basal spine. Wings (Plate 1, fig. 8) with ground color brown, variegated by darker brown and whitish hyaline areas

to produce an unusually brilliant pattern; entire prearcular field, as well as cell Sc, and cell C beyond basal portion, brilliant yellow; darker brown areas including a postarcular darkening in bases of cells R and M, with a slightly disconnected area in cell C on either side of h which is scarcely visible against this ground; stigma and a confluent area on anterior cord, as well as outer portion of cell C dark brown; whitish areas include a complete band beyond cord from base of cell R<sub>2</sub> to posterior margin in cell M<sub>3</sub>; major white areas before cord include three in cell R, two in cell M, three in cell Cu, the extensive outer area crossing vein 1st A into the outer end of cell 1st A, the more basal two areas invading cell 1st A behind; an isolated marginal area in cell 1st A and base of cell 2d A; a much less distinct brightening near outer end of cell R<sub>5</sub>; veins brown, yellow in flavous areas. Venation: R<sub>1+2</sub> short but complete, oblique in position; Rs elongate, exceeding twice m-cu; petiole of cell M<sub>1</sub> subequal to or shorter than m.

Basal abdominal tergite gray; succeeding three tergites yellow, restrictedly darkened laterally, with a broken median vitta that is broadly interrupted at proximal end of each segment; segments beyond fifth uniformly blackened. Male hypopygium (Plate 3, fig. 33) relatively large, compressed; ninth sternite, 9s, separate from tergite, 9t; basistyle, b, entire, not produced. Ninth tergite, 9t, extensive, flattened, caudal margin with a U-shaped median notch, lateral lobes broad, with truncated apices; dorsal surface with numerous scattered setæ, lacking on median area which is very little produced at base of median notch. Outer dististyle a little expanded at base, outer portion subcylindrical, gently curved. Inner dististyle, id, with an extensive lobe on posterior margin at base, lower portion of lobe covered with abundant delicate setulæ. Eighth sternite unarmed, without lobes or setal brushes.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, White Cloud Temple, altitude 9,000 feet, June 12, 1937 (*Tsen*). Allotopotype, female, summit, altitude 11,000 feet, June 8, 1937. Paratopotype, female, with the allotype.

This singularly beautiful fly is allied to *Tipula* (*Oreomyza*) *lætibasis* Alexander and similar species, differing conspicuously in the coloration of the body, the wing pattern, and the structure of the male hypopygium. The wings, with the prearcular field yellow, followed by a major dark-brown area, and with a complete white fascia beyond the cord, are distinctive.

**TIPULA (OREOMYZA) SEXLOBATA** sp. nov. Plate 1, fig. 9; Plate 3, fig. 34.

General coloration gray, præscutum with four darker brownish gray stripes; antennal scape and pedicel yellow, flagellum black, segments weakly incised; legs black, only femoral bases restrictedly yellow; claws (male) toothed; wings almost uniformly brown, sparsely variegated with cream-colored areas; basal abdominal segments chiefly reddish yellow, outer segments black; male hypopygium with tergite bearing six lobes, two pairs on ventral surface bearing conspicuous tufts of setæ; inner dististyle with a slender yellow horn on outer margin at base; eighth sternite unarmed.

*Male*.—Length, about 16 millimeters; wing, 20; antennæ, about 5.

Frontal prolongation of head buffy yellow above, more infuscated on sides; nasus long, pale yellow; palpi brownish black, incisures a little paler. Antennæ with scape and pedicel yellow, flagellum black; flagellar segments only weakly incised; longest verticils subequal in length to segments; terminal segment a tiny oval button. Head gray, more ochreous on sides of anterior vertex; a capillary dusky median vitta.

Pronotum yellowish gray, with a dusky median line, and more or less darkened on sides. Mesonotal præscutum light gray, with four slightly darker brownish gray stripes, intermediate pair confluent and dusky at extreme cephalic ends; lateral stripes a little darker than intermediates; posterior sclerites of notum light gray, each lobe variegated by brownish gray areas. Pleura gray, dorsopleural membrane buffy yellow. Halteres yellow, knob dark brown, its apex a trifle paler. Legs with coxæ light gray; trochanters yellow; remainder of legs black, only femoral bases narrowly yellow; claws (male) with a single basal spine. Wings (Plate 1, fig. 9) almost uniformly brown, sparsely variegated by whitish subhyaline or creamy areas; prearcular field and cells C and Sc light yellow, outer end of cell C slightly more darkened; stigma and a confluent cloud on anterior cord darker brown; pale oblitative areas before stigma and across cell 1st  $M_2$ ; creamy areas in extreme base of cell  $R_3$ , near base and outer end of cells M and Cu, and near bases of both anal cells; a small pale marginal spot in cell 1st A; veins dark brown. No squamal setæ. Venation:  $R_{1+2}$  longer than  $R_{2+3}$ ; Rs very long, about two and one-half times m-cu;  $M_{3+4}$  a little shorter than basal section of  $M_3$ .

Abdomen with basal four segments reddish yellow, narrowly striped with darker; outer segments, including hypopygium,



black. Male hypopygium (Plate 3, fig. 34) with tergites, 9*t*, narrowed outwardly, caudal margin with a deep U-shaped to nearly rectangular median notch, lateral lobes obliquely truncate, terminating in slender lateral points; oblique margins of these lobes microscopically crenulate; on ventral surface of tergite on either side with two further lobes, both conspicuously tufted with setæ, more cephalic lobe shorter and stouter; normal surface setæ of tergite virtually lacking. Basistyle with caudal margin bearing a small obtuse glabrous lobe; apical border produced into a short blackened spine. Outer dististyle, *od*, dusky, weakly spatulate. Inner dististyle, *id*, stout; apical beak stout; posterior portion at base produced into a slender yellow horn that bears numerous setæ. Eighth sternite unarmed. *Æ*deagus, *a*, triangular, short, subtending apophyses greatly reduced to virtually lacking.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, summit, altitude 11,000 feet, June 9, 1937 (*Tsen*).

*Tipula* (*Oreomyza*) *sexlobata* is quite different from other allied forms of generally similar coloration, the chief distinctions being found in the tergite and styli of the male hypopygium.

**TIPULA (OREOMYZA) COMPRESSILOBA** sp. nov. Plate 1, fig. 10; Plate 3, fig. 35.

General coloration gray, præscutum with three conspicuous dark-gray stripes; antennal scape and pedicel yellow, flagellum black; halteres brownish black, base of stem restrictedly obscure yellow; legs black, femoral bases narrowly obscure yellow; wings yellowish brown to pale brown, sparsely variegated with whitish and cream-colored areas; cell 1st  $M_2$  with inner end pointed; basal abdominal segments reddish yellow, striped with black; outer segments uniformly black; male hypopygium with tergite broadly notched medially, from ventral surface on either side with a compressed blade.

*Male*.—Length, about 13 to 14 millimeters; wing, 17 to 18.5; antennæ, about 5.5 to 6.

*Female*.—Length, about 16 millimeters; wing, 14.

Frontal prolongation of head brown to yellowish brown; nasus distinct; palpi black. Antennæ (male) relatively long; scape and pedicel yellow, flagellum black; flagellar segments moderately incised, relatively long, verticils shorter than segments; terminal segment reduced. Head gray, vertex with a dusky median line; vertical tubercle low, entire.

Pronotum gray, darkened medially. Mesonotal præscutum gray, with three conspicuous dark-gray or brownish-gray stripes, median stripe very insensibly divided medially by double dusky lines; posterior sclerites of notum gray, scutal lobes conspicuously variegated by brownish gray; a vague capillary median darkening on postnotum. Pleura light gray; dorsopleural membrane obscure yellow. Halteres brownish black, base of stem restrictedly obscure yellow. Legs with coxæ light gray; trochanters obscure yellow; remainder of legs black, femoral bases very narrowly obscure yellow. Wings (Plate 1, fig. 10) with a strong yellowish-brown to pale-brown tinge, cell Sc somewhat clearer yellow; stigma and a confluent cloud on anterior cord slightly darker brown; restricted whitish oblitative areas before stigma and across cell 1st  $M_2$ ; in cases ground color variegated by very restricted cream-colored areas in base and apex of cell M and in cells Cu, 1st A, and 2d A; in still other cases these areas quite lacking; veins dark brown. Venation: Rs long, from two to two and one-half times as long as m-cu; cell 1st  $M_2$  narrow, its inner end pointed; cell  $M_1$  deep, its petiole subequal to or shorter than m.

Basal abdominal tergites gray; tergites two to four reddish yellow, with a very broad entire black dorsal stripe and less distinct sublateral stripes, most conspicuous on second segment, lateral borders gray; fifth and succeeding segments uniformly black; basal sternites uniformly yellow. Male hypopygium (Plate 3, fig. 35) with tergite, 9t, sternite, 9s, and basistyle, b, separate. Ninth tergite, 9t, with caudal border broadly notched, margin microscopically roughened; from ventral surface on either side a compressed blade projecting caudad, apex obtuse, ventral margin microscopically roughened. Basistyle, b, unarmed. Outer dististyle, od, relatively small, dusky, weakly spatulate. Inner dististyle, id, as figured. Ædeagus, a, projecting caudad from the genital chamber, dorsal surface channelled, tip decurved.

*Habitat.*—China (Szechwan).

Holotype, male, Mount Omei, summit, altitude 11,000 feet, June 9, 1937 (*Tsen*). Allotopotype, female. Paratopotypes, 7 specimens, males and females, altitude 9,000 to 11,000 feet, June 12 to 14, 1937 (*Tsen*).

In its general appearance *Tipula* (*Oreomyza*) *compressiloba* is very similar to *T. (O.) sexlobata* sp. nov., but the structure of the male hypopygium indicates a very distinct species.

TIPULA (OREOMYZA) PERCOMMODA sp. nov. Plate 1, fig. 11; Plate 3, fig. 36.

General coloration light gray, præscutum with four darker stripes; antennæ (male) relatively long, if bent backward extending about to base of abdomen; scape and pedicel obscure yellow, flagellum black; flagellar segments with basal enlargement only feebly developed; apex of knob of halteres yellow; legs black, femoral bases narrowly yellow; claws (male) simple; wings beautifully variegated light yellow and brown, including numerous yellow areas before cord and an incomplete crossband beyond cord; cell  $M_1$  short-petiolate; basal abdominal segments yellow, striped with black; sixth and succeeding segments uniformly black; male hypopygium with tergite notched, ventral surface on either side with a compressed triangular blade; basistyle at apex produced into a glabrous blade; outer dististyle long and slender, nearly cylindrical; inner dististyle large, scoop-shaped.

*Male*.—Length, about 16 millimeters; wing, 18; antennæ, about 6.5.

Frontal prolongation of head moderately long, gray; nasus distinct; palpi black. Antennæ (male) relatively long, if bent backward extending approximately to base of abdomen; scape and pedicel obscure yellow, flagellum black, first segment a trifle brightened at base; flagellar segments subcylindrical, with feebly indicated basal swellings; longest verticils subequal to or shorter than segments; terminal segment greatly reduced. Head gray, more yellowish on front and orbits; a dusky median vitta on posterior vertex; vertical tubercle entire.

Pronotum brownish gray. Mesonotal præscutum light gray with four darker stripes, intermediate pair darker gray, narrowly bordered by more brownish gray, including a median vitta; lateral stripes slightly darker brownish gray; scutum light gray with large brownish-gray areas on lobes; scutellum and mediotergite light gray, with a conspicuous dark median line. Pleura light gray; dorsopleural membrane more buffy. Halteres with stem obscure yellow, base of knob dark brown, tip abruptly and conspicuously pale yellow. Legs with coxæ light gray; trochanters obscure yellow; remainder of legs black, femoral bases narrowly yellow; claws (male) simple. Wings (Plate 1, fig. 11) beautifully variegated light yellow and brown, prearcular region and cell Sc brighter yellow; ground color brown, including cell C; whitish obliterative areas before stigma, with a major area crossing cell 1st  $M_2$ ; yellow areas in all cells

before cord, subequal in extent to dark ground, bases of cells R and M of latter color; a broad incomplete crossband beyond cord, extending from costa to cell 1st  $M_2$ ; veins brown, more brightened in yellow areas. Squama naked. Venation: Rs about twice m-cu;  $R_{1+2}$  entire; cell  $M_1$  very short-petiolate to nearly sessile;  $M_{3+4}$  shorter than basal section of  $M_3$ .

Basal abdominal tergite gray pruinose, tergites two to five yellow, with a continuous black median stripe and less distinct sublateral stripes, extreme margins more grayish; basal sternites more uniformly yellow; outer segments uniformly black. Male hypopygium (Plate 3, fig. 36) with tergite,  $9t$ , separated from sternite,  $9s$ , except on cephalic third; basistyle entire. Ninth tergite,  $9t$ , transverse, narrowly divided medially by pale membrane; caudal margin with a V-shaped median notch, lateral lobes low and obtuse; from ventral surface of tergite on either side a compressed triangular blade, directed caudad. Basistyle,  $b$ , produced apically into a conspicuous, long-triangular, glabrous blade, tip narrowly obtuse. Outer dististyle,  $od$ , long and slender, nearly cylindrical. Inner dististyle,  $id$ , large and massive, shallowly scoop-shaped; a long dorsal crest with long sparse setæ. Eighth sternite simple. Ædeagus small, decurved; gonapophyses greatly reduced.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, between White Cloud Temple and summit, altitude 10,000 feet, June 10, 1937 (*Tsen*).

*Tipula (Oreomyza) percommoda* is apparently most nearly allied to *T. (O.) compressiloba* sp. nov. and similar species, differing in the conspicuously patterned wings and in the structure of the male hypopygium.

**TIPULA (OREOMYZA) PROCLIVA** sp. nov. Plate 1, fig. 12; Plate 3, fig. 37.

General coloration gray, præscutum with four slightly differentiated, clearer gray stripes; antennæ black, basal three segments yellow; legs brownish black, femoral bases broadly yellow; wings brown, prearcular field conspicuously bright yellow; three large white discal areas, including a virtually complete band beyond cord; basal abdominal segments yellow, tergites trivittate with brown, outer segments uniformly black; male hypopygium with tergite notched medially, incision bearing a conspicuous median spine; basistyle produced into a spine; outer dististyle compressed.

*Male*.—Length, about 14 to 15 millimeters; wing 16.5 to 17.5; antennæ, about 4 to 4.2.



*Female*.—Length, about 22 millimeters; wing, 19.

Frontal prolongation of head obscure yellow above, darker laterally, pruinose at base; nasus distinct; palpi black. Antennæ (male) relatively short, if bent backward extending about to wing root; scape and pedicel light yellow; first flagellar segment yellow, apex darkened, remainder of flagellum black; flagellar segments moderately incised; longest verticils subequal to segments; terminal (thirteenth) segment variable in size, from one-third penultimate to greatly reduced. Head gray, center of vertex darker; vertical tubercle low and indistinct.

Mesonotum brownish gray, præscutum with four slightly differentiated, clearer gray stripes that are insensibly bordered by darker, intermediate stripes nearly confluent at anterior and posterior ends, more widely separated in intermediate portion; each scutal lobe with two dark areas. Pleura yellowish gray, variegated with darker gray areas; dorsopleural membrane yellow. Halteres brownish yellow, knobs dark brown. Legs with coxæ yellowish gray; trochanters obscure yellow; femora dark brown, passing into black at tips, bases broadly yellowish, narrowest (about basal fourth) on forelegs, widest (about basal two-thirds to three-fourths) on posterior femora; tibiæ brownish black, tips black; tarsi black; tibial spur formula 1:2:2; claws (male) with a single erect spine on basal half. Wings (Plate 1, fig. 12) with ground color brown, prearcular field conspicuously bright yellow; wing disc with three conspicuous whitish areas, including a nearly complete band beyond cord, from costal border in cell  $R_2$  to midlength of cell  $M_4$  or beyond practically to posterior border; second area at near two-thirds length of cell  $M$ , more or less invading cell  $R$  in front, very extensively so in female; third area more basal, involving subbasal portions of cells  $Cu$  and 1st  $A$ ; stigma, cells  $Sc$  and  $Cu_1$ , and a seam on anterior cord darker than ground; veins brown, yellow in flavous areas, especially prearcular field. Venation: Distal end of vein  $R_{1+2}$  atrophied, spur varying in completeness from one-half to three-fourths length; petiole of cell  $M_1$  subequal to or slightly longer than  $m$ .

Abdomen with basal four tergites yellow, trivittate with brown, median vitta very narrow on first tergite and basal half of second, widened behind; first tergite opaque, succeeding segments and basal sternites polished yellow; outer segments, including hypopygium, black. Male hypopygium (Plate 3, fig. 37) relatively large, compressed; tergite and sternite separated. Ninth

tergite, 9*t*, extensive, slightly narrowed outwardly, caudal margin with a broad U-shaped notch, median region further produced into a long spine; lateral lobes obtuse, obliquely truncated. Basistyle, *b*, entire, caudal margin produced into a strong straight spine. Outer dististyle, *od*, compressed, widened outwardly, apex obliquely truncated. Inner dististyle, *id*, shaped as in figure; outer margin at midlength produced into a spine; at base prolonged into a more flattened scoop. Eighth sternite unarmed.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, Chu Lao Tong Temple, altitude 6,500 feet, June 6, 1937 (*Tsen*). Allotopotype, female, June 5 and 6, 1937. Paratopotype, male, June 5, 1937.

*Tipula (Oreomyza) procliva* is entirely different from all other regional species of the subgenus having the basistyle of the male hypopygium produced into a spine.

TIPULA (OREOMYZA) PERTENUIS sp. nov. Plate 1, fig. 13; Plate 3, fig. 38.

Belongs to the *mutila* group; general coloration gray, præscutum with four slightly darker gray stripes, intermediate pair separated by a capillary brown vitta; antennæ with basal three segments yellow, remaining segment black; halteres yellow; legs black, femoral bases restrictedly yellow; claws (male) with a small basal tooth; wings with ground color rich brown, arcular region and cell Sc light yellow; disc of wing with large cream-colored areas, including an incomplete stripe beyond cord; m-cu and M<sub>3+4</sub> subequal, basal abdominal segments yellow with an entire median black stripe; outer segments uniformly blackened; male hypopygium with basistyle produced caudad into a slender hairy lobe; outer dististyle flattened; inner dististyle narrow; gonapophyses paired, scabrous at tips; eighth sternite truncated at tip, with dense short setæ.

*Male*.—Length, about 11 to 11.5 millimeters; wing, 12 to 12.5; antennæ, about 4.

Frontal prolongation of head obscure yellow to brownish yellow above, including long slender nasus; lower surface blackened; palpi black. Antennæ moderately long; basal three segments yellow, remainder black; flagellar segments weakly incised; longest verticils a little shorter than segments; terminal segment reduced, about one-third penultimate, narrowed outwardly. Head gray, posterior vertex with a capillary dark vitta.

Pronotum gray. Mesonotal præscutum light gray, with four darker gray stripes, intermediate pair separated by a capillary brown median vitta, their outer margins narrowly bordered by brownish gray; lateral stripes poorly defined, best indicated along their lateral borders; setigerous punctures small and relatively inconspicuous; posterior sclerites of notum light gray, scutal lobes and central areas of scutum, scutellum, and mediotergite darker. Pleura gray, dorsopleural membrane buffy yellow. Halteres yellow, knob not or scarcely darkened. Legs with coxæ gray, posterior pair paler; remainder of legs black, femoral bases restrictedly yellow; claws (male) with a small basal tooth. Wings (Plate 1, fig. 13) with ground color rich brown, arcular region and cell Sc clear light yellow; stigma slightly darker brown; cream-colored areas on disc, including a narrow and more or less broken band beyond stigma in cells  $R_2$ ,  $R_3$ , and  $R_5$ ; an area across cell 1st  $M_2$  and large spots before cord, including an ill-delimited area near bases of cells R and M, with other areas in outer ends of these cells and in cells Cu and 1st A; outer wing cells and 1st A uniformly darkened; veins brown, yellow in flavous areas. Venation:  $R_{1+2}$  entirely atrophied;  $R_2$  meeting  $Sc_2 + R_1$  at an angle; Rs long, approximately three times m-cu, the latter subequal to the long  $M_{3+4}$ ; petiole of cell  $M_1$  longer than m.

Abdominal tergites with basal three or four segments yellow, with a broad blackish median stripe that is widened behind; outer segments, including hypopygium, blackened; in some specimens, including the type, the pale color does not extend beyond the second tergite; basal sternites brightened. Male hypopygium (Plate 3, fig. 38) relatively large and conspicuous, tergite,  $9t$ , and sternite entirely separate; basistyle,  $b$ , entire, caudal margin produced caudad into a slender lobe, more flattened on one face than on the other, with numerous long setæ and delicate scattered setulæ. Ninth tergite,  $9t$ , narrowed posteriorly, restrictedly divided medially by pale membrane, each side slightly bilobed, lobes obtuse, one smaller and glabrous. Outer dististyle,  $od$ , flattened, broadest on basal half. Inner dististyle,  $id$ , unusually narrow, apex slender, subacute, surface with longitudinal striæ; surface and margin with scattered setæ; from posterior outer angle juts a conspicuous pale lobe. Gonapophyses,  $g$ , paired, jutting from genital chamber, apex of each obliquely truncated, microscopically roughened and scabrous.

Eight sternite, 8s, moderately projecting, narrowed posteriorly, apex broadly truncated; setæ at apex longer and more abundant than elsewhere on sclerite.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, White Cloud Temple, altitude 9,000 feet, June 12, 1937 (*Tsen*). Paratopotypes, 2 males.

*Tipula* (*Oreomyza*) *pertenuis* is closest to *T. (O.) mutiloides* Alexander and *T. (O.) submutila* Alexander among the described regional forms, differing conspicuously in the pattern of the wings and, especially, in the structure of the male hypopygium, notably the produced basistyles and paired scabrous gonapophyses.

**DOLICHOPEZA (DOLICHOPEZA) HONSHIUENSIS** sp. nov. Plate 1, fig. 14; Plate 4, fig. 39.

Mesonotal præscutum and scutal lobes uniformly blackened; antennæ (male) relatively long, scape and pedicel yellow, flagellum black; pleura slightly variegated with darker; femora yellow, tips broadly blackened; tibiæ black; basitarsi black, tips narrowly snowy white; remaining tarsal segments chiefly white; wings weakly tinged with brown; stigma oval, darker brown; Sc<sub>2</sub> ending a short distance beyond origin of short oblique Rs; medial forks shallow; outer abdominal segments blackened; male hypopygium with tergite trilobed; phallosome conspicuous, consisting of paired yellow spiniform blades that subtend the slightly longer ædeagus.

*Male*.—Length, about 12 millimeters; wing, 13; antennæ about 6.

Frontal prolongation of head short, brownish black; palpi black. Antennæ (male) relatively long, as shown by measurements; scape and pedicel yellow, flagellum black; flagellar segments subcylindrical; verticils shorter than segments; terminal segment about two-thirds penultimate. Head dull brownish black, front and anterior vertex obscure yellow.

Pronotum infuscated, obscure yellow behind. Mesonotal præscutum and scutal lobes uniformly blackened, surface nitidous, humeral region very restrictedly obscure yellow; setæ of præscutal interspaces white, of moderate length, suberect; median region of scutum and scutellum testaceous yellow, parascutella darker; central portion of mediotergite pale, posterior and lateral margins broadly blackened. Pleura yellow, variegated with brownish black on ventral anepisternum, sternopleurite, meron, and pleurotergite. Halteres elongate, stem yellow, knob



brownish black, apex slightly paler. Legs with coxæ and trochanters yellow, latter darkened on inner faces; femora obscure yellow, tips broadly blackened, more extensively so on forelegs; tibiæ black; basitarsi black basally, distal fourth or fifth white; remainder of tarsi white, terminal two segments darker. Wings (Plate 1, fig. 14) with a weak brown tinge; stigma oval, darker brown; veins brown. Macrotrichia throughout length of Rs. Venation: Sc moderately long, Sc<sub>2</sub> ending a short distance beyond origin of Rs, Sc<sub>1</sub> faintly indicated, opposite origin of Rs; Rs short, about one and one-half as long as basal section of R<sub>4+5</sub>, slightly oblique; medial forks shallow; M<sub>1</sub> only a little longer than its petiole; cell 2d A narrower than in *katoi*.

Abdomen obscure yellow, variegated with darker, outer segments uniformly brownish black to black. Male hypopygium (Plate 4, fig. 39) with tergite, 9t, trilobed, heavily blackened; lateral lobes relatively slender, tips truncated; median lobe lower, obtuse. Phallosome, p, conspicuous, consisting of paired yellow blades that subtend the longer ædeagus, these blades narrowed to acute points.

*Habitat*.—Japan (Honshiu).

Holotype, male, Komagatake, Yamanashi-ken, July 21, 1936 (*Jiro Machida*).

I express my deep thanks to my long-time friend, Dr. Jiro Machida, for his continued interest in sending me shipments of Japanese Tipulidæ. The nearest ally of the present fly is *Dolichopeza* (*Dolichopeza*) *katoi* Alexander (northern Honshiu, Japan), which differs conspicuously in the coloration of the body, legs, and wings, and in the structure of the male hypopygium.

#### CYLINDROTOMINÆ

CYLINDROTOMA MEGACERA sp. nov. Plate 1, fig. 15.

General coloration black, thorax conspicuously pitted and punctured; antennæ (male) of unusual length, about one and one-half as long as body or wing; eyes contiguous on vertex; halteres dusky, base of stem restrictedly yellow; wings with a brownish tinge; m-cu beyond midlength of cell 1st M<sub>2</sub>; abdomen, including hypopygium, black.

*Male*.—Length, about 7.5 millimeters; wing, 8; antennæ, about 12.

Rostrum short, black; palpi black. Antennæ (male) about one and one-half as long as either body or wing, dark brown throughout; flagellar segments long-cylindrical, outer ten to

twelve segments all nearly equal in length, each measuring just short of 1 millimeter; verticils long, coarse, scattered over segments. Head black; eyes very large, contiguous on vertex.

Thorax dull black, surface conspicuously pitted and punctured, least so on præscutal stripes and on scutellum; dorsopleural membrane restrictedly yellow. Halteres dusky, base of stem restrictedly yellow. Legs with coxæ black; trochanters brown; femora yellow basally, darker on outer portions; tibiæ pale brown, tips narrowly dark brown; tarsi dark brown. Wings (Plate 1, fig. 15) with a brown tinge; veins darker brown. Macrotrichia on longitudinal veins beyond cord and on all but basal fifth of Rs, lacking on M, Cu, and anals. Venation: Free tip of Sc<sub>2</sub> persistent; basal section of R<sub>4+5</sub> short; cell M<sub>1</sub> sessile; m-cu beyond midlength of cell 1st M<sub>2</sub>; distal section of Cu<sub>1</sub> bent strongly caudad, narrowing cell Cu at margin.

Abdominal tergites, including hypopygium, black, lateral borders of segments paler; basal sternites pale, remainder dark.

*Habitat*.—China (Szechwan).

Holotype, male, Pehlütting (Beh-luh-din), altitude 6,000 feet, July 11, 1937 (*Franck*).

The only near relative is *Cylindrotoma taiwania* (Alexander), of Formosa and eastern China. The latter fly was described as a species of *Cyttaromyia* Scudder<sup>4</sup> based upon the presence of a supernumerary crossvein in cell R<sub>5</sub>, but additional specimens received now indicate that this feature was an abnormality of the holotype specimen. I prefer to refer the two species to *Cylindrotoma*, but the marked structural characters indicate that a new genus will eventually be required for their reception. The present fly much resembles *C. taiwania* but has the antennæ unusually long, being approximately one and one-half as long as the entire body.

CYLINDROTOMA HYPOPYGIALIS sp. nov. Plate 1, fig. 16; Plate 4, fig. 40.

General coloration black; pronotum, scutellum, and cephalic portion of mediotergite light yellow; pleura chiefly yellow, variegated with black; halteres and legs black; wings strongly tinged with blackish; Sc<sub>2</sub> lying before level of r-m; inner end of cell 1st M<sub>2</sub> strongly arcuated; male hypopygium enlarged; ninth tergite strongly notched medially; ædeagus subtended on either side by about twelve acute spines.

<sup>4</sup> Philip. Journ. Sci. 40 (1929) 523, 524.

*Male*.—Length, about 11 to 13 millimeters; wing, 10 to 11; antennæ, about 4.5 to 5.

Rostrum black above, obscure yellow on sides; palpi black. Antennæ black throughout; verticils of cylindrical flagellar segments conspicuous, for the most part unilaterally distributed, Head dull black, smooth, front and posterior orbits more yellow; eyes small; anterior vertex very broad, much wider than diameter of eye as viewed from above.

Pronotum conspicuously pale yellow, restrictedly darkened laterally. Mesonotal præscutum dull black, interspaces marked by deep impressed lines, surface unsculptured; humeral region restrictedly light yellow; scutum black, median region restrictedly obscure yellow; scutellum yellow, more infuscated medially, parascutella yellow; mediotergite with cephalic third and lateral margins yellow, posterior portion broadly black. Pleura pale yellow, anepisternum and ventral sternopleurite brownish black; a smaller black area on ventral pleurotergite above root of halteres. Halteres black, extreme base of stem yellow. Legs with coxæ yellow, bases weakly infumed, especially fore and middle pairs; trochanters yellow; legs black, only femoral bases restrictedly yellow. Wings (Plate 1, fig. 16) with a strong blackish tinge, the relatively large, oval stigma still darker brown; cells C and Sc a trifle darker than remainder of ground; veins dark brown. Venation: Tip of vein Sc<sub>1</sub> persisting as a spur of varying lengths, Sc<sub>2</sub> lying just beyond fork of Rs and before level of r-m; Rs long, distinctly longer than cell 1st M<sub>2</sub>; cell M<sub>1</sub> variable in length, from nearly sessile to having its petiole subequal to m; inner end of cell 1st M<sub>2</sub> strongly arcuated; m-cu variable in position, from about opposite one-third to nearly one-half length of cell 1st M<sub>2</sub>.

Abdomen long, hypopygium unusually large and conspicuous; abdomen black, surface very sparsely pruinose. Male hypopygium (Plate 4, fig. 40) very conspicuous; tergite 9*t*, large, strongly arched, caudal margin deeply notched medially, lateral angles produced caudad into slender lobes. Dististyle, *d*, complex, at base on inner margin with a slender curved arm. Ædeagus very complex, at apex with about a dozen acute spines on either side of ædeagus, latter narrowed and pale at tip, with microscopic points.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, summit, altitude 11,000 feet, June 9, 1937 (*Tsen*). Paratopotypes, 12 males, altitude 10,000 to 11,000 feet, June 9 and 10, 1937 (*Tsen*).

The only approximately similar species in *Cylindrotoma nigripes* Alexander,<sup>5</sup> from the Szechwan-Tibet border. The unique type of the latter is a badly damaged specimen that was presumed to represent the male sex, but this is uncertain, as discussed under the original account. If the specimen is a male and the antennæ are correctly associated, the species is very distinct from the present fly. In other regards, *nigripes* differs from the present fly by the uniformly darkened pronotum and mesonotum and the scarcely variegated thoracic pleura; the wings are only faintly darkened, with small stigma, and with  $Sc_2$  lying some distance beyond the level of r-m. The present fly is the most conspicuous member of the genus yet discovered.

#### LIMONIINÆ

##### LIMONIINI

LIMONIA (LIMONIA) PERNIGRINA sp. nov. Plate 1, fig. 17; Plate 4, fig. 41.

General coloration black, including entire head and thorax; femora chiefly black, bases yellow, with a narrow yellow subterminal ring; tibiæ and tarsi black; wings yellow, heavily patterned with brown;  $Sc$  long,  $Sc_2$  longer than  $Sc_1$ , ending opposite or beyond fork of  $R_s$ ;  $R_{1+2}$  from two to four times as long as  $R_2$  alone; vein  $R_3$  at outer end deflected strongly caudad, cell  $R_2$  wide at margin; cell 1st  $M_2$  shorter than any of veins beyond it; m-cu at or shortly before fork of  $M$ ; male hypopygium with caudal margin of tergite emarginate; gonapophyses with mesal-apical lobes very low and obtuse.

*Male*.—Length, about 10 millimeters; wing, 10.5 to 11.

*Female*.—Length, about 13 to 14 millimeters; wing, 12.

Rostrum black, paraglossæ paler; palpi black. Antennæ with scape and pedicel black; first flagellar segment restrictedly brightened at base, remainder of organ black; flagellar segments subcylindrical, verticils a little exceeding segments. Head black; anterior vertex wider than diameter of scape in female, a little narrower in male; head narrowed behind.

Thorax uniformly black, surface rather dull, without markings; præscutal setæ very sparse but elongate. Pleura sparsely pruinose; dorsopleural membrane dark. Halteres obscure yellow, base of knob more or less infuscated. Legs with coxæ blackened; trochanters brownish yellow; femora yellow basally,

<sup>5</sup> Philip. Journ. Sci. 44 (1931) 348, 349.



on forelegs including about proximal third; remainder of femora intensely black with a narrow yellow subterminal ring placed considerably more than its own length before apex; tibiæ and tarsi black. Wings (Plate 1, fig. 17) with ground color yellow, heavily and handsomely patterned with brown, restricted ground color appearing chiefly as narrow zigzag bands at basal fourth of wing, at level of origin of Rs and at cord, involving margin at ends of veins Cu, 1st A, and 2d A; other isolated yellow areas beyond stigma and in cells of outer medial field; prearcular and basal cells, together with cells C and Sc, more extensively yellow; veins yellow, darker in the infuscated areas. Venation: Sc long, Sc<sub>1</sub> ending a short distance before level of fork of Rs, the longer Sc<sub>2</sub> ending opposite or shortly beyond fork; R<sub>1+2</sub> from two to four times R<sub>2</sub> alone, the distance variable; outer end of vein R<sub>3</sub> deflected strongly caudad, so cell R<sub>2</sub> is wide at margin; cell 1st M<sub>2</sub> relatively small, shorter than any of veins beyond it; m-cu at or shortly before fork of M.

Abdomen black, extreme borders of segments pale; hypopygium black. Male hypopygium (Plate 4, fig. 41) with caudal margin of tergite, 9t, emarginate. Dististyle, *d*, with apical point slender, subequal in length to the more darkened base. Gonapophyses, *g*, very pale, mesal-apical lobes low and obtuse. Ædeagus, *a*, gradually narrowed outwardly, apex with two slender elongate points, lying parallel to one another; surface of ædeagus with microscopic erect tubercles.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, White Cloud Temple, altitude 9,000 feet, June 12, 1937 (*Tsen*). Allotopotype, female. Paratopotypes, 1 male, 1 female; 1 male, summit, altitude 11,000 feet, June 9, 1937 (*Tsen*).

*Limonia* (*Limonia*) *pernigrina* is very different from the most similar regional species, *L. (L.) nominata* Alexander and *L. (L.) prudentia* Alexander, differing especially in the uniform black color and in the pattern of the legs and wings.

LIMONIA (LIMONIA) AMABILIS ANTISTES *subsp. nov.*

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

Close to the typical form (northern Japan), differing as follows:

Larger. Antennæ black, pedicel obscure yellow. Head with front and anterior vertex, with orbits, conspicuously gray; anterior vertex about one and one-third as wide as diameter of scape. Median præscutal vitta very narrow, ending as an acute

point before suture; mesal edges of scutal lobes narrowly darkened. Yellow femoral rings very narrow to subobsolete, especially on fore and middle legs, only about one-half to one-third as extensive as the broad dark tips; on posterior legs, yellow subterminal ring and darkened apex subequal. Abdomen brownish black, caudal borders of the more basal segments blackened. Ovipositor with cerci slender, moderately long.

*Habitat*.—China (Szechwan).

Holotype, female, Mount Omei, White Cloud Temple, altitude 9,000 feet, June 12, 1937 (*Tsen*).

LIMONIA (LIMONIA) EGRESSA sp. nov. Plate 1, fig. 18; Plate 4, fig. 42.

Mesonotal præscutum and scutum brownish yellow, posterior sclerites of notum slightly darker; flagellar segments with short glabrous apical necks; thoracic pleura with a narrow longitudinal dark stripe; legs yellow or brownish yellow; wings pale brown, oval stigma slightly darker brown; cell  $M_2$  open by atrophy of basal section of  $M_3$ ; m-cu at fork of M; male hypopygium with dististyle single, bilobed, rostral prolongation a flattened, sickle-shaped blade, its tip acute.

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

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

Rostrum brown, mouthparts paler; palpi black. Antennæ black; basal flagellar segments subglobular, with very short, stout, apical necks, outer segments oval with more slender apical pedicels; outermost segments elongate, slightly paler. Head gray.

Mesonotal præscutum and scutum obscure brownish yellow, posterior sclerites of notum somewhat darker. Pleura yellow, with a narrow, dark-brown, longitudinal stripe extending from cervical region, beneath root halteres, to abdomen. Halteres with stem pale, knob darkened. Legs with coxæ pale yellow, fore pair more infuscated; trochanters yellow; remainder of legs yellow to pale brownish yellow; claws long, with a single slender appressed spine at near midlength. Wings (Plate 1, fig. 18) with a pale-brown tinge, oval stigma slightly darker brown; veins pale brown. Venation: Sc moderately long,  $Sc_1$  ending shortly beyond midlength of Rs,  $Sc_2$  at its tip; free tip of  $Sc_2$  and  $R_2$  in transverse alignment, both pale; Rs long, nearly four times basal section of  $R_{4+5}$ ; cell  $M_2$  open by atrophy of basal section of  $M_3$ , cell 2d  $M_2$  a little longer than its petiole; m-cu at fork of M, longer than distal section of  $Cu_1$ .

Abdomen brown, sternites more yellow, especially on basal segments. Male hypopygium (Plate 4, fig. 42) with tergite,

9t, narrow, caudal margin subtruncate to very feebly emarginate. Basistyle, *b*, with ventromesal lobe extensive, at apex weakly bilobed. Dististyle, *d*, small, bilobed, rostral prolongation a long, sicklelike blade, tip acute. Gonapophyses, *g*, with mesal-apical lobe slender, smooth, gently curved, tip blackened, acute. *Æ*deagus with apex slender, decurved.

*Habitat*.—China (Szechwan).

Holotype, male, Pehlütting (Beh-luh-din), altitude 6,000 feet, July 11, 1937 (*Franck*). Allotopotype, female, pinned with type. Paratopotype, female, July 9, 1937 (*Franck*).

*Limonia (Limonia) egressa* is entirely distinct from other regional species of the subgenus. The open cell  $M_2$  and the structure of the male hypopygium provide strong characters for the recognition of the species.

LIMONIA (DICRANOMYIA) GRACILIROSTRIS sp. nov. Plate 1, fig. 19; Plate 4, fig. 43.

General coloration ochreous yellow; antennæ brownish black; knobs of halteres infuscated; legs yellow, terminal tarsal segments blackened; wings brownish yellow, sparsely patterned with darker;  $Sc_1$  ending a short distance beyond origin of Rs,  $Sc_2$  apparently lacking; m-cu at fork of M; male hypopygium with ventromesal lobe of basistyle a small rounded setiferous knob; mesal face of basistyle with a pencil of setæ; rostral prolongation of ventral dististyle unusually long and slender, the two spines at base; *æ*deagus unusually flattened, surface with microscopic setulæ.

*Male*.—Length, about 6.5 millimeters; wing, 7.6.

Rostrum brown; palpi black. Antennæ brownish black; flagellar segments oval, the first with a basal petiole; each segment with numerous verticils of moderate length on distal half of segment; terminal segment a little exceeding penultimate. Head gray.

Thorax almost uniformly ochreous yellow, præscutal stripes not or scarcely evident. Halteres pale, knobs infuscated. Legs yellow, outer tarsal segments blackened. Wings (Plate 1, fig. 19) with a brownish yellow tinge, cell C a little darker; stigma oval, pale brown, ill-defined; wing tip weakly darkened; indistinct brown clouds at origin and fork of Rs; axilla weakly darkened; veins pale brownish yellow. Venation:  $Sc_1$  ending a short distance beyond origin of Rs, opposite or beyond one-fourth length of latter,  $Sc_2$  not apparent; basal section of  $R_{4+5}$  long, about one-half Rs; m-cu at fork of M.

Abdominal tergites brown; basal sternites more yellow, caudal borders of segments weakly darkened; hypopygium brownish

yellow, ventral dististyle paler. Male hypopygium (Plate 4, fig. 43) with tergite, *9t*, slightly narrowed outwardly, caudal margin very gently emarginate, setæ sparse, most numerous at margin on either side of midline. Basistyle, *b*, with ventromesal lobe a small globular swelling, with numerous setæ; mesal face of style before apex with a pencil of four or five long setæ; dorsal face of style with a low flange. Dorsal dististyle a strongly curved, slender hook. Ventral dististyle, *vd*, fleshy, rostral prolongation unusually long and slender, apex acute; before apex on lower margin two pendant flattened setæ; rostral spines of moderate length, placed at base of prolongation. Gonapophyses, *g*, with mesal-apical lobe short and curved. Ædeagus, *a*, broadly flattened, outline roughly oval, surface with microscopic setulæ.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, White Cloud Temple, altitude 9,000 feet, June 12, 1937 (*Tsen*).

In the genitalic characters, especially the basistyle, ventral dististyle, and ædeagus, the present fly is entirely distinct from all other regional species of the subgenus.

**ANTOCHA (ANTOCHA) EMARGINATA** sp. nov. Plate 1, fig. 20; Plate 4, fig. 44.

General coloration gray, præscutum with three brown stripes; antennæ short, black; wings whitish subhyaline, prearcular field pale yellow; male hypopygium with tergite extensive, caudal margin with a deep U-shaped median notch, lateral lobes obliquely truncated; inner gonapophyses appearing as slender straight spines; outer apophyses as flattened, paddle-shaped blades.

*Male*.—Length, about 5 to 5.5 millimeters; wing, 5.5 to 6.7.

Rostrum dark brown; palpi black. Antennæ short, a little longer than head, black; flagellar segments oval; terminal segment about one and one-third as long as penultimate. Head gray.

Mesonotal præscutum gray, with three brown stripes, the broad median vitta ending some distance before suture and vaguely split by a pale line behind; scutal lobes darkened; posterior sclerites of notum gray. Pleura dark gray. Halteres with stem obscure yellow, knob darkened. Legs with fore coxæ darkened, remaining coxæ and trochanters obscure yellow; femora yellowish brown to pale brown; tibiæ and tarsi brown; claws (male) with a single long basal spine. Wings (Plate



1, fig. 20) whitish subhyaline, prearcular field pale yellow; stigma pale brown, ill-delimited; veins brown. Venation:  $R_2$  about in transverse alignment with r-m; cell 1st  $M_2$  relatively small and narrow; m-cu more than one-third its length before fork of M.

Abdomen, including hypopygium, dark brown. Male hypopygium (Plate 4, fig. 44) with tergite, 9t, unusually extensive, broad at base, caudal margin with a deep U-shaped median notch; lateral lobes obliquely truncated, outer angles rounded; setæ restricted to lobes, lacking on median area. Outer dististyle, *od*, heavily blackened on distal portion, stem parallel-sided, apex produced into a foot-shaped enlargement. Inner dististyle, *id*, slender, simple. Inner gonapophyses appearing as nearly straight slender spines. Outer gonapophyses, *og*, long paddle-shaped blades.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, Chu Lao Tong Temple, altitude 6,500 feet, June 5, 1937 (*Tsen*). Paratype, male, Chengtu, altitude 1,800 feet, December 3, 1936 (*Franck*).

*Antocha* (*Antocha*) *emarginata* is readily told from other regional species by the structure of the male hypopygium, especially the tergite.

#### PEDICIINI

PEDICIA (TRICYPHONA) OMEIANA sp. nov. Plate 1, fig. 21; Plate 4, fig. 45.

Belongs to the *immaculata* group; general coloration gray, præscutum with three more blackish stripes, median stripe restrictedly divided behind by a pale line; antennæ 15-segmented, brownish black; femora brownish yellow, tips blackened; wings whitish subhyaline, stigma pale, very slightly indicated; veins basad of cord pale yellow, beyond cord passing into brown; cell 1st  $M_2$  closed; male hypopygium with lateral tergal arms stout, at apex bent at a right angle into a cultriform beak; outer dististyle suboval, with peglike spines.

*Male*.—Length, about 6.5 to 7 millimeters; wing, 8 to 8.5.

*Female*.—Length, about 7.5 to 8 millimeters; wing, 8 to 8.8.

Rostrum gray; palpi black. Antennæ 15-segmented, brownish black, scape more pruinose. Head gray.

Mesonotal præscutum gray, with three more blackish stripes, median stripe restrictedly divided behind by a pale line; posterior sclerites of notum gray, centers of lobes blackened. Pleura gray. Halteres yellow, knobs scarcely darkened. Legs

with coxæ gray; trochanters brown; femora yellow to brownish yellow, tips blackened; tibiæ and basitarsi brownish yellow, tips narrowly darkened; outer tarsal segments passing into dark brown. Wings (Plate 1, fig. 21) whitish subhyaline, stigma pale, very slightly indicated; veins basad of cord pale yellow, beyond cord passing into brown. Venation: r-m connecting with  $R_{4+5}$  some distance before midlength of latter; cell 1st  $M_2$  closed; cell  $M_1$  present.

Abdomen, including hypopygium, dark brown, sparsely pruinose. Male hypopygium (Plate 4, fig. 45) with lateral tergal arms, *9t*, relatively stout, narrowed outwardly, at apex bent at a right angle into a cultriform beak. Apical lobe of basistyle, *b*, small. Dististyles, or lobes of a single style, superimposed over one another, outer, *od*, suboval with a chiefly marginal series of short peglike spines. *Ædeagus*, *a*, appearing as slender paired rods.

*Habitat*.—China (Szechwan).

Holotype, male, Mount Omei, Chu Lao Tong Temple, altitude 6,500 feet, June 6, 1937 (*Tsen*). Allotopotype, female. Paratopotype, 5 of both sexes.

*Pedicia (Tricyphona) omeiana* is most nearly allied to *P. (T.) formosana* (Alexander) and *P. (T.) glabripennis* (Brunetti), differing especially in coloration and in the structure of the male hypopygium.

#### HEXATOMINI

*OXYDISCUS (OXYDISCUS) LATIOR* sp. nov. Plate 1, fig. 22.

General coloration of mesonotum dark reddish brown, without distinct markings, pleura darker; wings with a strong dusky tinge, prearcular region and base of cell 2d A infumed; stigma dark brown; macrotrichia of outer cells relatively abundant, especially in the female, extending from cell  $R_2$  to cell  $M_4$ ;  $R_s$  gently arcuated;  $R_2$  only a short distance beyond fork of  $R_{2+3+4}$ .

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

Rostrum and palpi black. Antennæ black throughout; flagellar segments oval; verticils elongate. Head black, sparsely pruinose.

Thoracic dorsum dark reddish brown, without distinct markings; pleura darker brown. Halteres with stem yellow, knob brown. Legs brownish yellow to yellowish brown, outer segments scarcely darker. Wings (Plate 1, fig. 22) with a strong dusky tinge; stigma darker brown, lying distad of vein  $R_2$ ; prearcular region and base of cell 2d A weakly infumed; veins

brown, more yellowish brown basad of cord. Macrotrichia of cells relatively sparse, in female occurring in the outer ends of cells  $R_2$  to  $M_4$  inclusive; in what appears to be male sex, less abundant, in cells  $R_3$  to  $M_1$  or 2d  $M_2$ . Venation: Rs gently arcuated;  $R_2$  only a short distance beyond fork of  $R_{2+3+4}$ ,  $R_{2+3}$  very short, less than  $R_2$ .

Abdomen brownish black; tips of cerci yellow. The specimen that may represent the male sex has lost the hypopygium.

*Habitat.*—China (Szechwan).

Holotype, female, Mount Omei, Chu Lao Tong Temple, altitude 6,500 feet, June 5, 1937 (*Tsen*). Paratopotypes, 3 females, June 5 or 6, 1937; 1, sex?, altitude 5,000 feet, June 13, 1937 (*Tsen*).

Closest to *Oxydiscus* (*Oxydiscus*) *latissimus* (Alexander), likewise from western China, differing in slight details of coloration of body and wings, and in the greater number of macrotrichia in the cells of the wing.

#### ERIOPTERINI

*ORMOSIA INSOLITA* sp. nov. Plate 1, fig. 23; Plate 4, fig. 46.

Belongs to the *aculeata* group; general coloration gray, præscutum with three broad reddish-brown stripes, posterior sclerites and pleura dark brown; femora yellow, with a narrow brown subterminal ring; wings dusky, variegated with darker-brown and extensive subhyaline areas; vein 2d A sinuous; male hypopygium with apex of basistyle unarmed; inner dististyle terminating in a long straight spine that is not strongly dilated subterminally.

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

Rostrum brownish black; palpi black. Antennæ dark brown, incisures of flagellar segments restrictedly paler; flagellar segments relatively long, verticils very long, about three times segments. Head dark gray.

Mesonotum gray, præscutum with three broad reddish-brown stripes; pseudosutural foveæ and tuberculate pits black; scutal lobes reddish brown; scutellum and postnotum dark brown, sparsely pruinose. Pleura dark brown, sparsely pruinose; dorsopleural region brighter. Halteres yellow, knobs broken. Legs with coxæ dark brown; trochanters reddish brown; femora yellow with a brownish subterminal ring; remainder of legs yellow, outer tarsal segments infuscated. Wings (Plate 1, fig. 23) with ground color dusky, prearcular and costal regions light yellow; a restricted darker pattern, including stigma and

vague seams along cord,  $Sc_2$ , fork of  $M_{1+2}$ , and as tiny marginal darkenings at ends of longitudinal veins; extensive whitish areas before stigma and cord, crossing latter and involving cell 1st  $M_2$ ; more restricted whitish areas beyond stigma in cell  $R_2$  and at outer end of cell 1st A; veins pale brown, darker in clouded areas, more yellowish in luteous fields. Macrotrichia involving all cells of wing except at base (indicated in figure by stippling). Venation:  $R_2$  just before fork of  $R_{3+4}$ ; outer radial veins, especially  $R_3$ , slightly upturned at ends; vein 2d A sinuous.

Abdomen, including hypopygium, dark brown. Male hypopygium (Plate 4, fig. 46) with caudal margin of tergite gently emarginate. Basistyle, *b*, unarmed at apex. Inner dististyle, *id*, not conspicuously dilated before long, straight, apical spine, subterminal swelling with microscopic roughenings but without well-defined spines, as in *solita*.

*Habitat*.—China (Szechwan).

Holotype, male, Pehlüting (Beh-luh-din), altitude 6,000 feet, July 11, 1937 (*Franck*).

The present fly is closely allied to *Ormosia solita* Alexander, likewise from western China, which differs in the details of coloration and venation and especially in the structure of the male hypopygium, as the spinous tips of the basistyles and the suddenly dilated spinous head of the inner dististyle. The present species and the Formosan *O. arisanensis* Alexander differ from the other members of the *aculeata* group by the unarmed tips of the basistyles. In *arisanensis* the expanded head of the inner dististyle is perfectly smooth, not armed with accessory spines as in *solita* or roughenings as in the present fly.

**MOLOPHILUS (MOLOPHILUS) BILOBULUS** sp. nov. Plate 1, fig. 24; Plate 4, fig. 47.

Belongs to the *gracilis* group and subgroup; general coloration intense black; antennæ of moderate length; antennæ, halteres, and legs black; wings strongly suffused with blackish; male hypopygium with tergite produced into a flattened plate that is deeply bilobed.

*Male*.—Length, about 3.8 millimeters; wing, 4.3.

Rostrum and palpi black. Antennæ black throughout, of moderate length, if bent backward extending to shortly beyond wing root; flagellar segments oval; longest verticils unilaterally arranged, much longer than segments. Head black, sparsely pruinose.



Thorax uniform intense black. Halteres black. Legs brownish black. Wings (Plate 1, fig. 24) strongly suffused with blackish, especially adjoining veins; veins darker than ground. Venation:  $R_2$  lying shortly distad of level of r-m; petiole of cell  $M_3$  short, subequal to m-cu; vein 2d A elongate, extending to about opposite one-third length of petiole of cell  $M_3$ .

Abdomen, including hypopygium, black. Male hypopygium (Plate 4, fig. 47) with caudal margin of tergite, *9t*, produced into a depressed-flattened lobe that is narrowly split medially to form two plates, their margins microscopically roughened. Basistyle with ventral lobe, *vb*, unusually long, with sparse elongate setæ; dorsal lobe, *db*, produced into a slender, needlelike spine. Outer dististyle, *od*, strongly curved on basal third, apical portion darkened and microscopically roughened. Inner dististyle, *id*, with stem straight, apical arms relatively short.

*Habitat*.—China (Szechwan).

Holotype, male, Pehlütting (Beh-luh-din), altitude 6,000 feet, July 11, 1937 (*Franck*).

*Molophilus bilobulus* is closest to *M. albibasis* Alexander and *M. nigropolitus* Alexander, agreeing in the black coloration, differing conspicuously in the strongly blackened wings and in the structure of the male hypopygium, notably the strongly bifid tergal plate.

## ILLUSTRATIONS

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

### PLATE 1

- FIG. 1. *Tipula gracilirostris* sp. nov.; venation.  
2. *Tipula* (*Schummelia*) *bilobula* sp. nov.; venation.  
3. *Tipula* (*Schummelia*) *cumulata* sp. nov.; venation.  
4. *Tipula* (*Vestiplex*) *inquinata* sp. nov.; venation.  
5. *Tipula* (*Vestiplex*) *subtestata* sp. nov.; venation.  
6. *Tipula* (*Oreomyza*) *interrita* sp. nov.; venation.  
7. *Tipula* (*Oreomyza*) *perlata* sp. nov.; venation.  
8. *Tipula* (*Oreomyza*) *lætissima* sp. nov.; venation.  
9. *Tipula* (*Oreomyza*) *sexlobata* sp. nov.; venation.  
10. *Tipula* (*Oreomyza*) *compressiloba* sp. nov.; venation.  
11. *Tipula* (*Oreomyza*) *percommoda* sp. nov.; venation.  
12. *Tipula* (*Oreomyza*) *procliva* sp. nov.; venation.  
13. *Tipula* (*Oreomyza*) *pertenuis* sp. nov.; venation.  
14. *Dolichopeza* (*Dolichopeza*) *honshiuensis* sp. nov.; venation.  
15. *Cylindrotoma megacera* sp. nov.; venation.  
16. *Cylindrotoma hypopygialis* sp. nov.; venation.  
17. *Limonia* (*Limonia*) *pernigrina* sp. nov.; venation.  
18. *Limonia* (*Limonia*) *egressa* sp. nov.; venation.  
19. *Limonia* (*Dicranomyia*) *gracilirostris* sp. nov.; venation.  
20. *Antocha* (*Antocha*) *emarginata* sp. nov.; venation.  
21. *Pedicia* (*Tricyphona*) *omeiana* sp. nov.; venation.  
22. *Oxydiscus* (*Oxydiscus*) *latior* sp. nov.; venation.  
23. *Ormosia insolita* sp. nov.; venation.  
24. *Molophilus* (*Molophilus*) *bilobulus* sp. nov.; venation.

### PLATE 2

- FIG. 25. *Tipula gracilirostris* sp. nov.; male hypopygium, ninth tergite.  
26. *Tipula gracilirostris* sp. nov.; male hypopygium, dististyles.  
27. *Tipula* (*Schummelia*) *bilobula* sp. nov.; male hypopygium, details.  
28. *Tipula* (*Schummelia*) *cumulata* sp. nov.; male hypopygium, details.  
29. *Tipula* (*Vestiplex*) *inquinata* sp. nov.; male hypopygium, dististyles.  
30. *Tipula* (*Vestiplex*) *subtestata* sp. nov.; male hypopygium, details.  
31. *Tipula* (*Oreomyza*) *interrita* sp. nov.; male hypopygium, details.  
32. *Tipula* (*Oreomyza*) *perlata* sp. nov.; male hypopygium, details.

### PLATE 3

- FIG. 33. *Tipula* (*Oreomyza*) *lætissima* sp. nov.; male hypopygium, details.  
34. *Tipula* (*Oreomyza*) *sexlobata* sp. nov.; male hypopygium, details.  
35. *Tipula* (*Oreomyza*) *compressiloba* sp. nov.; male hypopygium, details.

- FIG. 36. *Tipula* (*Oreomyza*) *percommoda* sp. nov.; male hypopygium, details.  
37. *Tipula* (*Oreomyza*) *procliva* sp. nov.; male hypopygium, details.  
38. *Tipula* (*Oreomyza*) *pertenuis* sp. nov.; male hypopygium, details.

## PLATE 4

- FIG. 39. *Dolichopeza* (*Dolichopeza*) *honshiuensis* sp. nov.; male hypopygium.  
40. *Cylindrotoma hypopygialis* sp. nov.; male hypopygium.  
41. *Limonia* (*Limonia*) *pernigrina* sp. nov.; male hypopygium.  
42. *Limonia* (*Limonia*) *egressa* sp. nov.; male hypopygium.  
43. *Limonia* (*Dicranomyia*) *gracilirostris* sp. nov.; male hypopygium.  
44. *Antocha* (*Antocha*) *emarginata* sp. nov.; male hypopygium.  
45. *Pedicia* (*Tricyphona*) *omeiana* sp. nov.; male hypopygium.  
46. *Ormosia insolita* sp. nov.; male hypopygium.  
47. *Molophilus* (*Molophilus*) *bilobulus* sp. nov.; male hypopygium.

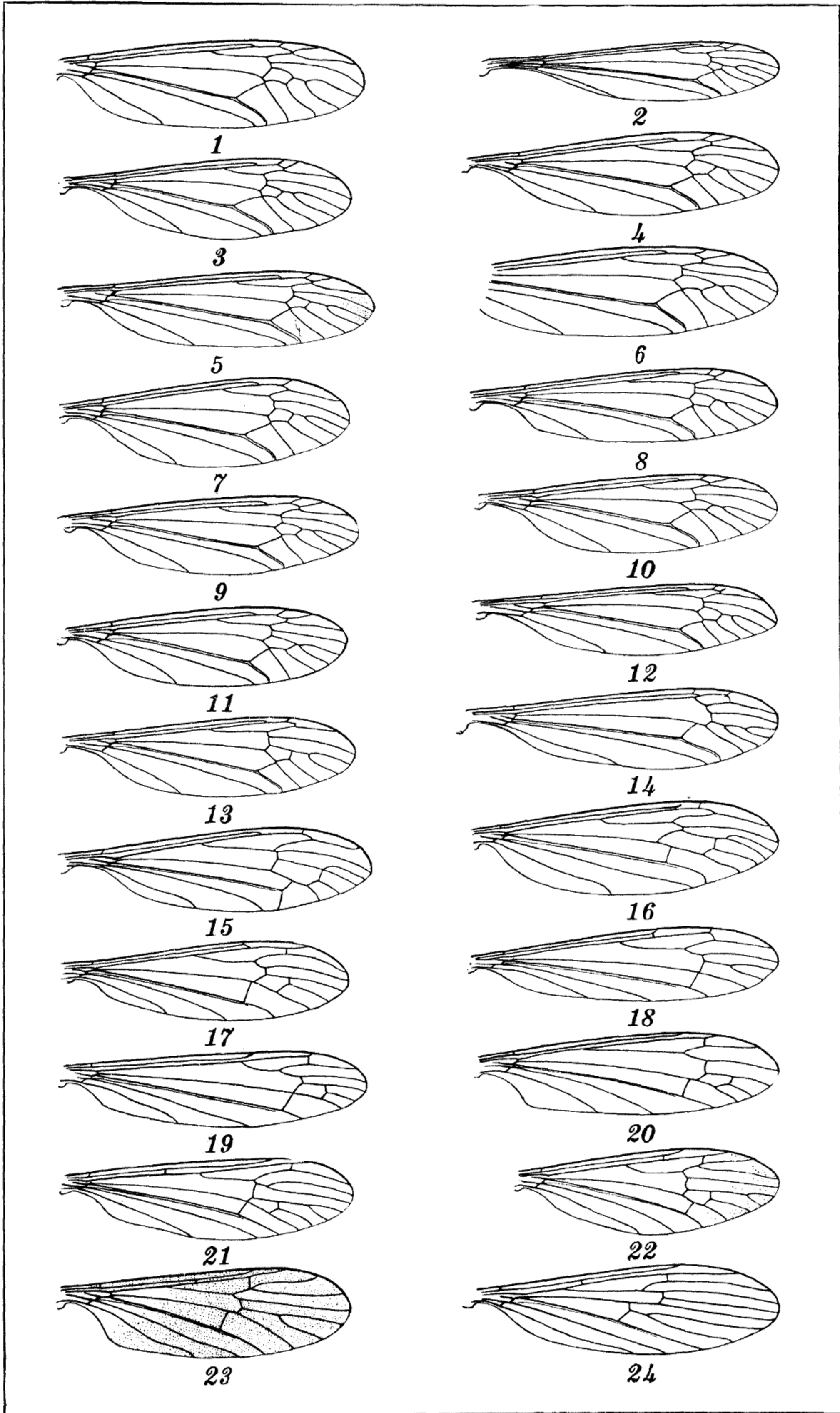


PLATE 1.



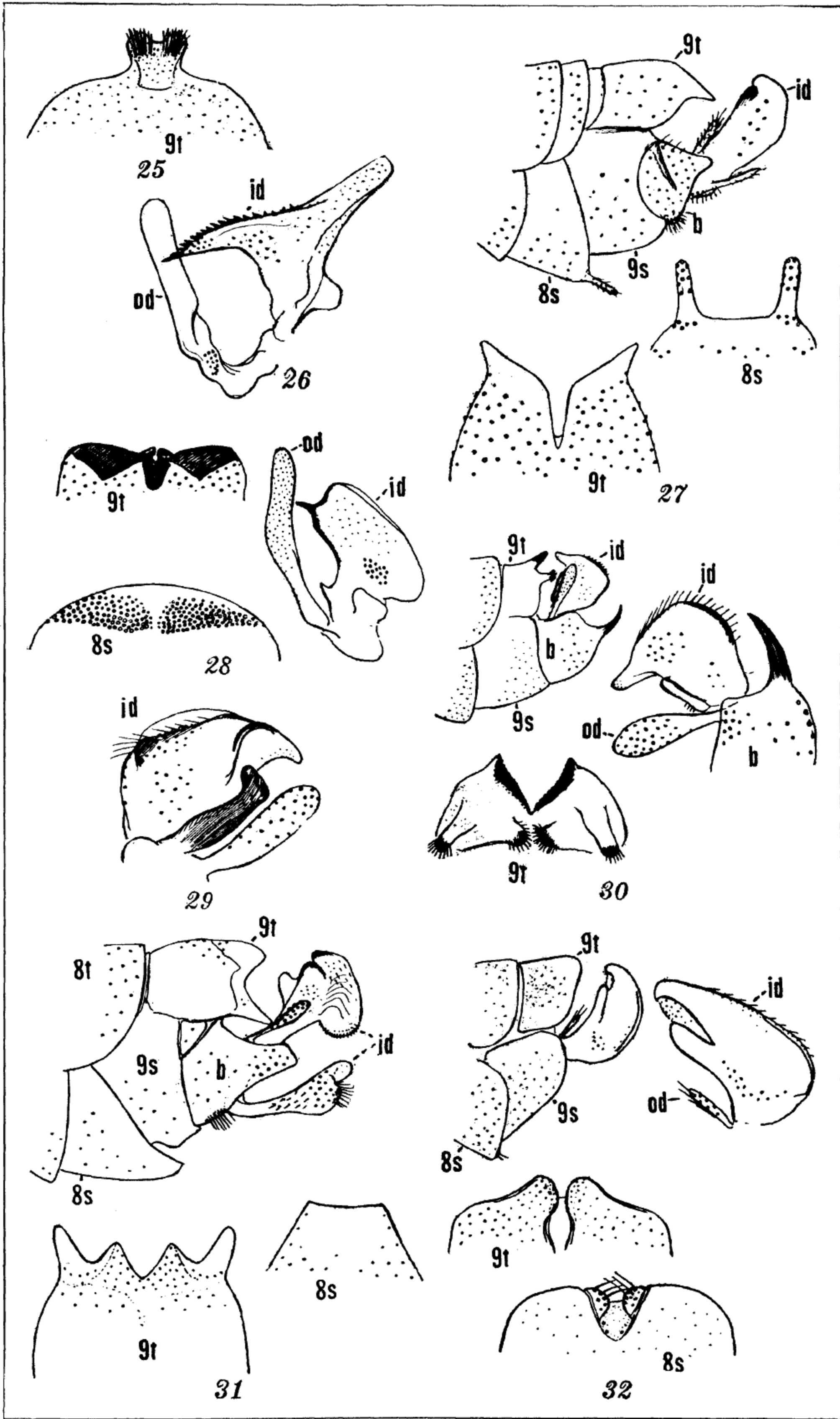


PLATE 2.



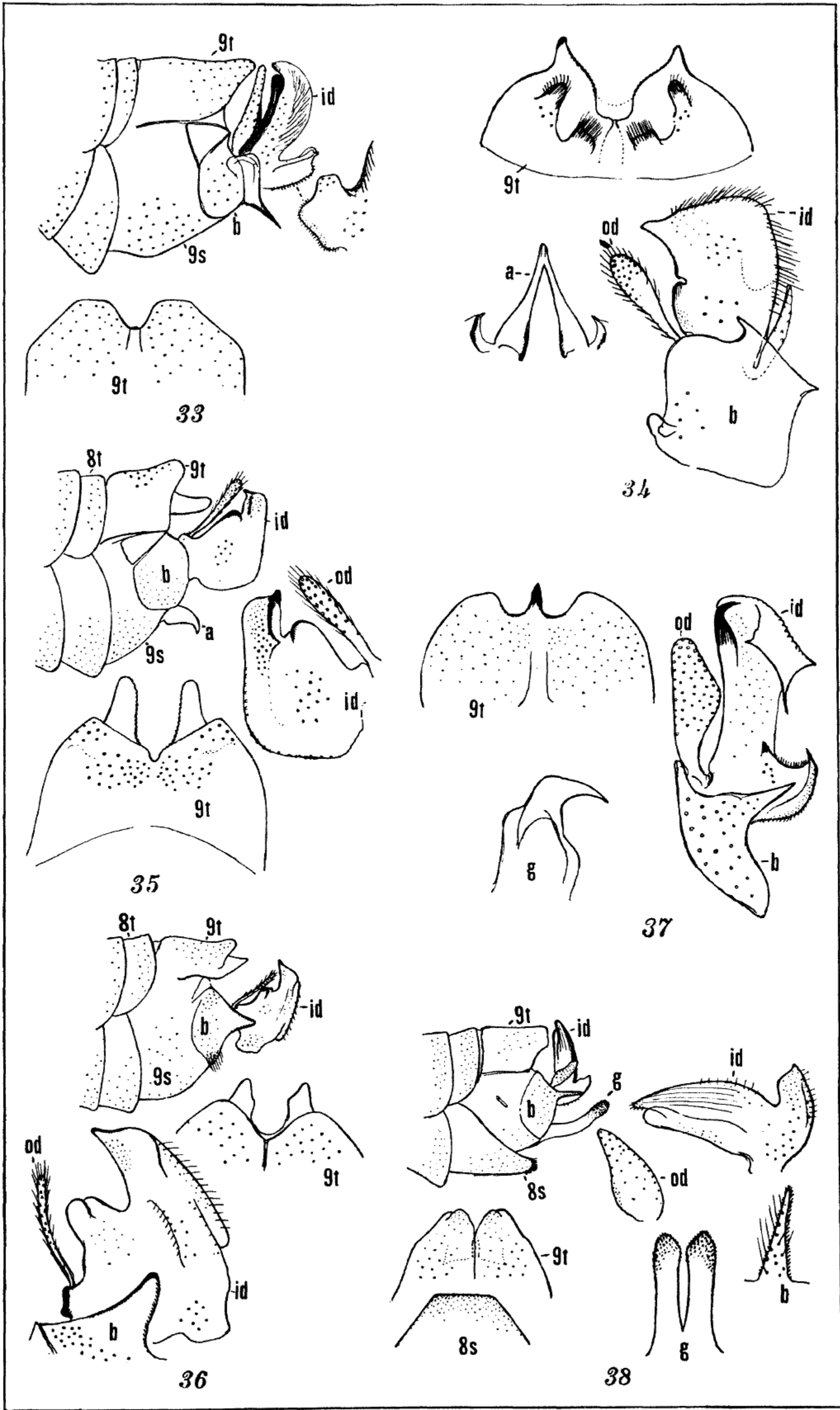


PLATE 3.



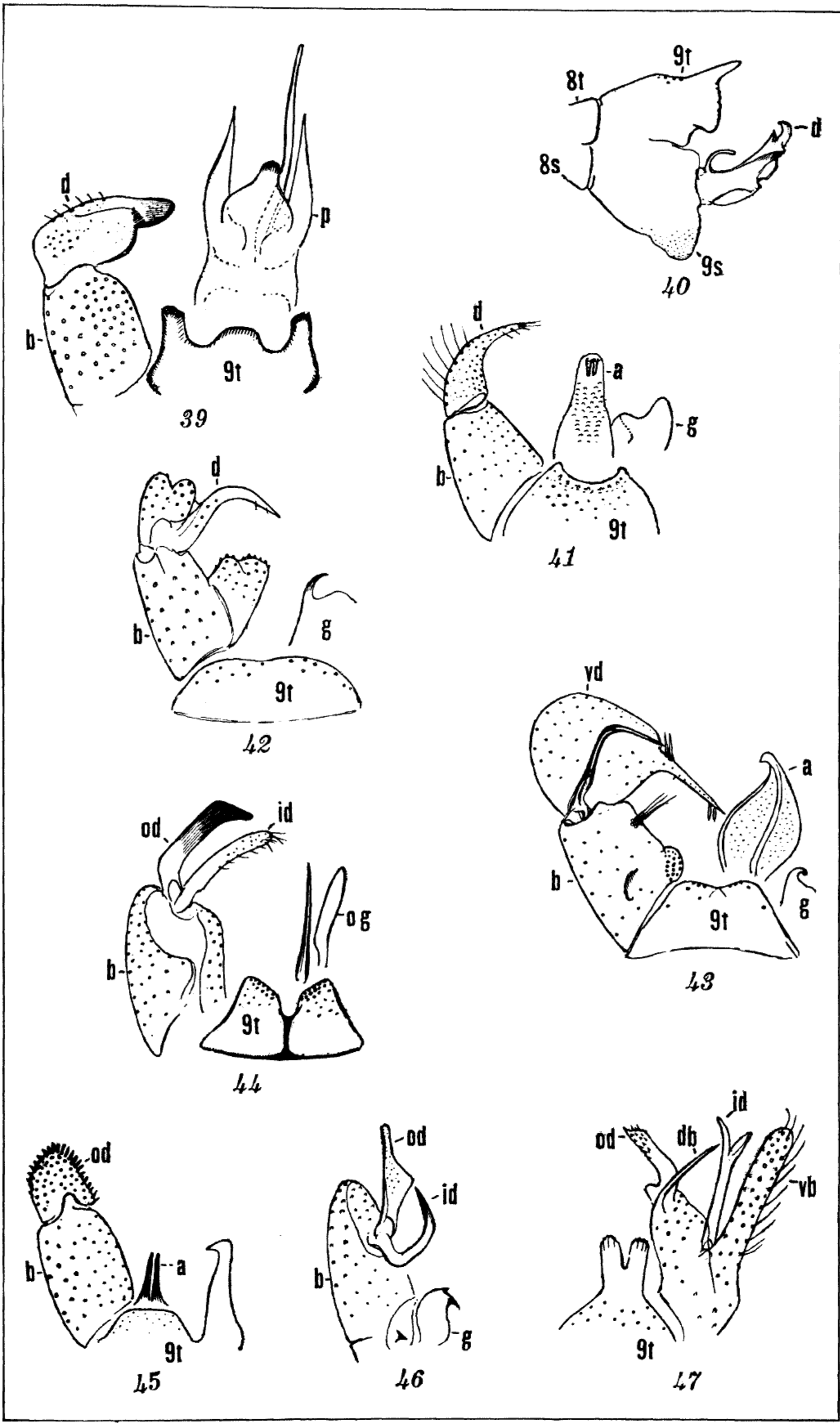


PLATE 4.

