

NEW OR LITTLE-KNOWN TIPULIDÆ FROM EASTERN ASIA (DIPTERA), XIII ¹

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FOUR PLATES

The crane flies discussed at this time are chiefly from Japan, where they were collected by my friends Messrs. Esaki, Hibi, Imanishi, Inomata, Issiki, Machida, Nakamura, Oda, Sakaguchi, Shiraki, Takahashi, and Tokunaga. The smaller but highly important series from China were taken on Mount Omei, Szechwan, by the Reverend Mr. Franck. I wish to express my deepest thanks to all of the gentlemen above mentioned for this continued interest in developing our knowledge of the Tipulidæ of the Eastern Palæarctic region. The types of the novelties are preserved in my collection.

In accordance with a policy adopted in earlier parts under this general title, detailed lists of the Tipulidæ of certain mountainous areas in Honshiu, Japan, are here supplied. It is only by means of such lists that our knowledge of distribution of the Japanese crane flies can make material progress.

Mount Shirouma (Mount Hakuba, or White Horse Mountain), in the alpine country between the Provinces of Echii, Echigo, and Shinano, August 8, 1931 (J. Machida and T. Nakamura).

Dolichopeza (Nesopeza) geniculata (Alex.).

Tipula (Schummelia) bidenticulata sp. nov.

Tipula (Acutipula) bubo Alex.

Tipula depressa Alex.

Tipula nigrosignata Alex.

Tipula verecunda Alex.

Cylindrotoma japonica Alex.

Limonia (Limonia) euphileta Alex.

Limonia (Limonia) fusciceps Alex.

Limonia (Limonia) karafutonis Alex.

Limonia (Limonia) neoindigena Alex.

Limonia (Limonia) pullata Alex.

Limonia (Limonia) subnubeculosa Alex.

¹ Contribution from the entomological laboratory, Massachusetts State College.

Limonia (*Limonia*) *tanakai* Alex.
Limonia (*Dicranomyia*) *immodestoides* (Alex.).
Pedicia (*Pedicia*) *brachycera* Alex.
Pedicia (*Pedicia*) *subtransversa* Alex.
Dicranota (*Dicranota*) *nippoalpina* Alex.
Epiphragma (*Epiphragma*) *subfascipennis* Alex.
Limnophila (*Tricholimnophila*) *brevirama* Alex.
Limnophila *subnemoralis* Alex.
Erioptera (*Erioptera*) *juvenilis* Alex.
Ormosia *machidana* sp. nov.
Ormosia *nantaisana* Alex.
Molophilus *nakamurana* sp. nov.

Mount Kiyozumi, Bōsō Peninsula, Kāzusa, altitude 380 meters, May 5, 1931
 (Bunkichi Oda).

Dolichopeza (*Nesopeza*) *tarsalis* (Alex.).
Tipula (*Nippotipula*) *coquilletti* End.
Tipula (*Schummelia*) *ecaudata* Alex.
Limonia (*Limonia*) *anthracina* Alex.
Limonia (*Limonia*) *euphileta* Alex.
Limonia (*Limonia*) *japonica* Alex.
Dicranota (*Rhaphidolabis*) *consors* Alex.
Limnophila (*Prionolabis*) *odai* sp. nov.
Limnophila (*Tricholimnophila*) *flavella* Alex.
Molophilus *triflatus* Alex.

Mount Mitake, Musashi, altitude to 700 meters, May 10, 1931
 (Bunkichi Oda).

Cylindrotoma *japonica* Alex.
Triogma *kuwanai* (Alex.).
Phalacrocer *mikado* Alex.
Limonia (*Limonia*) *euphileta* Alex.
Limonia (*Dicranomyia*) *pseudomorio* (Alex.).
Limonia (*Geranomyia*) *multipuncta* (Alex.).
Pedicia (*Tricyphona*) *optabilis* (Alex.).
Ula *succincta* sp. nov.
Limnophila (*Tricholimnophila*) *pilifer* Alex.
Ormosia *confluenta* Alex.

TIPULINÆ

DOLICHOPEZA (OROPEZA) INOMATAI sp. nov. Plate 1, fig. 1; Plate 2, fig. 25.

General coloration of mesonotum polished cinnamon-brown; legs brown, tarsi paling to obscure yellow; abdomen bicolorous, the bases of segments dark brown, the apices obscure yellow; male hypopygium with the median area of tergite produced into a bispinous or weakly trispinous plate; lateral arms of tergite densely set with microscopic recurved spinulæ; inner dististyle with very long, angularly bent setæ near outer end.

Male.—Length, 9 to 10 millimeters; wing, 9.5 to 11.

Female.—Length, about 11 millimeters; wing, 10.5.

Frontal prolongation of head brown; palpi brownish black. Antennæ with scape and pedicel yellow; flagellum black. Head pale brown, passing to yellowish on frontal portion.

Mesonotal præscutum polished cinnamon-brown, the posterior sclerites somewhat darker. Halteres pale, the knobs darkened. Legs dark brown, the femoral bases and outer tarsal segments more yellowish. Wings (Plate 1, fig. 1) with a pale brownish tinge, the oval stigma darker brown, conspicuous, preceded and followed by cream-colored areas; a pale obliterative streak across cell 1st M_2 ; veins pale brown.

Abdomen bicolorous, the bases of the segments dark brown, the apices somewhat more broadly obscure yellow; subterminal segments more uniformly darkened; hypopygium obscure yellow. Male hypopygium (Plate 2, fig. 25) with the caudal margin of tergite, 9*t*, produced in median portion into two subacute triangular points, one on either side of median line; on ventral surface a smaller median point, so that in certain aspects this tergal plate appears tridentate; lateral arms of tergite expanded, with carinæ, the cephalic face of club with abundant microscopic pale spinulæ that are more or less recurved. Outer dististyle, *od*, relatively short, with long setæ. Inner dististyle, *id*, slender, clothed with conspicuous setæ, those near the base small, those before apex long and angularly bent and thickened at near mid-length, the apical setæ again straight and spiniform. *Ædeagus*, *a*, simple. Gonapophyses appearing as pale setiferous lobes.

Habitat.—Japan (Honshiu).

Holotype, male, Kyusho Mountain, Hôki, June 13, 1930 (*Hibi*). Allotopotype, female. Paratopotypes, 2 males.

This interesting new *Oropeza* is named in honor of my friend Prof. Shujiro Inomata, to whom I am indebted for many interesting Tipulidæ from Tottori. The only described Japanese member of the subgenus that is at all similar to the present fly is *D. (O.) bispinula* (Alexander), likewise from the mountains of Honshiu. The hypopygium of the latter fly is very different, the outer ends of the lateral tergal arms being very large and smooth, while the setæ of the inner dististyle are short and simple.

MACGREGOROMYIA BREVICULA sp. nov. Plate 1, fig. 2; Plate 2, fig. 26.

General coloration of thorax brownish black; antennæ (male) elongate, exceeding one-half the length of the body; halteres yellow, the knobs black; legs black; wings grayish subhyaline, the

costal region more yellowish; stigma and a narrow seam along cord dark brown; Rs very short, less than the arcuated r-m, the latter connecting with the basal section of R_{4+5} ; cell 1st M_2 very small; abdominal segments bicolorous, dark brown basally, the apices broadly yellow.

Male.—Length, about 10 millimeters; wing, 11.5; antenna, about 5.8.

Frontal prolongation of head buffy; palpi black, the terminal segment exceeding in length the remainder of organ. Antennæ (male) relatively long, as shown by measurements; scape and pedicel buffy yellow; flagellum black; flagellar segments long-cylindrical, the basal enlargements very slightly developed, with tiny verticils that are about as long as the diameter of the segment. Head brown; anterior vertex more grayish.

Mesonotum chiefly blackish, the præscutal interspaces paler. Pleura dark-colored, crushed in the unique type. Halteres elongate, yellow, the knobs black. Legs black. Wings (Plate 2, fig. 2) grayish subhyaline, the prearcular and costal regions slightly more yellow; stigma oval, dark brown; a narrow but conspicuous dark seam along cord; still narrower dark borders to veins Cu and 2d A; posterior wing margin extensively but narrowly bordered by brown; veins dark brown, C, Sc, and R more yellowish. Venation: Rs very short, transverse, subequal to basal section of R_{4+5} and much shorter than the arcuated r-m; r-m connecting with R_{4+5} and not directly with Rs, as in the other species of genus; R_{1+2} preserved, parallel to free tip of Sc_2 ; cell 1st M_2 very small, narrowed outwardly; m-cu just beyond fork of M.

Abdomen with the basal segment dark brown; second tergite chiefly light yellow with a brown transverse ring just beyond midlength; succeeding tergites brown basally, their apices broadly yellow; segments eight and nine uniformly dark brown. Male hypopygium (Plate 2, fig. 26) with the tergite, 9t, notched medially, as in the genus. Outer dististyle, *od*, a long, slender, pale lobe clothed with conspicuous setæ. Inner dististyle, *id*, with the posterior or "heel" portion prolonged into an obtuse setiferous lobe. Ædeagus, *a*, simple.

Habitat.—China (Szechwan).

Holotype, male, Mount Omei, altitude 3,500 feet, August 16, 1931 (*Franck*).

Macgregoromyia brevicula differs from the four species of the genus hitherto described in having r-m connecting with vein R_{4+5} rather than with Rs before the fork of the latter. The group certainly appears to belong to the subtribe Dolichopezaria,

in the vicinity of *Dolichopeza* Curtis and *Scamboneura* Osten Sacken.

TIPULA (SCHUMMELIA) BIDENTICULATA sp. nov. Plate 1, fig. 3; Plate 2, fig. 27.

Belongs to the *continuata* group; general coloration yellow, conspicuously variegated with dark brown, including three præscutal stripes; antennal flagellum weakly bicolorous; wings with the ground color strongly infumed, variegated by dark brown and cream-colored areas; male hypopygium with the caudal end of the ninth tergite shallowly emarginate; inner dististyle prolonged behind, terminating in two acute blackened points.

Male.—Length, about 13 millimeters; wing, 14.

Female.—Length, about 12 to 14 millimeters; wing, 14 to 15.

Frontal prolongation of head testaceous-yellow; nasus elongate; palpi black. Antennæ with scape and pedicel light yellow; flagellum weakly bicolorous, brown, the basal enlargement of each segment a little darker than the remainder; antennæ (male) relatively short, if bent backward extending to the wing root or shortly beyond. Head yellow, most evident as a broad median stripe extending the whole length, bordered on either side by dark brown; posterior orbits very narrowly obscure yellow.

Pronotum broadly yellow medially, brown laterally. Mesonotal præscutum with the ground light yellow, with three conspicuous dark brown stripes, the median one feebly split by a capillary reddish line; lateral stripes with anterior ends approaching the median one and the interspaces here suffused with brown, though conspicuously light yellow behind; humeral region of præscutum broadly of the ground color; scutum, scutellum, and mediotergite broadly yellow medially, dark brown laterally, the scutellum more testaceous and with a faintly indicated dark median vitta. Pleura yellow, conspicuously variegated with dark brown on ventral anepisternum, sternopleurite, and meron; posterior sclerites of pleura chiefly yellow. Halteres obscure yellow, the knobs clearer yellow. Legs with the coxæ yellow, slightly darkened at bases; trochanters yellow; femora obscure yellow, the tips narrowly brownish black; tibiæ dark brown, the bases restrictedly pale, the tips narrowly blackened; tarsi black; claws (male) slender, with basal tooth. Wings (Plate 1, fig. 3) with the ground color strongly infumed, variegated by darker brown and cream-colored areas; darker areas chiefly evident as the stigma and as a broad seam on m-cu and distal section of Cu₁; vein 2d A narrowly seamed with brown; the creamy areas appear as a narrow oblitative band along cord; basal half of cell

R_2 ; areas near outer end of cell M, bases of cells Cu and 1st A, outer end of cell 1st A, adjoining vein 2d A, and along outer end of vein 1st A. Squama naked. Venation: R_{1+2} pale but preserved, without trichia on distal third or more.

Abdominal tergites obscure yellow, the first and base of second clearer yellow; succeeding tergites more obscure, the margins pale; hypopygium with the tergite dark brown, the sternites more brownish yellow. In the female, the incisures are more conspicuously light yellow. Male hypopygium (Plate 2, fig. 27) with the tergite, 9t, separated from the sternite, 9s; basistyle entirely fused with sternite. Ninth tergite, 9t, with the caudal margin very broadly and evenly emarginate, on ventral surface more sclerotized. Outer dististyle, *od*, a pale subcylindrical rod, gradually narrowed to the obtuse apex, clothed with elongate setae. Inner dististyle, *id*, produced behind into a bispinous point. Eighth sternite, 8s, unarmed.

Habitat.—Japan (Honshiu).

Holotype, male, Mount Shirouna, Shinano (Japanese Alps), August 8, 1931 (*Machida and Nakamura*). Allotopotype, female. Paratopotype, female.

The Japanese species of *Schummelia* now total more than a dozen and may be arranged in three groups. Of these, the *macrotrichiata* group includes *macrotrichiata* Alexander, *sparsiseta* Alexander, and *sparsissima* Alexander, separated by the presence of macrotrichia in the outer cells of the wing. The *variicornis* group includes *acifera* Alexander, *insulicola* Alexander, *insulicola fuscicauda* Alexander, *variicornis* Schummel, var., and presumably *nikkoensis* Alexander, still known only from the female sex. The remaining species fall in the *continuata* group, with *ecaudata* Alexander, *imanishii* sp. nov., *jocosipennis* sp. nov., *nipponensis* Alexander, *querula* Alexander, and the present species. *Tipula bidenticulata* is closest to *nipponensis* in the caudal extension of the inner dististyle of the male hypopygium, but the conformation of the styli is quite distinct.

TIPULA (SCHUMMELIA) JOCOSIPENNIS sp. nov. Plate 1, fig. 4; Plate 2, fig. 28.

Belongs to the *continuata* group; antennal flagellum black; mesonotum gray, the præscutum with three darker gray stripes; thoracic pleura variegated with yellow and brownish gray; wings with the ground color whitish, the prearcular and costal regions light yellow, the disk heavily patterned with brown, most conspicuously on the wing tip and along veins m-cu and distal section of Cu_1 ; male hypopygium with the inner dististyle mitten-

shaped, the cephalic edge at near midlength produced into a blackened point.

Male.—Length, about 10 to 11 millimeters; wing, 13 to 14.

Female.—Length, about 13 to 14 millimeters; wing, 14 to 15.

Frontal prolongation of head chiefly buffy yellow; palpi pale yellow, the outer segment passing into brown. Antennæ with the scape and pedicel light yellow; flagellum black; antennæ (male) relatively long, if bent backward extending about to root of halteres. Head with front and anterior vertex pale yellow, the remainder of vertex brownish gray. Mesonotum gray, with three darker gray stripes, the lateral pair somewhat darker, the median stripe more or less split on posterior portion; scutal lobes darkened; scutellum pale brown, with a more blackish median vitta; mediotergite dark plumbeous gray. Pleura yellow, variegated with brownish gray on anepisternum, sternopleurite, and meron. Halteres chiefly pale yellow. Legs with the coxæ and trochanters yellow; remainder of legs broken. Wings (Plate 1, fig. 4) with the ground color whitish, the prearcular and costal regions light yellow; stigma dark brown, very conspicuous; paler brown areas on disk, the most distinct being the wing tip and broad seams on m-cu and distal section of Cu₁; less evident washes on anterior cord, in outer end of cell 1st A, and as a marginal seam at end of vein 2d A; cells R and M vaguely suffused with pale brown, leaving an extensive ground area before outer end of latter; obliterative areas involving end of Rs, basal sections of M₁₊₂ and M₃; veins brown, paler in the obliterative areas, more yellowish in the flavous costal portion. Venation: As in the subgenus; Rs a little longer than m-cu, the latter connecting with M₃₊₄ shortly before its fork.

Abdominal tergites yellow, with a nearly continuous brownish black to dark brown median stripe, narrowly interrupted at the caudal margins of the intermediate segments; segments seven to nine, inclusive, more uniformly blackened; sternites chiefly yellow, the seventh and eighth segments blackened. Male hypopygium (Plate 2, fig. 28) with the tergite, 9*t*, entirely distinct from the sternite-basistyle, 9*s-b*, the two latter entirely fused. Median region of sternite broadly membranous. Ninth tergite, 9*t*, black, the caudal margin with a broadly rounded emargination, the lateral lobes obtuse. Outer dististyle, *od*, pale, elongate-cylindrical. Inner dististyle, *id*, mitten-shaped, the cephalic edge at near midlength produced into a blackened point.

Habitat.—Japan (Honshiu).

Holotype, male, Mount Ohdai, Yamato, altitude 2,600 feet, June 5, 1930 (*Sakaguchi*). Allotopotype, female. Paratopotypes, 3 of both sexes.

Tipula (*Schummelia*) *jocosipennis* differs from *T. (S.) ecaudata* Alexander and *T. (S.) querula* Alexander, which appear to be the nearest allies, in the more strikingly patterned wings, grayish pattern of the mesonotal præscutum, and the structure of the male hypopygium, especially of the inner dististyle. The pattern of the wing is more like that found in *T. (S.) macrotrichiata* Alexander, which, however, has distinct macrotrichia in the outer cells of the wing, as discussed at the conclusion of the preceding species. Despite this presence of macrotrichia, the relationship between the members of the *macrotrichiata* and *varicornis* groups is very close, indeed.

TIPULA (SCHUMMELIA) IMANISHII sp. nov. Plate 1, fig. 5; Plate 2, fig. 29.

Belongs to the *continuata* group; allied to *jocosipennis*; mesonotal præscutum obscure yellow, with three opaque dark gray stripes that are indistinctly bordered by blackish; posterior yellow interspaces narrow or suffused with dusky; wings with the ground color creamy, with certain of the veins seamed with darker, the wing tip unclouded; male hypopygium with the inner dististyle produced into a slender subterminal beak.

Male.—Length, about 10 to 11 millimeters; wing, 12.5 to 13.5.

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

Frontal prolongation of head yellow above, abruptly dark brown laterally; nasus distinct; palpi brownish black. Antennæ with scape obscure yellow, a little darker outwardly; pedicel pale yellow; flagellum brownish black; antennæ (male) moderately long, if bent backward extending about to root of halteres. Front and median area of anterior vertex yellow; posterior vertex and sides of anterior vertex weakly infumed.

Mesonotal præscutum obscure yellow, with three opaque dark gray stripes that are indistinctly bordered by blackish; posterior interspaces narrowly yellow to almost obliterated by dusky suffusions; scutum and mediotergite dark gray, each with a narrow median pale line; scutellum obscure yellow, with a capillary brown vitta. Pleura obscure yellow, conspicuously variegated by brownish gray. Halteres dusky, the knobs yellow. Legs with the femora obscure yellow, the tips conspicuously blackened; tibiæ and tarsi dark brown. Wings (Plate 1, fig. 5) with the ground color creamy, the prearcular region and costal cell brighter yellow, cell Sc slightly darkened; restricted obliterative

areas before and beyond stigma and across cell 1st M_2 ; veins bordered with brown, most heavily and distinctly on m-cu, Cu, and 2d A, the other veins less sensibly darkened. Venation: Cell 1st M_2 small; cell 2d A narrow.

Abdomen with basal five tergites obscure yellow, the lateral portions darkened; remaining segments, including hypopygium, brownish black. Male hypopygium (Plate 2, fig. 29) with the caudal margin of the ninth tergite, 9*t*, broadly and evenly rounded. Inner dististyle, *id*, somewhat of the type of *jocosipennis*; that is, without caudal extension and with a subapical beak; in the present fly, this beak lies farther distad and is distinctly slenderer than the similar beak of *jocosipennis*.

Habitat.—Japan (Honshiu).

Holotype, male, Mount Kurobegoro, Echiu, in subalpine meadow, altitude 7,800 feet, August 8, 1931 (*Imanishi*). Allotopotype, female. Paratopotype, male.

Tipula (*Schummelia*) *imanishii* is respectfully dedicated to the collector, Mr. K. Imanishi, to whom I am indebted for valuable coöperation in studying the Japanese Tipulidæ. The fly needs comparison only with *jocosipennis* sp. nov., differing most evidently in the distinct thoracic coloration, obscure wing pattern, and in the structure of the male hypopygium, notably the position and slenderness of the beak of the inner dististyle.

TIPULA (ACUTIPULA) INTACTA sp. nov. Plate 2, fig. 30.

Belongs to the *fulvipennis* group; allied to *turbida*; antennal flagellum uniformly dark brown; mesonotal præscutum with four brown stripes that are more or less confluent on cephalic portion of sclerite; tips of femora blackened; tarsi chiefly light yellow; wings with the ground color conspicuously darkened, restricting the whitish hyaline areas to a major spot before cord, the extreme bases of the outer medial cells and the usual areas in cells M and Cu; median lobe of ninth tergite of male hypopygium simple.

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

Frontal prolongation of head dark colored; nasus distinct; palpi dark, paler at incisures, the terminal segment broken. Antennæ dark brown, terminal segment reduced to a tiny button. Head dark brown.

Pronotum brown. Mesonotal præscutum with four relatively ill-defined brown stripes, all more or less confluent on cephalic portion of sclerite, the capillary pale median vitta well indicated behind; scutum and scutellum chiefly dark brown; medio-

tergite more or less denuded in the unique type, the posterior and lateral portions with a dense golden pollen. Pleura chiefly pale yellow. Halteres long, brown, the extreme base of stem paler. Legs with coxæ greenish yellow; trochanters yellow; femora yellow at bases, passing into brown, the tips conspicuously blackened; tibiæ brown, the tips narrowly darkened; tarsi paling to light yellow, the outermost segments broken; tibial spur formula 1-2-2. Wings with the pattern almost as in *brunirostris* and similar species; costal cell not conspicuously darkened, Sc a trifle more infumed; dark area in cell Cu distinct, placed before midlength of the basal section of Cu₁. All branches of M and distal section of Cu₁ with sparse but evident macrotrichia; squama with a few short setæ.

Basal abdominal segments brown, the caudal margins narrowly paler; outer segments, including hypopygium, more uniformly darkened. Male hypopygium (Plate 2, fig. 30) with the median lobe of the tergite, 9t, entire, at apex set with sparse blackened spicules. Outer dististyle, *od*, entirely pale, broad basally, narrowed to the subacute apex. Inner dististyle, *id*, conspicuously tripartite, the two outer lobes with dense groups of erect yellow setæ, the apical lobe much broader and stouter than the others, separated from the intermediate lobe by a shallow rounded notch. Eighth sternite, 8s, with the caudal portion narrowed, the apex truncate and set with short setæ that are shortest near the meson; before apex on ventral surface with a median swollen area set with longer yellow setæ.

Habitat.—China (Szechwan).

Holotype, male, Mount Omei, altitude 8,500 feet, July 18, 1931 (*Franck*).

The present species differs from *princeps* Brunetti, *shirakii* Edwards, *brunirostris* Edwards, and other similar allied species in the Oriental and Eastern Palæarctic faunal regions in the simple lobe of the ninth tergite of the male hypopygium. In the latter character, it agrees more closely with a small group of Eastern Palæarctic forms that center about *bubo* Alexander, as *kuzuensis* Alexander and *turbida* Alexander, differing in the wing pattern and details of the male hypopygium.

TIPULA (ACUTIPULA) SUBTURBIDA sp. nov. Plate 1, fig. 6; Plate 2, fig. 31.

Belongs to the *fulvipennis* group; allied to *bubo* and *turbida*; antennæ with scape and pedicel yellow, flagellum dark brown; præscutal stripes ill-defined; wings with a conspicuous dark pat-

tern, the outer half of cell R_5 nearly hyaline; male hypopygium with the median lobe of the ninth tergite simple.

Male.—Length, about 14 millimeters; wing, 16.

Frontal prolongation of head relatively stout, uniformly dark brown; palpi pale brown, terminal segment broken. Antennæ with the scape and pedicel yellow; flagellum dark brown, the basal enlargements of the segments more intense, the outer segments more uniformly darkened; verticils long and conspicuous, a trifle longer than the segments alone. Head dark brown.

Mesonotal præscutum light gray, with four scarcely indicated darker grayish brown stripes; mediotergite with a lighter gray pruinosity. Pleura obscure brownish yellow, the pleurotergite a little darker. Halteres relatively long, brown, the apex of knob paler. Legs with the coxæ pruinose; trochanters obscure yellow; remainder of legs broken. Wings (Plate 1, fig. 6) with a dark pattern that is much as in *turbida*; prearcular region and cells C and Sc dark brown; whitish area before cord more restricted; distal half of cell R_6 nearly hyaline.

Abdominal tergite one chiefly infuscated; succeeding segments light yellow, with a narrow sublateral brown stripe that widens on the third and following segments, the outer portion of organ, including hypopygium, chiefly dark brown. Male hypopygium as in *bubo* and allies, the median lobe of the tergite being simple and weakly spinulose. Eighth sternite with numerous short setæ at caudal end. The chief distinctions between species of the present group are to be found in the conformation and armature of the inner dististyle (Plate 2, fig. 1, *id*). Ninth sternite with a conspicuous brush of yellow setæ lying in the median notch.

Habitat.—China (Szechwan).

Holotype, male, Pehliting, Mount Omei, altitude 6,000 feet, July, 1931 (*Franck*).

Tipula (*Acutipula*) *subturbida* is allied to *bubo* Alexander and *turbida* Alexander, both of Japan, differing especially in the wing pattern and details of the male hypopygium, especially of the inner dististyle.

TIPULA SAKAGUCHIANA sp. nov. Plate 1, fig. 7; Plate 2, fig. 32.

Allied to *nigrocostata*; antennæ bicolorous, in male, if bent backward, extending about to the second abdominal segment; wing with costal border brownish black, remainder of disk pale brown, variegated by creamy areas; cell M_1 very short-petiolate; male hypopygium with the tergite divided by pale yellowish

membrane, on either side with an acute curved spine; basistyle produced.

Male.—Length, 15 millimeters; wing, 16; antenna, about 6.

Frontal prolongation of head relatively stout, grayish brown; nasus long and slender; palpi brown. Antennæ (male) elongate, but still shorter than in *nigrocostata*, if bent backward extending about to the second abdominal segment; antennæ with scape and pedicel yellowish brown; basal flagellar segments weakly bicolorous, the basal enlargements of the second and succeeding segments dark brown, the apices paler; outer segments more uniformly darkened; verticils stout, not exceeding one-half the length of the segments; terminal segment minute, thimble-shaped. Head brownish gray.

Mesonotal præscutum light gray, with three somewhat darker gray stripes that are narrowly bordered by darker brown, the median stripe with a central vitta of this color on anterior half; posterior sclerites of mesonotum dark gray. Pleura pale buffy gray, variegated with darker gray areas on anepisternum, ventral sternopleurite, and meron; pleura glabrous. Halteres elongate, brownish yellow, the knobs dark brown. Legs with the coxæ whitish; trochanters yellow, remainder of legs broken. Wings (Plate 1, fig. 7) with a faint brown tinge; prearcular region yellow; cells C and Sc brownish black, the color not involving any part of the radial field; stigma slightly paler brown; somewhat more cream-colored areas, as follows: Before stigma; as an incomplete fascia beyond cord and stigma, extending from basal half of cell R_2 through cell 1st M_2 ; in cell M_1 , on either side of a more dusky area at near midlength of the cell; veins dark brown, the prearcular veins more yellowish. Squama naked; trichia of veins numerous and well-distributed, including all veins beyond cord and on outer ends of principal basal veins. Venation: R_{1+2} entire, rather strongly upcurved; cell M_1 short-petiolate, the petiole being approximately one-half m ; $m-cu$ just beyond fork of M_{3+4} , at about one-third the length of cell.

Abdomen with the basal tergites yellow, with a dark brown median stripe that is narrowly interrupted at the caudal margins of the segments, widened on the outer tergites, the eighth segment chiefly infuscated, the ninth tergite again yellow, except for the caudal sclerotized armature; sternites yellow, the caudal margins of the segments narrowly darkened, the eighth sternite uniformly infuscated; hypopygium yellow. Male hypopygium (Plate 2, fig. 32) with the suture between the tergite, 9 t , and sternite, 9 s , complete except for about the cephalic fifth. Basi-

style, *b*, entirely separated from sternite, the outer end narrowed and produced to extend to opposite the tips of the inner dististyles, *id.* Ninth tergite, *9t*, viewed dorsally, entirely divided by pale membrane, the caudal margin on either side with an arched blackened thorn or spine, their tips acute; viewed from the side, the thorns are produced caudad and ventrad into flattened blackened plates; between the two blackened masses on either side is a high, compressed, pale membrane. Eighth sternite slightly sheathing, its apex with longer and more abundant setæ.

Habitat.—Japan (Honshiu).

Holotype, male, Kaisogun, Kii, altitude about 325 feet, August, 1929 (*Sakaguchi*).

I take pleasure in dedicating this beautiful species of *Tipula* to my friend Prof. S. Sakaguchi, who has added materially to our knowledge of the crane flies of the Riukiu Islands and Honshiu. The only near ally of this fly is *T. nigrocostata* Alexander (Kyūshū), which, while very similar in general appearance, differs in the longer, less distinctly bicolorous antennæ, the short cell M_1 of the wings, and the details of the male hypopygium, more especially of the tergite, where the dorsal spines are shorter and the median area is more solidly sclerotized.

TIPULA (VESTIPLEX) SERRIDENS Alexander. Plate 3, fig. 33.

Tipula serridens ALEXANDER, Trans. Am. Ent. Soc. 46 (1920) 18–19.

The type of this interesting fly was a female, taken in the Province of Musashi, Honshiu, in May, 1919. The male remained unknown until a small series was taken on Mount Daisen, Hōki, altitude 3,900 to 5,560 feet, June 7, 1930, by Hibi. The following description is given, since the male differs in several important regards from the female. The ground color of the wings, and especially the costal border, is darker, more brownish than in the holotype female, and the legs are much darker colored.

Male.—Length, about 15 to 16 millimeters; wing, 16 to 17.5.

Frontal prolongation of head dark gray; nasus short and stout; palpi brownish black. Antennæ of moderate length; scape and pedicel yellowish brown to brown; flagellum black; flagellar segments strongly incised to appear binodose. Head light gray, with a capillary brown line.

Mesonotal præscutum clear light gray, with four darker gray stripes that are narrowly but conspicuously bordered by bright brown, broadest and most distinct on the lateral stripes; inter-

mediate stripes wider and contiguous in front, narrowed and gradually divergent behind, not reaching the suture; posterior sclerites of mesonotum chiefly light gray, each scutal lobe with a small lunate mark at cephalolateral corner, immediately behind suture; scutellum with a capillary median brown vitta. Pleura gray; dorsopleural region buffy yellow. Halteres pale, the knobs chiefly yellow, the base of stem slightly darkened. Legs with coxæ light gray; trochanters grayish yellow; femora obscure yellow on slightly more than proximal half, thence passing into dark brown; tibiæ dark brown, the tips slightly darker; tarsi black; tibial spur formula 1-2-2; claws with a small basal tooth. Wings with the ground color rather dark brown, variegated by whitish areas, including an incomplete, rather narrow, cross-band beyond cord, extending from costa to near midlength of cell M_3 , including the outer half of cell Sc_2 , basal third of R_2 , narrow subbasal portions of cells R_3 and R_5 and most of 1st M_2 ; additional large white areas near outer end of cell M and in bases of Cu and 1st A ; cell R_1 before stigma chiefly white; prearcular region clear yellow; cell C brown, Sc more yellowish brown; stigma oval, dark brown; brown clouds at origin of Rs and on anterior cord; veins brown, pale in the obliterative areas. Squama naked. Vein R_{1+2} with about eight trichia, distributed on about the basal half; short trichia on all veins beyond cord, excepting the distal third of R_3 . Venation: R_{1+2} entire, both it and R_3 pale at outer end; m about one-half the petiole of cell M_1 ; $m-cu$ at fork of M_{3+4} .

Abdomen with the basal tergite grayish brown; segments two to four yellow, with a brown median vitta that widens on the outer segments; tergites five to eight black, sparsely pruinose, the lateral margins narrowly pale; sternites five to nine more strongly pruinose; styli of hypopygium yellow. Male hypopygium (Plate 3, fig. 33) with the tergite separated from the sternite. Basistyle embedded in membrane, thus separated from sternite. Ninth tergite, $9t$, appearing as a chitinized saucerlike structure, the margins smooth; viewed laterally, the inner blackened rim appears higher than the outer margin. Inner dististyle, id , relatively slender, with conspicuous setæ. Ventral portion of basistyle produced dorsad and caudad as a slender rod that terminates in an acute blackened point. Eighth sternite unarmed.

Allotype, male, Mount Daisen, Hôki, altitude 4,550 feet, June 7, 1930 (*Hibi*).

There are two distinct ways in which the allotype, or type of the opposite sex from that of the holotype or lectotype, may be selected. It may either be part of the *original series* of specimens and be chosen from such series either by the original author or a subsequent author; or, it may be a specimen quite *apart* from the *original series*, selected at a subsequent date by the original describer of the species or by any later student. Probably far more than one-half of all described insects have been based upon a single or unique type, and according to the first interpretation of the word "allotype," such species could never be represented by a specimen of the opposite sex. In recent years, certain writers have suggested additional type categories to accommodate the second option above listed; that is, the selection of an allotype from material not on hand at the time of the original description of the species. Betrem² proposed for such a type the term "allolectotype," not being acquainted with the earlier term "lectoallotype," proposed by Curran two years earlier.³ In the opinion of the present writer, both of these latter terms are synonyms of the original definition of "allotype," as proposed by Muttkowski.⁴ This writer clearly says: "The allotype need not be described by the protologist (first describer); it can be contained in the original as well as any subsequent description by other authors. Thus, if the protologist describes only a holotype male, the first female subsequently described is to be called the allotype." In the light of this clear exposition of what was intended in the original proposal of this term, it would seem that if two distinct terms were required to accommodate the two possibilities above listed it would be necessary to propose a new term for the case where the second sex is described coincidentally with the definition of the holotype. In any case, the present writer intends to continue to use the term "allotype" as was originally intended by the first proposer of the term.

TIPULA QUADRISPICATA sp. nov. Plate 1, fig. 8; Plate 3, fig. 34.

Allied to *tetracantha*; male hypopygium with the outer dististyle broad, narrowed into a long, straight, spikelike point; basal portion of inner dististyle produced into a conspicuous blackened rod that is unequally bispinous at apex.

² Treubia 9 supplement (1928) 3.

³ Can. Entomol. 58 (1926) 311.

⁴ Bull. Public Mus. Milwaukee 1 (1910) 10.

Male.—Length, about 16 millimeters; wing, 17.4.

Frontal prolongation of head obscure yellow; nasus conspicuous; palpi light brown, the outer segment darker. Antennæ with the scape and pedicel yellow; flagellar segments brown, the base of each segment obscure yellow, on the first segment including more than one-half the segment, on the remaining segments becoming less in amount, the outer segments uniformly darkened. Head light gray.

Mesonotal præscutum light gray, with four scarcely differentiated darker gray stripes; posterior sclerites of mesonotum gray, the scutellum obscure yellow with a median brown vitta. Pleura clear light gray; dorsopleural region buffy. Halteres pale, the knobs weakly infuscated. Legs with the coxæ sparsely pruinose; trochanters yellow; femora yellowish brown, the tips narrowly blackened; tibiæ brown; tarsi brownish black. Wings (Plate 1, fig. 8) with a strong brownish yellow tinge, cell Sc and prearcular region more yellow; stigma elongate, dark brown; veins dark brown. Obliterative areas very restricted, appearing at end of Rs and adjoining veins, and on basal sections of vein M_{1+2} and M_3 , crossing cell 1st M_2 . Venation: Petiole of cell M_1 a little more than one-half m.

Basal abdominal tergites yellow, the outer segments becoming dark brown, margined laterally and caudally with pale; sternites yellow. Male hypopygium with the tergite distinct from sternite except about on cephalic sixth. Basistyle fused with sternite except on ventral portion. Ninth tergite (Plate 3, fig. 34, 9t) extensive, gradually narrowed outwardly, terminating in two slender, blackened, spinulose lobes that are separated by a broad U-shaped notch. Outer dististyle, *od*, a broad rod that suddenly narrows to a long spikelike point. Inner dististyle, *id*, with the basal portion produced into a blackened rod, its apex unequally bispinous.

Habitat.—Japan (Honshiu).

Holotype, male, Kaisogun, Kii, June, 1930 (*Sakaguchi*).

Tipula quadrispicata is closely allied to *T. tetracantha* Alexander (Honshiu, Shikoku, Kiushu), differing conspicuously in the structure of the tergite and styli. These parts are shown for *tetracantha* (Plate 3, fig. 35) as a basis for comparison between the two species. Both of these flies have a pair of fingerlike lobes pendant from the ninth sternite. The species differ from the other known Japanese species of *Tipula* in having the bases of the individual flagellar segments pale yellow, contrasting with the brown remainder of the segment.

TIPULA CURVICAUDA Alexander. Plate 3, figs. 36 to 39.

Tipula curvicauda ALEXANDER, Ann. Ent. Soc. Am. 16 (1923) 72-73.

The type was a male from Kamikohti, Shinano, Honshiu, taken July 13, 1918, by Issiki. Additional material has since come to hand from other parts of the mountains of Honshiu, as follows: One male, Yumoto, Shimotsuke, altitude 4,800 feet, July 22, 1923 (*Esaki*); one female, Hinoëmata, Iwashiro, altitude 4,000 feet, July 24, 1923 (*Esaki*).

The allotype female may be briefly diagnosed. Length, about 24 millimeters; wing, 23. Characters as in male, differing in the sexual features only. Ovipositor with the cerci long, slender, straight; hypovalvæ relatively high and compressed.

Allotype, female, Hinoëmata, Iwashiro, July 24, 1923 (*Esaki*).

The following description of the remarkable male hypopygium is taken from the holotype male.

Male hypopygium (Plate 3, fig. 36) large and conspicuous, subglobular, tilted at an angle to the remainder of abdomen. Ninth tergite (Plate 3, fig. 37, 9*t*) massive, the caudal margin with a very broad U-shaped notch, the lateral angles formed being very thick and obtusely rounded, on their ventral margin produced into an obtuse black tooth; on the ventral floor of the notch lie two parallel, broad-based teeth, with blunt tips, separated from one another only by a narrow split. Basistyle, *b*, and sternite, 9*s*, united, except for a curved suture beneath. Outer dististyle (Plate 3, fig. 38, *od*) very remarkable, appearing as a long, powerful, terete arm that is strongly curved before midlength, the outer face clothed with long yellow setæ, the apex a little enlarged, obliquely truncated and provided with one or more spines. Inner dististyle (Plate 3, fig. 39, *id*) correspondingly small, heavily blackened. Ninth sternite, 9*s*, deeply notched, the area cephalad of the notch membranous, the proximal margins very tumid and provided with dense long setæ. Eighth sternite, 8*s*, unarmed.

TIPULA NIGROSIGNATA Alexander.

Tipula nigrosignata ALEXANDER, Ann. & Mag. Nat. Hist. IX 14 (1924) 472-473.

Described from a unique male, Lake Chuzenji, Shimotsuke, Honshiu, altitude 4,170 feet, July 22, 1923 (*Esaki*). The female sex is now known and is described herewith as allotype.

Female.—Length, about 21 millimeters; wing, 22.

Characters as in the male, except for the sexual differences of short antennæ. Anepisternum and sternopleurite conspicuously

blackened. Bases of fore and middle coxæ darkened. Ovipositor with cerci long and very slender, the margins smooth.

Allotype, female, Mount Shirouma, Shinano, Honshiu, August 8, 1931 (*Machida and Nakamura*).

TIPULA SEMPITERNA sp. nov. Plate 1, fig. 9; Plate 3, figs. 40, 41.

Mesonotal præscutum with the ground color blackish, with four dark gray stripes; anterior lateral pretergites and dorsopleural region bright yellow; ventral pleurotergite obscure yellow; legs chiefly black, the femora bases broadly yellow, narrowest on the forelegs; wings yellow, variegated with brown, including the wing tip; Rs approximately twice m-cu; male hypopygium with the caudal margin of tergite bearing two triangular spinous lobes; outer dististyle flattened, long and narrow, the apex truncate.

Male.—Length, about 12 millimeters; wing, 16.2.

Frontal prolongation of head grayish brown; nasus distinct; palpi black. Antennæ black throughout, if bent backward not extending to beyond wing root; flagellar segments feebly incised; verticils shorter than the segments. Head brownish gray, the front and anterior vertex clear light gray; vertical tubercle a small but conspicuous conical point.

Anterior pronotum dark brown medially and on the sides, variegated by obscure yellow sublaterally; posterior pronotum and anterior lateral pretergites deep yellow. Mesonotal præscutum with the ground color dull black, with four clear gray stripes, the humeral region and lateral margin yellow; scutum with the lobes chiefly dark gray, variegated with blackish along the suture, the median area of scutum light gray; posterior sclerites of notum gray. Pleura light gray, the ventral pleurotergite abruptly light yellow; dorsopleural region bright yellow. Halteres obscure yellow. Legs with the coxæ gray, their tips pale yellow; trochanters obscure yellow; femora black, their bases yellow, narrowest on the forelegs where less than one-third is included, widest on the middle and hind legs where about the distal third is blackened; tibiæ and tarsi black; tibial spur formula 1-2-2, the mid-tibia with one spur reduced in size, not exceeding one-half the length of the other; claws simple. Wings (Plate 1, fig. 9) with a strong cream-yellow tinge, the prearcular and costal regions brighter yellow; stigma dark brown; wing tip narrowly infuscated; a broad brown seam on anterior cord; narrower dark seams on posterior cord, vein Cu, and vein 1st A; less distinct washes in cell R and at outer end of cell

1st A; veins dark brown, brighter in the costal and prearcular regions. Macrotrichia beyond cord numerous; squama naked. Venation: Rs relatively long, nearly twice m-cu; R_{1+2} entire; m-cu on M_4 shortly beyond fork.

Abdominal tergites dark brown, the lateral borders of the basal segments yellowish; basal sternites yellow; outer segments, including hypopygium, uniformly darkened. Male hypopygium (Plate 3, figs. 40, 41) relatively small, black, only the outer dististyle obscure yellow. Tergite, 9t, entirely separate from the sternite. Basistyle, b, separated from the sternite by a suture that is broken on the cephalic portion, the caudal end of basistyle narrowed and produced; median region of sternite membranous, the caudal portion slightly produced as a flattened lobule. Ninth tergite, 9t, large, the caudal margin produced into two, small, triangular lobes which are separated by a notch that has about the same outline; viewed laterally, each of these lobes bears numerous, small, blackened points on ventral surface; ventrocaudal portion of tergite with a small, blackened, spinous point that is directed ventrad. Outer dististyle, od, flattened, relatively long and slender, the apex truncate. Inner dististyle, id, bearing a conspicuous, heavily blackened, outer spine, best seen from a ventral aspect; apex of style similarly blackened. Caudal margin of eighth sternite, 8s, straight, unarmed.

Habitat.—Japan (Honshiu).

Holotype, male, Mount Kurobegoro, Echiu, in subalpine meadow, altitude 7,800 feet, August 8, 1931 (*Imanishi*).

Tipula sempiterna has no close ally in the Japanese fauna. It bears a certain general resemblance to species such as *T. machidai* Alexander and *T. otiosa* Alexander, but is a very different fly.

TIPULA HIBII sp. nov. Plate 1, fig. 10.

Generally similar to *hylæa*; general coloration gray, the præscutum with a brown median stripe and less-distinct lateral stripes; knobs of halteres yellow; fore femora chiefly blackened, hind femora yellow, passing to black before tips; extreme tips of all femora narrowly but conspicuously reddish; tibiæ yellow, the tips narrowly dark brown; wings pale cream-yellow, with a cross-banded pattern of brown and gray; prearcular region and cell Sc light yellow, cell C dark brown; vein R_{1+2} atrophied.

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

Frontal prolongation of head buffy, sparsely light gray pruinose; nasus slender; palpi dark brown. Antennæ with the scape

and pedicel light yellow; flagellum broken. Head light gray, with indications of a very pale brown median vitta on vertex.

Mesonotum clear light gray, with a broad, conspicuous, median, brown stripe and much paler lateral stripes. Pleura clear gray; dorsopleural membrane very pale yellow. Halteres pale yellow, the extreme base of knob dusky, the majority of knob light yellow. Legs with the coxæ light gray; trochanters obscure yellow; fore femora chiefly blackened, the base narrowly brightened; middle femora obscure yellowish brown to brown, deepening to brownish black before tip; posterior femora obscure yellow, before tips with a broad black ring; tips of all femora very narrowly but conspicuously reddish; tibiæ light yellow, the tips narrowly dark brown; tarsi dark brown; tibial spur formula 1-2-2; claws (female) small, simple. Wings (Plate 1, fig. 10) with the ground color pale cream-yellow, the prearcular region and cell Sc clear light yellow; cell C dark brown except on basal portion; stigma and a relatively narrow crossband on anterior cord dark brown; wing apex in radial field dark brown; paler brownish gray clouds on posterior cord and as a broken fascia before level of origin of Rs, interrupted in cell Cu; outer half of cell 2d A similarly clouded; veins of outer medial field, extreme outer end of cell M, and outer two-thirds of vein 2d A narrowly seamed with dark brown; veins pale yellowish, brown where traversing the darkened areas. Squama naked; long, conspicuous macrotrichia on veins beyond cord. Venation: R_{1+2} atrophied; petiole of cell M_1 long, fully three or more times m.

Abdominal tergites obscure yellow, with a conspicuous median brown stripe that is broadly interrupted at the caudal margins of the segments; basal sternites a little variegated with yellow. Ovipositor with cerci and hypovalvæ straight, both relatively slender, with smooth margins.

Habitat.—Japan (Honshiu).

Holotype, female, Kyusho Mountain, Hôki, June 13, 1930 (*Hibi*).

I take great pleasure in naming this beautiful *Tipula* in honor of the collector, who has secured numerous interesting Tipulidæ in various parts of Hôki. The species is most generally similar to *T. hylæa* Alexander, in the venation and wing pattern, differing in the yellow knobs of the halteres, and, especially, the variegated pattern of the legs, which, in *hylæa*, are uniformly dark brown. *Tipula quadrifasciata* Matsumura (*aluco* Alexander) is also somewhat similar but again differs in the uniformly

darkened legs and knobs of halteres, and in the more cross-banded pattern of the wings, including a broad fascia across cells R and M beyond the arculus.

TIPULA LEGALIS sp. nov. Plate 1, fig. 11; Plate 3, fig. 42.

Antennæ with scape yellow, the remaining segments brownish black; mesonotal præscutum grayish yellow, with three conspicuous blackish stripes, the median one with its center somewhat paler; femoral tips broadly black; wing pattern much as in *cruciata*; outer ends of radial cells uniformly darkened; basal segments of abdomen yellowish, the outer segments black; male hypopygium with the tergite trilobed at apex, the median lobe longest; outer dististyle narrowly and weakly sinuous; eighth sternite with two groups of setæ.

Male.—Length, about 13 millimeters; wing, 13.

Frontal prolongation of head dark brown, a trifle brighter laterally at base; nasus long and slender; palpi dark brown, the terminal segment restrictedly brighter at tip. Antennæ with the scape yellow, a little darkened basally on mesal face; pedicel and flagellum brownish black; flagellar segments with the basal enlargement relatively conspicuous, with elongate verticils. Head dark gray, the anterior vertex behind the antennal bases paler.

Mesonotal præscutum with the ground color grayish yellow, with three conspicuous blackish stripes, the median stripe slightly paler in center; posterior sclerites of mesonotum chiefly blackened, the median region of scutum and mediotergite sparsely pruinose. Pleura chiefly covered by a heavy yellowish pollen, the dorsal portion of the pleurotergite abruptly darkened; dorso-pleural membrane buffy; ventral sternopleurite and meron more darkened. Halteres with stem pale yellow, the knobs dark brown. Legs with the coxæ sparsely pruinose, especially the fore and middle coxæ; trochanters yellow; femora yellow, the tips broadly and abruptly black; tibiæ obscure yellow, the tips more narrowly blackened; tarsi passing from brown to black; tibial spur formula 1-2-2; claws with a single basal spine or tooth. Wings (Plate 1, fig. 11) with pattern much as in *cruciata*, the white band beyond cord reaching costa only as a narrow point in cell R_2 ; outer ends of all radial cells uniformly darkened; markings of basal cells almost as in *cruciata* but not so strongly contrasted. Squama naked. Venation: Rs more than twice as long as m-cu; R_{1+2} entire; basal section of R_{4+5} short but evident, less than r-m; cell 1st M_2 relatively small and short.

Basal four or five abdominal segments yellowish, the remaining segments, including hypopygium, black. Male hypopygium (Plate 3, fig. 42) with the tergite and basistyle entirely cut off by sutures. Ninth tergite, 9*t*, with the caudal margin unequally trilobed, the median lobe longer, the lateral lobes with the outer mesal angle weakly produced into a blackened point. Outer dististyle, *od*, slender, weakly sinuous, the slightly expanded apex very obliquely truncated. Inner dististyle, *id*, with the lobe at base on outer margin small and obtuse. Eighth sternite, 8*s*, moderately sheathing, with long yellow setæ that are arranged in two more or less distinct groups or brushes and become decussate across the midline, with a single marginal row of similar setæ extending across the midline.

Habitat.—China (Szechwan).

Holotype, male, Pehlingting, Mount Omei, altitude 6,000 feet, July, 1931 (*Franck*).

The nearest described ally of this fly seems to be *Tipula cruciata* Edwards (Tibet to Sikkim), which differs notably in the thoracic pattern and less evidently in the structure of the male hypopygium. In *cruciata*, the basal section of vein R_{4+5} is obliterated or nearly so; in the present fly the element is short but distinct.

TIPULA ILLEGITIMA sp. nov. Plate 1, fig. 12.

General coloration of mesothorax gray, the præscutum with scarcely indicated darker gray stripes; basal four or five segments of antennæ light yellow, the succeeding segments darker; wings whitish subhyaline, with a diffuse pale brown pattern, darkest in the outer radial field; pale crossband beyond cord incomplete; R_{1+2} almost entirely atrophied; abdomen obscure yellow, both the tergites and sternites with a conspicuous median brown stripe.

Female.—Length, about 15 millimeters; wing, 12.5.

Frontal prolongation of head relatively long, pale brownish gray; nasus short, tipped with long yellow setæ; palpi dark brown, the extreme tip of the last segment reddish. Antennæ with the scape, pedicel, and basal two flagellar segments light yellow, the succeeding segments passing into brown, the basal enlargements of the segments somewhat darker; dorsal verticils elongate, much exceeding the ventral pair. Head light gray.

Mesonotal præscutum gray, with slightly darker gray stripes that are very little evident; interspaces with sparse brownish setigerous punctures; posterior sclerites of mesonotum gray, the

scutellum with a median brown vitta. Pleura gray, the dorso-pleural region more buffy. Halteres yellow, the knobs weakly darkened. Legs with the coxæ pruinose; trochanters yellow; femora and tibiæ obscure yellow, the tips passing into brown; tarsi brown; tibial spur formula 1-2-2. Wings (Plate 1, fig. 12) whitish subhyaline, with a diffuse pale brown pattern, darkest in the stigmal region and in the outer ends of cells R_2 and R_3 ; cell C yellowish brown, distinctly darker in color than the clear yellow cell Sc; pale crossband beyond cord narrow, extending from costa into basal third of M_3 , including approximately one-fourth to one-fifth the length of the radial cells it traverses; pale area in outer ends of cells R and M relatively restricted; veins chiefly yellow. Venation: R_{1+2} atrophied, indicated only by a slight basal spur without macrotrichia; Rs about one-half to two-thirds longer than m-cu; cell 1st M_2 small.

Abdomen obscure yellow, both the tergites and sternites with a conspicuous brown median line. Ovipositor with the cerci long, straight, and slender.

Habitat.—Japan (Honshiu).

Holotype, female, Mount Ohdai, Yamato, altitude 2,600 feet, June 5, 1930 (*Sakaguchi*).

Of the Japanese species of *Tipula* in which R_{1+2} is entirely or chiefly atrophied (*autumna* Alexander, *flavocostalis* Alexander, *futilis* Alexander, *hylæa* Alexander, *manca* Alexander, *phæopasta* Alexander, *pluriguttata* Alexander, *quadrivittata* Matsumura, *subfutilis* Alexander, *taikun* Alexander, *trupheoneura* Alexander), the present form is most similar to *flavocostalis*, differing in the body coloration and in the wing pattern, as the more cream-yellow ground color and the very diffuse pale brown pattern. In *flavocostalis*, vein R_{1+2} is represented by a short spur that is provided with a few macrotrichia.

TIPULA TRUPHEONEURA Alexander. Plate 4, fig. 43.

Tipula trupheoneura ALEXANDER, Trans. Am. Ent. Soc. 46 (1920) 17-18.

The unique type, a female, was from Saitama, Musashi, Honshiu, collected May 31, 1919, by Takahashi. An additional male and a female were taken on Mount Daisen, Hôki, altitude 3,900 to 5,200 feet, June 7, 1930, by Hibi. The male is herewith characterized as allotype.

Male.—Characters as in the female, including the infuscated, weakly pruinose antennal scape. Male hypopygium with the tergite separated from the sternite by a suture. Ninth tergite

(Plate 4, fig. 43, 9*t*, *a*) appearing as a subquadrate plate, its caudal margin subtransverse, with a deep and narrow, parallel-sided, median notch; caudal margin on either side of median notch with microscopic denticles. Basistyle complete, its caudal margin not produced, as is the case in the similar species, *pollex* sp. nov. Outer dististyle, *od*, *a*, relatively small, with conspicuous setæ. Inner dististyle broad, the outer ventral angle produced into a fingerlike lobe. Ninth sternite on mesial portion, immediately adjoining the basistyle, produced into a blackened spikelike point, the oval area from which the spine arises surrounded by membrane. This structure must function almost as a gonapophysis, yet is evidently a development of the sternite (fig. 43, 9*s*, *a*). Eighth sternite unarmed and scarcely sheathing; its median portion is less strongly sclerotized, especially near the caudal margin, forming a pale triangular area destitute of, or with more sparse, setæ; from beneath the caudal margin of the sternite protrudes pale membrane that is usually hidden beneath the sclerite.

Allotype, male, Mount Daisen, Hôki altitude 3,900 feet, June 7, 1930 (*Hibi*).

An additional male, taken at Gokanosho, Higo, Kyūshū, altitude 700 feet, April 29, 1924 (*H. Hori*), has a slightly different hypopygium but still seems certainly to fall within the limits of the present species. Male hypopygium more heavily blackened. Ninth tergite, 9*t*, *b*, with the caudal margin less transverse, each lobe subtriangular in outline, its mesal slope with conspicuous denticles. The blackened spine on the ninth sternite, 9*s*, *b*, is somewhat stouter.

TIPULA POLLEX sp. nov. Plate 1, fig. 13; Plate 4, fig. 44.

Thorax clear ashy gray, the præscutal stripes scarcely evident; antennæ with scape and pedicel light yellow, flagellum black; fore femora extensively blackened, the remaining femora blackened only at tips; wings whitish, including a broad, almost complete crossband beyond cord; wing tip strongly infumed; R_{1+2} entire; basal abdominal segments yellow, the outer segments blackened; ninth tergite of hypopygium produced into a compressed median blade; basistyle produced into a compressed fingerlike lobe; eighth sternite unarmed.

Male.—Length, about 15 to 16 millimeters; wing, 15 to 16.

Frontal prolongation of head obscure yellow, slightly pruinose at base; nasus very short and blunt; palpi dark brown. Antennæ (male) of moderate length, if bent backward ending

shortly before base of abdomen; scape and pedicel light yellow; flagellum black. Head light ashy gray.

Mesonotum light ashy gray, the very slightly darker præscutal stripes almost obsolete. Pleura ashy gray, the dorsopleural region pale yellow. Halteres pale yellow, the knobs weakly darkened. Legs with the coxæ whitish pruinose; trochanters pale yellow; femora yellow basally, the tips conspicuously blackened, broadest on the forelegs, where about the outer three-fourths is included, very narrow on the middle and hind femora where only the tips are darkened; tibiæ brown; tarsi black; tibial spur formula 1-2-2; claws small, simple. Wings (Plate 1, fig. 13) with the ground color whitish, most apparent as a broad, nearly complete crossband beyond the cord, including approximately the basal half of cells R_2 , R_3 , and M_3 , the basal two-fifths of R_5 , and almost all of cell 1st M_2 ; other large areas of the ground color lie at two-thirds the length of cell M and before mid-length of 1st A ; wing tip broadly and conspicuously darkened, more intense in the radial field; stigma and a narrow seam on anterior cord dark brown; prearcular region and cells C and Sc light yellow; remainder of cells before cord a very pale brown; obliterative areas including the outer end of R_s and the basal sections of veins M_{1+2} and M_3 ; veins dark brown, flavous in the yellow areas. Macrotrichia on all longitudinal veins beyond cord; squama naked. Venation: R_{1+2} entire, with all but the base pale and without trichia; R_s more than twice the length of $m-cu$; cell 1st M_2 elongate, narrowed outwardly; petiole of cell M_1 about one-third longer than m .

Basal abdominal segments yellow, the tergites with a conspicuous median brown stripe that is almost continuous; fourth and succeeding tergites blackish, all but the last with broad, lateral, and less conspicuous pale caudal margins; sternites five to seven, inclusive, similar in color; hypopygium blackened. Male hypopygium (Plate 4, fig. 44) with the tergite and basistyle entirely separate; an additional small triangular sclerite cut from caudo-dorsal portion of ninth sternite, above the basistyle. Ninth tergite, $9t$, heavily sclerotized, the caudal margin with a highly compressed median blade. Basistyle, b , produced caudad into a flattened fingerlike lobe; ventrocaudal angle of basistyle produced slightly caudad beyond the level of the sternite. Inner dististyle, id , with the outer margin near base armed with several small spinous points, the more basal ones larger. Eighth sternite unarmed, its caudal margin evenly convex, not sheathing.

Habitat.—Japan (Honshiu).

Holotype, male, Mount Daisen, Hôki, altitude 4,550 feet, June 7, 1930 (*Hibi*). Paratopotype, male, altitude 5,200 feet, June 7, 1930 (*Hibi*).

Tipula pollex is very similar to *T. trupheoneura* Alexander, differing in the persistence of vein R_{1+2} , the almost obsolete præscutal stripes, and the very different male hypopygium.

TIPULA SETICELLULA LONGILIGULA subsp. nov. Plate 4, fig. 45.

Almost exactly as in the typical form but with the lobe of the eighth sternite (Plate 4, fig. 45, 8s) of quite different form, being elongate, narrowed outwardly, the lobe fringed with long, conspicuous, darkened setæ. On either side of lobe, a loose pencil of elongate setæ.

Habitat.—Japan (Honshiu).

Holotype, male, Mount Ohdai. Yamato, altitude 3,250 feet, June 5, 1930 (*Sakaguchi*). Allotopotype, female. Paratopotypes, 1 male, 1 female.

LIMONIINÆ

LIMONIINI

LIMONIA (DICRANOMYIA) SUSPENSa sp. nov. Plate 1, fig. 14; Plate 4, fig. 46.

General coloration reddish brown; antennæ with short-oval flagellar segments; wings with a faint brown tinge, the stigma pale; distal section of vein M_3 lying suspended in membrane, both the basal section of M_3 and m atrophied; male hypopygium with two or three rostral spines.

Male.—Length, about 5 millimeters; wing, 5.5.

Female.—Length, about 6 millimeters; wing, 5.5.

Rostrum yellow; palpi short, brown. Antennæ pale brown; flagellar segments short-oval, becoming slightly longer at outer end of organ; verticils short, inconspicuous. Head pale brown.

Mesonotum and pleura pale reddish brown to darker liver brown, without evident markings; pleura very sparsely and vaguely pruinose. Halteres pale, the knobs weakly darkened. Legs with the coxæ and trochanters reddish brown; remainder of legs obscure yellow. Wings (Plate 1, fig. 14) with a faint brown tinge, the stigma scarcely darker; veins brown. Macrotrichia lacking on free tip of Sc_2 , R_2 , and on anterior cord except for distal half of basal section of R_{4+5} . Venation: Sc_1 ending approximately opposite origin of Rs , Sc_2 a short distance from its tip; distal section of M_3 suspended in the membrane of wing, with both m and basal section of M_3 atrophied; $m-cu$ shortly before fork of M ; cell 2d A wide.

Abdomen, including the hypopygium, reddish brown. Male hypopygium (Plate 4, fig. 46) with the caudal margin of tergite, 9*t*, notched medially, the lateral lobes broadly rounded. Dorsal dististyle strongly curved. Ventral dististyle, *vd*, moderately large, exceeding the basistyle in area, the rostral prolongation long and slender, with two, or sometimes, three, rostral spines at its base, these arising from short, inconspicuous tubercles. Mesal-apical lobe of gonapophysis, *g*, slender, strongly curved, entirely pale.

Habitat.—Japan (Honshiu).

Holotype, male, Seto, Kii, strictly marine, June 10, 1930 (*Tokunaga*). Allotopotype, female. Paratopotype, 1 male.

Limonia (*Dicranomyia*) *suspensa* is the fourth marine crane fly belonging to this genus that has been discovered by Tokunaga at Seto.⁵ The curious venation of the medial field of the wing is constant in all specimens before me and certainly appears to represent a normal condition which will serve to separate this fly from all other regional species. In this regard, the insect lies about midway between the conditions found in the subgenera *Dicranomyia* and *Alexandriaria*, the former having either *m* or the basal section of *M*₃, or both, preserved, while the latter group has *m* and both sections of *M*₃ atrophied. I am referring the species to the subgenus *Dicranomyia*.

LIMONIA (RHIPIDIA) GARRULOIDES sp. nov. Plate 1, fig. 15; Plate 4, fig. 47.

Mesonotum dark grayish brown, the præscutum with a darker brown median stripe; antennæ (male) only 11-segmented, the flagellum with eight branched segments; halteres whitish; tarsi chiefly snowy white; wings milky white, the apex and a broad seam along cord infuscated; *Rs* relatively short, only about one-half longer than *R*₂₊₃; caudal margins of intermediate segments narrowly pale.

Male.—Length, about 4 millimeters; wing, 4.4.

Rostrum and palpi dark brown. Antennæ only 11-segmented, dark brown, the apical pedicles white; basal eight flagellar segments bipectinate, only the terminal segment being simple; branches shorter than in *garrula*. Head dark grayish brown.

Pronotum dark brown, more yellowish pollinose dorsally. Mesonotum dark grayish brown, the præscutum with a median darker brown stripe. Pleura chiefly dark grayish brown, not clearly visible in the unique type. Halteres whitish. Legs with the coxæ and trochanters dark; femora brownish black, brightened

⁵ Philip. Journ. Sci. 49 (1932) 112–115.

at bases, the fore femora yellow with only the tips narrowly blackened; fore tibiae brownish yellow, the tips narrowly and vaguely darkened, remaining tibiae brownish black; basitarsi snowy white, with only the extreme bases blackened, this slightly broader on the forelegs, where about one-sixth is included; posterior basitarsi with only a microscopic portion darkened; remainder of tarsi white, with only the terminal segment black. Wings (Plate 1, fig. 15) milky white, the apex and a broad area at the cord brown, a little less intense than the dark brown stigma, these two areas leaving a complete white crossband between them; region of arculus weakly darkened; veins pale in the ground, darker in the clouded areas. Venation: Sc_1 ending just beyond origin of R_s , Sc_2 not evident in the unique type; R_s relatively short, only about one-half longer than R_{2+3} ; cell 2d A relatively narrow.

Abdomen brownish black, the caudal margins of the intermediate tergites narrowly paler; outer segments uniformly darkened; hypopygium, including the ventral dististyle, darkened. Male hypopygium (Plate 4, fig. 47) with the tergite, 9t, transverse, the caudal margin notched to form two evenly rounded lobes. Rostral prolongation of ventral dististyle, *vd*, with the two spines arising from a common tubercle, the spines longer and slenderer than in *garrula*. Mesal-apical lobe of gonapophysis, *g*, relatively stout.

Habitat.—China (Szechwan).

Holotype, male, Mount Omei, altitude 3,500 feet, July 17, 1931 (*Franck*).

Limonia (Rhipidia) garruloides is most nearly allied to *L. (R.) garrula* Alexander, likewise from western China, differing most evidently in the reduced number of antennal segments, the more extensively whitened tarsi, and the distinct wing pattern and venation.

PEDICIINI

PEDICIA (TRICYPHONA) CUBITALIS sp. nov. Plate 1, fig. 16.

General coloration of thorax gray; antennae 13-segmented, the intermediate flagellar segments crowded, transverse; legs relatively short and stout; femora yellow, the tips narrowly blackened; wings light yellow, veins *R*, *Cu*, and the cord narrowly seamed with dark brown, forming a nearly complete discal triangle; abdomen orange, the tergites with a median black vitta, the outer segments darker.

Female.—Length, about 24 millimeters; wing, 18.5.

Rostrum gray; palpi brownish black; terminal segment short, not exceeding the penultimate. Antennæ 13-segmented; scape dark brown, the remainder of organ a trifle paler; intermediate flagellar segments short and crowded, transverse, the longest verticils unilaterally arranged, exceeding the segments; outer flagellar segments smaller and more elongate. Head gray; vertical tubercle very small.

Mesonotal præscutum light gray, with three darker gray stripes, the interspaces with yellow setæ; posterior sclerites of mesonotum darker, the caudal margin of the mediotergite slightly infumed. Pleura gray, more or less covered by yellowish pollen. Halteres pale yellow, the knobs weakly darkened. Legs relatively short and stout; coxæ and trochanters yellow; femora yellow, the tips narrowly brownish black; tibiæ brownish yellow, the tips narrowly darkened; tarsi black. Wings (Plate 1, fig. 16) with the ground color light yellow, cells C and Sc a little darker, more brownish yellow; restricted dark brown seams adjoining vein R, in cell R, extending from arculus to origin of Rs; along vein Cu; and a slightly wider seam along the cord, the three areas forming the three sides of a typical *Pedicia*-triangle, broken only between the origin of Rs and the cord; posterior prearcular region darkened; outer end of cell 1st M₂ weakly darkened; stigma yellowish brown; veins brownish yellow, darker in the infuscated areas, with extensive oblitative areas along cord. Venation: Sc₂ faint, a short distance before origin of Rs; r-m connecting with Rs before its fork; R₂ about opposite the fork of R₄₊₅; cell 1st M₂ closed; cord moderately oblique.

Abdomen with the basal tergite gray; tergites two to five orange, with a continuous median black vitta; outer segments more pruinose laterally, blackened medially; sternites orange, the outer segments darkened medially. Ovipositor with the dorsal shield and cerci blackened.

Habitat.—Japan (Honshiu).

Holotype, female, Mount Kurobegoro, Echiu, in subalpine meadow, altitude 7,800 feet, August 10, 1931 (*Imanishi*).

Pedicia (Tricyphona) cubitalis is most nearly allied to the Japanese *gaudens* (Alexander) and *grandior* (Alexander), all three species being closely related and suggesting in a striking manner the smaller species of the typical subgenus *Pedicia* Latreille. The present fly differs from the two above-mentioned species in the narrow but conspicuous dark cubital seam and the entirely flavescent central portion of the wing disk, this being

much paler than the margins in both listed species. Only the male sex of *gaudens* and *grandior* has been discovered; *gaudens* has the antennæ 13-segmented, the flagellum brownish yellow, much paler than the black scape and pedicel, and the basal abdominal tergites without a continuous black median stripe; *grandior* has only 11-segmented antennæ and has the dark wing pattern much reduced.

DICRANOTA (RHAPHIDOLABIS) SPINA sp. nov. Plate 1, fig. 17; Plate 4, fig. 48.

General coloration gray, the præscutum with three more blackish stripes; antennæ 13-segmented, black throughout; wings milky, the stigma scarcely indicated; cell R_3 nearly sessile, R_{2+3+4} being reduced to a punctiform element; male hypopygium with the median region of tergite broadly convex, each lateral arm produced into a straight acute spine; interbase a powerful flattened rod, the apex narrowed to an acute spine.

Male.—Length, about 5.5 millimeters; wing, 5.8.

Rostrum and palpi black. Antennæ 13-segmented, short, black throughout; flagellar segments oval, the verticils shorter than the segments; terminal segment smaller than the penultimate. Head gray.

Mesonotum gray, the præscutum with three ill-defined, more blackish stripes. Pleura gray. Halteres pale, the knobs slightly infuscated. Legs with the coxæ obscure yellow; trochanters yellow; femora yellow, passing into brown at about the basal third; remainder of legs brown. Wings (Plate 1, fig. 17) with a milky ground color, somewhat more grayish on outer half; stigma scarcely indicated; veins pale brown. Macrotrichia of veins short but abundant, on all veins beyond cord, M and 1st A except basal fifth, Cu except basal third, 2d A on about distal half. Venation: R_{1+2} about one-half R_2 ; cell R_3 nearly sessile, R_{2+3+4} indicated only by a punctiform element; m-cu more than one-half its length beyond fork of M.

Abdomen dark grayish brown; hypopygium more yellowish. Male hypopygium (Plate 4, fig. 48) with the median region of tergite, 9t, broadly convex, with numerous erect setæ; lateral arm of tergite produced into a slender, straight, acute spine. Basistyle, b, with the outer apical lobe a little produced and set with rather sparse spines; interbase, i, a powerful, flattened rod, at about two-thirds the length gradually curved to form a right-angled, gently curved, acute spine, the surface glabrous. Outer dististyle, od, stout-clavate, the apex with more-abundant spines.

Habitat.—Japan (Honshiu).

Holotype, male, Mount Kurobegoro, Echiu, in subalpine meadow, altitude 7,800 feet, August 13, 1931 (*Imanishi*).

Dicranota (Rhaphidolabis) spina is readily distinguished from the other regional species in eastern Asia by the milky white wings, with cell R_3 nearly sessile, and by the acute, straight, lateral spine of the ninth tergite of the male hypopygium.

DICRANOTA (AMALOPINA) MEGAPLAGIATA sp. nov. Plate 1, fig. 18.

Allied to *gibbera*; general coloration of thorax pale yellow, the postnotum somewhat darker; wings whitish, sparsely variegated with brown, including a major area extending from costa across anterior cord; cell 1st M_2 open by atrophy of m.

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

Rostrum and palpi brownish black. Antennæ with the scape black; flagellum light yellow. Head grayish brown.

Mesonotum pale yellow, the postnotum somewhat darker. Pleura pale yellow. Halteres pale yellow throughout. Legs all detached; what appear to represent the forelegs have the femora and extreme bases of tibiæ brownish black; remainder of legs whitish, the outer tarsal segments darkened; one other pair of legs is present, whitish, the tips of the femora, narrower tips of tibiæ, and outer segments of tarsus darkened. Wings (Plate 1, fig. 18) whitish, with a restricted brown pattern, including a single large area extending from costa across wing to fork of M ; additional small brown dots, distributed as follows: Sc_2 , origin of R_s , R_2 , posterior cord, marginal dots at ends of longitudinal veins, forks of M_{1+2} and M_{3+4} , and two or three small spots in cell Cu adjoining vein 1st A ; veins pale, darker in the infuscated areas.

Abdominal tergites bicolorous, the apices conspicuously dark brown, the central parts of the basal rings obscure yellow, the lateral portions more darkened; sternites more extensively yellow, the caudal margins of the segments narrowly darkened.

Habitat.—China (Szechwan).

Holotype, female, Mount Omei, altitude 7,000 feet, July 17, 1931 (*Franck*).

The present fly is undoubtedly allied to *D. (A.) elegantula* (Brunetti) and *D. (A.) gibbera* (Alexander), differing from all known species by the large darkened area on the anterior cord of the wings. In *gibbera*, the fore and middle femora are darkened, while the posterior femora are chiefly pale. It seems certain that this is the condition obtaining in the present fly.

ULA SUCCINCTA sp. nov. Plate 1, fig. 19; Plate 4, fig. 49.

General coloration yellowish brown, the head dark; femora yellow, the tips vaguely darkened; wings brownish yellow, almost immaculate; stigma uniformly pale yellowish brown; abdominal tergites uniformly dark brown; basal sternites yellow.

Male.—Length, about 5.5 millimeters; wing, 5.5.

Rostrum obscure yellow, darker medially above; palpi brown, the elongate terminal segment paling to obscure yellow. Antennæ with the scape and pedicel brownish yellow; flagellum dark brown; flagellar segments (male) subcylindrical, with short, inconspicuous verticils. Head dark brown, possibly pruinose in dry specimens.

Mesonotum and pleura yellowish brown, the humeral region of præscutum obscure yellow. Halteres pale. Legs with the coxæ yellow, the fore coxæ slightly darkened at bases; trochanters yellow; femora and tibiæ obscure yellow, the tips of the former vaguely darkened; tarsi yellow, passing to brown on outer segments. Wings (Plate 1, fig. 19) brownish yellow, almost immaculate, the stigma uniformly pale yellowish brown, without distinctly darkened ends; an almost imperceptible clouding along anterior cord; veins brownish yellow.

Abdominal tergites uniformly dark brown; sternites two to five yellow. Male hypopygium (Plate 4, fig. 49) with the ninth tergite, 9*t*, gradually narrowed outwardly, the caudal margin with a deep U-shaped median notch, the lateral lobes obtusely rounded at tips. Dististyle, *d*, relatively long and slender, the outer end with about fifteen black spines.

Habitat.—Japan (Honshiu).

Holotype, alcoholic male, Mount Mitake, Musashi, May 10, 1931 (Oda).

Ula succincta is closest to *U. cincta* Alexander (Hokkaido), which is still known to me only in the female sex. The present fly differs in the more nearly immaculate wings, with the central portion of the stigmal area concolorous with the ends, and in the uniformly darkened abdominal tergites.

HEXATOMINI

LIMNOPHILA (PRIONOLABIS) ODAI sp. nov. Plate 1, fig. 20; Plate 4, fig. 50.

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

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

Closely allied and generally similar to *submunda*, differing especially in slight details of the male hypopygium. Wings (Plate

1, fig. 20) unusually broad. Legs with the femora obscure yellow, the tips narrowly dark brown, the latter approximately equal in degree on all legs, including the fore pair, embracing (male) about the outer fourth to fifth. Male hypopygium (Plate 4, fig. 50) with the outer dististyle, *od*, bearing a single major subapical spine. Inner dististyle, *id*, with two, long, erect, subterminal spines, the apex beyond this point slender. Gonapophyses, *g*, pale throughout.

Limnophila (*Prionolabis*) *odai* is named in honor of the collector, Prof. Bunkichi Oda, who has collected numerous Tipulidæ in the vicinity of Tokyo. The only other species that is close to this fly is *L. (P.) submunda* Alexander, of Honshiu and Kyūshū.⁶ The latter fly is the only described Japanese member of the subgenus with dusky gonapophyses, and presents a general appearance very different from that found in the present fly.

ERIOPTERINI

ORMOSIA MACHIDANA sp. nov. Plate 1, fig. 21; Plate 4, fig. 51.

General coloration of mesonotal præscutum dark reddish brown, with a narrow, darker brown, median vitta; posterior sclerites of mesonotum and the pleura brownish black; halteres yellow; wings with anal veins convergent; male hypopygium with the inner dististyle a slender, gently curved rod; two pairs of gonapophyses, the inner pair slightly expanded and weakly roughened at tips.

Male.—Length, about 4.5 millimeters; wing, 5.3; antenna, about 1.25.

Rostrum and palpi black. Antennæ brownish black, relatively long, as shown by the measurements; flagellar segments elongate, with verticils that exceed the segments. Head blackish.

Mesonotal præscutum dark reddish brown, with a narrow, darker brown, median vitta; humeral region obscure yellow, inclosing the blackish pseudosutural foveæ; posterior sclerites of mesonotum and the pleura brownish black, sparsely pruinose. Halteres yellow. Legs with the coxæ brown; trochanters obscure yellow; legs yellowish brown, the outer tarsal segments darker. Wings (Plate 1, fig. 21) with a brownish tinge, the stigma darker; basal portion of wing more yellowish; veins brown. Venation: Sc_2 nearly opposite midlength of R_s ; cell 1st M_2 open

⁶ Entomol. Mag. Kyoto 3 (1919) 125-126.

by atrophy of basal section of M_3 ; vein 2d A strongly sinuous, cell 1st A being widest at midlength.

Abdomen, including hypopygium, dark brown. Male hypopygium (Plate 4, fig. 51) with the tergite, 9t, appearing as a conspicuous spatula. Outer dististyle, *od*, broad, dilated at near midlength, the apex blackened and acutely pointed. Inner dististyle a slender, gently curved rod. Gonapophyses, *g*, in two pairs, the outer pair appearing as slender blackened spines, the inner pair stouter, their apices weakly expanded and microscopically roughened.

Habitat.—Japan (Honshiu).

Holotype, male, Mount Shirouma, Shinano, August 8, 1931 (*Machida and Nakamura*).

I take pleasure in naming this distinct *Ormosia* in honor of my old friend Dr. Jiro Machida, to whom I am deeply indebted for many kind favors in the past decade. The species is distinct from all others in eastern Asia in the structure of the male hypopygium. It comes closest to the group containing *O. takahashii* Alexander, *O. takeuchii* Alexander, and *O. tokunagai* Alexander, yet is amply distinct in the conformation of the dististyles and gonapophyses.

MOLOPHILUS PICTIFEMORATUS sp. nov. Plate 1, fig. 22.

Belongs to the *gracilis* group and subgroup; rostrum, palpi, and antennæ black; head and thorax dark brown; halteres yellow; femora brown, the tips broadly blackened, preceded by a much narrower, clear yellow ring; wings with a strong dusky tinge; vein 2d A ending before level of m-cu.

Female.—Length, about 3 millimeters; wing, 3.5.

Rostrum and palpi black. Antennæ black throughout; flagellar segments oval, with long, conspicuous verticils. Head dark brown.

Mesonotum almost uniformly dark brown, the anterior lateral pretergites restrictedly obscure yellow, the posterior sclerites of notum even darker. Pleura brownish black. Halteres yellow. Legs with the femora restrictedly pale basally, passing into brown, the tips broadly and conspicuously blackened, preceded by a much narrower clear yellow ring; tibiæ dark brown, the bases narrowly yellow, the tips slightly more broadly brownish black; tarsi dark brown. Wings (Plate 1, fig. 22) with a strong dusky tinge, the prearcular region narrowly and vaguely obscure

yellow; veins pale brown, the macrotrichia darker. Venation: R_2 in approximate alignment with r-m; vein 2d A relatively short, ending just before the level of m-cu.

Abdomen brownish black, the basal sternites paler. Ovipositor with the cerci very long and only slightly upcurved.

Habitat.—China (Szechwan).

Holotype, female, Mount Omei, altitude 3,500 feet, August 16, 1931 (*Franck*).

Molophilus pictifemoratus differs from all regional species of the genus in the pattern of the legs, especially of the femora.

MOLOPHILUS NAKAMURAI sp. nov. Plate 1, fig. 23; Plate 4, fig. 52.

Belongs to the *gracilis* group and subgroup; general coloration yellow; femora with more than the outer half black, the bases yellow; tibiæ light yellow, the tips narrowly brownish black; wings relatively narrow, yellowish gray, the costal border pale yellow; male hypopygium with the dorsal lobe of basistyle with setæ to tip; two simple dististyles, one obtuse at apex, the other narrowed to an acute point.

Male.—Length, about 3.5 to 4 millimeters; wing, 4.3 to 5.

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

Rostrum and palpi dark brown. Antennæ short in both sexes, if bent backward extending to shortly beyond the wing root; basal four or five segments yellow, the remainder of flagellum brown. Head gray, the genæ and occiput in cases more yellowish.

Mesonotum light orange, the lateral pretergites pale yellow; posterior sclerites of mesonotum more testaceous. Pleura testaceous-yellow. Halteres yellow. Legs with the coxæ and trochanters yellow; femora with about the basal third obscure yellow, the remainder brownish black; tibiæ abruptly pale yellow, the tips narrowly brownish black; basal segments of tarsus obscure yellow, the narrow tips of the segments darkened; outer tarsal segments dark brown. Wings (Plate 1, fig. 23) narrow, pale yellowish gray, the prearcular and costal portions clear yellow; veins pale and difficult to distinguish; trichia pale brown, those of the costal fringe light yellow. Venation: Vein 2d A long, extending nearly parallel to 1st A for most of its length.

Abdominal tergites brownish yellow, the caudal margins of segments narrowly paler; sternites and hypopygium clear yellow. Male hypopygium (Plate 4, fig. 52) with the dorsal lobe of

basistyle, *b*, moderately stout, with setæ to its tip. Outer dististyle, *od*, at apex expanded into a weak club that is microscopically spiculate. Inner dististyle, *id*, a little shorter, gradually narrowed to a needlelike point, the extreme tip pale.

Habitat.—Japan (Honshiu).

Holotype, male, Mount Shirouma, Shinano, August 8, 1931 (*Machida and Nakamura*). Allotopotype, female. Paratopotypes, 4 males.

Molophilus nakamurai is named in honor of Mr. Toyoji Nakamura, collector of a number of rare species in the Japanese Alps. The peculiar pattern of the legs is quite distinctive of the species. The structure of the male hypopygium is much as in *M. pegasus* Alexander, but in all other respects the two flies are clearly different.

MOLOPHILUS TAKAOENSIS sp. nov. Plate 1, fig. 24; Plate 4, fig. 53.

Belongs to the *gracilis* group and subgroup; general coloration black; halteres yellow; male hypopygium with the dorsal lobe of basistyle short and obtuse; inner dististyle sinuous, bearing an acute lateral spine at about midlength.

Male.—Length, about 2.8 millimeters; wing, 3.3.

Described from a dried specimen formerly preserved in spirit.

Rostrum black; palpi brownish yellow, the terminal segment more infuscated. Antennæ (male) short, if bent backward extending to shortly beyond the wing root; scape brown, the succeeding four or five segments light yellow, the outer segments infuscated. Head black.

Mesonotum and pleura shiny black; if any bloom is normally present, it is destroyed by immersion in spirit. Halteres yellow. Legs with the fore coxæ light brownish yellow, the remaining coxæ light yellow; trochanters yellow; remainder of legs chiefly yellow, the tips of femora and tibiæ narrowly and weakly darkened; terminal tarsal segments infuscated; one detached leg, evidently one of the fore pair, has about the distal half of femora dark brown, the tibia with a pale brown subbasal ring; most of vestiture of legs is lost through immersion in spirit, but enough persists to indicate that the setæ of the yellow portions of the legs are pale in color. Wings (Plate 1, fig. 24) with a weak brown tinge; veins darker brown. Venation: R_{4+5} in general longitudinal alignment with Rs; petiole of cell M_3 about twice m-cu; vein 2d A relatively short, ending before m-cu.

Abdomen, including hypopygium, brownish black. Male hypopygium (Plate 4, fig. 53) with the dorsal lobe, *db*, of basistyle short and obtuse; mesal lobe, *mb*, darkened, densely set with numerous recurved setulæ; ventral lobe longest, with a marginal fringe of coarse setæ. Two dististyles, the outer, *od*, a slender simple rod, with appressed denticles on outer two-thirds; inner style, *id*, longer, strongly sinuous, at near midlength bearing a slender acute spine, beyond which point the surface of style is roughened into appressed teeth, the long acute apex glabrous.

Habitat.—Japan (Honshiu).

Holotype, male, Mount Takao, Musashi, June 1, 1930 (*Oda*).

Molophilus takaoensis is most generally similar to *M. trifilatus* Alexander, differing most evidently in the very different male hypopygium.

ILLUSTRATIONS

[Legend: *a*, aedeagus; *b*, basistyle; *d*, dististyle; *db*, dorsal lobe of basistyle; *g*, gonapophysis; *i*, interbase; *id*, inner dististyle; *mb*, mesal lobe of basistyle; *od*, outer dististyle; *s*, sternite; *t*, tergite; *vb*, ventral lobe of basistyle; *vd*, ventral dististyle.]

PLATE 1

- FIG. 1. *Dolichopeza* (*Oropeza*) *inomatai* sp. nov.; venation.
 2. *Macgregoromyia brevicula* sp. nov.; venation.
 3. *Tipula* (*Schummelia*) *bidenticulata* sp. nov.; venation.
 4. *Tipula* (*Schummelia*) *jocosipennis* sp. nov.; venation.
 5. *Tipula* (*Schummelia*) *imanishii* sp. nov.; venation.
 6. *Tipula* (*Acutipula*) *subturbida* sp. nov.; venation.
 7. *Tipula sakaguchiana* sp. nov.; venation.
 8. *Tipula quadrispicata* sp. nov.; venation.
 9. *Tipula sempiterna* sp. nov.; venation.
 10. *Tipula hibii* sp. nov.; venation.
 11. *Tipula legalis* sp. nov.; venation.
 12. *Tipula illegitima* sp. nov.; venation.
 13. *Tipula pollex* sp. nov.; venation.
 14. *Limonia* (*Dicranomyia*) *suspensa* sp. nov.; venation.
 15. *Limonia* (*Rhipidia*) *garruloides* sp. nov.; venation.
 16. *Pedicia* (*Tricyphona*) *cubitalis* sp. nov.; venation.
 17. *Dicranota* (*Rhaphidolabis*) *spina* sp. nov.; venation.
 18. *Dicranota* (*Amalopina*) *megaplagiata* sp. nov.; venation.
 19. *Ula succincta* sp. nov.; venation.
 20. *Limnophila* (*Prionolabis*) *odai* sp. nov.; venation.
 21. *Ormosia machidana* sp. nov.; venation.
 22. *Molophilus pictifemoratus* sp. nov.; venation.
 23. *Molophilus nakamurai* sp. nov.; venation.
 24. *Molophilus takaoensis* sp. nov.; venation.

PLATE 2

- FIG. 25. *Dolichopeza* (*Oropeza*) *inomatai* sp. nov.; male hypopygium.
 26. *Macgregoromyia brevicula* sp. nov.; male hypopygium.
 27. *Tipula* (*Schummelia*) *bidenticulata* sp. nov.; male hypopygium, details.
 28. *Tipula* (*Schummelia*) *jocosipennis* sp. nov.; male hypopygium, lateral aspect; ninth tergite.
 29. *Tipula* (*Schummelia*) *imanishii* sp. nov.; male hypopygium, details.
 30. *Tipula* (*Acutipula*) *intacta* sp. nov.; male hypopygium, details.
 31. *Tipula* (*Acutipula*) *subturbida* sp. nov.; male hypopygium, inner dististyle.
 32. *Tipula sakaguchiana* sp. nov.; male hypopygium, details.

PLATE 3

- FIG. 33. *Tipula (Vestiplex) serridens* Alexander; male hypopygium, details.
34. *Tipula quadrispicata* sp. nov.; male hypopygium, details.
35. *Tipula tetracantha* Alexander; male hypopygium, details.
36. *Tipula curvicauda* Alexander; male hypopygium, lateral aspect.
37. *Tipula curvicauda* Alexander; male hypopygium, ninth tergite.
38. *Tipula curvicauda* Alexander; male hypopygium, outer dististyle.
39. *Tipula curvicauda* Alexander; male hypopygium, inner dististyle.
40. *Tipula sempiterna* sp. nov.; male hypopygium, details.
41. *Tipula sempiterna* sp. nov.; male hypopygium, details.
42. *Tipula legalis* sp. nov.; male hypopygium, details.

PLATE 4

- FIG. 43. *Tipula trupheoneura* Alexander; male hypopygium, details.
44. *Tipula pollex* sp. nov.; male hypopygium, details.
45. *Tipula seticellula longiligula* subsp. nov.; male hypopygium, eighth sternite.
46. *Limonia (Dicranomyia) suspensa* sp. nov.; male hypopygium.
47. *Limonia (Rhipidia) garruloides* sp. nov.; male hypopygium.
48. *Dicranota (Rhaphidolabis) spina* sp. nov.; male hypopygium.
49. *Ula succincta* sp. nov.; male hypopygium.
50. *Limnophila (Prionolabis) odai* sp. nov.; male hypopygium.
51. *Ormosia machidana* sp. nov.; male hypopygium.
52. *Molophilus nakamurai* sp. nov.; male hypopygium.
53. *Molophilus takaoensis* sp. nov.; male hypopygium.

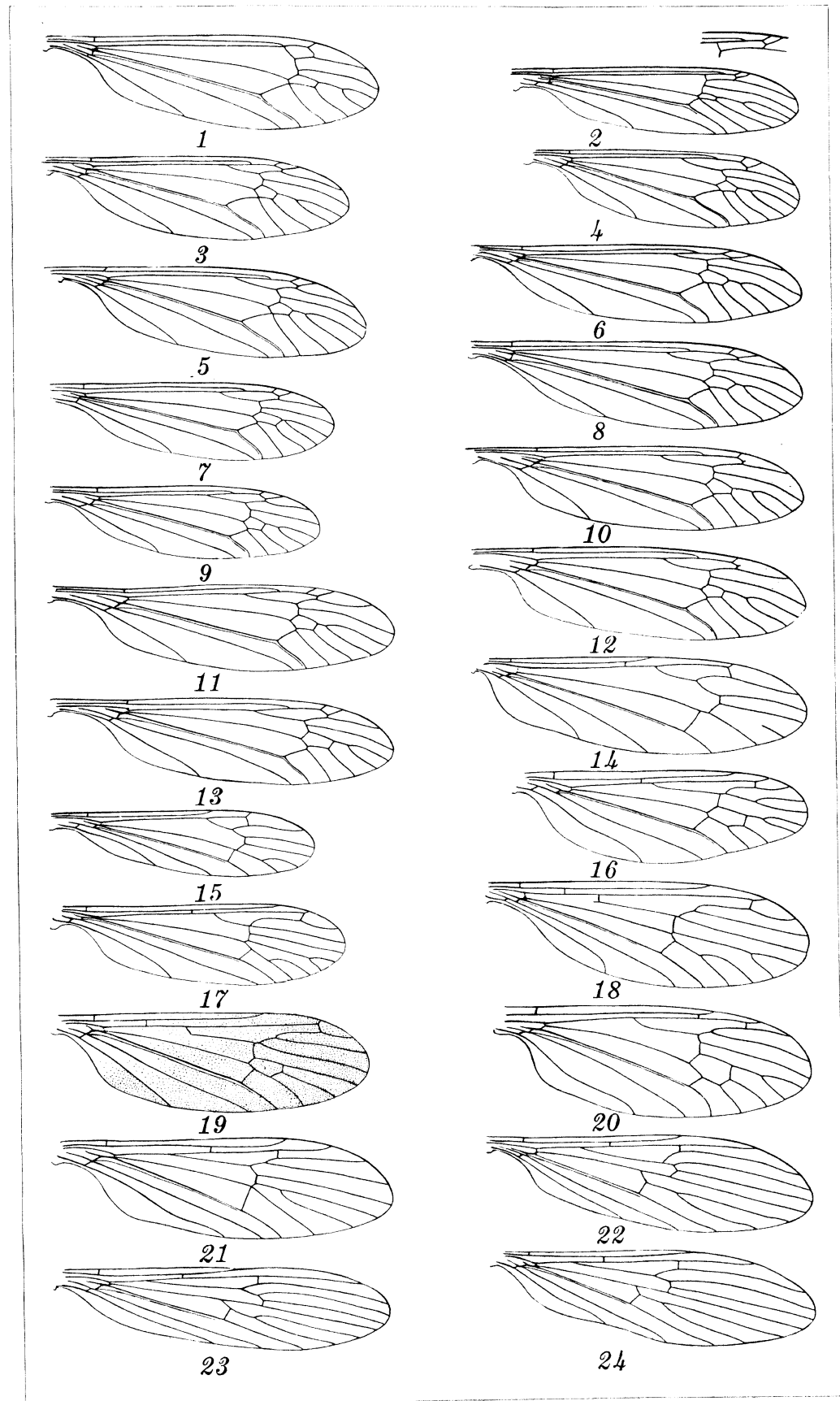


PLATE 1.

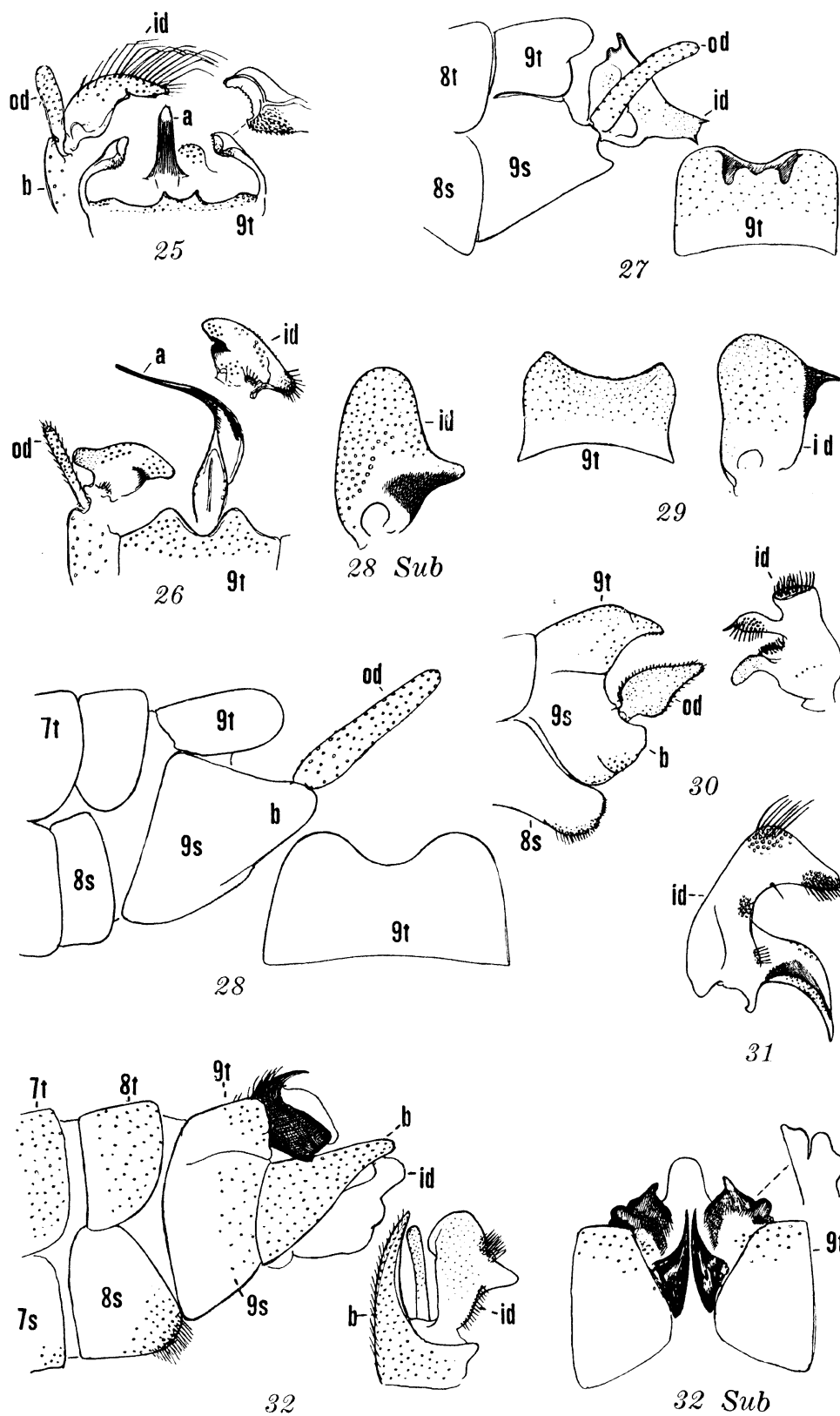


PLATE 2.

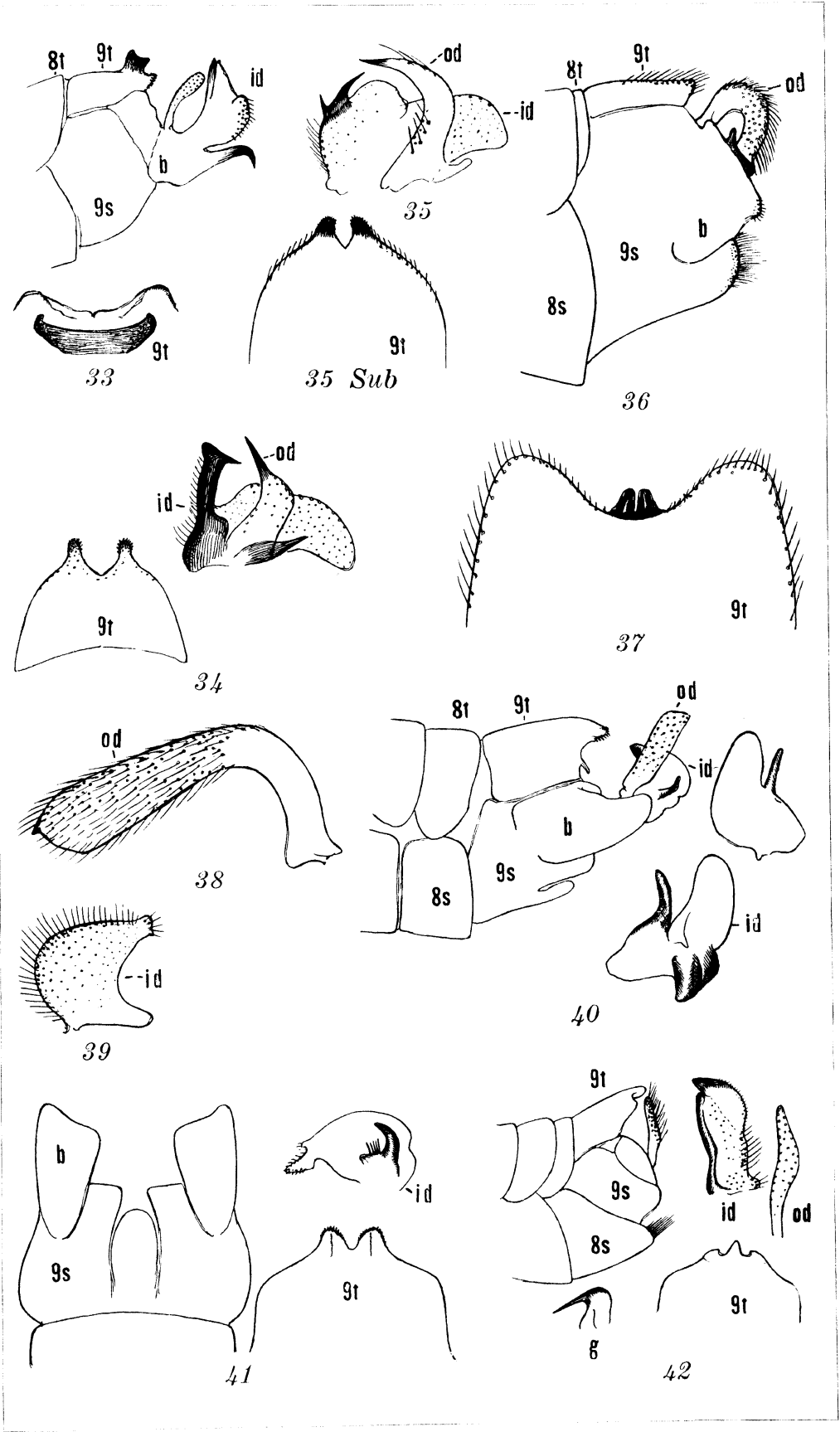


PLATE 3.



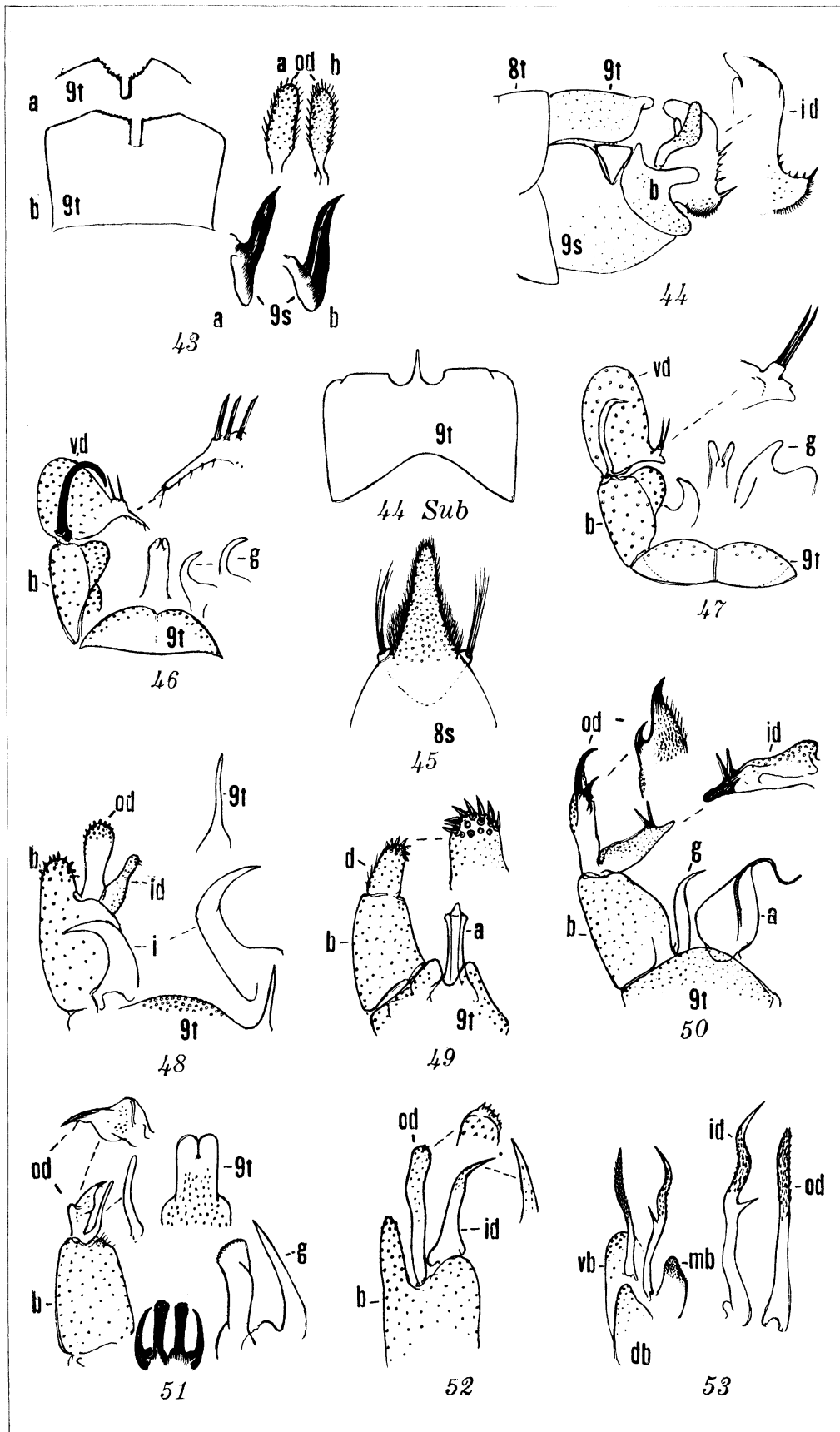


PLATE 4.