

NEW OR LITTLE-KNOWN TIPULIDÆ FROM EASTERN ASIA (DIPTERA), XXIII¹

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THREE PLATES

The crane flies discussed in this paper are chiefly derived from three sources; namely, Celebes, collected by Mr. Charles F. Clagg; Formosa, by Mr. J. Linsley Gressitt; and Kashmir, by Miss Vivien R. Hutchinson. Scattered additional species were secured in Java by Dr. Ian Mackerras; in Formosa by Prof. Syûti Issiki; and on Mount Omei, western China, by the Rev. Mr. George M. Franck. One further species, from eastern Siberia, was included in the rich collections belonging to the Russian Academy of Sciences, Leningrad, sent to me for study by Dr. A. von Stackelberg. I wish to express my deepest thanks to all of the above-named entomologists for their continued kindly coöperation in my study of the Tipulidæ of Asia. Except where indicated to the contrary, types of the various novelties are preserved in my collection. As has been done in other parts under this series of reports, I am including a species of Trichoceridæ, preferring this course to preparing a special paper on this insect.

TRICHO CERIDÆ

TRICHO CERA ARISANENSIS sp. nov. Plate 1, fig. 1.

General coloration of thorax brownish yellow, the præscutum with three darker brown stripes; pleura chiefly dark brown, variegated by paler brown; femora brown, their bases obscure yellow; wings yellowish gray, sparsely patterned with brown; abdominal segments conspicuously bicolorous, the basal portion brown, the outer ring light yellow.

Female.—Length, about 6 millimeters; wing, 6.5.

Rostrum dark brown; palpi elongate, brownish black. Antennæ black, the scape and pedicel paler; outer flagellar segments

¹ Contribution from the entomological laboratory, Massachusetts State College.

paler than the basal ones; flagellum much more elongate and much slenderer than in *pictipennis*, the individual segments correspondingly lengthened. Head brown.

Mesonotal præscutum brownish yellow with three darker brown stripes; scutal lobes dark brown, the median area more yellowish; scutellum and mediotergite more testaceous brown. Pleura chiefly dark brown, variegated by paler brown on the pteropleurite and posterior anepisternum; dorsopleural membrane yellow. Halteres pale yellow, the knobs dark brown. Legs with the coxæ and trochanters yellowish testaceous; femora obscure yellow basally, passing into brown outwardly; tibiæ and tarsi brown. Wings (Plate 1, fig. 1) with the ground color yellowish gray, sparsely patterned with brown, including areas at origin of Rs, along cord, on vein R_2 , outer end of cell 1st M_2 , and the fork of vein M_{1+2} ; paler and less evident areas in the outer radial field; no darkening at end of vein 2d A; veins brown. Venation: R_{2+3+4} a little shorter than R_{1+2} ; Sc_1 ending about opposite fork of R_{2+3+4} ; cell M_1 subequal to or a little longer than its petiole; m-cu shortly before fork of M_{3+4} ; vein 2d A somewhat angular, at extreme outer end bent suddenly into margin.

Abdominal segments conspicuously bicolorous, the basal two-thirds of the individual segments brown, the outer third light yellow. Cerci pale yellow, the tips acute.

Habitat.—Formosa.

Holotype, female, Arisan, altitude 7,640 feet, May 24, 1934 (*Gressitt*).

The nearest allied species is *Trichocera pictipennis* Alexander, of Japan and Korea, which differs conspicuously in the coloration of the thorax and abdomen, in the shorter antennæ, and in the details of the wing pattern. The genus *Trichocera* is new to the fauna of Formosa.

TIPULIDÆ

TIPULINÆ

LONGURIO (LONGURIO) VARICEPS sp. nov. Plate 1, fig. 2.

General coloration of thorax black; head fulvous-orange, with a conspicuous black longitudinal stripe on either side of vertex; halteres and legs black throughout; wings strongly tinged with black, the costal portion and seams along vein Cu and anterior cord still darker; Rs short, a little less than cell 1st M_2 ; abdomen with segments six to nine, inclusive, black; tergites two to five

orange, narrowly bordered by blackish; basal sternites conspicuously bicolorous, black, variegated by yellow.

Male.—Length, about 21 millimeters; wing, 16.5; abdomen alone, 16.5.

Female.—Length, about 25 millimeters; wing, 18; abdomen alone, 20.

Rostrum and palpi velvety black. Antennæ black throughout; outer verticils very long and conspicuous. Head dull fulvous-orange, with a conspicuous black longitudinal stripe extending from either side of the vertical tubercle along the orbital region, behind becoming more diffuse and involving the occipital region, leaving the median area of the posterior vertex of the ground color.

Thoracic dorsum and pleura entirely deep velvety black. Halteres and legs black throughout. Wings (Plate 1, fig. 2) very strongly tinged with black, the prearcular region, cells C and Sc, stigma, and seams along vein Cu and on anterior cord darker; paler longitudinal streaks in cells R, M, and 1st A in female sex; veins black. Venation: Rs shorter than cell 1st M₂ and a little longer than m-cu.

Abdomen with basal segment velvety black; tergites two to five, inclusive, orange, narrowly bordered on the lateral and caudal portions by black; succeeding tergites and hypopygium black; basal sternites conspicuously bicolorous, black, variegated more extensively on sides of basal ring with yellow, less extensively and distinctly on outer ring just before apex.

Habitat.—Formosa.

Holotype, male, Hori, altitude 2,340 feet, June 7, 1934 (*Gressitt*).

Allotopotype, female. Paratopotype, female.

The nearest ally is *Longurio* (*Longurio*) *rubriceps* Edwards, likewise from Formosa, which differs in the coloration of the head, legs, and pattern of the basal abdominal sternites, and in the elongate Rs.

TIPULA (ACUTIPULA) ALBOPLAGIATA sp. nov. Plate 1, fig. 3; Plate 2, figs. 25, 26.

Allied to *Tipula* (*Acutipula*) *munda*; antennal flagellum weakly bicolorous, the basal enlargements of the individual segments a trifle darker than the remainder; pleura yellow; legs black; wings very strongly tinged with brown, variegated by a whitish oblitative area before cord and by a pale yellow longitudinal streak behind vein Cu; abdomen yellow, the outer segments brownish black; male hypopygium with tergal lobe

bifid; inner dististyle with outer lobe terminating in a very slender, acute spine; eighth sternite fringed with yellow setæ.

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

Frontal prolongation of head brown; nasus dark brown, conspicuous; palpi black. Antennæ with scape and pedicel dark brown; flagellum very weakly bicolorous, the basal enlargement a trifle darker brown than the remainder. Head dark brownish gray.

Pronotum uniformly reddish brown. Mesonotal præscutum gray, with four more olive-gray stripes that are poorly defined against the ground, the stripes feebly delimited by very narrow darker borders; scutal lobes brownish gray, the median region more yellowish; posterior sclerites of mesonotum chiefly yellow pollinose. Pleura yellow, the pleurotergite gray pruinose. Halteres brownish black throughout. Legs with the coxæ and trochanters yellow; remainder of legs black, excepting only the very narrow femoral bases which are yellow. Wings (Plate 1, fig. 3) very strongly tinged with brown, the prearcular region and cells C and Sc even darker brown; stigma small, yellow; ground color variegated by a conspicuous whitish obliterative area before the cord, extending from the proximal end of the stigma into cell 1st M_2 but not or scarcely invading cell M_3 ; a conspicuous, pale yellow, longitudinal stripe extending almost the entire length of wing immediately behind the basal section of vein Cu_1 , involving cell Cu_1 and the adjoining portion of cell Cu; veins dark brown. Macrotrichia of veins sparse; squama with setæ. Venation: Petiole or cell M_1 shorter than m.

Abdomen yellow, the tergites with a narrow, brown, sub-lateral border; segments six to nine, inclusive, more uniformly brownish black. Male hypopygium (Plate 2, fig. 25) with the ninth tergite (Plate 2, fig. 26, 9t) narrowed at outer end into a depressed yellow lobe, the apex of which has a deep U-shaped median notch, the slender lobes thus formed set with blackened spines. Outer dististyle, *od*, flattened, relatively narrow, the outer margin nearly straight, the inner one evenly curved. Inner dististyle, *id*, with the outer lobe terminating in a very slender, acute spine; inner lobe darkened, simple, the apex obtuse. Eighth sternite (Plate 2, fig. 26, 8s) with the caudal margin transverse, fringed with yellow setæ, those at the outer lateral portions a little longer and slightly stouter.

Habitat.—Formosa.

Holotype, male, Arisan, altitude 7,640 feet, May 24, 1934 (*Gressitt*).

Tipula (*Acutipula*) *alboplagiata* is very different from other regional members of the *munda* group in the black legs, darkened wings, and structure of the male hypopygium, especially of the inner dististyle which is distinct from that of all other described species known to me.

TIPULA (SCHUMMELIA) INDIFFERENS sp. nov. Plate 1, fig. 4; Plate 2, figs. 27, 28.

Belongs to the *continuata* group; antennæ with flagellar segments unicolorous; mesonotal præscutum obscure brownish yellow, with three brownish gray stripes, the median one divided by a capillary blackish line; knobs of halteres chiefly light yellow; wings grayish brown, the stigma dark brown; restricted paler brown clouds in outer end of cell 1st M_2 , on m-cu, and on distal section of Cu_1 ; squama naked; abdomen orange, segments six to nine uniformly black.

Male.—Length, 12 to 13 millimeters; wing, 13 to 14.5.

Frontal prolongation of head dark brown above, paling to yellow beneath and on sides; nasus elongate. Antennæ (male) of moderate length, if bent backward extending about to mid-distance between the bases of the wings and halteres; scape and pedicel yellow; basal two or three flagellar segments brownish yellow, the succeeding segments passing into black; verticils a little longer than the segments. Head brownish gray, more or less pruinose.

Mesonotal præscutum obscure brownish yellow, with three brownish gray stripes, the median one divided by a capillary more-blackish line; lateral stripes vaguely bordered by darker, especially along their mesal edge; centers of scutal lobes darkened; scutellum infuscated basally, margined with yellow; post-notum yellow. Pleura chiefly yellow or brownish yellow, the pleurotergite darker and weakly pruinose. Halteres dusky, the base of stem obscure yellow, the knob chiefly light yellow. Legs with the coxæ and trochanters yellow; femora obscure yellow, before the tips narrowly blackened, the extreme apices restrictedly pale; tibiæ brown, the tips slightly darker; tarsi black. Wings (Plate 1, fig. 4) with the ground color grayish brown, very weakly patterned with darker; stigma oval, dark brown; paler brown clouds across outer end of cell 1st M_2 , along m-cu and outer section of vein Cu_1 ; oblitative area extensive, from the outer end of cell R into base of cell M_3 ; veins dark brown. Squama naked. Venation: R_{1+2} entire but without trichia except at base; Rs shorter than m-cu; petiole of cell M_1 shorter than m.

Abdomen orange, the pleural region narrowly dusky; segments six to nine uniformly black, only the outer dististyle pale yellow. Male hypopygium (Plate 2, fig. 27) with the caudal border of the tergite (Plate 2, fig. 28, 9t) deeply emarginate, blackened, fringed with delicate yellow setæ. Outer dististyle, *od*, slightly flattened, narrowed outwardly, the tip obtuse. Inner dististyle as shown (Plate 2, fig. 28, *id*); setæ of outer margin approximately 20 in number.

Habitat.—Kashmir.

Holotype, male, Srinagar, altitude 5,000 feet, June 9, 1934 (*Miss Hutchinson*). Paratopotype, male; paratypes, 3 males, Kaj-Nag Range, altitude 8,000 feet, May 30 to June 1, 1934.

Tipula (*Schummelia*) *indifferens* is very distinct from the other regional members of the subgenus in the almost unpatterned wings and the conspicuous coloration of the abdomen. The nearest allies would seem to be *continuata* Brunetti and *xanthopleura* Edwards, both with a very distinct pattern of the wings and abdomen.

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

Belongs to the *continuata* group; præscutal stripes distinct, narrowly bordered by darker brown; thoracic pleura striped longitudinally with brown; knobs of halteres extensively yellow; femora with a narrow, nearly terminal, black ring; wings whitish subhyaline, with a conspicuous brown pattern; cell Sc uniformly blackened; cell 2d A yellow, variegated by two dark clouds; squama naked; abdominal tergites reddish, narrowly lined with darker; a subterminal black ring on abdomen; male hypopygium with the caudal margin of tergite tridentate; basistyles bearing conspicuous pencils of reddish setæ.

Male.—Length, 12 to 13 millimeters; wing, 12.5.

Female.—Length, 17 to 19 millimeters; wing, 15 to 16.

Frontal prolongation of head yellow above and beneath, narrowly darkened on sides; nasus elongate, yellow. Antennæ (male) of moderate length, if bent backward extending approximately to wing root; scape and pedicel light yellow; flagellar segments dark brown, the extreme outer end of the individual segments a trifle paler; longest verticils subequal to the segments. Head brownish yellow, clearer yellow on anterior vertex; a narrow brownish median line.

Mesonotal præscutum yellow, with three conspicuous brown stripes that are narrowly bordered by darker brown, the median one further divided by a dark vitta; scutal lobes chiefly covered

by brown areas, the median region of scutum pale; scutellum and mediotergite chiefly darkened medially, paler laterally. Pleura yellow, conspicuously striped longitudinally with dark, including a dorsal stripe extending from the propleura across the ventral anepisternum, and a more interrupted, fainter area on the ventral sternopleurite and meron. Halteres with the stem obscure yellow, a little brighter at base; base of knob brown, the apex conspicuously light yellow. Legs with the coxæ and trochanters pale yellow; femora brownish yellow, immediately before tip with a narrow black ring; tibiæ brown, paler basally, blackened outwardly; tarsi black. Wings (Plate 1, fig. 5) whitish to pale yellow subhyaline, handsomely patterned with brown; prearcular region and cell C clearer yellow; cell Sc uniformly blackened, excepting the yellow extreme outer end; stigma dark; the dark discal pattern includes conspicuous clouds across m-cu and fork of Cu; at near midlength of cell M, and at outer end of cell 1st M_2 , together with the adjoining veins; outer radial cells weakly washed with brown; cell 2d A yellow, conspicuously variegated by a dark cloud at end and by another at midlength of margin; veins dark, except in the oblitative area. Squama naked. Venation: R_{1+2} entire; petiole of cell M_1 subequal to or shorter than m.

Abdominal tergites chiefly reddish, the sternites more yellow; tergites narrowly and inconspicuously lined medially and laterally with black; a black subterminal ring, involving tergites six to nine and sternites seven and eight; remainder of the hypopygium yellow. Male hypopygium with the tergite (Plate 2, fig. 29, 9t) transverse, the emarginate caudal end tridentate, with smaller blackened teeth on either side, directed mesad, together with a paler median tooth. Region of basistyle, on either side, with a pencil of reddish setæ, directed ventrad. Outer dististyle relatively long and slender, subterete, narrowed gradually to the apex. Ninth sternite on either side of ventral portion, immediately caudad of the margin of the eighth sternite, produced ventrad into a reddish fingerlike lobe.

Habitat.—Kashmir.

Holotype, male, Kaj-Nag Range, altitude 8,000 feet, June 1, 1934 (*Miss Hutchinson*). Allotopotype, female. Paratopotypes, 1 male, May 25, 1934; 1 male, 1 female, altitude 9,000 feet, May 30 to June 3, 1934.

The present species is readily told from all other regional members of the subgenus by the uniformly blackened subcostal cell and by the rather peculiar structure of the male hypopygium.

TIPULA (SCHUMMELIA) INDISCRETA sp. nov.

Female.—Length, about 17 millimeters; wing, 15.5.

Generally similar to *T. (S.) nigrocellula* sp. nov., differing in several important details.

Nasus short and stout. Antennæ with scape brownish yellow. Squama with setæ. Wings with cell Sc light yellow, concolorous with cell C; outer two-thirds of cell 1st M_2 abruptly darkened; cell M_1 conspicuously pale; dark seam along m-cu scarcely invading cell M_4 ; cell 2d A uniformly suffused with pale brown.

Compared with *T. (S.) continuata* Brunetti, which likewise has a group of setæ on the squama, the present fly differs conspicuously in the coloration of the antennæ and body, and in the venation and wing pattern, especially the much longer Rs, which is somewhat longer than m-cu and nearly twice as long as R_{2+3} ; elongate cell 1st M_2 , with the second section of vein M_{1+2} nearly two-thirds as long as vein M_1 ; and in the broader cell M_4 .

Habitat.—Kashmir.

Holotype, female, Kaj-Nag Range, altitude 8,000 feet, June 1, 1934 (*Miss Hutchinson*).

TIPULA (LUNATIPULA) TRIALBOSIGNATA sp. nov. Plate 1, fig. 6; Plate 2, figs. 30, 31.

Antennæ bicolorous; mesonotal præscutum with ground color yellow pollinose, narrowly or obsoletely striped with darker yellow; wings grayish, variegated with darker gray and whitish areas, including a broad, incomplete, poststigmatal fascia; a dark spot in cell Cu, preceded and followed by whitish areas; abdomen yellow, in the female with the tergites narrowly trilineate with darker yellow; male hypopygium with the basistyle produced caudad into a subobtuse chitinized point; eighth sternite with caudal brush of long yellow setæ.

Male.—Length, about 15 millimeters; wing, 15.5.

Female.—Length, about 20 millimeters; wing, 18.5.

Frontal prolongation of head brownish yellow above, darker laterally; nasus distinct. Antennæ (male) of moderate length, if bent backward extending to the wing root or shortly beyond; scape and pedicel yellow; flagellar segments bicolorous, brownish black basally, the outer end yellow, narrowly so on the first flagellar segment; outer flagellar segments more uniformly darkened. Head brownish yellow.

Mesonotal præscutum with the ground color yellow pollinose, with four narrow brown stripes that represent the lateral stripes and posterior outer borders of the usual median stripe; in male,

præscutal stripes obsolete or nearly so; scutal lobes more or less variegated with darker color; scutellum and mediotergite yellow. Halteres yellow, the knobs infuscated. Legs with the coxæ and trochanters yellow; femora obscure yellow to brownish yellow, the tips narrowly dark brown, preceded by a slightly clearer, more yellowish ring; tibiæ and basitarsi obscure yellow, the tips narrowly dark brown; outer tarsal segments dark brown. Wings (Plate 1, fig. 6) with the ground color grayish, variegated by pale and darker areas; the white markings include one before stigma; a broad poststigmatal fascia, extending from margin to cell 1st M_2 , and an oblitative streak across base of cell 1st M_2 , extending from cell R into bases of cells M_3 and M_4 , usually disconnected from the poststigmatal fascia but, in cases, confluent; additional white areas on either side of a dark cloud in cell Cu; the dark areas include the stigma and a confluent area along cord, together with the dark spot in cell Cu above described; narrow and less evident dark seams on posterior cord and outer end of cell 1st M_2 ; veins brown to brownish yellow. Macrotrichia of veins small and relatively sparse; squama with sparse setæ. Venation: R_{1+2} entire; petiole of cell M_1 shorter than m.

Abdomen entirely yellow or orange-yellow; in female, with indications of three narrow brown tergal stripes. Male hypopygium (Plate 2, fig. 30) with the tergite chiefly separated from the sternite. Ninth tergite (Plate 2, fig. 31, 9*t*) extensive, the caudal margin terminating in two small acute points that are separated from one another by a very shallow emargination; as in *Vestiplex*, these points are the dorsal manifestation of a tergal saucer that has swung caudad and ventrad so as to lie on the lower surface of the tergite. Basistyle, *b*, entire, the outer end produced into a subobtuse chitinized point; ventral portion with an oval lobe set with long yellow setæ. Outer dististyle slender, pale, from a slightly enlarged base. Inner dististyle, *id*, with the outer margin heavily blackened and corrugated. Eighth sternite, 8*s*, with a dense brush of long yellow setæ but without lobes or other armature. Ovipositor with the cerci rather stout, smooth-margined.

Habitat.—Kashmir.

Holotype, male, Kaj-Nag Range, altitude 9,000 feet, June 3, 1934 (*Miss Hutchinson*). Allotopotype, female. Paratopotypes, 1 male, 1 female.

The darkened cloud in cell Cu is suggestive of the condition found in many species of *Acutipula* and other subgeneric groups of *Tipula*, but the present fly seems correctly referable to *Luna-*

tipula. The wing pattern and the structure of the male hypopygium, especially the basistyle, readily separate the species from other described Himalayan members of the genus.

TIPULA (OREOMYZA) ARISANENSIS Edwards. Plate 2, figs. 32, 33.

Tipula arisanensis EDWARDS, Ann. & Mag. Nat. Hist. IX 8 (1921) 109-110.

The types, two females, were from Arisan, Formosa, collected May 24, 1917, by Shiraki. One male, from Pianan-ambu, Formosa, May 11, 1932, collected by Gressitt, seems undoubtedly to belong to this species and is described herewith as allotype.

The male hypopygium is of rather remarkable construction, much as in *Tipula foliacea* Alexander, yet with the details quite distinct.

Ninth tergite (Plate 2, fig. 32) very large and massive, fused with the sternite on basal half, the outer half indicated by a gently curved suture; lateral tergal arms produced into powerful flattened blades that extend caudad about as far as the level of the tips of the inner dististyle; median area of tergite with two low, triangular points. Viewed from the side (Plate 2, fig. 33) the tergal blades are seen to be strongly decurved, narrowed outwardly, with a shallow notch close to tip.

Male.—Length, about 9.5 millimeters; wing, 11.5.

Allotype, male, Pianan-ambu, Formosa, May 11, 1932 (*Gressitt*).

In *T. foliacea* the tergal blades are much longer, extending far beyond the level of the dististyles; the intermediate lobes of the tergite are obtusely rounded.

TIPULA GRESSITTI sp. nov. Plate 1, fig. 7; Plate 2, fig. 34.

General coloration gray, the præscutum with four dark brownish gray stripes; antennæ (male) relatively elongate, bicolorous; front silvery white; tips of femora broadly black; wings gray, variegated by yellow and darker areas; male hypopygium very small and of simple structure; ovipositor with short, fleshy valves.

Male.—Length, 9 to 10 millimeters; wing, 13; antenna, 4.

Female.—Length, about 9 to 10 millimeters; wing, 11.

Frontal prolongation of head dark brown, sparsely pruinose; nasus long and conspicuous, tufted with black setæ; palpi black. Antennæ (male) elongate, the thirteenth segment microscopic; antenna approximately as long as the combined head and thorax; scape and pedicel yellow; first flagellar segment yellow, weakly darkened at base; succeeding segments conspicuously bicolorous,

the basal enlargement black, the remainder yellow; outer segments more obscure but all except the twelfth retaining the bicolorous appearance; verticils a little shorter than the segments. Head with the front silvery white; anterior vertex and orbits yellow; disk of vertex more infumed, variegated by an elongate brown area on either side of the median furrow, the inner ends of the marks dilated, the narrow outer portion paralleling the orbits; an additional smaller dark spot immediately behind each antennal fossa.

Mesonotum gray, the præscutum with four dark brownish gray stripes, the intermediate pair separated only by a capillary line; scutum dark brownish gray, the anterior portion darkened by a posterior prolongation of the lateral præscutal stripes; posterior sclerites of mesonotum blackened, sparsely pruinose. Pleura black, heavily pruinose, more heavily so on ventral sternopleurite; dorsopleural membrane obscure yellow. Halteres chiefly pale yellow, darkened only by abundant black setæ near base of club. Legs with coxæ brownish gray, paler apically; trochanters yellow; femora obscure brownish yellow, the tips broadly and conspicuously blackened; tibiæ and tarsi brownish black to black; tibial spur formula apparently 1-1-2. Wings (Plate 1, fig. 7) with the ground color gray, variegated by brown and yellow areas; prearcular region and cell Sc yellow; cell C uniformly infuscated; stigma dark brown; a distinct brown cloud on anterior cord; the yellow color includes areas before and beyond stigma; near base and near outer end of cell M; near outer ends of cells M_1 to M_4 , inclusive; most of cell Cu and areas in cell 1st A; cell 2d A more uniformly darkened; veins brown. Squama naked; macrotrichia of veins relatively long and numerous. Venation: R_{1+2} entire; petiole of cell M_1 variable in length, in the allotype nearly lacking so that cell M_1 is sessile; cell 2d A relatively narrow.

Abdomen brown, the basal two tergites variegated with obscure yellow; lateral margin of second tergite blackened; hypopygium dark. Male hypopygium (Plate 2, fig. 34) very small and of simple structure, among the most generalized so far discovered in the genus. Ninth tergite separated from the fused sternite-basistyle; suture between basistyle and sternite indicated beneath, the former region extensive. Ninth tergite, 9t, transverse, the caudal margin with a broad shallow emargination, the lateral lobes obtuse, with abundant normal setæ. Outer dististyle, od, broadly flattened, the apex obtuse. Inner disti-

style, *id.*, simple, the apical beak very long and slender. Eighth sternite simple, weakly sheathing, the outer end membranous but with abundant setæ. Ovipositor with short fleshy valves.

Habitat.—Formosa.

Holotype, male, Arisan, altitude 7,640 feet, May 24, 1934 (*Gressitt*). Allotopotype, female. Paratopotypes, 2 males, 1 female.

Tipula gressitti is named in honor of the collector, who has secured many interesting Tipulidæ in the high mountains of Formosa. I cannot place the fly in any of the now numerous subgenera of the vast genus *Tipula*. The Eastern Nearctic *Nobilotipula* Alexander has an ovipositor of somewhat similar structure, but the present fly scarcely seems to be consubgeneric. In its general appearance, especially in body coloration and wing coloration, the species bears a considerable resemblance to several other regional members of the subgenera *Acutipula*, *Lunatipula*, *Oreomyza*, and *Vestiplex*, but in the details of structure is very distinct.

NEPHROTOMA ATROLATERA sp. nov. Plate 1, fig. 8.

Mesonotal præscutum with the central portion largely covered by a shield-shaped pearly area that is margined in front and on sides by a velvety-black border; scutellum and mediotergite light yellow; pleura yellow; abdominal tergites yellow, trilineate with dark brown; sternites uniformly orange-yellow.

Female.—Length, about 14 millimeters; wing, 13.5.

Frontal prolongation of head light sulphur yellow; nasus with long black setæ; mouth parts more fulvous; palpi dark brown. Antennæ with basal segments brownish yellow, the flagellum passing into darker brown. Front light sulphur yellow; posterior portion of head dark orange, more yellowish behind but without evident occipital band.

Pronotum entirely light sulphur yellow. Mesonotal præscutum with three confluent pearly stripes, the shield-shaped area thus formed bordered by velvety black, including a narrow cephalic border, broader lateral margins, and a deep triangular invasion of the humeral field; scutum with centers of lobes pearly, narrowly but completely bordered by velvety black; median region of scutum yellow; scutellum and mediotergite light sulphur yellow, with a narrow transverse dark line separating the two; mediotergite with numerous short black setæ. Anterior lateral pretergites sulphur yellow. Pleura yellow. Halteres dusky, the knobs yellow. Legs with the coxæ and trochanters light yellow; femora and tibiæ light brown, the tips weakly darkened; tarsi

black. Wings (Plate 1, fig. 8) somewhat teneral in the unique type, subhyaline; stigma and a seam along the cord narrowly darker; veins brown. Venation: Cell M_1 broadly sessile; m-cu uniting with M just before departure of vein M_4 .

Abdominal tergites yellow, conspicuously trilineate with dark brown, the stripes entire or virtually so; sternites orange-yellow, the caudal borders of the segments restrictedly paler yellow.

Habitat.—Formosa.

Holotype, female, Hassensan, altitude 4,875 feet, June 22, 1934 (*Gressitt*).

The present fly is amply distinct from other described species of the genus in the pattern of the mesonotal præscutum and scutum. The presence of short, dense, black setæ on the post-notal mediotergite reminds one of *Nephrotoma medipubera* Edwards (eastern Java), which is otherwise a very different fly.

DOLICHOPEZA (NESOPEZA) LUGUBRIVESTIS sp. nov. Plate 1, fig. 9; Plate 2, fig. 35.

General coloration dark brown, the præscutum with three more-glabrous, somewhat nacreous stripes; pleura dark brown; legs black, only the outer tarsal segments restrictedly yellowish white; wings with the ground color strongly blackened; stigma darker, preceded and followed by whitish areas; Rs short, a little less than m-cu; male hypopygium with the lateral lobes of the tergal plate broadly rounded; gonapophyses long and conspicuous, the tips acute.

Male.—Length, about 12 millimeters; wing, 13.

Frontal prolongation of head brown; palpi black. Antennæ of moderate length, if bent backward extending approximately to base of abdomen; scape and pedicel brownish yellow, flagellum black; verticils abundant, the longest on the upper face and well scattered over the length of the segment. Front and vertical tubercle brownish yellow, the posterior portions of head more uniformly dark brown.

Mesonotal præscutum dull dark brown, with three more-glabrous, nacreous stripes, the median one broad and well defined, the lateral pair less clearly delimited; posterior sclerites of notum dark brown, the median area of scutum and mediotergite paler. Pleura dark brown, the dorsopleural region paler. Halteres with the stem dusky, narrowly obscure yellow at base, the knobs dark brown. Legs with the coxæ dark brown, paler apically; trochanters obscure yellow; femora and tibiæ black, the former restrictedly paler at base; tarsi black basally, the outer segments narrowly and restrictedly yellowish white, more ex-

tensively so on the posterior legs where the brightening involves about the outer two-thirds of the second tarsal segment and the succeeding segments; on the anterior legs the bright color of the tarsi is even more obscured. Wings (Plate 1, fig. 9) with the ground color strongly blackened, the stigma even darker, preceded and followed by whitish areas; a restricted darkened cloud on anterior cord; veins brownish black. Venation: Rs short, a little less than m-cu; medial forks of moderate depth.

Abdominal tergites dark brown, the incisures restrictedly more blackened, outer segments, including hypopygium, more uniformly blackened. Male hypopygium (Plate 2, fig. 35) with the lateral lobes of the tergal plate, 9t, broad, their caudal margins broadly rounded. Ædeagus and subtending apophyses, g, very long and conspicuous, as illustrated; apophyses at base with a small cylindrical lobe but beyond this point simple, the tips acute.

Habitat.—Formosa.

Holotype, male, Arisan, altitude 7,475 feet, May 25, 1934 (Gressitt).

Dolichopeza (*Nesopeza*) *lugubrivestis* is most nearly allied to *D. (N.) idiophallus* (Alexander) and *D. (N.) tarsalba* (Alexander), differing from both in the coloration of the body and wings, the venation, especially the short Rs, and the details of structure of the male hypopygium.

LIMONIINÆ

LIMONIINI

LIMONIA (LIMONIA) SUBHOSTILIS sp. nov. Plate 1, fig. 10; Plate 3, fig. 36.

General coloration brown, the præscutal stripes not or scarcely indicated; antennæ black throughout; each of the outer flagellar segments with a single very long verticil, these unilaterally arranged; outer flagellar segments gradually increasing in length to the last; halteres elongate; legs brown, the femoral tips not brightened; wings broad, suffused with gray; stigma lacking; Sc₂ and R₁₊₂ both very long; male hypopygium with a single dististyle, this terminating in a slender apical beak.

Male.—Length, about 10 millimeters; wing, 11.8.

Rostrum brown; palpi dark brown. Antennæ dark brown throughout; outer flagellar segments with a single verticil of unusual length, placed on outer face near base, this seta approximately twice the length of the segment bearing it; remain-

ing verticils relatively small and insignificant; flagellar segments beyond midlength of organ becoming progressively more elongate, the terminal segment longest. Head dark brown.

Mesonotum almost uniformly medium brown, the surface polished; præscutal stripes not or scarcely defined, the lateral pair indicated chiefly by a slightly darkened lateral portion. Pleura testaceous-brown. Halteres unusually long and slender, dark brown. Legs with the coxæ and trochanters brown; remainder of legs medium brown, the femoral bases not or scarcely brightened; claws with a long slender spine at near midlength, with a second smaller, more basal tooth. Wings (Plate 1, fig. 10) broad, almost uniformly suffused with gray; stigma not or scarcely indicated; veins brown. Macrotrichia of veins relatively long and conspicuous, on all longitudinal veins beyond cord, extreme distal end of vein 1st A and outer two-thirds of 2d A. Venation: Sc_2 very long, as in *hostilis*, several times as long as Sc_1 and considerably longer than R_2 ; R_{1+2} elongate; cell 1st M_2 wide; m-cu close to fork of M.

Abdomen dark brown; hypopygium somewhat paler. Male hypopygium (Plate 3, fig. 36) with the tergite, 9t, narrowed outwardly, the apex abruptly thin and glabrous, with a U-shaped median notch, the lateral lobes thus formed low and subtruncate. Dististyle, *d*, single, its apical beaklike portion unusually slender. Gonapophyses, *g*, with the mesal-apical lobe broad. *Æ*deagus broad at apex.

Habitat.—Formosa.

Holotype, male, Arisan, altitude 7,312 feet, May 27, 1934 (*Gressitt*).

The nearest described ally of the present fly is undoubtedly *Limonia (Limonia) hostilis* Alexander (Szechwan-Tibet border, at high altitudes), which differs conspicuously in the abruptly yellow tips of the femora and in slight details of venation and body coloration.

LIMONIA (DICRANOMYIA) TRANSFUGA sp. nov. Plate 1, fig. 11.

Mesonotal præscutum with a broad median brown stripe, the lateral borders of the sclerite broadly golden yellow; pleura pruinose; knobs of halteres dark brown; femora blackened at tips, the fore femora more extensively so; wings tinged with yellow, sparsely patterned with brown; abdomen with basal six segments orange-yellow, the remaining outer segments black.

Female.—Length, about 9.5 millimeters; wing, 10.

Rostrum brown, sparsely pruinose; palpi black. Antennæ black throughout; basal flagellar segments subglobular, the outer segments oval to elongate-oval. Head brownish gray.

Mesonotum with a broad median brown stripe, the lateral portions of the sclerite broadly and conspicuously golden-yellow pollinose; lateral præscutal stripes scarcely indicated; scutal lobes variegated with darker yellow; mediotergite black, sparsely pruinose, the lateral portions paling to yellow. Pleura yellow, the mesopleura and pleurotergite heavily pruinose. Halteres with basal portion of stem yellow, the outer portion and knob dark brown. Legs with the coxæ and trochanters yellow; fore femora black, the basal third yellow; remaining femora yellow, the tips more narrowly blackened, not including more than the distal fourth or fifth; tibiæ and tarsi dark brown to brownish black. Wings (Plate 1, fig. 11) with a strong yellow tinge, the costal border and outer radial field more-saturated brownish yellow; stigma and narrow seams along cord and outer end of cell 1st M_2 dark brown; a brownish seam along vein Cu in cell M; veins brownish yellow, darker in the clouded areas. Venation: Sc_1 ending a short distance beyond origin of Rs, Sc_2 some distance before this origin; free tip of Sc_2 and R_2 in transverse alignment; m-cu close to fork of M, subequal to or a little longer than distal section of Cu_1 ; anal veins at origin subparallel or very slightly convergent.

Abdomen with the basal six segments orange-yellow, the remaining segments black. Ovipositor with the cerci relatively short and unusually slender, gently upcurved to the acute tips, a little longer than the hypovalvæ.

Habitat.—Kashmir.

Holotype, female, Kaj-Nag Range, altitude 9,000 feet, May 30, 1934 (*Miss Hutchinson*).

Limonia (Dicranomyia) transfuga is quite distinct from other regional members of the subgenus, superficially bearing a certain resemblance to *L. (D.) baileyi* (Edwards), of Tibet, yet entirely distinct.

PEDICIINI

DICRANOTA (RHAPHIDOLABIS) SUBSORDIDA sp. nov. Plate 1, fig. 12; Plate 3, fig. 37.

General coloration gray, the præscutum with a darker median stripe; antennæ black throughout; knobs of halteres infuscated; legs brownish black; wings grayish subhyaline, the oval stigma brown; R_{2+3+4} approximately twice the basal section of R_5 ; abdominal tergites dark brown, hypopygium brownish yellow;

male hypopygium with the caudal margin of tergite transverse, each outer angle produced into a low setiferous lobe; interbase widely expanded on proximal portion.

Male.—Length, about 5 millimeters; wing, 6.2.

Rostrum gray; palpi black. Antennæ short, black throughout, the scape a little pruinose. Head gray.

Mesonotum gray, the præscutum with a darker, plumbeous gray, median stripe. Pleura gray. Halteres pale, the knobs infuscated. Legs with the coxæ pruinose on outer face, the inner face pale; trochanters yellow; femora brownish black, the bases restrictedly pale; tibiæ and tarsi brownish black. Wings (Plate 1, fig. 12) grayish subhyaline; stigma oval, brown; veins dark brown. Venation: R_{2+3+4} approximately twice the basal section of R_5 ; R_2 transverse; cell M_1 unusually small, the inclosing branches divergent; m-cu about one-half its length beyond fork of M.

Abdominal tergites dark brown; sternites somewhat paler, slightly pruinose; hypopygium brownish yellow. Male hypopygium (Plate 3, fig. 37) with the tergite, $9t$, transverse across caudal margin, each lateral portion produced into a low, rounded, setiferous lobe. Dististyle, d , with the outer blade elongate, flattened, a little expanded on outer end and here provided with several setæ. Interbase, i , a yellow blade, very widely expanded on proximal portion, gradually narrowed outwardly, the tip narrowly obtuse.

Habitat.—Kashmir.

Holotype, male, Kaj-Nag Range, altitude 8,000 feet, May 18, 1934 (*Miss Hutchinson*).

The species is most readily told from *Dicranota (Rhaphidolabis) sordida* (Brunetti) by the black antennæ and almost uniformly darkened legs.

DICRANOTA (RHAPHIDOLABIS) UNINEBULOSA sp. nov. Plate 1, fig. 13; Plate 3, fig. 38.

General coloration gray, the præscutum without evident stripes; antennal flagellum black; knobs of halteres weakly darkened; femora brownish yellow, the tips weakly darkened; wings subhyaline, stigma brown; a small brown cloud on anterior cord; R_{2+3+4} fully one-half longer than basal section of vein R_5 ; abdomen brown, sparsely pruinose, the extreme caudal margins of the segments pale; hypopygium yellow; male hypopygium with the interbase curved, the apex flattened and having the margin microscopically serrulate.

Male.—Length, about 6.5 millimeters; wing, 7.5.

Rostrum gray; palpi dark. Antennæ short; scape and pedicel brownish black, flagellum black; antennæ 15-segmented; flagellar segments short-oval to subglobular. Head dark gray.

Mesonotum gray, the præscutum without evident stripes. Pleura gray. Halteres pale, the knobs weakly darkened. Legs with the coxæ pale, gray pruinose; femora brownish yellow, the tips weakly darkened; tibiæ pale brown, the tips, together with the tarsi, more brownish black. Wings (Plate 1, fig. 13) subhyaline; stigma brown; a small but distinct brown cloud on anterior cord; veins brown. Venation: R_{2+3+4} fully one-half longer than the basal section of vein R_5 ; R_2 transverse or nearly so; M almost in direct alignment with M_{1+2} , the basal section of the latter lacking or virtually so; m-cu about one-half its length beyond fork of M.

Abdomen brown, sparsely pruinose; extreme caudal margins of segments pale; hypopygium yellow. Male hypopygium with the interbase (Plate 3, fig. 38, *i*) curved, the apex flattened, its margin microscopically serrulate.

Habitat.—Kashmir.

Holotype, male, Kaj-Nag Range, altitude 8,000 feet, May 26, 1934 (*Miss Hutchinson*).

Dicranota (Rhaphidolabis) uninebulosa is readily told from the other Himalayan species of the subgenus by the large size and the pattern of the wings.

DICRANOTA (RHAPHIDOLABIS) PALLIDITHORAX sp. nov. Plate 1, fig. 14; Plate 3, fig. 39.

General coloration of thorax pale brownish yellow; antennæ dark brown, the scape brownish yellow; knobs of halteres darkened; wings subhyaline, the stigmal area faintly darker; R_{2+3+4} about one-half longer than the basal section of vein R_5 ; R_2 oblique; male hypopygium with the interbase on mesal face at near midlength produced into a spinous point.

Male.—Length, about 7 millimeters; wing, 7.8.

Female.—Length, about 8 millimeters; wing, 8.5.

Rostrum brown, paler laterally; palpi brown. Antennæ short, 15-segmented; scape brownish yellow, remaining segments dark brown. Head light gray throughout.

Pronotum and mesonotum, together with the pleura, entirely pale brownish yellow to yellow, without markings. Halteres pale, the knobs darkened. Legs with the coxæ and trochanters yellow; femora brownish yellow, clearer yellow basally, darker outwardly; tibiæ and tarsi dark brown. Wings (Plate 1, fig.

14) subhyaline, iridescent; stigmal area faintly darker, pale brown; veins brown. Venation: Rs of moderate length; R_{2+3+4} about one-half longer than the basal section of vein R_5 ; R_2 oblique, exceeding one-half R_{1+2} ; m-cu about its own length beyond the fork of M.

Abdominal tergites dark brown, the caudal borders of the segments very narrowly pale; basal sternites obscure yellow, the outer segments somewhat more darkened; hypopygium chiefly yellow. Male hypopygium with the interbase (Plate 3, fig. 39, *i*) of characteristic shape, on mesal face at near midlength produced into an acute spinous point, the apical portion slender, narrowed before the oval distal end.

Habitat.—Kashmir.

Holotype, male, Kaj-Nag Range, altitude 8,000 feet, May 22, 1934 (*Miss Hutchinson*). Allotopotype, female.

Dicranota (Rhaphidolabis) pallidithorax is very distinct from the other Asiatic species of the subgenus so far described in the major size, the pale coloration of the thorax, and the structure of the interbase of the male hypopygium.

DICRANOTA (AMALOPINA) FUMICOSTATA sp. nov. Plate 1, fig. 15; Plate 3, fig. 40.

Mesonotal præscutum yellow, with a median darker stripe; posterior sclerites of mesonotum darkened; legs yellow; wings yellow, the costal border to apex broadly infumed, including all of cells C and Sc; smaller darker areas on certain of the veins and crossveins; no supernumerary crossvein in cell R_1 ; R_{2+3+4} short; cell 1st M_2 closed; male hypopygium with both the tergal arms and the interbases appearing as stout flattened blades that terminate in acute spines.

Male.—Length, about 5.5 millimeters; wing, 6.5.

Rostrum and palpi brownish black. Antennæ with the scape brownish black; pedicel brownish yellow; flagellum light yellow, only the outer two or three segments more darkened. Head brown; eyes relatively large and protuberant.

Cervical sclerites and central portion of pronotum dark brown. Mesonotal præscutum yellow, with a more brownish median stripe; lateral stripes narrow and scarcely evident; posterior sclerites of mesonotum darker brown, this color including the posterior border of the pleurotergite. Remainder of pleurotergite and all of the pleura pale yellow. Halteres with the stem yellow, its outer end and the knob infuscated. Legs with the coxæ and trochanters pale yellow; remainder of legs light yellow,

only the last tarsal segment darkened. Wings (Plate 1, fig. 15) with the ground color yellowish, the costal border to apex broadly infumed, the darkening including all of cells C and Sc, together with the basal third of cell R; restricted darker brown areas at origin of Rs, along cord, R₂, outer end of cell 1st M₂ and fork of M₁₊₂; veins pale, darker in the infumed areas. Venation: Sc₂ lying at near three-fifths the distance between arculus and origin of Rs; no supernumerary crossvein in cell R₁; cell R₃ short-petiolate, R₂₊₃₊₄ being represented by an element that is subequal to or shorter than the basal section of R₅; cell 1st M₂ closed; m-cu about one-half its length beyond the fork of M.

Abdominal tergites brown, the sternites paler; abdomen darker apically. Male hypopygium (Plate 3, fig. 40) with the lateral arms of the tergite, 9t, appearing as powerful erect rods, the tip incurved to a short acute spine; median area of tergite slightly convex, with abundant setæ. Interbases, *i*, large and powerful, appearing as sinuous yellow blades, the tip of each narrowed into an acute spine. Dististyle unusually simple, the outer lobe with the usual close-set spines, the inner blade with numerous setæ.

Habitat.—Formosa (north).

Holotype, male, Urai, altitude 1,500 feet, April 1, 1932 (*Gressitt*).

Dicranota (Amalopina) fumicostata is very different from the other regional species of the subgenus, the distinctions being best shown by the accompanying key to the five species now known from the Japanese Empire.

Key to the Japanese species of Amalopina.

1. Cell 1st M₂ open by atrophy of m; fore and middle femora brownish black, the posterior femora and remainder of all legs light yellow (*gibbera* and races) 2.
- Cell 1st M₂ closed; legs yellow 3.
2. Wings (male) broad, widest opposite end of vein 2d A. (Japan.)
gibbera gibbera Alexander.
- Wings (male) narrow, of approximately equal width along the central third of length. (Japan.)..... *gibbera karafutonis* Alexander.
3. No supernumerary crossvein in cell R₁; outer ends of radial cells uniformly infumed. (Formosa.) *fumicostata* sp. nov.
- A supernumerary crossvein in cell R₁; outer ends of radial cells clear or with darkenings at ends of veins only..... 4.
4. Cells C and Sc undarkened. (Japan.)..... *dicranotoides* Alexander.
- Cell C, and usually Sc also, strongly darkened on basal half..... 5.

5. Outer ends of all longitudinal veins with brown spots and dots. (Siberia and Korea.)..... *siberica* Alexander.
Outer ends of longitudinal veins undarkened. (Formosa.)
delectata Alexander.

It may be noted that all of the above species (excepting *siberica*, a male of which is not available to me at this time) show marked distinctions in the structure of the male hypopygium.

ERIOPTERINI

GONOMYIA (GONOMYIA) JUSTA sp. nov. Plate 1, fig. 16; Plate 3, fig. 41.

Belongs to the *tenella (subcinerea)* group; allied to *G. (G.) nebulicola*; antennæ black throughout; mesonotum grayish brown, restrictedly variegated with yellow; pleura sulphur yellow, variegated by reddish brown; legs dark brown; R_{2+3+4} strongly arcuated; male hypopygium with the outer lobe of basistyle relatively short, only a little longer than the dististyle, the latter broadly flattened, bispinous; blackened appendage of phallosome not spinous.

Male.—Length, about 4.2 millimeters; wing, 5.

Rostrum yellow; palpi brownish black. Antennæ black throughout; outer flagellar segments very slender, almost setaceous, the basal ones more enlarged. Head gray.

Pronotum and anterior pretergites light yellow. Mesonotum uniformly dark grayish brown, the humeral region and sides of præscutum restrictedly yellow; median area of scutum obscure yellow; posterior lateral portions of scutal lobes and the broad posterior border of scutellum dark yellow. Pleura light sulphur yellow, variegated by reddish or reddish brown on anepisternum and more extensively on ventral sternopleurite and meron. Halteres dusky, the base of stem light yellow. Legs with the coxæ reddish or yellow, the fore pair darker; trochanters obscure yellow; remainder of legs dark brown. Wings (Plate 1, fig. 16) uniformly tinged with gray, the stigma pale brown; veins dark brown. Venation: Sc_1 ending shortly beyond origin of R_s , Sc_2 opposite this origin; R_{2+3+4} strongly arcuated; basal section of R_5 reduced; cell 1st M_2 relatively small; m-cu at fork of M .

Abdominal tergites dark brown, the sternites and hypopygium more brownish yellow. Male hypopygium (Plate 3, fig. 41) with the outer lobe of basistyle, *b*, relatively short, only a little longer than the dististyle. Dististyle, *d*, broadly flattened, bearing two unequal spines on outer margin, the outermost long and

gently curved, with a single seta at base; second spine in axil of the first; no carina connecting the inner spine with apex of style, as is the case in *nebulicola*. Phallosome, *p*, with a single blackened appendage, this subobtuse at apex, not spinous.

Habitat.—Java.

Holotype, male, Mount Malabar, altitude about 4,000 feet, May 26, 1929 (*Mackerras*). Paratopotype, male.

Type in the National Collection, Federal Capital Territory, Canberra.

The nearest described ally of the present fly is undoubtedly *Gonomyia* (*Gonomyia*) *nebulicola* Alexander (Mindanao), which differs chiefly in the structure of the dististyle and phallosome of the male hypopygium, as contrasted above.

GONOMYIA (LIPOPHLEPS) TORAJA sp. nov. Plate 1, fig. 17; Plate 3, fig. 42.

Mesonotum dark gray, the scutellum obscure yellow, pruinose; thoracic pleura with a silvery white longitudinal stripe; knobs of halteres yellow; femora obscure yellow, the tips broadly blackened; wings with a grayish tinge, the ground color vaguely brightened by paler areas; veins along cord darkened; basal section of R_5 long; abdomen dark brown; male hypopygium with two dististyles, the outer a long simple black rod; inner style profoundly bifid, its outer arm fusiform, clothed with long conspicuous setæ.

Male.—Length, about 3 millimeters; wing, 3.2.

Rostrum and palpi black. Antennæ black; flagellar segments (male) with very long verticils. Head brownish yellow, the center of vertex darker.

Sides of pronotum and the anterior lateral pretergites whitish, the posterior pretergites more silvery. Mesonotal præscutum dark gray; pseudosutural foveæ black; scutum dark gray, including the median area; scutellum obscure yellow, sparsely pruinose, the base darkened; mediotergite dark, heavily pruinose. Pleura dark, including the dorsopleural membrane; a conspicuous silvery longitudinal stripe extending from behind the fore coxæ to the base of abdomen; indications of a second, much less distinct, obscure yellow stripe above the first, involving the pteropleurite, pleurotergite, and cephalic-lateral portions of the mediotergite. Halteres dusky, the knobs yellow apically. Legs with the coxæ dark brown, the fore coxæ pale on outer face; trochanters brownish yellow; femora obscure yellow, the tips broadly black (certain of the femoral tips are broken and it cannot be affirmed as to whether or not certain of these areas

are slightly subterminal); tibiæ yellow, the tips very narrowly darkened; tarsi broken. Wings (Plate 1, fig. 17) with a grayish tinge, the ground color vaguely brightened by paler areas, chiefly before origin of Rs and beyond stigma; stigmal area very faint; a darkened area along cord, indicated chiefly by the darker veins; veins pale, except as described. Costal fringe long. Venation: Sc₁ ending shortly before the origin of Rs; basal section of R₅ long; m-cu shortly before fork of M.

Abdomen, including hypopygium, dark brown. Male hypopygium (Plate 3, fig. 42) with the basistyle, *b*, unproduced at outer end. Two dististyles, the outer, *od*, a long, simple, blackened rod, curved and gently sinuous to the acute tip; inner style, *id*, profoundly bifid, its outer arm a yellow fusiform structure that terminates in an acute spine, the surface with abundant setæ; inner arm shorter, with marginal setæ. Phallosome, *p*, consisting of two pairs of broadly flattened, superimposed plates.

Habitat.—Central Celebes (District Bontoe Batoe).

Holotype, male, Latimodjong Mountains, altitude 3,800 feet, May 15, 1931 (*Clagg*).

Gonomyia (Lipophleps) toraja is named from an aboriginal tribe inhabiting central Celebes. The species is readily told from all other regional species of the subgenus by the structure of the male hypopygium. This latter has a structure generally like that of *G. (L.) kerteszi* Alexander (northeastern New Guinea), but the details are entirely different.

GONOMYIA (LIPOPHLEPS) TOALA *sp. nov.* Plate 1, fig. 18; Plate 3, fig. 43.

General coloration of notum dark brownish gray, the lateral border of the præscutum conspicuously lighter gray; pleura striped longitudinally with whitish; halteres yellow; femora and tibiæ brownish yellow; wings yellowish gray; stigmal area faintly indicated; Rs angulated, and, in cases, short-spurred at origin; male hypopygium with three dististyles, the intermediate one profoundly bifid; phallosome consisting of flattened pale plates, without blackened points or spines.

Male.—Length, about 2.8 to 3 millimeters; wing, 3.4 to 3.6.

Rostrum and palpi black. Antennæ black, the pedicel more or less brightened; verticils (male) unusually long and delicate. Head brownish gray, more or less variegated by paler gray.

Mesonotum chiefly dark brownish gray, the lateral border of the præscutum conspicuously lighter gray; posterior sclerites of notum, including the scutellum, gray. Pleura brown, with a broad whitish longitudinal stripe extending from and including

the fore coxæ to the base of abdomen, this stripe narrowly bordered both above and beneath by still darker brown. Halteres yellow. Legs with the coxæ brown, the fore coxæ whitish, as described; trochanters obscure yellow; remainder of legs brownish yellow, the outer tarsal segments more blackened. Wings (Plate 1, fig. 18) with a yellowish gray tinge, the prearcular and costal portions a little clearer yellow; stigmal area faintly indicated; veins pale. Venation: Sc of moderate length, Sc₁ ending a short distance before origin of Rs; Rs angulated and sometimes short-spurred at origin; m-cu a short distance before fork of M.

Abdomen dark brown, the pleural region paler; incisures, especially of the outer segments, a little brightened. Male hypopygium (Plate 3, fig. 43) with the apex of basistyle, *b*, unproduced. Three dististyles; outer, *od*, a slender, nearly straight rod, the apex narrowly blackened and gently curved into a spine, the outer margin with a series of microscopic setæ; intermediate style, *md*, profoundly bifid, the outer arm a little longer than the outer style, appearing as a flattened pale blade that is slightly arcuate; inner arm of this style much shorter, its apex a blackened spine; inner style, *id*, elongate-oval, with numerous setæ, none of which is evidently fasciculate. Phallosome, *p*, appearing as two flattened pale plates, with a slenderer median pale structure, the entire organ without blackened points or spines.

Habitat.—Central Celebes (District Bontoe Batoe).

Holotype, male, Latimodjong Mountains, altitude 3,800 feet, May 15, 1931 (*Clagg*). Paratopotype, male.

The specific name of this species, *toala*, is that of an aboriginal tribe. The fly is quite distinct from all other regional members of the subgenus in the structure of the male hypopygium, especially the profoundly bifid intermediate dististyle and the entirely pale phallosome.

LIPSOTHRIX KASHMIRICA sp. nov. Plate 1, fig. 19; Plate 3, fig. 44.

Thorax yellow; legs yellow, the tips of femora and narrow bases of tibiæ brownish black; wings whitish hyaline, without stigma; veins brown, the prearcular veins light yellow; abdominal tergites with a broad, continuous, dark brown, median stripe; male hypopygium with the interbase bearing two small acute spines on outer face before midlength.

Male.—Length, 7.5 to 8 millimeters; wing, 8 to 8.5.

Female.—Length, 8.5 to 9.5 millimeters; wing, 9 to 9.5.

Rostrum yellow, palpi pale. Antennæ with basal segments pale yellow, the outer ones passing into brown; the number of pale basal segments varies considerably in different specimens, in some cases involving several of the flagellar segments, as well as the scape and pedicel. Head brownish yellow.

Thorax entirely yellow. Halteres yellow. Legs yellow, the femoral tips and narrower tibial bases brownish black; tips of tibiæ narrowly darkened; outer tarsal segments infuscated. Wings (Plate 1, fig. 19) whitish hyaline, without stigmal or other markings; veins brown, the prearcular veins light yellow. Macrotrichia on all longitudinal veins beyond cord, including the outer ends of both anal veins, the amount on the latter veins variable in different specimens. Venation: m-cu at or close to fork of M; basal section of R₅ and r-m often angulated and weakly spurred.

Abdominal tergites with a broad, continuous, dark brown, median stripe, the lateral borders of the segments yellow, more widely so on the outer segments; seventh to ninth segments (male) uniformly blackened. Male hypopygium (Plate 3, fig. 44) with the interbase, *i*, long and sinuous, at base with a slender spinous point; on outer margin before midlength with two small acute spines.

Habitat.—Kashmir.

Holotype, male, Kaj-Nag Range, altitude 9,000 feet, May 30, 1934 (*Miss Hutchinson*). Allotopotype, female, altitude 8,000 feet, May 24, 1934. Paratopotypes, 15 of both sexes, altitude 8,000 feet, May 22 to 30, 1934.

Lipsothrix kashmirica is most nearly allied to *L. errans* (Walker), differing especially in the nearly hyaline wings and conspicuous, entire, median dark stripe on abdominal tergites. Edwards² has indicated the existence in Europe of no fewer than four species, of which three occur in Britain. Four other species are found in Japan and Formosa, but hitherto none had been recorded from the Asiatic mainland.

ORMOSIA HUTCHINSONÆ sp. nov. Plate 1, fig. 20; Plate 3, fig. 45.

Mesonotum gray, with scarcely indicated præscutal stripes; antennæ with scape and pedicel pale, flagellum black; thoracic pleura yellow; knobs of halteres dark brown, femora yellow, the tips broadly blackened; wings whitish subhyaline; stigma and

² Entomologist 63 (1930) 212.

very narrow seams along cord and outer end of cell 1st M_2 brown; cell 1st M_2 closed; anal veins divergent; abdominal tergites brownish black, the sternites and hypopygium yellow.

Male.—Length, 3.8 to 4.2 millimeters; wing, 4.5 to 5.

Female.—Length, about 5 to 5.5 millimeters; wing, 5.5 to 6.

Rostrum brownish yellow to yellow; palpi dark brown. Antennæ short; scape light yellow; pedicel brownish yellow; flagellum black; flagellar segments oval, the outer segments a little more elongate. Front light yellow; vertex light gray.

Mesonotum gray, the præscutal stripes not or scarcely defined; tuberculate pits black, conspicuous; lateral margins of præscutum paling to yellow; lateral pretergites light yellow. Pleura yellow to weakly infumed, contrasting with the notum. Halteres dark brown, the basal portion of stem yellow. Legs with the coxæ and trochanters light yellow; femora yellow, the tips broadly blackened; tibiæ brown, the tips blackened; tarsi black. Wings (Plate 1, fig. 20) whitish subhyaline; stigma and very narrow seams along cord and outer end of cell 1st M_2 brown; veins brown. Venation: Cell 1st M_2 closed; m-cu not far beyond the fork of M; anal veins divergent.

Abdominal tergites brownish black, sparsely pruinose; lateral borders of segments very narrowly pale; sternites and hypopygium light yellow. Male hypopygium (Plate 3, fig. 45) with the dististyle, *d*, apparently simple but deeply bifid, the outer arm a cylindrical blackened structure that terminates in a group of acute teeth; inner arm pale, broad-based, narrowed to a long slender point, the tip obtuse.

Habitat.—Kashmir.

Holotype, male, Kaj-Nag Range, altitude 8,000 feet, May 15, 1934 (*Miss Hutchinson*). Allotopotype, female. Paratopotypes, 15 of both sexes.

Ormosia hutchinsonæ is named in honor of Miss Vivien R. Hutchinson, to whom I am greatly indebted for many interesting Tipulidæ from Kashmir. The species is readily distinguished from all other Palæarctic species having cell 1st M_2 closed by the coloration of the body and peculiar conformation of the dististyle of the male hypopygium.

STYRINGOMYIA CELEBESENSIS sp. nov. Plate 1, fig. 21; Plate 3, fig. 46.

General coloration yellow; mesonotum, especially the scutum, with specially modified setæ; wings with vein R_3 nearly transverse; 2d A strongly curved to margin; male hypopygium with

apex of basistyle bispinous; outer arm of dististyle without median projection.

Male.—Length, about 5.3 to 5.5 millimeters; wing, 5.2 to 5.4.

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

Rostrum brown; palpi dark brown, the terminal segment paler. Antennæ with the scape and pedicel dark beneath, more yellow above; flagellum yellow, the basal segments short and crowded. Head grayish brown; setæ large and conspicuous.

Pronotum whitish, with conspicuous setæ. Mesonotal præscutum yellowish brown, vaguely lined with darker brown; notal setæ conspicuous, especially those of the scutum, much as in *S. ensifera*; mediotergite pale. Pleura testaceous-yellow. Halteres yellow. Legs with the coxæ and trochanters yellow; remainder of legs yellow, the femoral and tibial rings broad but diffuse, brown; fore femora with a group of strong black setæ at tip; tarsi pale, the tips of the segments narrowly darkened. Wings (Plate 1, fig. 21) pale yellow, the costal border slightly more saturated; small dark areas on r-m; both ends of basal section of vein M_3 but with the intermediate portion pale, m-cu; marginal spots at ends of all medial, cubital, and anal veins, largest and most conspicuous on 2d A. Venation: R_3 nearly transverse; cell 2d M_2 narrow to broadly sessile; vein 2d A strongly curved into margin but without angulation.

Abdomen obscure yellow, the caudal borders of the tergites narrowly darkened. Male hypopygium (Plate 3, fig. 46) with two broadly flattened spines on basistyle, *b*, these sessile or from very short lobes. Outer lobe of dististyle, *od*, with the basal portion pale and slightly dilated, with abundant setæ; more than the outer half of arm narrowed and darkened; no lobe at near midlength, as in *ensifera*; intermediate, *md*, and inner, *id*, arms of dististyle complex, especially the latter. Tenth tergite, *t*, with an elongate liguliform terminal lobe. Ninth sternite, *9s*, broad, the usual modified outer setæ distinctly subterminal in position, the sternite projecting strongly beyond their insertion, narrowed and feebly darkened at apex.

Habitat.—Central Celebes (District Bontoe Batoe).

Holotype, male, Latimodjong Mountains, altitude, 3,800 feet, May 15, 1931 (*Clagg*). Allotopotype, female. Paratopotypes, 1 male, 2 females.

The other species of *Styringomyia* with bispinous basistyles (*armata* Edwards, *claggi* Alexander, *ensifera* Edwards) differ

conspicuously from the present fly in the structure of the male hypopygium. The latter comes closest to *ensifera*, differing in the conformation of both inner lobes of the dististyle and the lack of a medium lobule on the outer arm of the style.

STYRINGOMYIA SIBERIENSIS sp. nov. Plate 1, fig. 22; Plate 3, fig. 47.

General coloration of mesonotum pale, variegated with darker; scutellum black, with a yellow central spot; wings with brown clouds on r-m, m-cu, outer end of cell 1st M_2 , and end of vein 2d A; vein 2d A angulated and more or less spurred near outer end; male hypopygium with the basistyle bearing a single lobe and spine; ninth sternite with two setæ.

Male.—Length, about 5.5 millimeters; wing, 4.2.

Female.—Length, about 5.3 millimeters; wing, 4.3.

Rostrum and palpi brownish black. Antennæ with scape and pedicel black; flagellum obscure yellow throughout. Head brownish yellow, sparsely pruinose; occipital region with a brown area on either side of the median line.

Pronotum pale medially, dark brown on sides. Mesonotal præscutum brownish gray, narrowly lined with darker brown; scutal lobes brown, the centers brownish yellow; median area of scutum yellow; scutellum black with a yellow median spot; mediotergite brownish black, sparsely pruinose; pleurotergite testaceous-yellow. Pleura variegated dark brown and obscure yellow. Halteres pale yellow throughout. Legs with the coxæ and trochanters yellow; remainder of legs yellow, the femora with two narrow dark brown rings that are interrupted beneath; tibiæ yellow, with two brown rings, the median one incomplete; tarsi yellow, the terminal segment abruptly darkened. Wings (Plate 1, fig. 22) yellow, with brown clouds on r-m, m-cu, outer end of cell 1st M_2 , and end of vein 2d A; veins yellow, darkened in the clouded areas. Venation: Cell 2d M_2 narrow to more broadly sessile; vein 2d A angulated and short- to long-spurred at point of angulation.

Abdominal tergites more or less bicolorous, especially in male; obscure yellow in central portions, the bases and more narrow tips brown; sternites uniformly pale yellow. Male hypopygium (Plate 3, fig. 47) with the tenth tergite, *t*, produced into a conspicuous apical lobe; ninth sternite, *9s*, slender, the two setæ close together. Basistyle, *b*, with the outer lobe slender, exceeding its terminal spine in length. Dististyle with the outer arm, *od*, provided with a series of four setæ at near midlength; inner arm, *id*, with the marginal spines in three groups; from near the

second of these groups arises a slender pale lobe that is tipped with a spine; discal setæ of inner arm about fourteen in number; intermediate arm, *md*, with apex produced into a single, powerful, black spine, with a comb of smaller black pegs just beneath it; a further comb of pegs some distance basad of the first group.

Habitat.—Eastern Siberia (Ussuri).

Holotype, male, Vinogradovka, 133° 50' east longitude, 43° 20' north latitude, August 10, 1929 (*Kiritchenko*). Allotopotype, female.

The types are preserved in the museum of the Russian Academy of Sciences.

As is usual in this involved genus, the present species is best defined by the structure of the dististyle of the male hypopygium, especially the armature of the intermediate and inner lobes. By Edwards's key to the species of *Styringomyia*³ the present fly runs to *crassicosta* (Speiser), an African species. *Styringomyia siberiensis* is allied to two other species described at this time (*omeiensis* sp. nov. and *separata* sp. nov.), but differs from both in hypopygial characters. I had earlier⁴ indicated the occurrence of this tropicopolitan genus in Siberia, this note being based upon the present record. The species is more northern in its distribution than any other so far made known, the most northerly previous record being for *S. nipponensis* Alexander, from Honshiu Island, Japan, latitude about 35° north.

STYRINGOMYIA OMEIENSIS sp. nov. Plate 1, fig. 23; Plate 3, fig. 48.

General coloration chiefly pale, the abdomen only slightly patterned; wings with the usual four dark spots; cell 2d M₂ broadly sessile; vein 2d A angulated and spurred at outer end; male hypopygium with the setæ of the ninth sternite slightly separated; dististyle with inner arm terminating in a single very long spine, with a group of about three smaller spines at its base.

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

Rostrum brownish yellow; palpi light brown. Antennæ with the scape blackened beneath, obscure yellow above; pedicel brownish black; flagellum broken. Head chiefly pale.

Mesonotal præscutum pale, lined with brownish black on anterior portion; scutum chiefly pale; scutellum blackish, pale medially; mediotergite darkened. Pleura pale yellow. Halteres broken. Legs with the fore and middle coxæ pale yellow; femora

³ Trans. Ent. Soc. London for 1914 (1914) 210-212.

⁴ Philip. Journ. Sci. 52 (1933) 395.

pale yellow, each with two narrow dark rings that are slightly interrupted beneath; tibiae with the apex and a premedial ring dark; tarsal segments whitish, the fore tarsi with the tips of the individual segments narrowly darkened; terminal segment black. Wings (Plate 1, fig. 23) pale yellow, with the usual four dark spots at r-m, m-cu, outer end of cell 1st M_2 , and outer end of vein 2d A. Venation: Cell 2d M_2 broadly sessile, vein 2d A angulated and spurred at outer end.

Abdomen chiefly pale yellow, only slightly patterned at posterior borders of the tergites. Male hypopygium (Plate 3, fig. 48) with the ninth sternite, 9s, relatively broad at tip, the two setae slightly separated at base. Armature of dististyle as shown; note that the apex of inner arm, *id*, terminates in one very long spine, surrounded at base by about three shorter ones; from this apical group the margin of the lobe slopes obliquely to base, with an almost continuous group of peglike spines along this margin; discal spines about a dozen in number.

Habitat.—China (Szechwan).

Holotype, male, Mount Omei, altitude 4,500 feet, August 9, 1929 (*Franck*).

Styringomyia omeiensis is most nearly allied to *S. separata* sp. nov. and *S. siberiensis* sp. nov., being most readily distinguished by the details of structure of the male hypopygium. As in the case of the species mentioned, by the use of Edwards's key to the species of the genus,⁵ the present fly runs to *S. crassica* (Speiser), of Africa.

STYRINGOMYIA SEPARATA sp. nov. Plate 1, fig. 24; Plate 3, fig. 49.

Male.—Length, about 6 millimeters; wing, 4.5.

Female.—Length, about 5 millimeters; wing, 4.

Characters much as in *S. omeiensis* sp. nov., to which it is most nearly allied, differing especially in the structure of the male hypopygium.

Præscutum almost entirely brownish yellow, the dark markings best represented by four areas immediately before the suture and by the strongly darkened cephalic portion of the sclerite before the pseudosutural foveæ, the two regions interconnected by narrow darkenings on the interspaces. Wings (Plate 1, fig. 24) with vein 2d A very weakly angulated but unspurred. Male hypopygium (Plate 3, fig. 49) with the inner lobe, *id*, of

⁵ Trans. Ent. Soc. London for 1914 (1914) 210–212.

the dististyle of distinctive conformation, the outer point terminating in about six powerful spines that are widely separated from the next group along the margin by a broad U-shaped notch; discal group of spines about ten in number, all long and slender; at base of inner lobe on mesal face with a small pale point.

Habitat.—Formosa (north).

Holotype, male, Rimozan, May 2, 1933 (*Issiki*).

Allotopotype, female, pinned with type.

ILLUSTRATIONS

[a, *Æ*deagus; b, basistyle; d, dististyle; g, gonapophysis; i, interbase; id, inner dististyle; md, intermediate lobe of dististyle; od, outer dististyle or outer lobe of dististyle; p, phallosome; s, sternite; t, tergite.]

PLATE 1

- FIG. 1. *Trichocera arisanensis* sp. nov., venation.
2. *Longurio* (*Longurio*) *variceps* sp. nov., venation.
3. *Tipula* (*Acutipula*) *alboplagiata* sp. nov., venation.
4. *Tipula* (*Schummelia*) *indifferens* sp. nov., venation.
5. *Tipula* (*Schummelia*) *nigrocellula* sp. nov., venation.
6. *Tipula* (*Lunatipula*) *trialbosignata* sp. nov., venation.
7. *Tipula gressitti* sp. nov., venation.
8. *Nephrotoma atrolatera* sp. nov., venation.
9. *Dolichopeza* (*Nesopeza*) *lugubrivestis* sp. nov., venation.
10. *Limonia* (*Limonia*) *subhostilis* sp. nov., venation.
11. *Limonia* (*Dicranomyia*) *transfuga* sp. nov., venation.
12. *Dicranota* (*Rhaphidolabis*) *subsordida* sp. nov., venation.
13. *Dicranota* (*Rhaphidolabis*) *uninebulosa* sp. nov., venation.
14. *Dicranota* (*Rhaphidolabis*) *pallidithorax* sp. nov., venation.
15. *Dicranota* (*Amalopina*) *fumicostata* sp. nov., venation.
16. *Gonomyia* (*Gonomyia*) *justa* sp. nov., venation.
17. *Gonomyia* (*Lipophleps*) *toraja* sp. nov., venation.
18. *Gonomyia* (*Lipophleps*) *toala* sp. nov., venation.
19. *Lipsothrix kashmirica* sp. nov., venation.
20. *Ormosia hutchinsonæ* sp. nov., venation.
21. *Styringomyia celebesensis* sp. nov., venation.
22. *Styringomyia siberiensis* sp. nov., venation.
23. *Styringomyia omeiensis* sp. nov., venation.
24. *Styringomyia separata* sp. nov., venation.

PLATE 2

- FIG. 25. *Tipula* (*Acutipula*) *alboplagiata* sp. nov., male hypopygium, details.
26. *Tipula* (*Acutipula*) *alboplagiata* sp. nov., male hypopygium, details.
27. *Tipula* (*Schummelia*) *indifferens* sp. nov., male hypopygium, details.
28. *Tipula* (*Schummelia*) *indifferens* sp. nov., male hypopygium, details.
29. *Tipula* (*Schummelia*) *nigrocellula* sp. nov., male hypopygium, ninth tergite.
30. *Tipula* (*Lunatipula*) *trialbosignata* sp. nov., male hypopygium, details.

- FIG. 31. *Tipula* (*Lunatipula*) *trialbosignata* sp. nov., male hypopygium, ninth tergite.
32. *Tipula* (*Oreomyza*) *arisanensis* Edwards, male hypopygium, dorsal aspect.
33. *Tipula* (*Oreomyza*) *arisanensis* Edwards, male hypopygium, lateral aspect.
34. *Tipula gressitti* sp. nov., male hypopygium, details.
35. *Dolichopeza* (*Nesopeza*) *lugubrivestis* sp. nov., male hypopygium, details.

PLATE 3

- FIG. 36. *Limonia* (*Limonia*) *subhostilis* sp. nov., male hypopygium.
37. *Dicranota* (*Rhaphidolabis*) *subsordida* sp. nov., male hypopygium.
38. *Dicranota* (*Rhaphidolabis*) *uninebulosa* sp. nov., male hypopygium, interbase.
39. *Dicranota* (*Rhaphidolabis*) *pallidithorax* sp. nov., male hypopygium, interbase.
40. *Dicranota* (*Amalopina*) *fumicostata* sp. nov., male hypopygium.
41. *Gonomyia* (*Gonomyia*) *justa* sp. nov., male hypopygium.
42. *Gonomyia* (*Lipophleps*) *toraja* sp. nov., male hypopygium.
43. *Gonomyia* (*Lipophleps*) *toala* sp. nov., male hypopygium.
44. *Lipsothrix kashmirica* sp. nov., male hypopygium.
45. *Ormosia hutchinsonæ* sp. nov., male hypopygium.
46. *Styringomyia celebesensis* sp. nov., male hypopygium.
47. *Styringomyia siberiensis* sp. nov., male hypopygium.
48. *Styringomyia omeiensis* sp. nov., male hypopygium.
49. *Styringomyia separata* sp. nov., male hypopygium.

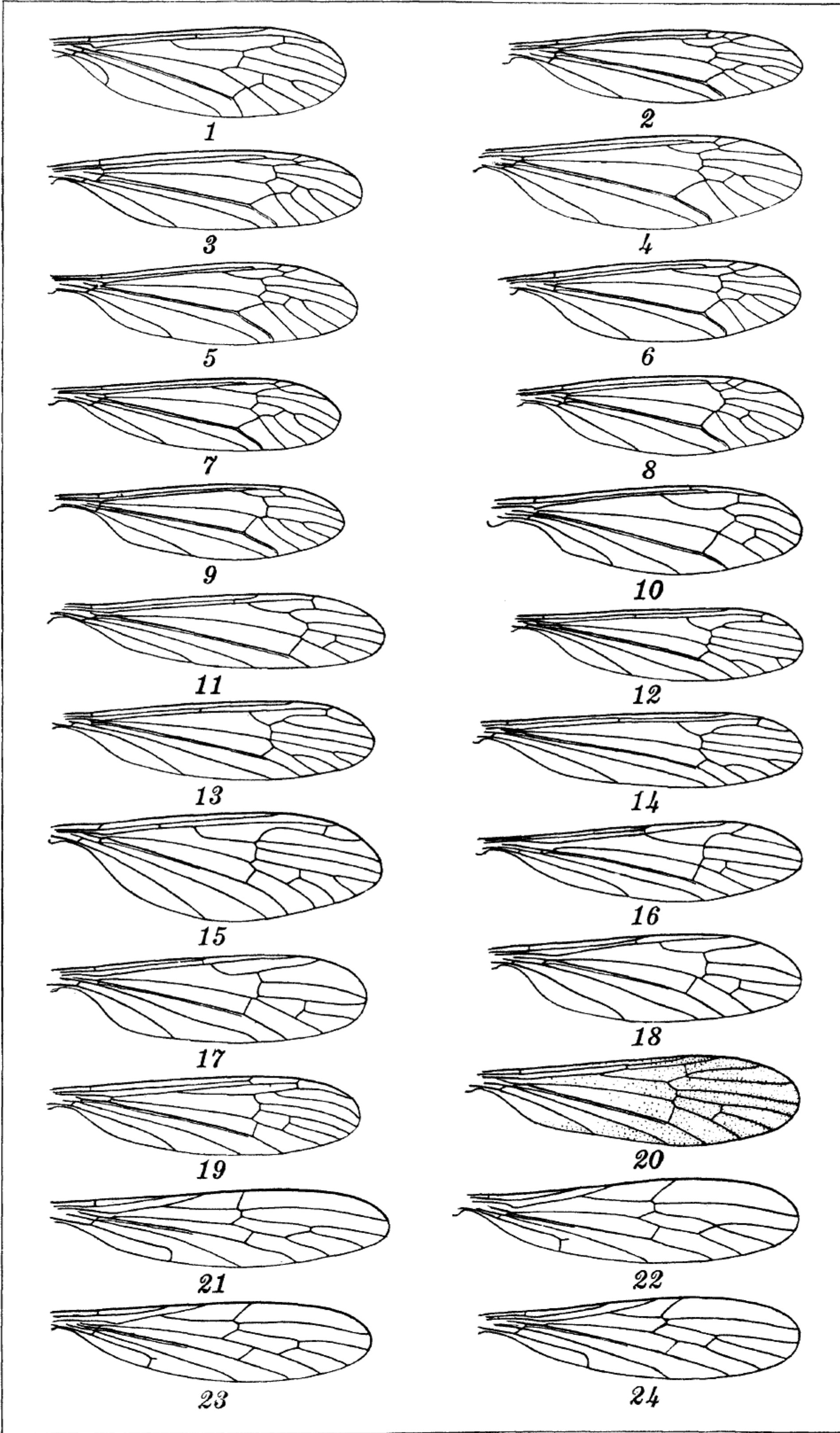


PLATE 1.



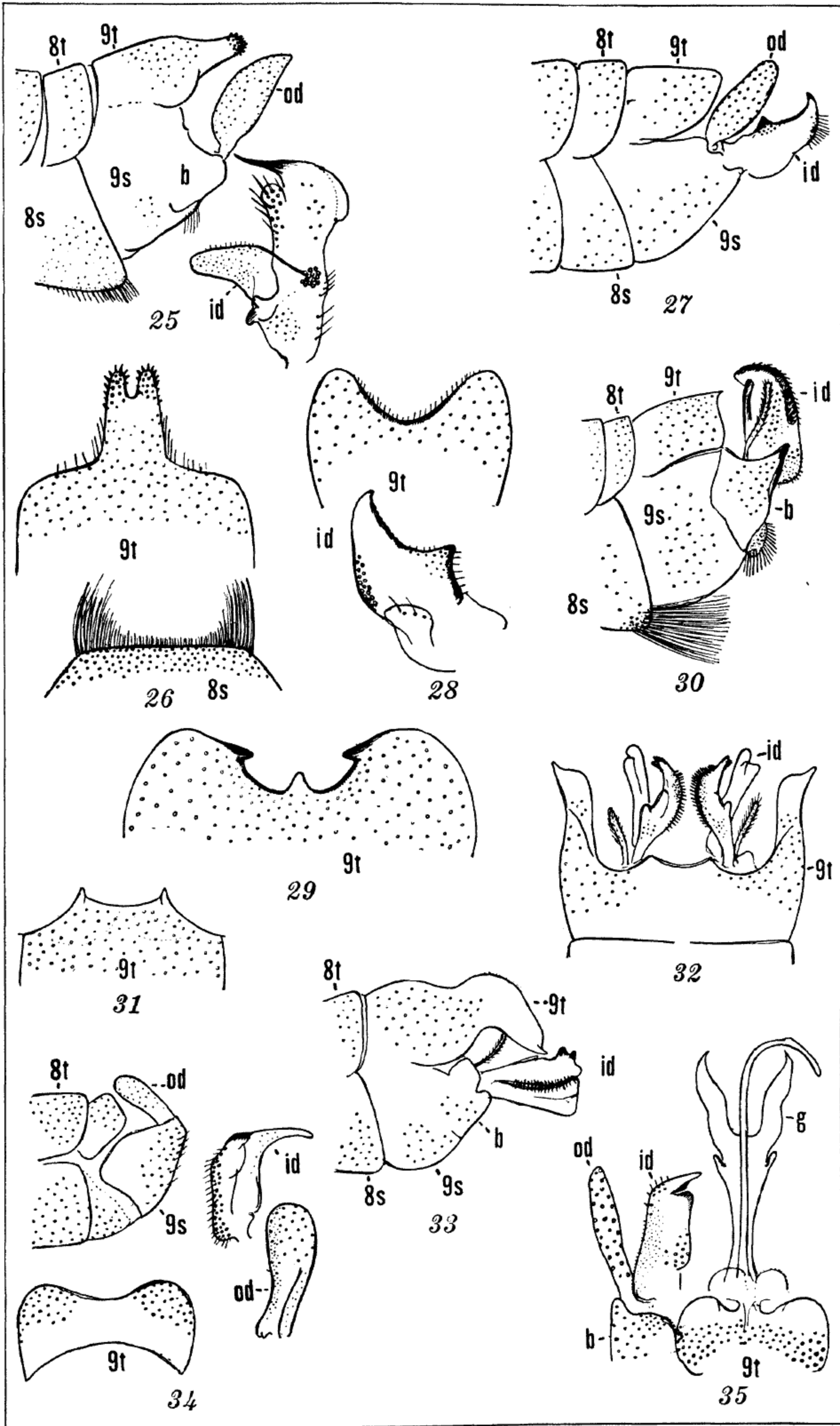


PLATE 2.



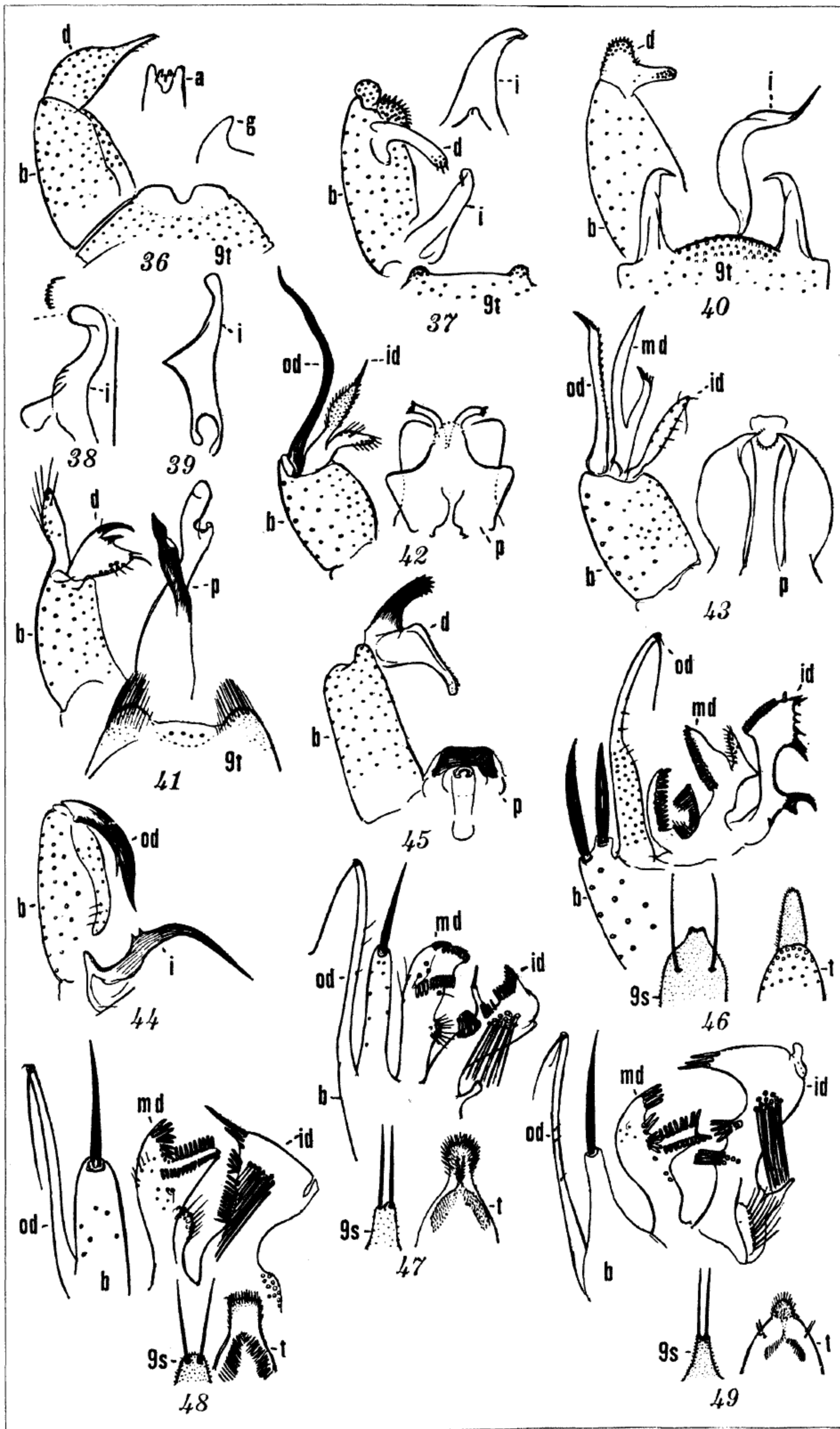


PLATE 3.