

NEW OR LITTLE-KNOWN TIPULIDÆ FROM EASTERN ASIA (DIPTERA), XXXVI¹

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THREE PLATES

The crane flies discussed in this paper were included in extensive shipments of these flies received from Japan and Formosa, collected by Messrs. Takeo Kato, Hiromu Yamamoto, and Ryoichi Takahashi; from southeastern China, taken by Mr. J. Linsley Gressitt and Mr. Ernest R. Tinkham, together with additional materials taken by a native collector employed by Mr. Tinkham; and from Sumatra and Java, collected by Mrs. M. E. Walsh. All of the types are preserved in my collection of these flies, and I wish to express my very deepest thanks to all of the above-mentioned entomologists for their continued interest in saving these flies which are too often ignored by collectors of insect specimens.

TIPULINÆ

PLOCIMAS MAGNIFICUS Enderlein. Plate 1, fig. 1; Plate 2, fig. 25.

Plocimas magnificus ENDERLEIN, Zool. Anzeig. 52 (1921) 226, 227.

Enderlein described this beautiful fly from both sexes, the specimens being taken at and near Canton, Kwangtung, China, in 1911 by von Mell. One female, Hong San, southeastern Kiangsi, altitude 3,000 feet, June 22, 1936 (*Gressitt*).

The specimen differs in some regards from the type description.

Female.—Length, about 35 millimeters; wing, 22.5.

Outer segments of palpi black. Frontal prolongation of head elongate, much as in the genus *Clytocosmus* Skuse, but with a distinct nasus. Intermediate præscutal stripes paler at cephalic ends. Each scutal lobe with two dark areas; these, like the præscutal stripes, subnitidous, narrowly bordered by more opaque brown; præscutal interspaces with sparse setæ; lateral portions of scutal lobes with long erect black setæ; scutellum

¹ Contribution from the Department of Entomology, Massachusetts State College.

with long coarse golden setæ; parascutella glabrous, paler yellow. Femora obscure yellow, tips narrowly (1 to 1.5 millimeters) blackened. Wings with a dark spot at origin of Rs and a broad seam along vein 2d A.

A few additional generic and specific characters may be noted. The antennæ of the female sex (Plate 2, fig. 25) on each flagellar segment beyond the first have three setæ on outer face at and beyond midlength; lower or larger ventral lobe with one very long verticil that exceeds in length the entire segment, as well as two shorter, unequal bristles, the longer of which becomes progressively longer on the outer segments; outer or smaller lobe of flagellum without major setæ; terminal segment prolonged at tip. Tibial spur formula 1-2-2; claws (female) simple. Venation (Plate 1, fig. 1): No vestige of Sc₁; Rs long; R₁ beyond free tip of Sc₂ about equal in length to latter; m-cu on M₄ some distance beyond origin of latter; cell 2d A wide. All outer radial veins with macrotrichia; veins M₁, M₂, and M₃ with fewer trichia; M₄ and Cu₁ with these setæ less numerous and scattered.

PRIONOTA NIGRICEPS van der Wulp.

Prionota nigriceps VAN DER WULP, Notes Leyden Mus. 7 (1885) 2, 3.

Prionota nigriceps ALEXANDER, Proc. U. S. Nat. Mus. 49 (1915) 181, 182, pl. 45, fig. 34 (wing); pl. 47, fig. 50 (antenna), figs. 51, 52 (hypopygial details).

Three males, Selabintanah, Mount Gedeh, western Java, altitude 3,000 feet, September, 1935 (*Walsh*). One male, Goenoeng Malang, Djampang, western Java, altitude 4,000 feet, October, 1936 (*Walsh*).

In these specimens the following differences from van der Wulp's characterization are noted. Antennal scape black, pedicel reddish to brownish black. Petiole of cell M₁ very variable in length, in cases exceeding m, in others the cell narrowly sessile.

PSELLIOPHORA KANGEANENSIS sp. nov. Plate 1, fig. 2.

Head and thorax orange; halteres black; legs black, all tibiæ with a conspicuous subbasal white ring; wings uniformly suffused with black; abdomen with basal three segments orange, remainder, including hypopygium and ovipositor, black.

Male.—Length, about 13 to 15 millimeters; wing, 12 to 14; antenna, 4.5 to 5.

Female.—Length, about 20 to 22 millimeters; wing, 15 to 16.

Frontal prolongation of head orange-yellow, nasus a little darker; palpi with basal two segments dusky, outer segments

more yellowish. Antennæ with scape and pedicel reddish brown; flagellum black, incisures of the more basal segments restrictedly pale. Head orange, posterior orbits more yellowish.

Pronotum and mesonotum almost uniformly reddish orange, præscutum subopaque, without clearly defined darker areas; scutum orange, each lobe with two slightly darker areas. Pleura orange, dorsopleural membrane a little more yellowish orange. Halteres black, base of stem narrowly reddish. Legs with coxæ and trochanters orange; femora black, bases restrictedly yellow, narrowest on posterior legs; tibiæ black, all with a narrow but clearly defined and conspicuous white subbasal ring, vestiture of the annulus snowy white; tarsi black. Wings (Plate 1, fig. 2) uniformly suffused with black, stigma and costal portion a little more intense; in the female, cells R and M with pale linear central streaks beyond midlength; veins black. Squama naked, margin immediately beyond it with long dense black setæ. Venation: Cell M_1 narrowly to broadly sessile.

Abdomen with basal three segments orange; remainder of abdomen, excepting posterior border of fourth sternite, black.

Habitat.—Kangean Island (northeast of Java).

Holotype, male, Petapau, March 1936 (*Walsh*). Allotopotype, female, pinned with type. Paratopotypes, 10 males and females; paratypes, 2 males, 1 female, Ardjasa, March 1936 (*Walsh*).

The nearest relative of the present fly is *Pselliophora luctuosa* de Meijere, of western Java, which differs conspicuously in the coloration of the abdomen and in the structure of the male hypopygium.

PSELLIOPHORA LUCTUOSA de Meijere.

Pselliophora luctuosa DE MEIJERE, Tijds. voor Ent. 59 (1916) 199.

One male, Goenoeng Besser, Djampang, western Java, May, 1936 (*Walsh*).

PSELLIOPHORA STIGMATICA FLAVOSCUTELLARIS subsp. nov.

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

Differs from typical *stigmatica* de Meijere (Central Nias), as follows: Median præscutal stripe divided by a pale vitta, especially conspicuous on posterior half; dark areas on scutal lobes not confluent across midline; scutellum uniformly yellow, including parascutella; mediotergite not or scarcely darkened on posterior half. Blackened areas on both the anepisternum and ventral sternopleurite. Femora with only the distal fourth or less dark brown; tibiæ brown, white basal rings of the posterior pair much more extensive than those of other legs; tarsi black.

Wings with prearcular field weakly darkened; stigma pale yellow, its proximal end weakly darkened. Venation: Cell M_1 very short-petiolate. Basal abdominal tergites brownish black, their posterior margins yellow; sternites yellow, not or scarcely darkened.

Habitat.—Sumatra (Benkoelen).

Holotype, female, Tanjong Sakti, altitude 1,650 to 2,000 feet, June 11 to 20, 1935 (*Walsh*).

It seems probable that *Pseliophora chaseni* Edwards (Anamba Island, South China Sea) will likewise be found to represent a subspecific group of *stigmatica*. It differs from the present fly by the entire median præscutal stripe, posteriorly darkened mediotergite, and the distinctively patterned legs and wings.

PSELLIOPHORA BIAURANTIA sp. nov. Plate 1, fig. 3.

General coloration black; abdominal segments two and three orange; all tibiæ with a clearly defined white subbasal ring; wings black, variegated by five creamy-yellow areas, including a broken crossband of three areas before cord; cell M_1 sessile.

Female.—Length, about 17 millimeters; wing, 14.

Frontal prolongation of head and nasus black, dorsal surface of former with abundant black setæ; palpi brownish black. Antennæ black, 12-segmented (female); outer flagellar segments depressed, broader than long. Head velvety black.

Mesothorax uniformly black, three præscutal stripes glabrous and faintly nitidous, not otherwise differentiated from remainder of notum. Halteres black. Legs black, all tibiæ with a subbasal white ring, narrow but clearly defined on all legs; posterior femora stout, with inconspicuous setæ, extreme femoral bases pale. Wings (Plate 1, fig. 3) black, variegated by five creamy-yellow areas, including a major series of three forming an incomplete crossband before cord, located in cells R_1 and R_2 , outer end of cell M , and outer end of cell Cu , respectively, interrupted by dark seams along veins M and Cu ; the two additional creamy areas lie in the base and outer portion of cell 1st A ; additional to these primary areas are pale longitudinal streaks in centers of cells R , M , M_3 , M_4 , Cu , and 1st A , these latter presumably a character of the female sex only, as common in the genus; cell 2d A more grayish, its base darker; veins dark brown. A fringe of long setæ on wing margin beyond squama. Venation: R_2 unusually long, erect; cell M_1 sessile.

Abdomen velvety black, with the single exception of segments two and three which are deep orange, lateral borders of tergites slightly darkened, caudal margin of third sternite narrowly brownish black; genital shield and ovipositor polished black; cerci straight, tips narrowly pale.

Habitat.—China (Kwangtung).

Holotype, female, Pi Shan, Yuen Hing Ying, low on mountain, among trees, May 26, 1936 (*Hai Tsz*).

Pselliophora biaurantia is most nearly allied to *P. speciosa* Edwards (Assam) and *P. stabilis* Alexander (Yunnan). These species are all smaller than *P. ctenophorina* Riedel (Formosa) but agree in the uniformly black head and thorax. The present fly differs from *speciosa* in the reduction of the orange on the abdomen and in the conspicuously patterned wings; from *stabilis* it is readily told by the coloration of the legs and abdomen, the increased number of antennal segments, and especially by the pattern of the wings.

PSELLIOPHORA UPSILON sp. nov. Plate 1, fig. 4.

Mesonotal præscutum and pleura yellow, variegated with black, cephalic half of præscutum black, posterior half covered by a U-shaped yellow area before the suture; scutellum yellow; knobs of halteres dark brown; femora black, bases yellow, the amount of the latter greatest on posterior legs; all tibiæ with a narrow, clearly defined, white subbasal ring; wings almost uniformly tinged with brown, stigma darker brown; cell M_1 short-petiolate; abdomen with basal four segments yellow, segments five to eight black; ninth segment (male) chiefly orange-red, blackened at apex.

Male.—Length, 13 to 14 millimeters; wing, 12 to 13; antenna, about 7.

Frontal prolongation of head above light sulphur-yellow, including nasus, infuscated laterally and beneath; palpi pale, distal end of terminal segment more darkened. Antennæ with scape and pedicel obscure yellow; flagellum and branches black, apices of the more basal segments narrowly brightened. Head orange, occiput and postgenæ brownish black.

Pronotum yellow medially, blackened on sides. Mesonotal præscutum with cephalic half, including humeral region, solidly black, the area produced more caudad along the midline, ending at near midlength of sclerite; opposite humeral region the dark

color becoming confluent with the black of prothorax; posterior half of præscutum uniformly orange, forming a U-shaped transverse saddle before suture; scutal lobes and suture blackened, median area of scutum and posterior portion of lobes yellow; scutellum testaceous yellow; mediotergite with posterior half and lateral borders black, anterior central portion orange-yellow. Pleura variegated orange-yellow and black, black color including propleura; a large but narrow area on mesosternum, this narrowed to virtually interrupted on dorsal sternopleurite, directly connected with dark color of scutal lobes; posterior half of pleurotergite and entire metapleural region black; dorsopleural region light yellow, excepting darkened end portions as described. Halteres yellow, extreme base of stem and the knobs dark brown. Legs with fore and middle coxæ yellow, hind coxæ blackened, their apical portions yellow; trochanters yellow, darkened apically; femora black, bases yellow, including about proximal third of fore femora, proximal half of midfemora, and proximal two-thirds of hind pair; tibiæ black, all with a clear-cut, narrow, white ring, slightly broader and somewhat more yellowish on posterior tibiæ; tarsi black. Wings (Plate 1, fig. 4) almost uniformly tinged with brown, the prearcular region and small stigma darker brown; veins brownish black. Venation: Cell M_1 petiolate, stem shorter than m.

Abdomen with basal four segments uniformly light yellow to orange-yellow; segments five to eight, inclusive, black; segment nine cylindrical, orange-red, apex including styli blackened.

Habitat.—Eastern Java.

Holotype, male, Baoeng Falls, Tengger Mountains, altitude 1,200 feet, February, 1936 (*Walsh*). Paratopotypes, 2 males.

By various keys to the species of *Pseliophora* the present fly runs to *P. fuscipennis* (Macquart), which differs notably in the coloration of the body and wings. The transverse yellow saddle of the present fly, involving the entire posterior half of the præscutum, is very conspicuous, and the pattern of the abdomen is similarly distinctive.

LONGURIO (LONGURIO) FULVUS Edwards.

Longurio fulvus EDWARDS, Ann. & Mag. Nat. Hist. 8 (1916) 262.

The types, females, were from northern China. I have before me a few specimens representing both sexes. In this material the orange color of the body is very bright and intense, more so than in material from Kiangsi Province and from Formosa. The present specimens were taken in Kwangtung

Province, southeastern China, by Mr. Hai Tsz, native collector for Mr. Tinkham.

Sui Hit Chi, Gow Bo Shan, Yue Hing Ying, on mountain grass, altitude over 1,000 feet, May 31, 1936. Ping Shan, Yue Hing Ying, June 5, 1936. Gee To Wa, June 7, 1936.

TIPULA (TIPULODINA) AMABILIS sp. nov. Plate 1, fig. 5.

Belongs to the *venusta* group; allied to *gracillima*; mesonotal præscutum with stripes confluent, scarcely differentiated from ground color; an incomplete, dark brown, transverse girdle extending from lateral ends of præscutal stripes across dorso-pleural membrane onto dorsal sternopleurite; Rs short, transverse; R_{1+2} atrophied; R_3 long, deflected strongly toward wing tip.

Female.—Length, about 23 millimeters; wing, 15.5.

Frontal prolongation of head whitish above, blackened on sides and beneath; nasus elongate, white; basal segments of palpi dark brown, two distal segments paler, outer one darkened at apex. Antennæ with scape pale at base, darkened apically; pedicel dark brown; flagellum black, segments cylindrical, with verticils shorter than segments; terminal segment about two-thirds length of penultimate. Front and anterior vertex whitish; posterior vertex and occiput infuscated, with a capillary black median vitta extending from anterior vertex almost to occiput.

Pronotum dark brown medially, abruptly whitened on sides. Mesonotal præscutum almost covered by dark brown, the usual interspaces virtually concolorous with the stripes, the latter delimited by a slightly darker median vitta and by vague margins to the lateral stripes; a dark area opposite anterior end of lateral stripe, crossing the dorsopleural membrane and extending as a narrow incomplete girdle across the anepisternum onto sternopleurite; humeral triangle of præscutum abruptly light yellow; sides of præscutum before suture a little brightened; scutum dark brown; scutellum a little paler, parascutella dark; mediotergite pale brown, the posterior border and a central stem darker to form an inverted T-shaped area. Pleura pale yellow, variegated with brown, as described above; pleurotergite weakly infumed except at summit of tubercle. Halteres long and slender, black, base of stem restrictedly pale. Legs with coxæ whitened; trochanters white, with a dark spot on inner face at apex; fore and middle femora black, more yellowish basally, darker outwardly, with a narrow (1.3 millimeters) white ring immediately before the very narrow blackened apex; hind fe-

mora brown, tips deepening to black; fore and middle tibiae black, with a relatively broad (2 millimeters) white ring at tip; hind tibiae black, with a moderately broad (3 millimeters) white ring beyond base and another wider (4 millimeters) annulus at tip; fore and middle basitarsi black, tips narrowly (about the distal sixth or less) snowy white; posterior basitarsi black with about the outer three-fifths abruptly white; remaining tarsal segments white. Wings (Plate 1, fig. 5) subhyaline, with a very delicate yellowish tinge; stigma and a confluent seam on anterior cord brownish black; wing tip, in cells Sc_2 to R_5 , inclusive, darkened, the area barely involving the cephalic margin of cell M_1 ; in cells R_3 and R_5 centers of darkened portions a little paler; cell Sc black; veins black, very distinct. Venation: R_{1+2} atrophied, so cells Sc_2 and R_2 are confluent; R_s very short, subequal to $r-m$ and nearly in transverse alignment with the other elements of anterior cord; vein R_3 long, deflected strongly toward wing apex; cell 2d A moderately wide.

Abdominal tergites brown, variegated with more yellowish areas on basal rings before apices of segments; sternites more uniformly brownish yellow.

Habitat.—Western Java.

Holotype, female, Goenoeng Malang, Djampang, altitude 4,000 feet, October, 1936 (*Walsh*).

Tipula (Tipulodina) amabilis is most closely allied to *T. (T.) gracillima* Brunetti, of southern India and Ceylon, differing in the coloration of the body and legs, and in the details of venation. In the present fly vein R_3 is shorter and more distant from the costal border than in *gracillima*. Both species have vein R_{1+2} atrophied, either wholly or except for a rudimentary basal spur.

TIPULA (VESTIPLEX) NOKONIS Alexander.

Tipula nokonis ALEXANDER, Philip. Journ. Sci. 36 (1928) 459-461.

The type, a male, was from Noko, Formosa, altitude 9,800 feet, collected June 27, 1927, by Issiki. A female specimen that surely seems to be conspecific is now available.

Female.—Length, about 22 millimeters; wing, 18.

Characters as in male, with the following differences: Palpi black. Antennae with scape brownish black, pedicel light yellow; flagellum entirely black. Vertex of head chiefly dark brown, front more grayish; vertical tubercle low and entire. Ground color of mesonotum clearer gray than greenish gray. Femora obscure yellow, tips blackened, without a clearly-defined subterminal yellow ring. Ovipositor with cerci strongly com-

pressed, margins entirely smooth; hypovalvæ relatively short, not exceeding caudal end of genital shield.

Allotype, female, Kwanzan, Formosa, altitude 9,000 feet, June 30, 1936 (*R. Takahashi*).

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

Size small (wing, female, 9 millimeters); general coloration of thorax dark brown, præscutum with four narrow black stripes; antennal scape and pedicel light yellow, flagellum black, halteres dark brown, base of stem narrowly obscure yellow; femora black, with a narrow yellow subterminal ring; wings brown, vaguely brightened by more yellowish areas; Rs about twice length of m-cu; cerci yellow, margins entire.

Female.—Length, about 12.5 millimeters; wing, 9.

Frontal prolongation of head yellow above, blackened on sides and beneath; nasus distinct; palpi black. Antennæ with the scape and pedicel light yellow, flagellum black; flagellum with some of the segments fused, including the basal two and the apical pair; segments short-cylindrical, simple, with verticils that exceed the segments in length. Front and anterior vertex golden-yellow, with a narrow capillary dark vitta extending from summit of the simple vertical tubercle to occiput; sides of posterior vertex and genæ infuscated.

Pronotum brownish black. Mesonotal præscutum dark brown, with four narrow black stripes, intermediate pair connected in front, convergent behind, apparently representing darkened borders of a median stripe; long yellow setæ on præscutal interspaces; posterior sclerites of notum brown. Pleural, including dorsopleural membrane, dark brown. Halteres dark brown, base of stem narrowly obscure yellow. Legs with coxæ dark brown; trochanters yellow; femora black, base of fore femora narrowly yellow; all femora with a narrow but conspicuous subterminal yellow ring placed a little more than its own length from tip; tibiæ testaceous-brown, tips narrowly darkened; tarsi black. Wings (Plate 1, fig. 6) relatively small and narrow, but not showing indications of degeneration of venation; ground color brown, vaguely brightened by more yellow areas, including the prearcular field; a common mark near bases of cells M to 2d A, inclusive; small spots before and beyond origin of Rs; a poststigmatal brightening in cells R₂ and R₃; conspicuous, more whitish, oblitative areas before stigma and across base of cell 1st M₂; veins brown. Venation: Rs relatively long, about twice m-cu; cell 1st M₂ relatively large, its inner end pointed; petiole of cell M₁ shorter than m; cell 2d A narrow.

Abdomen reddish brown, the tergites more blackened medially; subterminal segments more uniformly blackened. Cerci yellow, with entire margins; hypovalvæ very reduced, black.

Habitat.—Formosa.

Holotype, female, Hattsukan, altitude 9,000 feet, August 23, 1936 (*Takahashi*).

I take unusual pleasure in naming this interesting *Tipula* in honor of the collector, my long-time friend, Professor Ryoichi Takahashi, to whom I express my deep indebtedness for many favors in connection with a study of the Tipulidæ of the Japanese Empire. The species is very distinct from the other regional species of the genus in size, in the coloration of the body, wings, and legs, and in the entire cerci. *Tipula (Vestiplex) deserrata* Alexander, of western China, and *T. (V.) nokonis* Alexander, of Formosa, have similar entire cerci, but in all other regards are quite distinct flies. The condition of having the cerci un-toothed appears to be more common in *Vestiplex* than had hitherto been believed.

TIPULA (VESTIPLEX) BICORNIGERA sp. nov. Plate 2, figs. 26 and 27.

Allied to *bicornuta*; general coloration yellow, præscutum with four brown, unmargined stripes; antennæ (male) relatively elongate, flagellum black; knobs of halteres dark brown; femora obscure brownish yellow, tips narrowly black, preceded by a clearer yellow ring; wings pale brown, variegated by slightly darker brown and cream-colored areas; male hypopygium with tergite produced into a median plate that divides into two yellow divergent lobes that are set with strong black setæ; basistyle produced into a nearly straight black spine; inner dististyle a compressed high blade.

Male.—Length, about 11 millimeters; wing, 12.5; antenna, about 5.

Frontal prolongation of head light yellow, slightly darker on sides; nasus slender; palpi brownish black. Antennæ (male) relatively elongate, as shown by the measurements; scape and pedicel light yellow; first flagellar segment brown, narrowed outwardly; remainder of flagellum black; flagellar segments with moderately large basal enlargements; verticils long but still somewhat shorter than segments; terminal segment about one-fourth length of penultimate. Head yellow, with a narrow brown median vitta; vertical tubercle small and low.

Pronotum dark medially, golden-yellow pollinose. Mesonotal præscutum with ground color golden pollinose, with four brown

stripes, intermediate pair entirely confluent at extreme cephalic portion, narrowly separated on posterior two-thirds; posterior interspaces with small dark triangles just before suture; setæ of interspaces small, yellow; scutum yellow, each lobe with two brown areas, median region with a capillary dark vitta that continues almost unbroken over central area of scutellum and mediotergite. Pleura yellow. Halteres with stem obscure yellow, knob dark brown. Legs with coxæ and trochanters yellow; femora obscure brownish yellow, tips rather narrowly (about 1 millimeter) black, extreme tip a trifle paler, black areas subequal in length on all legs; black femoral apices preceded by a clearer yellow subterminal ring of approximately equal length; tibiæ and tarsi black. Wings pale brown, variegated by slightly darker brown and cream-yellow areas; prearcular region and cell C uniformly yellow, cell Sc a trifle more infuscated on basal half; dark areas including stigma and a confluent seam on anterior cord and another area at origin of Rs; cream markings involving cells before cord, as well as a narrow, incomplete, poststigmatal area from C into cell R₅, nearly reaching oblitative mark across cell 1st M₂; outer radial and medial cells almost uniformly pale brown, not or scarcely variegated; veins brown, a little paler in the more yellowish areas. Venation: Rs a little more than twice m-cu; R₃ nearly straight, not markedly upcurved on distal portion (as in *biserra*), cell R₂ at margin thus much more extensive than cell R₃; petiole of cell M₁ a little longer than m; cell 1st M₂ pentagonal in outline, its outer end only moderately pointed; m-cu shortly before fork of M₃₊₄.

Abdominal tergites yellow, trivittate with darker, including a more clearly defined, nearly continuous, median stripe and paler brown submarginal stripes, extreme borders pruinose; outer segments uniformly darkened; basal sternites yellow. Male hypopygium somewhat as in *bicornuta* but with the details very different. Ninth tergite (Plate 2, fig. 26, 9t) with the median area produced caudad into a flattened yellow plate that forks into two divergent lobes set with short blackened setæ that are directed outward; dorsal lateral angles of tergite produced into small black lobes that are tipped with a few setæ; posterior or cephalic portions of tergal saucer blackened and microscopically roughened, saucer divided at midwidth by pale membrane. Basistyle (Plate 2, fig. 27, b) bearing a powerful black spine, nearly straight, tip obtuse. Outer dististyle a dusky, flattened-clavate lobe. Inner dististyle (Plate 2, fig. 27,

id) much deeper than in *bicornuta*, stem portion near base bearing a conspicuous black spine. Eighth sternite simple, unmodified by lobes, and with very few setæ.

Habitat.—Formosa.

Holotype, male, Oiwake, Noko-gun, altitude 7,570 feet, August 12, 1936 (*Takahashi*).

The nearest ally of the present fly is undoubtedly *Tipula* (*Vestiplex*) *bicornuta* Alexander, likewise from the high mountains of Formosa. The latter species is a trifle larger, with bicolorous antennal flagellum, shorter Rs, and a very differently constructed male hypopygium, the distinctions in the latter, including the tergite, the spine of the basistyle, and especially the inner dististyle which is narrow and drawn out into a long apical beak.

TIPULA (OREOMYZA) NIITAKENSIS sp. nov. Plate 1, fig. 7; Plate 2, figs. 28 to 30.

General coloration of mesonotum olive-gray, præscutum with four darker stripes; antennal flagellum uniformly black; femora obscure yellow, tips narrowly blackened; wings pale brown, variegated with numerous, small, cream-colored areas distributed over surface; cell M_1 narrowly sessile; abdominal tergites trivittate with brownish black, median stripe entire; outer abdominal segments uniformly darkened; male hypopygium with tergite deeply emarginate, lateral lobes slender, pale, provided with setæ to their tips; eighth sternite unmodified.

Male.—Length, about 14 millimeters; wing, 16; antenna, about 4.2.

Frontal prolongation of head grayish brown; nasus slender; palpi brownish black. Antennæ with scape and pedicel yellow; flagellum black; flagellar segments weakly incised; longest verticils subequal in length to segments; terminal segment nearly one-third length of penultimate. Head brownish gray, front and vertical tubercle light yellow; a capillary median vitta from summit of vertical tubercle backward, becoming nearly obsolete on posterior vertex.

Pronotum olive-brown, darker in front. Mesonotal præscutum olive-gray, with four darker stripes, intermediate pair darker brown, separated by a very indistinct gray median vitta, their margins narrowly and insensibly bordered by darker; lateral stripes more grayish brown, mesal edge darker; scutum olive-gray, each lobe with two confluent brown areas; median area of suture and posterior sclerites of mesonotum olive-gray, with a nearly continuous brown median vitta. Pleura chiefly

olive-gray, yellowish sericeous. Halteres with stem brownish yellow, knob dark brown with paler apex. Legs with coxæ olive-yellow; trochanters yellow; femora obscure yellow, tips rather narrowly (2 millimeters) blackened, the amount subequal on all legs, this tip preceded by a vague, clearer yellow, subterminal ring; tibiæ brownish yellow, tips narrowly brownish black; tarsi brownish black. Wings (Plate 1, fig. 7) with ground color pale brown, variegated by numerous small cream-colored areas, distributed over surface, larger in basal cells; pale areas before and beyond origin of R_s ; an incomplete post-stigmal yellow band in cells Sc_2 to R_5 , inclusive; a conspicuous, more whitish spot in cell 1st M_2 and the adjoining portion of cells M_3 and M_4 ; outer medial cells uniformly darkened; cell 2d A pale at both ends; cells C and Sc uniformly yellow; veins brown, a little paler in the brightened areas. Venation: R_{1+2} entire; cell M_1 narrowly sessile or microscopically petiolate; cell 2d A of moderate width.

Abdomen yellow, tergites trivittate with brownish black; median stripe entire, on sixth to ninth segments involving entire sclerites; lateral stripes paler, margins of segments narrowly gray; sternites yellow, terminal segments blackened. Male hypopygium (Plate 2, fig. 28) of moderate size; tergite, 9t, only indistinctly separated from sternite by pale membrane; basistyle entirely distinct. Ninth tergite (Plate 2, fig. 29, 9t) with a very deep V-shaped notch, so the sclerite at midlength is very narrow; lateral angles produced into slender pale lobes, clothed with setæ to their tips; on ventral surface on either side a blackened expanded lobe, its apical margin microscopically serrulate. Outer dististyle (Plate 2, fig. 30, *od*) elongate, distal half expanded into a narrow blade. Inner dististyle (Plate 2, fig. 30, *id*) with the apical beak slender, simple, blackened; from its base a long flattened ribbonlike blade, apex obtuse, provided with a few long setæ. Eighth sternite (Plate 2, fig. 28, 8s) not produced, its margin pale and unmodified by lobes or setæ; near base, on either side of midline, with a transverse linear pale line.

Habitat.—Formosa.

Holotype, male, Mount Niitaka, August 25, 1936 (*Takahashi*).

Tipula (*Oreomyza*) *niitakensis* is quite distinct from other regional species of the subgenus in the sessile cell M_1 and in the structure of the male hypopygium, especially the ninth tergite and styli. This is another species that may well be better

placed in the subgenus *Vestiplex* Bezzi. A list of the critical species that may with almost equal propriety be placed in *Oreomyza* or *Vestiplex* has been provided in another paper of this series.²

TIPULA (OREOMYZA) TRIDENTATA Alexander.

Tipula tridentata ALEXANDER, Ann. Ent. Soc. America 13 (1920) 265, 266.

Tipula (Oreomyza) tridentata ALEXANDER, Philip. Journ. Sci. 57 (1935) 123.

The type locality was Musha, Formosa, altitude about 3,700 feet, May 18 to June 15, 1919. Additional Formosan records are: Arisan, altitude 8,000 feet, August 26, 1936 (*Takahashi*). Mount Gokwan, altitude 10,000 feet, August 12, 1936 (*Takahashi*).

In this species there is considerable variation in the coloration of the antennal scape and in the relative width of the yellow subterminal femoral rings.

NEPHROTOMA NIGROCENTRALIS sp. nov. Plate 2, figs. 31 and 32.

General coloration sulphur-yellow and black; antennæ (male) relatively long, flagellum black; orbits with dark spots; præscutum with three polished black stripes that are narrowly bordered by velvety black; lateral stripes straight, crossing suture onto scutal lobes; scutellum black; mediotergite clear yellow, its posterior fourth blackened; knobs of halteres sulphur yellow; fore femora pale at both ends, with nearly the central half black; wings whitish subhyaline, stigma, cells Sc and Cu₁, and a seam along vein Cu in cell M dark; no stigmal trichia; subterminal abdominal segments blackened; hypopygium orange; male hypopygium with the lateral tergal lobes broad; eighth sternite without modified setæ.

Male.—Length, about 12 millimeters; wing, 10; antenna, about 5.

Frontal prolongation of head yellow, blackened laterally and beneath and with a narrow black dorsal area that includes the nasus; palpi brownish black. Antennæ (male) relatively long, as shown by measurements; scape and pedicel obscure yellow, flagellum black; flagellar segments strongly incised; longest verticils much shorter than segments. Head orange; posterior orbits with a large velvety black area on either side, directly behind antennal bases; occipital brand triangular, its anterior point acute but not reaching base of vertical tubercle.

² Philip. Journ. Sci. 57 (1935) 118.

Pronotum broadly yellow medially, blackened on sides. Mesonotal præscutum light yellow, with three polished black stripes that are very narrowly bordered by more velvety black, posterior interspaces reduced to narrow lines; lateral stripes nearly straight, velvety border at their anterior end a trifle expanded but scarcely outcurved; scutum yellow, centers of lobes black, connected across suture with lateral præscutal stripes, and further confluent behind with polished black scutellum; parascutella weakly infumed; mediotergite clear sulphur-yellow, posterior fourth blackened, with sparse pale setæ only. Pleura sulphur-yellow, including dorsopleural membrane, variegated with black on anepisternum, dorsal pteropleurite and posterior pleurotergite; ventral sternopleurite and meron more reddish. Halteres with stem black, knob light sulphur-yellow. Legs with coxæ obscure yellow, fore and hind coxæ narrowly blackened at bases; trochanters yellow; fore femora with base and apex yellow (about 2 millimeters), leaving central portion more broadly (about 3.5 millimeters) black; remaining femora obscure yellow, tips very narrowly blackened; tibiæ yellowish brown, tips narrowly blackened; tarsi black. Wings whitish subhyaline; stigma and cell Sc blackened; a dusky seam in cell M adjoining vein Cu; cell Cu₁ darkened; veins black. Stigma without trichia, except that in one wing of type there is a single one on the extreme border of proximal end, the character undoubtedly being variable. Venation: Sc₁ persistent as a spur; Sc₂ opposite origin of Rs, latter in oblique alignment with basal section of R₄₊₅; cell 1st M₂ small; cell M₁ narrowly sessile; m-cu on M₄ just beyond origin, latter a corresponding distance from fork of M₃.

Abdomen black, segments two to five, inclusive, with bases broadly yellow, the amount of the latter including more than basal half of segment, less extensive on segment five; subterminal segments black; hypopygium orange. Male hypopygium with caudal margin of tergite (Plate 2, fig. 31, 9*t*) bearing a very deep and narrow median incision, adjoining lobes with abundant black spinous points; lateral angles of tergite produced into broader and more truncated lobes that bear an apical group of similar spines, lateral and intermediate lobes separated by a U-shaped notch above and an obtuse sclerotized flange below. Outer dististyle (Plate 2, fig. 32, *od*) relatively broad, produced apically into a cylindrical lobe. Inner dististyle (Plate 2, fig. 32, *id*) simple, apical beak slender. Median region of ninth sternite produced ventrad into a small conical pale point. Eighth

sternite extensive, caudal portion with a U-shaped median incision filled with pale membrane, lateral apical portions paling to yellow and without setæ. Gonapophyses small and pale, apical blade in slide mounts appearing twisted and crumpled.

Habitat.—Sumatra (Benkoelen).

Holotype, male, Moeara Tenam, June 16 to 23, 1935 (Walsh).

The most similar described species is *Nephrotoma medipubera* Edwards, of eastern Java, which has the fore femora somewhat similarly patterned, but differs in other details of coloration of the body, in the details of venation, and in the presence of dense setæ on the postnotal mediotergite.

NEPHROTOMA PALLIDAPEX sp. nov. Plate 1, fig. 8; Plate 2, figs. 33 and 34.

General coloration yellow, with black markings; frontal prolongation of head black; antennal flagellum black; no differentiated occipital brand; præscutal stripes polished black, narrowly bordered by more velvety black; scutellum yellow; knobs of halteres clear yellow; legs black, femoral bases obscure yellow; wings with cells basad of cord weakly tinted with brown, those beyond cord clear gray; stigma oval, brown; cell Sc darkened; outer abdominal segments, including hypopygium, black.

Male.—Length, about 12 millimeters; wing, 10.5; antenna, about 3.5.

Frontal prolongation of head, including nasus, entirely black; palpi black. Antennæ relatively short, as shown by the measurements; scape and pedicel obscure yellowish brown, flagellum black; flagellar segments strongly incised; longest verticils a little shorter than segments. Front and anterior vertex sulphur-yellow, posterior vertex more orange; a small darker orange-brown spot near posterior orbits, behind antennal bases, not touching the eye margin; posterior genæ conspicuously brownish black, more pruinose on ventral portions; no differentiated occipital brand.

Pronotum yellow medially, blackened on sides. Mesonotal præscutum sulphur-yellow, with three polished black stripes that are narrowly bordered by more velvety black; posterior interspaces relatively wide; lateral stripes straight but with a faint darker cloud opposite their anterior ends; scutum yellow, lobes chiefly covered by confluent polished black areas that are narrowly bordered by velvety black, very narrowly separated at suture from lateral præscutal stripes; scutellum yellow, parascutella infuscated on central portion; mediotergite yellow, broad, central portion of posterior third darkened; a few long coarse

black setæ at posterolateral portions of mediotergite. Pleura yellow, variegated by black on propleura; anepisternum, this including a narrow border adjoining the pteropleurite in addition to major darkened portion lying more cephalad; ventral sternopleurite and meron; dorsal and posterior portions of pleurotergite. Halteres obscure yellow, knobs clear sulphur-yellow. Legs with coxæ black, with abundant long white setæ; trochanters brown; femora black, basal third or less obscure yellow; tibiæ and tarsi black. Wings (Plate 1, fig. 8) with cells basad of cord weakly tinted with brown, those beyond cord abruptly clear gray; stigma oval, brown, cell Sc uniformly darkened; veins dark brown. Stigmal trichia about five. Venation: Sc₁ present; Sc₂ extending to just beyond origin of Rs, the latter longer than basal section of R₄₊₅; cell M₁ narrowly sessile; veins M₃ and M₄ arising at fork of M, m-cu just beyond origin of latter.

First abdominal tergite velvety black; tergites two to four, inclusive, obscure yellow, posterior margins with low black triangles, the points directed forward; basal sternites uniformly pale; segments five to nine, including hypopygium, black. Male hypopygium of unique type, with tergite accidentally lost in dissecting. Outer dististyle (Plate 2, fig. 33, *od*) moderately attenuated. Inner dististyle (Plate 2, fig. 34, *id*) with beak stout, disc of style set with coarse black retrorse setæ. Ninth sternite with a median pale lobe, directed ventrad, lying in notch of extensive, feebly emarginate eighth sternite.

Habitat.—Sumatra (Benkoelen).

Holotype, male, Boekit Jtam, altitude 1,000 to 2,000 feet, June 11 to 15, 1935 (*Walsh*).

Nephrotoma pallidapex is readily told from all allied regional species by the peculiar pattern of the wings. From other forms with the frontal prolongation of the head black and with undifferentiated occipital brand, as *N. nigrirostris* Edwards (Pahang), it differs evidently in the coloration of the body and wings.

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

Mesonotal præscutum and scutum darkened; thoracic pleura uniformly pale yellow; femora yellow, tips narrowly blackened; all tarsi snowy white; wings with a strong brown tinge, stigma slightly darker; Rs short and transverse; medial forks of moderate depth; male hypopygium with caudal margin of tergite trilobed, median lobe obtuse.

Male.—Length, about 14 millimeters; wing, 13.5; antenna, about 5.5.

Frontal prolongation of head brownish black; palpi black. Antennæ with basal three segments pale yellow, remainder of flagellum black, incisures of more basal segments narrowly pale; flagellar segments long-cylindrical, without developed basal swellings; verticils shorter than segments. Head brownish black, silvery pruinose in front.

Pronotum brownish black, paler laterally. Mesonotal præscutum and scutum almost uniformly polished brownish black, the former paler laterally; scutellum and mediotergite more brownish testaceous. Pleura and pleurotergite uniformly pale yellow. Halteres elongate, stem obscure yellow, knob infuscated. Legs with coxæ and trochanters pale yellow; femora yellow, tips narrowly brownish black, the amount subequal on all legs; tibiæ obscure yellow, tips very narrowly darkened; tarsi snowy white. Wings (Plate 1, fig. 9) with a strong brown tinge, cell Sc more yellowish; stigma pale brown; indistinct pale brown seams on m-cu and distal section of Cu₁; obliterative areas before and beyond stigma and at r-m small but conspicuous; veins brownish black, paler in costal portion. Macrotrichia of veins abundant but relatively small and delicate. Venation: Sc₂ ending a short distance before transverse, entirely pale Rs; free tip of Sc₂ some distance before R₂, R₁ thus preserved, with about ten trichia; medial forks of moderate length; cell 2d A relatively wide.

Abdominal tergites almost uniformly brown, the outer segments and hypopygium more brownish black, lateral borders of segments obscure yellow; sternites yellow. Male hypopygium (Plate 2, fig. 35) with caudal margin of tergite, 9t, trilobed, median lobe obtuse. Outer dististyle a small, elongate, pale lobe. Inner dististyle, id, powerful, oval in outline, margin of apical portion blackened. What appears to be a lobe from the sternite, 8s, is long and slender, a little expanded and weakly bilobed at apex, entire surface with abundant pale setæ.

Habitat.—Japan (Honshiu).

Holotype, male, Yamagawa, Iwate, June 7, 1936 (*Kato*); collector's No. 15.

I take great pleasure in naming this fly in honor of the collector, Mr. Takeo Kato. The only other described species of the subgenus in eastern Asia is *Dolichopeza (Dolichopeza) isikiella* Alexander, of southern Formosa, an entirely different

fly. The present insect is one of the most distinct species of the genus so far discovered.

DOLICHOPEZA (NESOPEZA) THISBE sp. nov. Plate 1, fig. 10; Plate 2, fig. 36.

General coloration testaceous yellow, præscutum with three dark brown stripes, median area divided by a paler median vitta; antennal flagellum brown; wings whitish subhyaline, heavily patterned with brown, markings much broken and less extensive than ground color; R_{1+2} entirely atrophied; medial forks short.

Male.—Length, about 9 millimeters; wing, 9; antenna, about 3.5.

Frontal prolongation of head brownish black; palpi black, outer end of terminal segment paling to whitish. Antennæ relatively long, if bent backward extending about to base of abdomen; scape and pedicel pale; flagellum pale basally, passing into brown; flagellar segments cylindrical, with short abundant setæ and a single long verticil on each segment, placed beyond midlength, this bristle shorter than segment; terminal segment long-oval, a little more than one-third length of penultimate. Head dark; eyes large, reducing extent of vertex.

Pronotum dark brown, posterior margin paler. Mesonotal præscutum with ground color testaceous-yellow, with three brown stripes, median stripe divided for all but its anterior portion by a pale vitta; lateral stripes entire, their lateral portion produced to border of sclerite but a little paler than the stripe itself; scutum pale, lobes variegated by darker; scutellum chiefly darkened; mediotergite pale, somewhat darker medially. Pleura dark brown, variegated with paler yellowish brown on pteropleurite and pleurotergite. Halteres elongate, stem pale yellow, knob dark brown. Legs with fore coxæ dark brown, mid-coxa slightly darkened at base, posterior coxæ pale; trochanters pale yellow; femora dirty white, tips rather narrowly (0.5 millimeter) dark brown, the amount about equal on all legs; tibiæ white, tips very narrowly but conspicuously black, middle and hind tibiæ faintly darkened on basal half, just beyond the narrow, pure white bases; tarsi white. Wings (Plate 1, fig. 10) whitish subhyaline, heavily patterned with brown, markings arranged much as in *titania* but more broken, ground color exceeding in area the brown pattern; in *titania* the ground color is grayish subhyaline, each dark area being narrowly bordered by whitish, whereas in the present fly there are no such pale margins to the brown markings; prearcular field uniformly darkened; veins

dark. Venation: Sc long, Sc_2 ending opposite fork of R_s , the latter long, spurred near origin; vein R_1 beyond free tip of Sc_2 bending into R_{2+3} , with no trace of vein R_{1+2} ; medial forks shallow; $m-cu$ less than its own length before fork of M .

Abdominal tergites brown, paler laterally; sternites more uniformly yellow, with vague transverse dark clouds or bands; hypopygium dark. Male hypopygium (Plate 2, fig. 36) small and of simple construction. Ninth tergite, $9t$, with the caudal margin blackened and sclerotized, median region a little produced into a low obtuse lobe; lateral portions of tergite more expanded, lateral ends with about six small blackened conical spines. Outer dististyle, od , small, long-oval, with about fifteen long setæ. Inner dististyle, id , with apex of apical beak truncated. Eighth sternite small, unmodified except medially where there is a small emargination in which the ædeagus lies in a position of rest.

Habitat.—Western Java.

Holotype, male, Goenoeng Tjimerang, Djampang, altitude 2,100 feet, April, 1936 (*Walsh*).

The nearest relative of the present fly is *Dolichopeza* (*Nesopeza*) *titania* (Alexander) of Sumatra³ which has the same general coloration of the body, wings, and legs, and with the venation very similar. The present fly differs especially in the more dissected dark wing pattern and the very different ground color, the brown markings not being bordered by whitish and thus producing a very different effect. The wings of *thisbe* are shorter and slightly wider than in *titania*, with the proportions of the cells correspondingly modified; vein R_3 is shorter and more arcuated, while R_s is distinctly short, being less than the distal section of R_{4+5} .

LIMONIINÆ

LIMONIINI

LIMONIA (LIMONIA) FUSCICEPS NIGRICUSPIS *subsp. nov.*

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

Characters as in typical *fusciceps* Alexander (Hokkaido, Honshiu), differing especially in the details of the male hypopygium.

Male hypopygium with mesal apical lobe of gonapophysis stout, gently curved, heavily blackened. In the typical form these lobes are slender, weakly darkened, the tips acute or subacute, the concave margin with a low, erose flange.

Habitat.—Japan (Honshiu).

³ Supplementa Entomol. 15 (1927) 92, 93, fig.

Holotype, male, Matsuo, Iwate, altitude 3,250 feet, May 31, 1936 (*Yamamoto*).

DICRANOPTYCHA STYGIPES sp. nov. Plate 1, fig. 11.

General coloration gray, præscutum with four scarcely indicated darker gray stripes; legs black, femoral bases yellow, narrowest on forelegs.

Female.—Length, about 12 millimeters; wing, 11.5.

Rostrum gray pruinose; palpi black. Antennæ with scape dark brown, pruinose; pedicel brownish yellow, flagellum black; flagellar segments oval to long-oval, ends truncated; verticils about one and one-half as long as segments. Head gray.

Thoracic dorsum gray, præscutum with four scarcely indicated darker gray stripes, anterior ends of intermediate pair obsolete. Pleura gray. Halteres pale yellow. Legs with coxæ pale, surface sparsely pruinose, most distinct on fore pair; trochanters obscure yellow; femora black, bases yellow, narrowest on forelegs where about the proximal sixth is involved, broader on middle and hind femora, on the latter including about the basal third; tibiæ and tarsi black. Wings (Plate 1, fig. 11) with a strong brownish yellow tinge, prearcular and costal regions clearer yellow; veins beyond cord brown, those basad of cord and in costal field more yellowish. Venation: Cell 1st M_2 about as long as vein M_4 beyond it; m-cu at or shortly before mid-length of cell.

Abdomen black, surface sparsely pruinose; genital shield black, cerci and hypovalvæ horn-yellow to yellowish brown, tips of cerci darker.

Habitat.—Japan (Honshiu).

Holotype, female, Matsuo, Iwate, altitude 2,600 feet, June 14, 1936 (*Yamamoto*). Paratopotype, female, altitude 3,250 feet, June 21, 1936.

Dicranoptycha stygipes is most closely allied to *D. yamata* Alexander, which has the legs differently colored, the tibiæ and basitarsi being light brown to yellowish brown with the tips narrowly infuscated. The latter species further differs in having the wings longer and narrower, with the inner end of cell 1st M_2 but little arcuated and with m-cu closer to the fork of M.

PROTOHELIUS TINKHAMI sp. nov. Plate 1, fig. 12; Plate 3, fig. 37.

General coloration ferruginous-yellow; antennæ (male) elongate, if bent backward extending about to base of abdomen;

legs yellow; wings relatively narrow, grayish yellow, clearer yellow in the prearcular and costal fields; stigma small, oval, pale brown; abdomen, including hypopygium, brownish yellow.

Male.—Length, 7 to 8 millimeters; wing, 7 to 8; antenna, 3 to 3.3.

Female.—Length, 9.5 to 10 millimeters; wing, 8 to 8.2.

Rostrum brownish yellow; basal two segments of palpus obscure yellow, outer segments black. Antennæ (male) relatively elongate, if bent backward extending about to base of abdomen; scape, pedicel, and basal three or four flagellar segments yellow, outer segments passing into brown; flagellar segments long-oval to subcylindrical, with a short dense pubescence; longest verticils about as long as segments. Head gray pruinose over a brown ground; eyes (male) large and protuberant; anterior vertex relatively wide, more than twice diameter of scape.

Thorax entirely ferruginous-yellow, unmarked, except that in some cases the præscutum is a trifle more brownish yellow. Halteres pale, knobs weakly darkened. Legs with coxæ and trochanters ferruginous-yellow; remainder of legs yellow, terminal tarsal segments darkened. Wings (Plate 1, fig. 12) relatively narrow, grayish yellow, prearcular and costal areas clear luteous; stigma small, oval, pale brown; veins brown, yellow in luteous areas. Venation: Sc_2 varying from just before to about opposite fork of R_s ; distance on C between Sc_1 , free tip of Sc_2 , and R_{4+2} subequal; R_{2+3} and R_{4+5} subequal; inner end of cell 1st M_2 strongly arcuated; m-cu variable in position, from shortly before to just beyond fork of M.

Abdomen, including hypopygium, brownish yellow. Male hypopygium (Plate 3, fig. 37) with the two dististyles of generally similar form, as in the genus, the outer one, *od*, glabrous and blackened, the inner style, *id*, pale, with both lobes stouter and provided with erect setæ. Ovipositor with the valves long and slender.

Habitat.—China (Kwangtung, Kiangsi).

Holotype, male, Loh Fau Shan, near Wa Shan Tóí Monastery, Kwangtung, altitude about 1,000 feet, April 27, 1936 (*Tinkham*). Allotopotype, female, pinned with type. Paratopotypes, 1 male, 2 females. Paratype, male, Hong San, southeastern Kiangsi, altitude 1,500 feet, July 16, 1936 (*Gressitt*).

Protohelius tinkhami is respectfully dedicated to the collector, Mr. Ernest R. Tinkham, to whom I express my thanks for cooperation in studying the Tipulidæ of eastern China. The only

other species so far made known is the genotype, *P. issikii* Alexander, of Formosa, which differs conspicuously in the much larger size, the blackened mesonotum, the broad grayish brown wings with a distinct stigmal area, and in other characters.

The exact affinities of *Protohelius* still remain in question. As indicated at the time of the original defining of the genus,⁴ the group is of extreme importance in that it clearly indicates how the more reduced venation of the subtribe *Heliaria* has been brought about. Furthermore, the general structure of the male hypopygium and the venation of the medial field of the wing is strongly suggestive of the genus *Electrolabis* Alexander⁵ of the Baltic Amber, a group that I am now inclined to consider identical with *Lipsothrix* Loew. In the latter case, vein R_{1+2} is elongate, whereas in the present fly it is short, curved abruptly into the margin, and thus in almost transverse alignment with vein R_2 .

The known distribution of the genus, with one species in Formosa and another in southeastern China, is very interesting. Gressitt, in a significant paper on the zoögeographical relationships of Formosa,⁶ indicates a type of distribution in the island where the species concerned must have found their way into Formosa through Siam and Indo-China, rather than by way of the Philippine Archipelago. The present instance would seem to fall within this category.

PEDICIINI

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

General coloration of head and thorax light gray, præscutum with three darker, brownish gray stripes; antennæ 17-segmented; femora yellow basally, tips broadly blackened, most extensively so on the fore pair; wings with a yellow tinge, more conspicuous in the prearcular and basal costal regions; stigma oval, dark brown; darkened seams on cord, outer end of cell 1st M_2 , and along vein Cu ; R_{2+3+4} a little shorter than basal section of R_5 ; cell 1st M_2 closed; cell M_1 subequal to its petiole; abdomen dark brown, basal sternites more obscure yellow; male hypopygium with the tergite extensive, gradually narrowed outwardly, apex with a shallow median notch.

Male.—Length, about 9 millimeters; wing, 9.8.

⁴ Philip. Journ. Sci. 35 (1928) 466, 467.

⁵ Bernstein-Forschungen (2) (1931) 58.

⁶ Entomological World. Tokyo 4 (1936) 711-727.

Rostrum black, pruinose; palpi black. Antennæ 17-segmented, black, scape and pedicel more pruinose; flagellar segments oval; verticils shorter than segments. Head light gray.

Pronotum light gray. Mesonotal præscutum light gray, with three darker brownish gray stripes, the broad median stripe divided by a pale vitta on about its cephalic half; posterior sclerites of mesonotum gray, scutal lobes variegated with darker gray. Pleura clear ashy gray, dorsopleural membrane more dusky. Halteres yellow, knobs very slightly darker. Legs with coxæ pale, fore coxæ more darkened; trochanters yellow; femora yellow basally, tips broadly blackened, most widely so on fore pair where about the distal two-thirds is darkened, narrowest on posterior femora where about the outer fourth is blackened; tibiæ and tarsi brownish black to black. Wings (Plate 1, fig. 13) with ground color yellowish, prearcular field and basal costal region clear light yellow; stigma oval, dark brown; rather conspicuous dark seams on cord, outer end of cell 1st M_2 , and along vein Cu; extreme wing tip a little darkened; veins brown, brightened in the flavous areas. Venation: Sc_1 ending nearly opposite the level of m; Rs relatively long, only feebly arcuated; R_{2+3+4} somewhat shorter than basal section of R_5 ; cell 1st M_2 closed; cell M_1 subequal to its petiole.

Abdomen, including hypopygium, dark brown; basal sternites more obscure yellow. Male hypopygium (Plate 3, fig. 38) with tergite, $9t$, extensive, gradually narrowed outwardly, apex with a shallow median notch; lateral lobes very low, obliquely truncated; lateral tergal arms produced into elongate yellow blades. Basistyles, b , relatively short and stout; interbase, i , a curved flattened blade, bearing a small, toothlike spine at the lower mesal angle. Outer dististyle, od , with relatively few spines. Inner dististyle, id , with a very extensive shoulder on basal half.

Habitat.—Japan (Honshiu).

Holotype, male, Matsuo, Iwate, altitude 3,250 feet, June 7, 1936 (Yamamoto).

Dicranota (Rhaphidolabis) clausa is so distinct from all other described species that it requires no comparison with any. The closed cell 1st M_2 is unique in the subgenus, while the excessive number of antennal segments is equalled only in the otherwise very distinct *D. (R.) polymera* Alexander. In its general appearance the present fly somewhat resembles *D. (R.) flavibasis* (Alexander), but is an entirely different fly. The presence of

a close cell 1st M_2 gives the fly somewhat the appearance of a member of the subgenus *Amalopina* Brunetti, but the reference to *Rhaphidolabis* seems undoubtedly to be the correct one.

HEXATOMINI

LIMNOPHILA (PRIONOLABIS) NIGROFEMORATA sp. nov. Plate 1, fig. 14; Plate 3, fig. 39.

Large (wing, male, over 10 millimeters); antennæ black throughout; thorax black, surface very sparsely pruinose; halteres elongate, knobs infuscated; legs black; wings broad, whitish, with a sparse pale-brown pattern; male hypopygium with caudal margin of tergite emarginate medially; outer dististyle with abundant microscopic spinulæ on outer margin; inner dististyle with a conspicuous arm on outer margin before apex, tip set with numerous blackened spinous points.

Male.—Length, 9 to 10 millimeters; wing, 10.5 to 11.5.

Rostrum and palpi black. Antennæ black throughout, 15-segmented, in the paratype with the basal two flagellar segments partly fused; flagellar segments oval, with verticils that slightly exceed the segments in length. Head black, surface sparsely pruinose.

Thorax black, præscutum a little dulled by a sparse pruinosity. Pleura dusted with gray. Halteres elongate, stem pale, knob strongly infuscated. Legs black throughout. Wings (Plate 1, fig. 14) broad; ground color whitish, prearcular and costal portions restrictedly pale yellow; stigma oval, brown; restricted pale brown seams along cord, outer end of cell 1st M_2 , and vein Cu; veins pale brown, brighter in the flavous areas. Venation: R_{2+3+4} not in longitudinal alignment with Rs, being a little elevated; R_{1+2} and R_2 subequal; cell M_1 exceeding its petiole; m-cu beyond midlength of cell 1st M_2 .

Abdomen, including hypopygium, black, surface scarcely pruinose. Male hypopygium (Plate 3, fig. 39) with caudal margin of tergite, 9t, conspicuously emarginate medially. Outer dististyle, *od*, slender without a conspicuous flange on outer margin; in the type with a single well-developed tooth on mesal edge, in the paratype with two or three poorly-indicated denticles; outer margin of style with abundant microscopic appressed spinulæ. Inner dististyle, *id*, with a conspicuous arm on outer margin before apex, this set with numerous microscopic blackened spinous points. Gonapophyses, *g*, narrow, yellow. Ædeagus, *a*, greatly compressed but relatively broad in relation to the length.

Habitat.—Japan (Honsiu).

Holotype, male, Mount Nanshō, Iwate, altitude 2,600 feet, November 4, 1934 (*Kato*); collector's No. 5. Paratopotype, male.

Limnophila (Prionolabis) nigrofemorata is readily told by the large size, the black legs, and the structure of the male hypopygium, especially of the styli. In the Japanese fauna the species is exceeded in size only by *L. (P.) rufipennis* Alexander, which has the male hypopygium of quite distinct construction.

LIMNOPHILA (PRIONOLABIS) YAMAMOTANA sp. nov. Plate 1, fig. 15; Plate 3, fig. 40.

Small (wing, male, 7.5 millimeters); general coloration polished black; number of antennal segments variable; halteres yellow; fore femora with outer two-thirds blackened, middle and hind femora with tips narrowly darkened; wings weakly tinged with brownish, prearcular and costal regions light yellow; a restricted pale-brown pattern; male hypopygium with median area of tergite produced, its margin weakly trilobed; inner dististyle with a comb of four long teeth on outer margin before apex; gonapophyses narrow, dusky.

Male.—Length, about 6 millimeters; wing, 7.5.

Female.—Length, about 7.5 to 8 millimeters; wing, 7.

Rostrum and palpi black. Antennæ black throughout; antennal segments variable in number, in the holotype male 14-segmented, with basal two flagellar segments partly fused, terminal segment elongate and apparently the result of fusion. In the allotype female there appear to be only nine segments; paratype female with fifteen segments. Head black, sparsely pruinose.

Thorax black, dorsum somewhat polished, pleura slightly more pruinose but inconspicuously so. Halteres yellow. Legs with coxæ and trochanters black; fore femora yellow basally, with about the distal two-thirds blackened; remaining femora yellow, tips narrowly blackened, the amount including about the outer fifth or sixth; tibiæ obscure yellow, tips slightly darkened; tarsi passing through yellowish brown to black. Wings (Plate 1, fig. 15) moderately broad, with a weak brownish tinge, prearcular and costal fields light yellow; stigma dark brown; a restricted pale-brown pattern, including clouds at origin of Rs, cord, outer end of cell 1st M₂, and a seam along vein Cu; veins brown, brightened in the flavous areas. Venation: Cell M₁ subequal to or shorter than its petiole; m-cu close to midlength of cell 1st M₂.

Abdomen, including hypopygium, black. Male hypopygium (Plate 3, fig. 40) with median area of caudal margin of tergite, *9t*, a little produced, edge very insensibly trilobed to nearly truncate. Outer dististyle, *od*, with a single lateral spine; inner dististyle, *id*, with a comb of three long and a shorter outer spine before the abbreviated black tip. Gonapophyses, *g*, dusky, relatively narrow, outer third or fourth gradually narrowed, tip obtuse. Ovipositor with the cerci very long and slender, almost straight.

Habitat.—Japan (Honshiu).

Holotype, male, Matsuo, Iwate, altitude 1,625 feet, June 6, 1936 (*Yamamoto*). Allotopotype, female, with the type. Paratopotype, female, with the type.

This interesting *Prionolabis* is named in honor of the collector, Mr. Hiromu Yamamoto, to whom I express my thanks for valuable coöperation in studying the Japanese Tipulidæ. The nearest ally is *Limnophila (Prionolabis) odai* Alexander, which is likewise a species of small size, with the ninth tergite of the male hypopygium somewhat similarly produced and weakly trilobed. The present fly differs in the broadly darkened fore femora, brown-tinged wings, and the details of the male hypopygium, notably the inner dististyle and the narrow dusky gonapophyses. The variability in number of antennal segments in the present species is very surprising, and more material will be needed to show the true range in number of segments. It scarcely seems possible that the three specimens constituting the type series all represent teratological individuals.

HEXATOMA (ERIOCERA) INSIDIOSA sp. nov. Plate 1, fig. 16.

Belongs to the *verticalis* group; general coloration black, præscutum without stripes; antennæ (female) 8-segmented, scape and pedicel obscure brownish yellow, flagellum black; vertical tubercle simple; halteres black; fore femora chiefly black, remaining femora obscure brownish yellow, tips narrowly blackened; wings with a strong brown suffusion; stigma subcircular, darker brown; outer radial and medial veins with abundant trichia; R_{1+2} and R_2 subequal, the latter at fork of R_{2+3+4} ; m-cu about one-third its length beyond fork of M; abdominal segments bicolorous, brown or brownish yellow, caudal margins black.

Female.—Length, about 12 millimeters; wing, 11.

Rostrum dark brown; palpi black. Antennæ (female) 8-segmented; scape and pedicel obscure brownish yellow, flagellum

black; flagellar segments cylindrical, gradually decreasing in length outwardly; two outermost segments subequal. Head with vertical tubercle bulbous, simple, dark brown; remainder of head more heavily pruinose.

Pronotum dark brown. Mesonotal præscutum uniformly black, subnitidous, without stripes; præscutal setæ very small and sparse; posterior sclerites of notum blackened, with a relatively sparse yellow or grayish yellow bloom. Pleura black, sparsely dusted with gray. Halteres black. Legs with coxæ black, sparsely dusted with gray; trochanters brownish yellow; fore femora black, bases narrowly obscure yellow; remaining femora obscure brownish yellow, tips narrowly blackened; tibiæ brownish black to black, tips blackened; tarsi black. Wings (Plate 1, fig. 16) with a strong brown suffusion; stigma sub-circular, darker brown; longitudinal veins very indistinctly and vaguely seamed with dusky; veins dark. Costa with long coarse trichia; veins R_{2+3+4} , R_3 , R_4 , R_5 , and outer sections of M_{1+2} and M_3 with conspicuous trichia. Venation: R_{1+2} and R_2 subequal, latter at fork of R_{2+3+4} ; R_s relatively long, fully twice R_{2+3+4} ; m-cu about one-third its length beyond fork of M , subequal to distal section of Cu_1 .

Abdominal segments bicolorous, sternites more distinctly so than tergites, both pale brown or brownish yellow, with the caudal half to third of individual segments blackened; genital shield dark brown; valves of ovipositor elongate, brownish yellow; hypovalvæ blackened at bases.

Habitat.—China (Kwangtung).

Holotype, female, Loh Fau Shan, near the Wa Shan Tóí Monastery, in woods, altitude about 800 feet, April 27, 1936 (*Tinkham*).

The nearest ally of the present fly is *Hexatoma* (*Eriocera*) *nipponensis* (Alexander), of Japan, which has similar trichia on the outer wing veins but differs conspicuously in the coloration of the body. *H. (E.) nigrina* (Riedel) and *H. (E.) verticalis* (Wiedemann) have the veins beyond cord, with the exception of the outer section of R_5 , without trichia.

HEXATOMA (ERIOCERA) MIRANDA sp. nov. Plate 1, fig. 17.

Belongs to the *dichroa* group; general coloration black; antennæ (male) 7-segmented, terminal segment more than one-half length of penultimate; mesonotal præscutum with four reddish brown stripes that are narrowly bordered by velvety black; halteres and legs black; wings long and narrow, dark brown, with

a narrow yellow crossband before cord; bases of anal cells conspicuously light yellow; R_{1+2} very long, considerably exceeding the long R_{2+3+4} ; cell M_1 longer than its petiole; abdomen velvety black, tergites two to five deep orange, except the base of tergite two and the apex of tergite five.

Male.—Length, about 17 millimeters; wing, 19.5; antenna, about 3.5.

Rostrum and palpi black. Antennæ (male) 7-segmented, black throughout; flagellar segments very gradually decreasing in length outwardly, segment five more than one-half length of penultimate. Head black, sparsely gray pruinose, with coarse black setæ; a slender median vertical tubercle, with paired smaller tubercles on either side behind antennal bases.

Pronotum black, pruinose. Mesonotal præscutum with ground color grayish, with four reddish brown stripes that are narrowly bordered by velvety black; setæ of interspaces long and erect; posterior sclerites of mesonotum brownish black. Pleura brownish black, dorsopleural membrane even darker. Halteres black. Legs black throughout. Wings (Plate 1, fig. 17) long and narrow, about four and one-half times as long as wide; ground color dark brown, including prearcular and costal regions; a narrow but conspicuous yellow crossband before cord, extending from vein R_1 to posterior margin, a little suffused and interrupted along vein M ; bases of both anal cells conspicuously pale yellow, including about proximal third of cell 2d A ; veins yellowish brown to brown, clearer luteous in yellow areas. Costa with abundant trichia; R_{2+3+4} and R_{3+4} , together with outer medial veins, almost without trichia, a few scattered trichia near outer end. Venation: R_s a little shorter than R , about twice R_{2+3+4} ; R_{1+2} unusually long, considerably exceeding R_{2+3+4} ; cell M_1 longer than its petiole; $m-cu$ shortly beyond midlength of cell 1st M_2 .

Abdomen uniform velvety black, with the exception of tergites two to five which are deep orange, base and sides of tergite two and apex of tergite five velvety black; hypopygium black; abdominal tergites without differentiated basal rings.

Habitat.—Western Java.

Holotype, male, Goenoeng Besser, Mount Djampang, May, 1936 (*Walsh*).

Hexatoma (Eriocera) miranda is very distinct from all other members of the *dichroa* group in the conspicuously banded wings. In the latter feature the fly somewhat resembles *H. (E.) meso-*

pyrrha (Wiedemann), but belongs to an entirely different group of species, being more nearly allied to *H. (E.) ferruginosa* (van der Wulp).

HEXATOMA (ERIOCERA) CELESTIA sp. nov. Plate 1, fig. 18.

Belongs to the *nepalensis* group; general coloration opaque black; antennæ (male) 8-segmented, black throughout; femora yellow, tips narrowly black, the amount subequal on all legs; wings dark brown, with a conspicuous whitish hyaline crossband extending from costa obliquely backward almost to vein Cu, widest in cells R and M; anal cells and central portion of cell Cu abruptly paler than ground; R_2 transverse; cell M_1 lacking; basal portions of intermediate tergites more nacreous and shiny.

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

Rostrum black; palpi relatively long, black throughout. Antennæ (male) 8-segmented, black throughout; flagellar segments gradually decreasing in length and diameter, last two subequal. Head black; vertical tubercle inconspicuous; setæ on occipital region long and conspicuous.

Thorax entirely black, without stripes; præscutal setæ erect, small, inconspicuous. Halteres black. Legs with coxæ and trochanters black; femora yellow, tips narrowly (2 millimeters) black, the amount subequal on all legs; tibiæ obscure yellow, tips narrowly blackened; basitarsi brown, tips blackened; remaining tarsal segments black. Wings (Plate 1, fig. 18) dark brown, including prearcular field; cell C, basal half of Sc, and basal portion of R_1 more yellowish brown; an oblique, whitish-hyaline crossband before cord, beginning at costa at end of Sc, very narrow in cells Sc_1 and R_1 , much wider and forming an oval area in outer ends of cells R and M, not quite attaining vein Cu posteriorly; small pale areas before origin of Rs in cell R and in cell R_4 adjoining vein R_4 ; anal cells abruptly grayish, confluent with a whitish hyaline area at midlength of cell Cu; veins dark brown, brighter in the yellow costal portions. Numerous macrotrichia on veins R_3 , R_4 , and distal section of R_5 ; more sparse trichia on distal ends of outer branches of M. Venation: Rs long, nearly twice R; R_{1+2} about twice R_{2+3} ; R_2 transverse; R_{2+3+4} shorter than R_{1+2} ; cell M_1 lacking; m-cu beyond two-thirds length of cell 1st M_2 .

Abdomen black, basal portions of intermediate tergites broadly more nacreous and shiny; sternites, subterminal tergites, and hypopygium more uniformly opaque black.

Habitat.—China (Kwangtung).

Holotype, male, Gow Bo Shan, Sui Hit Chi, Yue Hing Ying, Sixth District, on mountain grass, July 4, 1936 (*Tsz Hai*).

Hexatoma (Eriocera) celestia is very different from other regional members of the subgenus, the abrupt paling of the anal cells and the nearly hyaline central portion of cell Cu contrasting conspicuously with the dark ground color of the wing. By Edwards's key to the Old World species of *Eriocera*,⁷ the species runs to *hilpa* (Walker), a very distinct fly.

HEXATOMA (ERIOCERA) AMBROSIA sp. nov. Plate 1, fig. 19.

Belongs to the *nepalensis* group; general coloration black, præscutum with three polished black stripes; antennæ (female) 11-segmented; femora yellow, tips narrowly blackened, the amount subequal on all legs; wings dark brown, costal portion conspicuously yellow; a narrow, whitish hyaline crossband before cord; numerous trichia on veins beyond cord; cell M_1 lacking; bases of abdominal tergites polished; genital segment fiery orange.

Female.—Length, about 17 millimeters; wing, 12; antenna, 3.5.

Rostrum and palpi black. Antennæ (female) 11-segmented, black throughout; flagellar segments one to six gradually decreasing in length and thickness; terminal three segments short, subequal in length. Head dull black, very sparsely pruinose; vertical tubercle low and simple; vertex with abundant long coarse setæ.

Pronotum dull black. Mesonotal præscutum with restricted interspaces dull black, disc chiefly covered by three polished black stripes; setæ restricted to posterior half of præscutal interspaces, long, conspicuous, erect; posterior sclerites of mesonotum chiefly polished black. Pleura and pleurotergite dull black. Halteres black throughout. Legs with coxæ and trochanters black; femora bright yellow, tips narrowly (less than 1 millimeter) and abruptly blackened, the amount subequal on all legs and involving distal eighth to tenth of segment; tibiæ and basitarsi yellowish brown, tips narrowly brownish black; remainder of tarsi black. Wings (Plate 1, fig. 19) with ground color dark brown; anal cells more grayish, but vicinity of vein 2d A somewhat clouded; costal border conspicuously yellow, involving cell Sc and much of cell R_1 beyond origin of R_s , the

⁷ Ann. & Mag. Nat. Hist. IX 8 (1921) 70-78.

latter portion of the area crossing Rs into margin of cell R; cell C more brownish yellow, clearer yellow at ends; a narrow whitish hyaline crossband before cord, extending from vein R₁ into cell Cu, nearly parallel-sided except at either end, distal edge touching fork of Rs; veins dark brown, more yellowish in brightened areas. Costa with very abundant trichia; veins beyond cord with numerous trichia, involving both radial and medial fields; Cu virtually without trichia; distal ends of Rs and M with sparse long trichia. Venation: h nearly transverse; Sc₂ some distance before tip of Sc₁, lying before fork of Rs; R₂ and R₂₊₃ subequal, the former a little oblique; cell M₁ lacking; m-cu beyond midlength of lower face of cell 1st M₂, in one wing of type more distad than in the other.

Abdomen opaque black, tergites two to seven, inclusive, with polished, more plumbeous, basal rings; sternites more uniformly opaque black, polished bases narrow and ill-defined; genital shield fiery orange; cerci elongate, yellowish horn-colored.

Habitat.—China (Kwangtung).

Holotype, female, Gow Bo Shan, Sui Hit Chi, Yue Hing Ying, Sixth District, July 2, 1936 (*Tsz Hai*).

By Edwards's key to the Old World species of *Eriocera*⁸ the present fly runs to *Hexatoma (Eriocera) hilpa* (Walker), an entirely distinct fly. The nearest regional species would appear to be *H. (E.) celestia* sp. nov., which differs especially in the opaque præscutal stripes and in the pattern of the legs and wings.

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

General coloration black, præscutum with four more polished black stripes; head and mesonotum with coarse black setæ; antennæ, halteres, and legs black; wings blackish, with a conspicuous, more yellow brightening before cord, apical cells darkened; cell M₁ present but variable in length; hypopygium black; genital shield of ovipositor orange.

Male.—Length, 10 to 16 millimeters; wing, 10.5 to 16; antenna, 3.5 to 4.

Female.—Length, 20 to 22 millimeters; wing, 15 to 17; antenna, 4.

Rostrum and palpi black. Antennæ of male 8-segmented, of female 9-segmented, black throughout; flagellar segments cylindrical, gradually decreasing in length outwardly, last two sub-

⁸ loc. cit.

equal. Head black, with coarse black setæ; vertical tubercle relatively low and inconspicuous.

Thorax opaque black; præscutum with four more polished black stripes, the intermediate pair separated only by a narrow velvety black line; posterior portion of præscutum with long black setæ, chiefly on interspaces but including the posterior ends of the intermediate stripes; centers of scutal lobes somewhat polished. Pleura black. Halteres and legs black throughout. Wings (Plate 1, fig. 20) with a blackish tinge, more grayish in the cubital and anal cells; a more yellowish, ill-delimited brightening before cord, including parts of cells R_1 , R , and M , merging very insensibly with the ground; veins black. Abundant macrotrichia on veins beyond cord, fewer and more scattered on M_3 and M_4 ; costal setæ dense in both sexes. Venation: R_{2+3+4} shorter than R_{2+3} ; R_{1+2} relatively long, from one and one-half to two times R_{2+3+4} ; inner end of cell 1st M_2 arcuated to angulated; cell M_1 small, variable in length, in abnormal cases and including one wing of the holotype, lost by fusion of veins M_1 and M_2 to margin; m-cu at or before midlength of cell 1st M_2 .

Abdomen, including hypopygium, black, without differentiated tergal rings. Female with genital shield orange; ovipositor ferruginous; cerci long and slender.

One female (Sui Hit Chi, Gow Bo Shan, northern Kwangtung, May 15, 1936) has the wings, with the exception of the costal border and cells beyond cord, chiefly obscure yellow, and R_2 somewhat more oblique. I consider this individual a variant of the present fly.

Habitat.—China (Kwangtung, Kiangsi).

Holotype, male, north side of Paak Wan Shan (White Cloud Mountain), Canton, near stream, altitude 200 to 500 feet, April 28, 1936 (*Tsz Hai*). Allotopotype, female. Paratopotypes, several males and females, April 28 to May 4, 1936 (*Tsz*). Paratype, 1 male, Kuling, Kiangsi, altitude 3,250 feet, August 27, 1935 (*Monteil*); in the Musée Heude, Shanghai.

The present fly is most closely allied to *Hexatoma* (*Eriocera*) *morula* (Alexander), of Szechwan, western China, which has the outer medial cells of the wings pale and the venational details distinct. In the latter fly Cu_2 is very short, about one-half m-cu, and bent strongly caudad, widening cell M_4 , while the inner end of cell 1st M_2 is not arcuated. The possibility is not excluded that the present fly is only racially distinct from *morula*.

ELEPHANTOMYIA (ELEPHANTOMYODES) EGREGIA de Meijere.

Elephantomyia egregia DE MEIJERE, Tijds. voor Ent. 56 (1913) 347, 348.

The type, a male, was from Nongkodjadjar, in the Tengger Mountains, eastern Java, collected in January by Jacobson. The still undescribed female is discussed below.

Female.—Length, excluding rostrum, about 9 millimeters; wing, 6.5; rostrum, about 4.

Characters as in the male, as described and figured by de Meijere, with the following differences: Flagellar segments long-oval, all but basal ones with very long verticils. Pronotum and dorsopleural region dark brown, mesepisternum weakly infumed, remainder of pleura, together with pleurotergite and lateral borders of mediotergite, light yellow. Legs black, femoral bases restrictedly brightened; basitarsi black, outer ends abruptly snowy white; succeeding tarsal segments snowy white, last segment infuscated. Wings with the pattern described by de Meijere, but the pale areas in cell R not oval but rectangular to quadrate in outline, like remaining pale areas on disc; pale area in cell R₁ only about one-half as long as the one immediately beneath it in the outer end of cell R. Venation: m-cu at mid-length of cell 1st M₂; cell 2d A long and narrow, parallel-sided for virtually its whole length, not narrowed and obliterated at proximal end as figured by de Meijere.

Allotype, female, Mount Ardjano, eastern Java, altitude 6,000 to 7,000 feet, January, 1936 (*Walsh*).

ELEPHANTOMYIA (ELEPHANTOMYODES) MACKERRASI Alexander.

Elephantomyia (Elephantomyodes) mackerrasi ALEXANDER, Philip. Journ. Sci. 53 (1934) 287, 288.

The types were from Mount Malabar, Java, altitude 4,000 feet, collected in May by Mackerras. One male, Soember Brantas, Mount Ardjano, eastern Java, altitude 6,000 feet, January 14 to 25, 1936 (*Walsh*). The coloration of the mesonotum is a little darker than in the type.

ERIOPTERINI

Genus **GONOMYIA** Meigen

Gonomyia MEIGEN, Syst. Besch. 1 (1818) 146.

Characters as in the subgenus *Idiocera* Dale (*Ptilostena* Bergroth), differing in the presence of a supernumerary crossvein in cell R₄ of the wing beyond midlength (Plate 1, fig. 21).

Type of subgenus.—*Gonomyia (Euptilostena) reticulata* Alexander (Eastern Palæarctic Region).

Other members of the group include *G. (E.) jucunda* Loew (Western Palæarctic) and *G. (E.) supernumeraria* sp. nov. (Oriental).

In case *Idiocera* Dale is recognized as a genus distinct from *Gonomyia* Meigen, the present group will deserve subgeneric ranking in it. Edwards has recently made the discovery that the name *Idiocera* Dale, overlooked by Kertész and other cataloguers of the Tipulidæ, is the correct name for what has long been called *Ptilostena*. Of the various groups that have been proposed in the older group *Gonomyia*, *Lipophleps* Bergroth and *Gonomyia* Meigen lack the anterior arculus of the wings, while the remaining groups, *Protogonomyia* Alexander, *Progonomyia* Alexander, *Ellipterodes* Becker, *Ptilostenodes* Alexander, *Idiocera* Dale, and *Euptilostena* subgen. nov., have this present.

GONOMYIA (EUPTILOSTENA) SUPERNUMERARIA sp. nov. Plate 1, fig. 21.

General coloration of mesonotum gray, præscutum faintly lined with brown; antennæ black, pedicel paler; pleura yellow, darkened dorsally; halteres brownish black; legs yellow; wings whitish, faintly suffused with brown; a heavy brown pattern restricted to the vicinity of the veins; abdominal tergites dark brown, caudal margins narrowly ringed with pale; hypoalvæ of ovipositor black.

Female.—Length, about 7 millimeters; wing, 6.

Rostrum black; palpi brownish black. Antennæ with scape brownish black; pedicel obscure brownish yellow; flagellum black; flagellar segments long-oval, verticils exceeding segments. Front and anterior vertex obscure yellow; posterior vertex gray pruinose; anterior vertex with a more darkened median area.

Mesonotum dark, light gray pruinose, præscutum with indications of darker stripes; scutellum more brownish yellow. Pleura obscure yellow, dorsal pleurites and pleurotergite more blackened. Halteres brownish black. Legs with fore coxæ darkened, remaining coxæ and all trochanters yellow; remainder of legs yellow, outer tarsal segments darkened. Wings (Plate 1, fig. 21) whitish, with a weak brown suffusion, prearcular and costal portions more luteous; a restricted dark-brown pattern arranged as follows: Origin of Rs, stigma, anterior cord, supernumerary crossvein in cell R_4 , distal section of vein R_4 , and m-cu; veins pale brown, darker in the clouded areas, more yellowish in the luteous portions. Venation: Sc_1 ending just beyond origin of Rs, Sc_2 far from its tip, at near three-fifths the distance between arculus and origin of Rs; R_{1+2} and R_3 only narrowly separated

along costal margin; distal section of vein R_4 and supernumerary crossvein subequal in length, in nearly transverse alignment; m-cu about one and one-half times its length before fork of M.

Abdominal tergites dark brown, caudal margins narrowly ringed with pale, broader and more yellow on basal two or three segments, becoming narrower and more obscure on outer tergites; sternites paler, obscure yellow, especially on outer segments; pleural membrane yellow. Genital shield and cerci pale; hypoalvæ powerfully constructed, black.

Habitat.—Western Java.

Holotype, female, Goenoeng Besser, Djampang, April, 1936 (Walsh).

Gonomyia (Euptilostena) supernumeraria is readily told from all regional species of the genus by the subgeneric character of a supernumerary crossvein in the wings. In the general nature of the wing pattern the fly most resembles species such as *Gonomyia (Idiocera) punctipennis* Edwards.

GONOMYIA (LIPOPHLEPS) BIACULEATA sp. nov. Plate 1, fig. 22; Plate 3, fig. 41.

Belongs to the *incompleta* group; flagellar segments with a dense white pubescence; male hypopygium with the dististyle narrow, with two unusually long and slender blackened spines.

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

Rostrum testaceous brown; palpi darker. Antennæ with scape testaceous, remaining segments black; flagellar segments with a long white pubescence but without elongate verticils. Head dark gray.

Pronotum dark brown. Mesonotal præscutum above dark brown, somewhat deeper in front, humeral portion yellow; posterior sclerites of notum dark brown. Pleura testaceous-yellow, anterior sclerites a little darker. Halteres dusky, stem yellow at base. Legs with fore coxæ darkened, remaining coxæ and all trochanters yellow; remainder of legs dark brown to black. Wings (Plate 1, fig. 22) with a brown tinge; stigma oval, a trifle darker brown; veins brown. Venation: Sc_1 ending a short distance before origin of R_s , distance on costa about one-half R_s alone; cell 1st M_2 strongly narrowed at proximal end.

Abdomen brown; hypopygium obscure yellow. Male hypopygium (Plate 3, fig. 41) with apical lobe of basistyle, *b*, stout, shorter than remainder of style. Dististyle, *d*, with the body very narrow, bearing two slender blackened spines, the outer stouter and nearly twice as long as the inner. Phallosome, *p*, as in *incompleta* and allies.

Habitat.—Central Java.

Holotype, male, Nglirip, djati forests, altitude 300 feet, January 1 to 7, 1936 (*Walsh*).

Gonomyia (*Lipophleps*) *biaculeata* is most nearly related to *G. (L.) bimucronata* Alexander (Luzon). Both species have the dististyles of the two sides symmetrical, in this respect differing from *incompleta* and allies where the dististyles are slightly asymmetrical and of very different conformation. In the present fly the body of the dististyle is very narrow, less than the length of either spine, whereas in *bimucronata* the spines are shorter and stouter, with the body of the structure much wider, nearly as wide as the total length of the outer spine alone.

GONOMYIA (LIPOPHLEPS) HORRIFICA sp. nov. Plate 1, fig. 23; Plate 3, fig. 42.

Belongs to the *alboannulata* group; mesonotum dark brown, scutellum yellow on posterior margin; femora with a broad black, nearly terminal ring; wings pale gray, unmarked; Sc_1 ending a short distance before origin of R_s ; basal section of R_s long; male hypopygium with three dististyles, the middle shorter than the outer, at apex with about a dozen powerful spines; inner dististyle bispinous; phallosome with the outer lateral arms appearing as flattened pale horns.

Male.—Length, about 3 to 3.2 millimeters; wing, 3.2 to 3.5.

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

Rostrum and palpi black. Antennæ black; verticils (male) elongate. Head above yellow, darkened medially.

Pronotum yellow, restrictedly darkened medially. Pretergites narrowly china white. Mesonotal præscutum and scutum dark brown; scutellum dark brown, margined posteriorly with yellow; mediotergite dark, heavily pruinose, lateral margin on cephalic half restrictedly brightened; pleurotergite chiefly yellow. Pleura black, sparsely pruinose; dorsopleural region a trifle paler; a very conspicuous, yellowish white, longitudinal stripe extending from fore coxæ to base of abdomen, passing above middle and posterior coxæ. Halteres obscure yellow, knob chiefly dark brown, its apex a little brightened. Legs with fore coxæ white, midcoxæ obscure yellow, basal half blackened, posterior coxæ obscure yellow, slightly darkened at base; trochanters yellow; femora brownish yellow to brown, with a broad black ring, preceded by a very narrow clearer ring; on fore and middle femora the black rings are terminal, on the posterior femora subterminal, the apex narrowly yellow; tibiæ obscure yellow,

extreme base and slightly more extensive apex blackened; tarsi black, basitarsi on proximal end slightly paler. Wings (Plate 1, fig. 23) with a pale gray tinge, unmarked; veins pale, those at cord a little darker. Venation: Sc_1 ending a short distance before origin of R_s , Sc_2 close to its tip; R_s strongly arcuated; basal section of R_5 long, about two-thirds r-m; cell 1st M_2 closed; m-cu before fork of M ; cell 2d A wide.

Abdominal tergites dark brown, sternites paler; hypopygium brownish yellow. Male hypopygium (Plate 3, fig. 42) with outer dististyle, *od*, a blackened, paddlelike blade. Middle dististyle, *md*, only about four-fifths the length of outer, basal half slender, apex more dilated, bearing about a dozen powerful spines, the outer ones larger. Inner dististyle, *id*, bispinous, outer or lateral spine longer. Phallosome, *p*, with outer lateral arms appearing as pale flattened horns, with pale membrane along their inner or mesal margin. In the Tjolo paratypes the middle dististyle is more slender, with the teeth somewhat more appressed; spines of the inner style closer together.

Habitat.—Java.

Holotype, male, Soekaboemi, western Java, altitude 1,800 feet, February, 1934 (*Walsh*). Allotype, female, Tjolo, Goenoeng Moeria, northern Java, altitude 2,100 feet, December 1 to 8, 1935 (*Walsh*). Paratopotypes, 3 males, with the allotype.

The nearest allied species is *Gonomyia (Lipophleps) acuspinea* Alexander, of western Sumatra, which has the details of the hypopygium quite distinct, the middle dististyle being equal in length to the outer and with a row of abundant small spines occupying almost the entire length of the style.

STYRINGOMYIA BICORNUTA sp. nov. Plate 1, fig. 24; Plate 3, figs. 43 to 46.

General coloration black, dorsopleural membrane pale; halteres black; legs black, extreme bases of femora and tibiae and posterior basitarsi paler; wings with proximal half whitish, distal portion somewhat more clouded; darker seams along vein Cu and on anterior cord; costal fringe (male) unusually long and conspicuous; abdomen black, pleural membrane yellow; male hypopygium with the tergite produced caudad into two slender divergent horns.

Male.—Length, about 8 millimeters; wing, 5.

Rostrum blackish; palpi black. Antennæ with scape and pedicel black; flagellum weakly bicolored, brownish black, incisures slightly pale. Head black; bristles inconspicuous.

Pronotum black, paler laterally, with a pair of major setæ. Mesonotum black, præscutum sublaterally slightly gray pruinose;

mesonotal bristles slender, relatively inconspicuous. Pleura brown, dorsopleural region obscure yellow. Halteres black throughout. Legs black, extreme femoral and tibial bases obscure yellow; posterior basitarsi dirty white on basal two-thirds, remainder darker. Wings (Plate 1, fig. 24) with proximal half whitish, distal portion somewhat more clouded; a seam along vein Cu and a cloud on anterior cord darker; veins brown, darker in the clouded areas. Costal fringe (male) unusually long and conspicuous, erect, setæ gradually decreasing in length outwardly, becoming of normal length near wing tip. Venation: Anterior branch of Rs suberect; cell 1st M_2 relatively wide (compared to *holomelania*), shorter than cell 2d M_2 beyond it, the latter in punctiform contact with cell 1st M_2 to narrowly sessile; m-cu oblique, about its own length beyond fork of M; vein 2d A arcuated on distal portion.

Abdomen black, only pleural membrane yellow. Male hypopygium with tergite (Plate 3, fig. 43, *t*) produced into two slender blackened horns. Sternite (Plate 3, fig. 44, 9s) narrow, at apex bearing the usual two strong bristles, placed rather close together at tip of median lobe. Basistyle (Plate 3, fig. 45, *b*) with two flattened spinous bristles, the outer from the summit of the usual apical lobe; second bristle sessile, widely separated from the first, at mesal-apical portion of basistyle. Dististyle (Plate 3, fig. 46, *d*) complex, as illustrated; outer arm, *od*, without spinous armature.

Habitat.—Eastern Java.

Holotype, male, Soember Brantas, altitude 6,000 feet, January 25, 1935 (*Walsh*).

Styringomyia bicornuta somewhat resembles *S. melania* Edwards (Western Java) and *S. holomelania* Alexander (Assam) in the extensive black coloration of the body and legs, differing in the very distinct structure of the male hypopygium, notably of the tergite.

ILLUSTRATIONS

[Legend: *a*, *Ædeagus*; *b*, *basistyle*; *d*, *dististyle*; *g*, *gonapophysis*; *i*, *interbase*; *id*, *inner dististyle*; *md*, *middle dististyle*; *od*, *outer dististyle*; *p*, *phallosome*; *s*, *sternite*; *t*, *tergite*.]

PLATE 1

- FIG. 1. *Plocimas magnificus* Enderlein; venation.
2. *Pselliophora kangeanensis* sp. nov.; venation.
3. *Pselliophora biaurantia* sp. nov.; venation.
4. *Pselliophora upsilon* sp. nov.; venation.
5. *Tipula* (*Tipulodina*) *amabilis* sp. nov.; venation.
6. *Tipula* (*Vestiplex*) *takahashiana* sp. nov.; venation.
7. *Tipula* (*Vestiplex*) *niitakensis* sp. nov.; venation.
8. *Nephrotoma pallidapex* sp. nov.; venation.
9. *Dolichopeza* (*Dolichopeza*) *kato*i sp. nov.; venation.
10. *Dolichopeza* (*Nesopeza*) *thisbe* sp. nov.; venation.
11. *Dicranoptycha stygipes* sp. nov.; venation.
12. *Protohelius tinkhami* sp. nov.; venation.
13. *Dicranota* (*Rhaphidolabis*) *clausa* sp. nov.; venation.
14. *Limnophila* (*Prionolabis*) *nigrofemorata* sp. nov.; venation.
15. *Limnophila* (*Prionolabis*) *yamamotoana* sp. nov.; venation.
16. *Hexatoma* (*Eriocera*) *insidiosa* sp. nov.; venation.
17. *Hexatoma* (*Eriocera*) *miranda* sp. nov.; venation.
18. *Hexatoma* (*Eriocera*) *celestia* sp. nov.; venation.
19. *Hexatoma* (*Eriocera*) *ambrosia* sp. nov.; venation.
20. *Hexatoma* (*Eriocera*) *cantonensis* sp. nov.; venation.
21. *Gonomyia* (*Euptilostena*) *supernumeraria* sp. nov.; venation.
22. *Gonomyia* (*Lipophleps*) *biaculeata* sp. nov.; venation.
23. *Gonomyia* (*Lipophleps*) *horrifca* sp. nov.; venation.
24. *Styringomyia bicornuta* sp. nov.; venation.

PLATE 2

- FIG. 25. *Plocimas magnificus* Enderlein; antenna, female.
26. *Tipula* (*Vestiplex*) *bicornigera* sp. nov.; male hypopygium, ninth tergite.
27. *Tipula* (*Vestiplex*) *bicornigera* sp. nov.; male hypopygium, styli.
28. *Tipula* (*Oreomyza*) *niitakensis* sp. nov.; male hypopygium, lateral aspect.
29. *Tipula* (*Oreomyza*) *niitakensis* sp. nov.; male hypopygium, ninth tergite.
30. *Tipula* (*Oreomyza*) *niitakensis* sp. nov.; male hypopygium, styli.
31. *Nephrotoma nigrocentralis* sp. nov.; male hypopygium, ninth tergite.
32. *Nephrotoma nigrocentralis* sp. nov.; male hypopygium, styli.
33. *Nephrotoma pallidapex* sp. nov.; male hypopygium, outer dististyle.

FIG. 34. *Nephrotoma pallidapex* sp. nov.; male hypopygium, inner dististyle.

35. *Dolichozeza* (*Dolichozeza*) *kato*i sp. nov.; male hypopygium.

36. *Dolichozeza* (*Nesozeza*) *thisbe* sp. nov.; male hypopygium, details.

PLATE 3

FIG. 37. *Protohelius tinkhami* sp. nov.; male hypopygium.

38. *Dicranota* (*Rhaphidolabis*) *clausa* sp. nov.; male hypopygium.

39. *Limnophila* (*Prionolabis*) *nigrofemorata* sp. nov.; male hypopygium.

40. *Limnophila* (*Prionolabis*) *yamamotoana* sp. nov.; male hypopygium.

41. *Gonomyia* (*Lipophleps*) *biaculeata* sp. nov.; male hypopygium.

42. *Gonomyia* (*Lipophleps*) *horrifica* sp. nov.; male hypopygium.

43. *Styringomyia bicornuta* sp. nov.; male hypopygium, tergite.

44. *Styringomyia bicornuta* sp. nov.; male hypopygium, sternite.

45. *Styringomyia bicornuta* sp. nov.; male hypopygium, styli.

46. *Styringomyia bicornuta* sp. nov.; male hypopygium, dististyle.

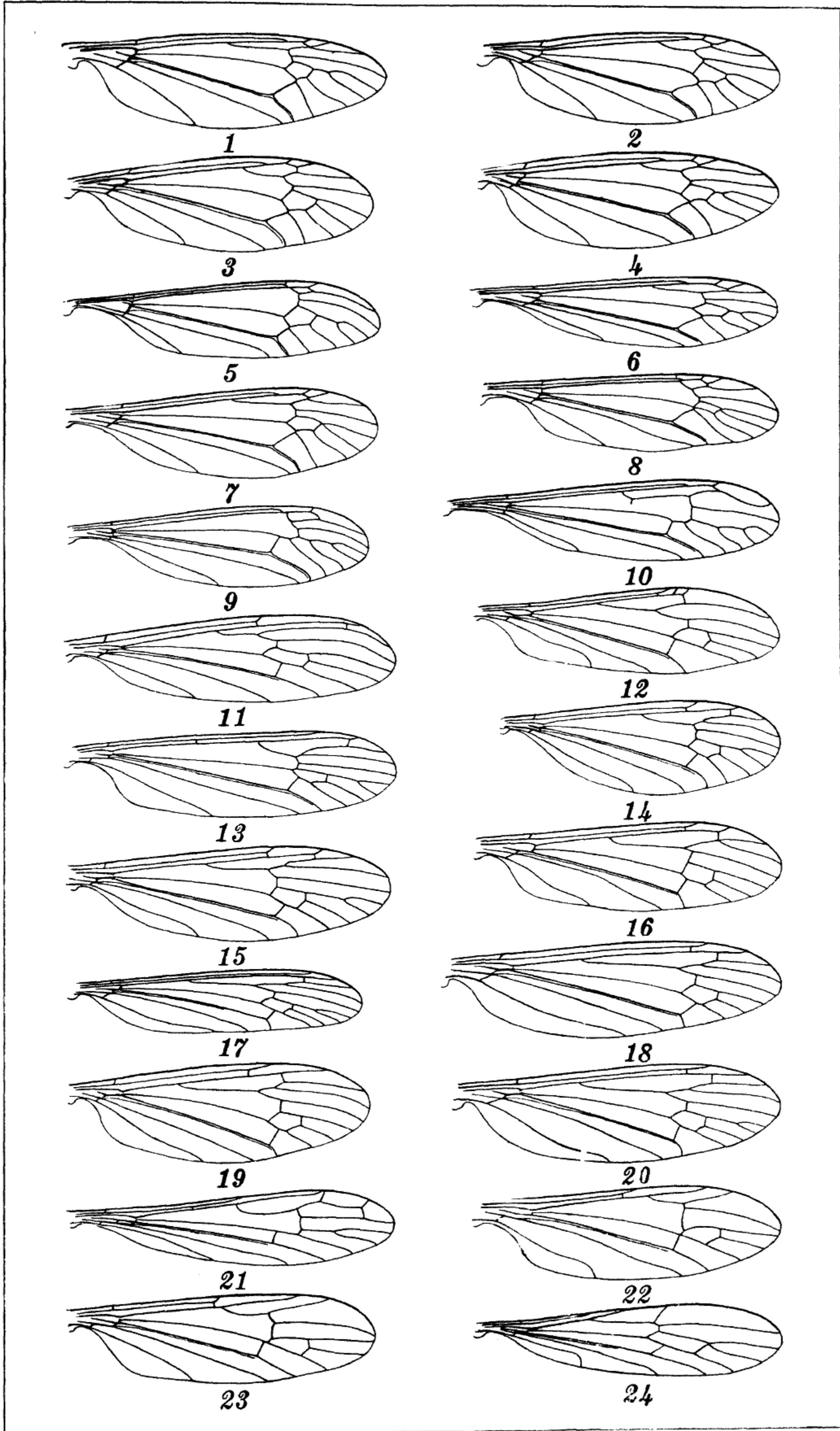


PLATE 1.

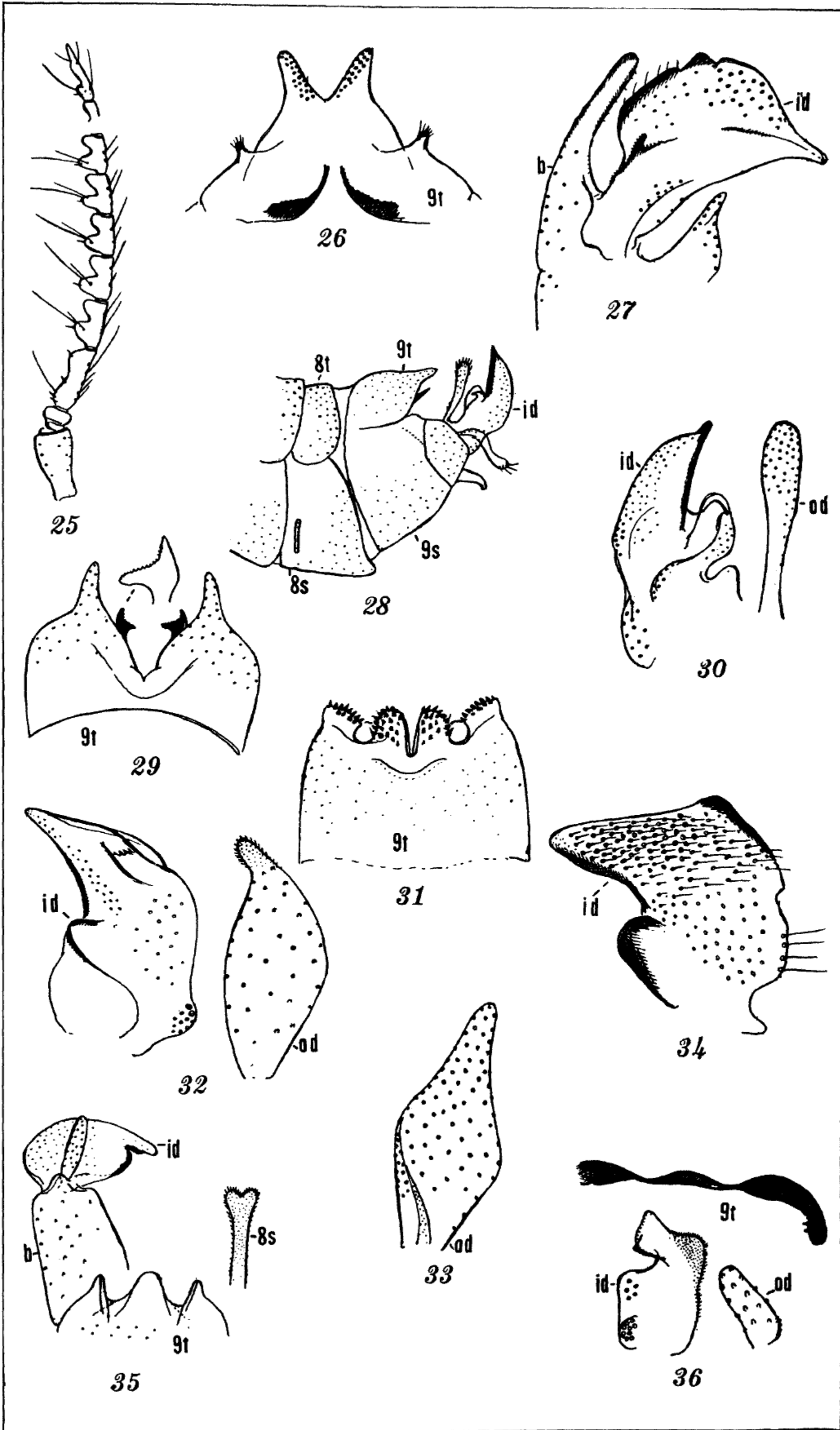


PLATE 2.

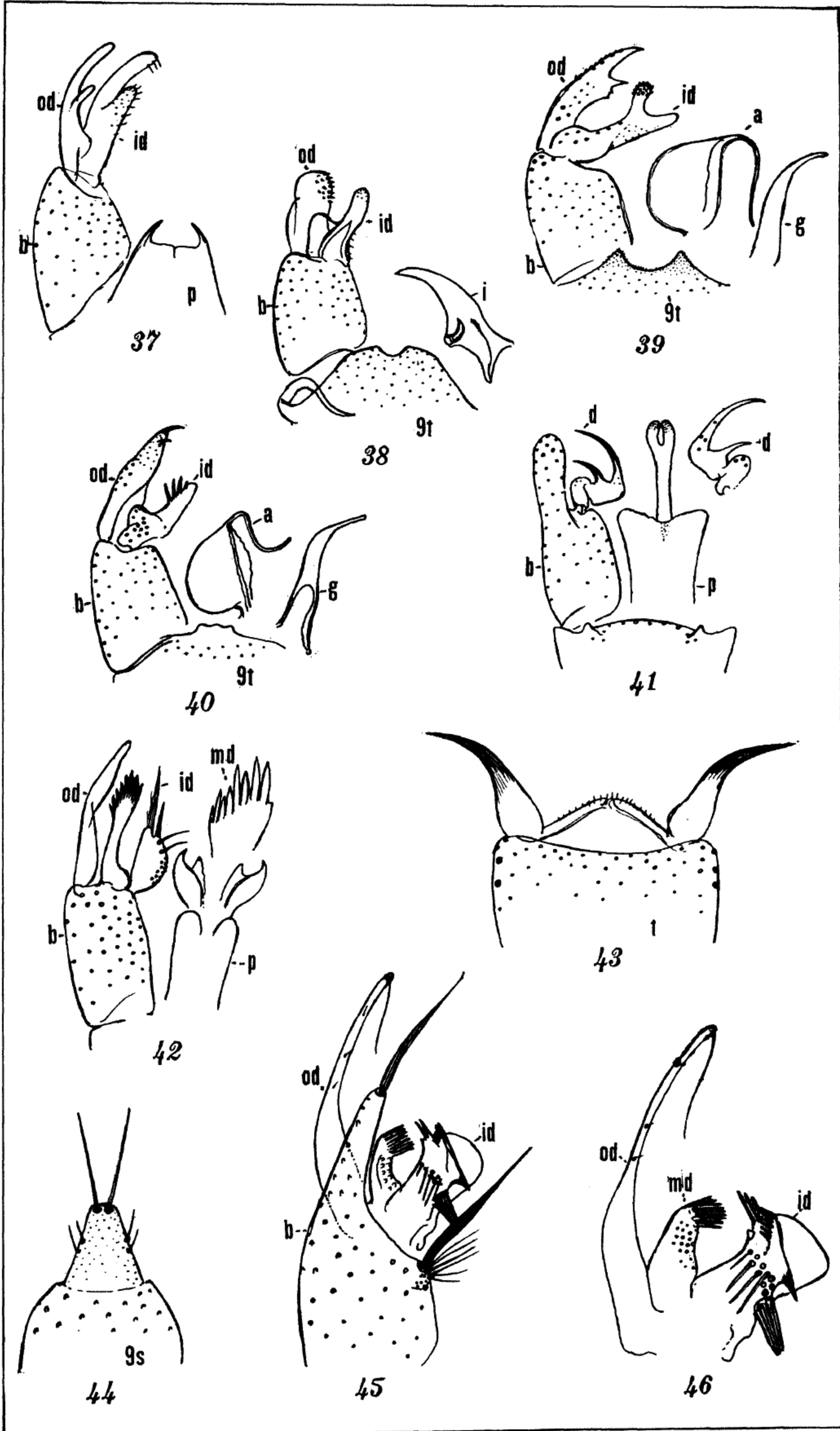


PLATE 3.