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

By CHARLES P. ALEXANDER
Of Amherst, Massachusetts

TWO PLATES

The majority of the species of crane flies discussed herewith are from western Java where they were taken by Mrs. M. E. Walsh and Mr. Owen Bryant; this material is preserved in my collection, the Bryant material through the friendly interest and generosity of the late Mr. Charles W. Johnson. Other species considered are from northern Celebes, collected by Mr. Charles F. Clagg, and from New Caledonia, taken by Dr. Jean Risbec, this material likewise being in my possession through the kindness of the collectors. A further important series of species are from northeastern New Guinea, where they were secured by the late Ludwig Biró, former Custos of the Hungarian National Museum, and loaned me for study by Dr. Z. Szilady; the types of this material are preserved in the Hungarian National Museum. Much of this last-mentioned material had earlier been reviewed by Riedel,² but in several instances, due to the incomplete knowledge of the Tipulidæ of Australasia and Wallacea at that date, many of the species had been left incompletely determined by Riedel and are further discussed at this time.

TIPULINÆ

PSELLIOPHORA LUCTUOSA de Meijere.

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

This superb fly was described from a unique female taken on the Goenoeng Susuruh, Preanger, western Java, by Corporaal. A small series is now available, including the hitherto unknown male, which is herewith defined as allotype.

¹ Contribution from the entomological laboratory, Massachusetts State College.

² Ann. Mus. Nat. Hungarici 18 (1921) 129-144.

Allotype, male, Djampang, western Java, altitude 1,500 to 2,000 feet, April 27, 1933 (*Walsh*).

Male.—Length, about 16 millimeters; wing, 17.

Characters almost exactly as in female, except in the usual sexual differences. Head more orange than brownish red. Maxillary palpi with basal three segments obscure yellow, the terminal segment abruptly blackened. Wings intensely black. Abdomen black, with pale yellow on middle of tergites three to five and extreme caudal margin of two.

Other specimens: Males and females, Djampang, 1,500 to 2,000 feet, February to May, 1933 (*Walsh*); one female, Wynkoops Bay, western Java, April, 1933 (*Walsh*).

PSELLIOPHORA TINCTIPENNIS ORBITALIS subsp. nov.

Male.—Length, about 12.5 millimeters; wing, 12.

Female.—Length, about 15 to 17 millimeters; wing, 13 to 15.5.

Agreeing closely with typical *tinctipennis* Edwards, of Burma and the Malay Peninsula,³ differing in the following regards:

Female.—Head black, conspicuously pruinose; frontal prolongation of head light ashy gray; orbits and occiput conspicuously more ochreous. Halteres entirely black. Wings with cell M_1 short-petiolate; fringe of setæ on petiole long and relatively abundant. Abdomen with basal four tergites and extreme cephalic end of fifth orange; succeeding tergites, including genital shield and all valves, deep black; basal five sternites orange, with a further slight encroachment onto the sixth segment.

Male.—Similar. Antennæ entirely black, including all branches. Præscutum with three more-saturated stripes that are but little evident against the ground. Abdomen orange; segments five to eight black, excepting the extreme bases of both the tergite and sternite of segment five; segment nine chiefly obscure reddish orange, the outer ends and appendages blackened.

Habitat.—Western Java.

Holotype, male, Djampang, altitude 1,500 to 2,000 feet, May, 1933 (*Walsh*). Allotopotype, female. Paratypes, 1 female, Djampang Tengah, altitude 1,500 to 2,000 feet, February, 1933 (*Walsh*); 2 females, Selabintanah, Mount Gedeh, altitude 3,000 feet, March, 1933 (*Walsh*).

I believe that when the males of the two forms are available for direct comparison the present fly will require specific ranking.

³ Bull. Raffles Mus. 7 (1932) 65–66.

Genus DOLICHOPEZA Curtis

Subgenus EUNESOPEZA subgen. nov.

Characters as in *Nesopeza* Alexander, differing in the presence of only three outer branches of media, interpreted as being M_{1+2} , M_3 , and M_4 , with veins M_1 and M_2 fused to the margin.

Type of subgenus.—*Dolichopeza* (*Nesopeza*) *defecta* Edwards (Oriental: North Borneo).

Dolichopeza (*Nesopeza*) *epiphragmoides* Edwards (North Borneo) likewise belongs here. My good friend Edwards,⁴ in describing the above very distinct species of *Dolichopeza*, did not consider the venational feature described above as being of primary importance. However, the presence of only three outer branches of media is so uncommon in the entire subfamily Tipulinæ (*Idiotipula* Alexander, Ethiopian; *Xenotipula* Alexander, Ethiopian; *Leptotarsus* Guerin: *Pseudoleptotarsus* Alexander, Australian; *Tipula* Linnæus: *Nesotipula* Alexander, Nearctic) that I believe the present group should rank as a subgenus.

DOLICHOPEZA (NESOPEZA) NEBULICOLA sp. nov. Plate 1, fig. 1; Plate 2, fig. 25.

Nesopeza gracilis de Meijere (in part); ALEXANDER, Proc. U. S. Nat. Mus. 49 (1915) 179.

Allied to *gracilis*; mesonotal præscutum reddish brown without clearly defined stripes; dorsal pleurites darkened, the ventral pleurites and all coxæ light yellow; wing veins brown; male hypopygium with the outer dististyle narrow, the apex a glabrous point; eighth sternite with the caudal margin almost evenly rounded, without lobes, the border on either side of the midline with two large setiferous punctures.

Male.—Length, about 10 millimeters; wing, 10.5.

Rostrum dark brown; palpi black. Antennæ with basal three segments light yellow; remainder broken. Head dark brown, the anterior vertex more pruinose; anterior vertex approximately twice as wide as diameter of scape.

Mesonotal præscutum reddish brown, without clearly defined stripes; scutal lobes testaceous brown, the centers of lobes more reddish brown; posterior sclerites of notum reddish brown. Pleura with dorsal sclerites, including the anepisternum, dorsal pteropleurite and pleurotergite dark brown; ventral pleurites

⁴ Journ. Fed. Malay St. Mus. 17 (1933) 289.

and all coxæ pale yellow. Halteres pale yellow, knobs brownish black. Legs with coxæ as described; trochanters yellow; remainder of legs broken. Wings (Plate 1, fig. 1) with the brown pattern of *gracilis* and allies; central portion of cell Sc₂ brightened; veins brown, including the medial veins. Macrotrichia of veins relatively abundant, including a series on distal third of vein 1st A. Venation: Spur at origin of Rs long and gently curved; medial forks deep; m-cu more than one-half its length before the fork of M.

Abdomen with basal segments more or less bicolorous, yellow and brown, the outer segments more uniformly darkened; hypopygium dark. Male hypopygium with the ninth tergite having only a low, obtuse, median lobule. Outer dististyle (Plate 2, fig. 25, *od*) unusually slender, especially in lateral view, as shown, the tip narrowed into a glabrous point. Eighth sternite, 8s, with caudal margin evenly rounded or with the median portion narrowly truncate, the mid-area at margin pale and membranous, continued caudad the entire length of sclerite as a weak impressed line; at caudal border, on either side of midline, with two short points on either side, these apparently representing basal spurs of powerful setæ.

Habitat.—Western Java.

Holotype, male, Tjibodas, Mount Gedeh, altitude 9,000 feet, 1909 (*Bryant and Palmer*). Paratopotype, male, in United States National Museum, determined by myself as *gracilis*, 1914.

It is evident that there are numerous Malayan species of *Nesopeza* that are closely allied to *gracilis* but differ in a decisive manner in the structure of the male hypopygium. The present fly and the species next to be described had earlier been mis-determined by me as being *gracilis*. Edwards⁵ has described the hypopygium of *gracilis* which has thus been shown to be a very distinct fly, with a greatly modified eighth sternite. I have male specimens of this same species from Sumatra and Java and it is evident that Edwards's conception of *gracilis* is the correct one.

DOLICHOPEZA (NESOPEZA) INSOLIDA sp. nov. Plate 2, fig. 26.

Nesopeza gracilis de Meijere (in part); ALEXANDER, Proc. U. S. Nat. Mus. 49 (1915) 179.

Allied to *gracilis*; mesonotum light reddish brown to testaceous brown, unmarked; dorsal pleurites darkened, the ventral pleu-

⁵ Bull. Raffles Mus. 7 (1932) 53.

rites and all coxæ clear light yellow; wings whitish subhyaline with a dark costal pattern; veins of undarkened portions light yellow; anterior cord nearly transverse; abdominal tergites darkened, with an obscure yellow area on sides at near midlength of the segments; male hypopygium with median lobe of tergite very low and obtuse; outer dististyle long and narrow, with setæ to apex; inner dististyle with a deep U-shaped incision on side; eighth sternite broadly transverse, the caudal margin very gently rounded, without setæ except on sides.

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

Frontal prolongation of head dark brown; palpi brown. Antennæ with basal two segments yellow, flagellum brown; flagellar segments long-cylindrical, with dense short pubescence and short verticils. Head light brown; anterior vertex relatively narrow.

Mesonotum entirely uniform light reddish brown to testaceous-brown, unmarked. Pleura with the dorsal sclerites darkened, extending from the propleura to base of abdomen, the ventral pleurites abruptly light yellow. Halteres yellow, the knobs blackened. Legs with the coxæ and trochanters pale yellow; femora whitish yellow, the tips blackened; tibiæ white, the tips narrowly blackened; tarsi white. Wings with the ground color whitish subhyaline, the dark costal pattern about as in *gracilis*; a whitish spot in basal costal cell, before h; dark seam on anterior cord narrow and nearly transverse in position; no darkening on posterior cord or on posterior margin at termination of vein Cu; veins of undarkened portions of wing light yellow, much paler than in *nebulicola*. Venation: Spur at origin of Rs straight; anterior cord nearly transverse; medial forks shallower than in *nebulicola*; cell 2d A a little narrower.

Abdominal tergites chiefly darkened, the segments variegated with obscure yellow on sides at near midlength of the segments; outer segments more uniformly darkened. Male hypopygium with the median lobe of tergite very low and obtuse. Outer dististyle (Plate 2, fig. 26, *od*) relatively long and narrow, with conspicuous setæ to apex. Inner dististyle, *id*, with a deep U-shaped incision, cutting off a slender basal lobe from the outer beaklike portion. Eighth sternite, 8s, broadly transverse, the caudal margin very gently rounded, entire; median area without setæ, these punctures occurring on subbasal half of sclerite and on sides of the rounded portion.

Habitat.—Western Java.

Holotype, male, Tjibodas, Mount Gedeh, altitude 4,500 feet, 1909 (*Bryant and Palmer*). Paratopotype, male, in United States National Museum, determined by myself as *gracilis*, 1914.

The distinctions between this species and the other regional members of the group are indicated in the above diagnosis and in the account given under the description of *Dolichopeza* (*Nesopeza*) *nebulicola* sp. nov.

DOLICHOPEZA (NESOPEZA) SUBCUNEATA sp. nov. Plate 1, fig. 2; Plate 2, figs. 27, 28.

Belongs to the *cuneata* group; most nearly allied to *cuneata*, differing chiefly in the details of the male hypopygium; ninth tergite with median lobe short, the lateral shoulders obtuse; outer dististyle short and dusky; eighth sternite large and conspicuously sheathing, its caudal margin obtusely rounded.

Male.—Length, about 10 millimeters; wing, 10.5.

Female.—Length, about 11.5 millimeters; wing, 10.8.

Frontal prolongation of head obscure yellow; basal two segments of palpi yellow, terminal segments blackened. Antennæ with pedicel light yellow, the remainder of organ black; flagellar segments (male) with very short verticils. Head with anterior vertex brownish yellow, the posterior portions darker brown.

Mesonotal præscutum with four dark reddish brown stripes that are a trifle paler than the interspaces; posterior sclerites of notum uniformly darkened. Pleura yellow, variegated with brown, the latter color on the anepisternum, dorsal pteropleurite, dorsal pleurotergite, ventral sternopleurite, and ventral meral region. Halteres elongate, pale yellow, the knobs blackened. Legs with coxæ and trochanters pale yellow; femora brown, obscure yellow basally, the tips passing into black; tibiæ brownish black, the tips passing into black, the extreme bases whitened; basitarsi extensively blackened, the fore pair white at both ends, the bases about one-half as extensively as the tips; mid-pair with only the tips narrowly whitened; posterior pair with the black ring narrow, the bases and tips broadly and subequally whitened; remainder of tarsi white, the last segment a little darkened. Wings (Plate 1, fig. 2) with a dusky tinge, cell Sc more darkened; stigma oval, dark brown; veins black. Venation: Rs subequal to or shorter than R_{2+3} ; m-cu only a short distance before fork of M; Cu_2 reaching wing margin; vein 2d A running very close to the anal margin, as in group.

Abdominal segments bicolorous, the incisures brownish black, the bases more narrowly darkened; intermediate portions of segments narrowly obscure yellow; sternites more extensively pale.

Male hypopygium with the median lobe of tergite (Plate 2, fig. 27, 9t) shorter than in *cuneata* (Plate 2, fig. 28, 9t), the lateral shoulders obtuse, acute in *cuneata*. Outer dististyle, *od*, short and dusky, in length considerably shorter than the inner dististyle, *id*. Eighth sternite conspicuously sheathing, much larger than in *cuneata*, its apex obtusely rounded, provided with setæ of moderate length; in *cuneata*, the margin transverse or subtransverse, with long powerful setæ.

Habitat.—Western Java.

Holotype, male, Bibidjilan, Djampang, altitude 2,000 feet, September, 1933 (*M. E. Walsh*). Allotopotype, female.

Although closely allied to *Dolichopeza* (*Nesopeza*) *cuneata* Edwards (North Borneo, in mountains), I must regard the present fly as being distinct. It is more remotely allied to *D. (N.) angusta* Edwards (Malay Peninsula) and *D. (N.) sandakanensis* Edwards (Borneo, lowlands), which again differ chiefly in the structure of the male hypopygia.

SCAMBONEURA MINAHASA sp. nov. Plate 1, fig. 3.

Thoracic dorsum reddish yellow, without markings; antennal flagellum bicolorous; legs yellow throughout, the outer tarsal segments darkened; wings light yellow, cell Sc clearer yellow; anterior cord subtransverse, only slightly bowed; abdominal tergites yellow, each with a quadrate blackish area on disk, these broadly interrupted at the incisures.

Female.—Length, about 16 to 17 millimeters; wing, 12.5 to 13.5.

Frontal prolongation of head, including nasus, yellow; palpi yellow, only the terminal segment darkened. Antennæ with scape, pedicel, and first flagellar segment yellow; succeeding flagellar segments bicolorous, the bases brownish black, the apices obscure yellow, on outer segments uniformly darkened. Head obscure yellow, the occipital brand lacking or scarcely differentiated from the color of the remainder of head.

Mesonotum uniform reddish yellow, without markings, the surface subnitidous. Pleura yellowish testaceous, unmarked. Halteres yellow, the knobs infuscated. Legs with the coxæ and trochanters yellow, remainder of legs yellow, the outer tarsal segments passing into brownish black. Wings (Plate 1, fig. 3) with the ground color light yellow, cell Sc clear yellow; stigma brown; veins brown, prearcular veins and Sc more yellowish. Macrotrichia of veins of moderate length only. Venation: Anterior cord only slightly bowed, subtransverse, the inner end of

cell R_5 a very little more proximad than that of cell R_3 ; a strong arcuation on r-m near its cephalic portion; R_s lying distinctly distad of r-m.

Abdominal tergites yellow, each with a quadrate blackish area on disk, broadly interrupted on the incisures, more broadly so on the bases of the segments than on the apices; sternites pale but almost hidden by the tergites, the exposed outer two sternites more darkened.

Habitat.—Northern Celebes.

Holotype, female, Roeroekan, Minahassa, altitude 4,000 feet, April 18, 1931 (*Clagg*). Paratopotype, female, April 13, 1931.

The species is named after an aboriginal tribe of northern Celebes, the Minahasa. In the venation, especially the subtransverse anterior cord, the present fly is closest to the otherwise very different *Scamboneura subtransversa* Alexander (Luzon). In the immaculate mesonotum, it agrees more nearly with *S. claggi* Alexander (Mindanao) and *S. primogenia* Alexander (Luzon), differing in the venation and bicolorous flagellum. The venation of *S. minahasa* is very like that of the species identified by Edwards from north Borneo as *S. quadrata* de Meijere.⁶ According to de Meijere's original description of *quadrata*⁷ his species (from Java) has a venation agreeing exactly with Osten Sacken's figure of *S. dotata* Osten Sacken⁸ that is with the strongly bowed anterior cord of the wing, quite different from the more-generalized condition obtaining in the present fly.

SCAMBONEURA SUBFACETA sp. nov. Plate 1, fig. 4.

Mesonotum yellow, the præscutum with three blackish stripes that are not bordered by darker; scutellum and mediotergite yellowish; antennal flagellum brownish black; wings with a faint brown tinge; stigma unusually small, brown; abdominal tergites yellow, with large brownish black areas on each segment.

Female.—Length, about 17 millimeters; wing, 14.5.

Frontal prolongation of head yellow, more orange-yellow dorsally; nasus long and slender; basal segment of palpi testaceous, the outer segments brown. Antennæ with scape orange-yellow, pedicel yellow; flagellum brownish black, the distal ends of basal three segments very vaguely paler but the organ definitely unicolorous. Head obscure brownish orange, the small occipital brand darker, its limits not well-marked.

⁶ Journ. Fed. Malay St. Mus. 16 (1931) 504.

⁷ Tijd. voor Ent., Suppl. 56 (1913) 8-9.

⁸ Berlin. Ent. Zeitschr. 26 (1882) 95, fig. 1.

Pronotum reddish brown, bordered by yellow. Mesonotum yellow, the præscutum with three blackish stripes that are not bordered by other colors, the median stripe with lateral margins of cephalic portion vaguely pruinose, the remainder of stripes polished; scutal lobes almost entirely covered by a polished black area on each; scutellum brownish yellow, the extreme cephalic end clearer yellow; mediotergite yellow, the posterior border darker. Pleura obscure yellow, vaguely patterned on anepisternum with more reddish. Halteres obscure yellow, the extreme base of stem pale. Legs with the coxæ and trochanters yellow; femora brownish yellow, clearer yellow basally; tibiæ light brown; tarsi passing into brownish black. Wings (Plate 1, fig. 4) with a faint brownish tinge, cell Sc more yellowish; stigma unusually small, brown; veins brownish black. Venation: R_3 elongate, running close to costa, with trichia only on basal third, the distal portion whitish; anterior cord strongly bowed, as usual in the more-specialized forms of the genus, the most basal point being on r-m just before it unites with R_{4+5} ; forks of medial cells deep.

Abdominal tergites with a large brownish black area on each segment, narrow on basal portion, thence broadened and occupying the disk of the segment, the caudal and lateral margins broadly yellow; sternites uniformly yellow.

Habitat.—Northern Celebes.

Holotype, female, Roeroekan, Minahassa, altitude 4,000 feet, April 17, 1931 (*Clagg*).

Although very close (at least in the female sex) to *Scambo-neura faceta* Alexander (Alabat Island, Luzon) I must regard the present fly as being distinct. The coloration of the posterior sclerites of the mesonotum and the details of venation of the radial field, especially the length and close approximation to the costal margin of vein R_3 , furnish the most obvious characters in this sex.

MACROMASTIX RISBECI sp. nov. Plate 1, fig. 5.

Antennæ (male) elongate; with abundant, relatively short, erect setæ; eyes (male) very large, reducing the vertex to a narrow strip; general coloration of thorax light reddish brown, the pleura yellow; wings brownish yellow, the oval stigma dark brown; abundant macrotrichia on outer radial and medial veins; r-m connecting with R_5 before its fork; cell M_1 short-petiolate; m-cu at midlength of cell 1st M_2 ; abdominal tergites conspicuously dimidiate, dark brown, broadly margined caudally with yellow; sternites chiefly light yellow; hypopygium dark brown.

Male.—Length, about 7.5 millimeters; wing, 9.5; antenna, about 11.

Frontal prolongation of head of moderate length, about one-third the remainder of head, light brown, without nasus; palpi dark brown. Antennæ (male) elongate, exceeding the wing in length; second to seventh flagellar segments longer than the first; flagellar segments with an abundant erect pubescence that is much shorter than in the male sex of *cockerellæ*, the longest not exceeding three times the diameter of segment at point of insertion; on first flagellar segment, the setæ are even finer and denser, the longest shorter than the diameter of the segment; scape and pedicel yellow; basal flagellar segments obscure yellow, the apices narrowly darkened, this color becoming more extensive on the fourth segment, the succeeding segments uniformly dark brown. Eyes very large, on dorsum reducing the vertex to a narrow strip; visible portions of head testaceous brown.

Pronotum obscure yellow. Mesonotal præscutum and scutum uniformly light reddish brown, the former somewhat darker in front; scutal lobes with centers slightly darkened; scutellum testaceous brown; mediotergite light brown, pale laterally. Pleura yellow, the pleurotergite light brown. Halteres dark brown, the base of stem narrowly yellow. Legs with the coxæ and trochanters yellow, the mid-coxæ slightly darker; femora obscure yellow, the tips narrowly blackened, the amount subequal on all legs; tibiæ dark brown; tarsi brownish black. Wings (Plate 1, fig. 5) with the ground color brownish yellow, cells C and Sc clearer yellow; stigma oval, dark brown; wing tip and margin as far back as vein Cu_1 insensibly suffused with brown; very narrow and ill-defined darkenings along cord, most evident on anterior cords; veins brown, more yellow in the costal field. An abundant series of macrotrichia on entire length of veins R_3 , R_{4+5} , M_1 , M_2 , M_3 , M_4 , and distal section of Cu_1 ; no trichia on R_{1+2} or R_2 . Venation: R_{1+2} about in longitudinal alignment with R_2 ; r-m connecting with R_s immediately before the fork; cell M_1 very deep, its petiole only about one-third m; basal section of M_3 longer than m and not in transverse alignment with it, so m-cu is at midlength of cell 1st M_2 ; cell 2d A wide.

Abdominal tergites conspicuously bicolorous; segment one obscure yellow; segment two dark brown on basal ring, the apical ring yellow; segments three and four dark brown basally, the apices broadly yellow; segment five uniformly brownish black; segments six and seven almost uniformly yellow; sternites light

yellow, the apices of segments five and six narrowly darkened; hypopygium dark brown.

Habitat.—New Caledonia.

Holotype, male, Poindimie, July 13, 1931 (*J. Risbec*).

I take great pleasure in naming this distinct fly in honor of Prof. Jean Risbec, distinguished malacologist. The interrelationships of the four species of *Macromastix* now known from New Caledonia are shown by the following key.

Key to the species of Macromastix of New Caledonia.

1. Wings veins beyond cord with numerous trichia, including complete series on veins R_3 , M_1 , M_2 , M_3 , M_4 , and distal section of Cu_1 ; r-m connecting with R_s before fork; antennæ (male) elongate.

risbeci sp. nov.

Wing veins beyond cord glabrous or nearly so, at most with an incomplete series on outer portion of vein R_{4+5} ; r-m connecting with R_{4+5} , the basal section of the latter conspicuous; antennæ (male) short or elongate 2.

2. Antennæ short in both sexes; m-cu opposite midlength of cell 1st M_2 , the basal section of M_3 not being in alignment with m.

novocaledonica Alexander.

Antennæ (male) elongate, in female shorter but still about as long as the thorax alone; m-cu opposite or beyond the outer end of cell 1st M_2 , the basal section of M_3 being in transverse alignment with m or approximately so 3.

3. Abdominal tergites uniformly dark brown; antennæ (male) of moderate length, subequal to wing (12 millimeters or less).

cockerellæ Alexander.

Abdominal tergites conspicuously ringed caudally with silvery; antennæ (male) very long (20 millimeters), being about a third longer than wing *caledoniana* sp. nov.

MACROMASTIX CALEDONIANA sp. nov. Plate 1, fig. 6.

Antennæ (male) elongate, the flagellar segments with abundant long erect setæ; thorax obscure yellow, the præscutum with four reddish brown stripes; wings pale yellowish subhyaline, the stigma scarcely darker; outer veins of wing without trichia, excepting a series on outer half of R_{4+5} ; r-m a little longer than the basal section of R_{4+5} ; m-cu opposite outer end of cell 1st M_2 ; abdominal tergites dark brown, the caudal borders broadly silvery gray.

Male.—Length, about 12 millimeters; wing, 15; antenna, about 20.

Frontal prolongation of head light brown; palpi more testaceous-yellow, the terminal segment darkened. Antennæ (male) elongate, much exceeding the wing length; first flagellar segment relatively short, less than one-half the second; second segment

nearly three-fourths the third; flagellar segments with long erect setæ that are much longer than the diameter of segment at point of insertion; on first segment about four times this diameter, on the outer more slender segments six or seven times this diameter; scape and pedicel brownish yellow; basal flagellar segments brownish yellow, the outer segments more uniformly dark brown. Eyes large; anterior vertex wide, approximately twice the diameter of scape, reddish brown, suffused with darker brown.

Mesonotal præscutum short, obscure yellow, with four reddish brown stripes, intermediate pair confluent in front; anterior interspaces with golden yellow setæ; scutum and scutellum more testaceous-yellow, the scutal lobes slightly and indistinctly darkened; mediotergite yellowish gray. Pleura yellow, the propleura and posterior portion of anepisternum infuscated; a linear blackish area on cephalic border of pteropleurite, ventrad of wing root. Halteres with stem pale yellow, knobs broken. Legs with the coxæ and trochanters yellowish testaceous; femora obscure yellow, the tips narrowly brownish black; tibiæ obscure yellow, the outer ends and the tarsi brownish black. Wings (Plate 1, fig. 6) pale yellowish subhyaline, cell Sc weakly darkened; stigma scarcely darker; veins bright reddish brown. No macrotrichia on vein R_3 or on any medial veins; a series of trichia on distal half of outer section of R_{4+5} . Venation: Free tip of Sc_2 lying very close to R_{1+2} and parallel with it, cell Sc_2 thus very narrow; R_{1+2} in longitudinal alignment with R_2 , r-m only a trifle longer than basal section of R_{4+5} ; petiole of cell M_1 a little shorter than m; basal section of M_3 in transverse alignment with m, m-cu lying on M_4 beyond the fork and thus opposite or slightly beyond the outer end of cell 1st M_2 ; cell 2d A wide.

Abdominal tergites beyond the brownish yellow first segment dark brown, the caudal borders broadly silvery gray; seventh tergite chiefly yellow; remaining segments and hypopygium chiefly dark brown; sternites yellow, the outer segments darkened.

Habitat.—New Caledonia.

Holotype, male, Ponerihouen, July 7, 1931 (*J. Risbec*).

The nearest ally of the present fly is *Macromastix cockerellæ* Alexander, as is shown by the key to the species in New Caledonia given with the preceding form.

TIPULA LEUCOSTICTA sp. nov. Plate 1, fig. 7; Plate 2, fig. 29.

Belongs to the *omissinervis* group; antennal flagellum bicolorous; mesonotal præscutum with three reddish brown stripes

that are narrowly bordered by darker brown; tarsi and tips of tibiæ white; wings with a restricted but conspicuous brown pattern, together with several small white to yellowish white spots; m-cu opposite midlength of M_{3+4} ; male hypopygium with the outer dististyle terminating behind in an acute spinous point.

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

Frontal prolongation of head light brown; nasus long and slender. Antennæ relatively short, only a little longer than the combined head and front; basal three segments light yellow; succeeding segments bicolorous, black basally, the tips yellow, the outer segments more uniformly darkened; verticils very long and conspicuous, exceeding twice the length of the segments.⁹ Head obscure fulvous, the center of vertex darker, sending a narrow brown vitta onto the low vertical tubercle.

Pronotum dark brown above, gray laterally. Mesonotal præscutum with the ground color grayish brown, with three reddish brown stripes that are narrowly bordered by darker, the lateral margin of the median stripe connected across humeri with the pseudosutural fovea by a dusky line, delimiting the interspaces in front; extreme cephalic portion of median stripe with a black streak, indicating the position of a normal median dark vitta; scutellum and mediotergite reddish brown, more grayish laterally. Pleura pale yellow, variegated by pale brown spots. Halteres elongate, dark brown, base of stem light yellow. Legs with coxæ pale yellow, variegated by pale brown spots at tips and bases; trochanters pale yellow; femora light brown, the tips passing into black; tips of tibiæ and the tarsi yellowish white; remainder of tibiæ brownish black (Riedel says with white rings at bases of tibiæ, legs now badly broken). Wings (Plate 1, fig. 7) with a faint brown tinge, stigma and costal region darker brown; arcular region narrowly darkened; a narrow seam along cord, broken at fork of M; outer radial cells to wing tip narrowly darkened; a brown spot at just beyond one-third the length of cell Cu, followed by a clear hyaline spot of equal size; several white or yellowish white spots on wing, as follows: A major area before stigma and anterior cord; a small poststigmatal area; small yellow spots at ends of veins R_3 and R_{4+5} ; white oblitative points across cell 1st M_2 , including basal sections of veins M_{1+2} and M_3 ; veins very delicate, brown. Veins behind R unusually glabrous, with a single strong seta

⁹ As figured by Riedel, as *Tipula venusta*; Ann. Mus. Nat. Hungarici 18 (1921) 142, fig. 7.

on Rs. Venation: R_{1+2} entirely atrophied, as in group; Rs short, pale; cell 1st M_2 large; m-cu at midlength of vein M_{3+4} ; petiole of cell M_1 about twice m; Cu_2 extending entirely to margin; cell 2d A of moderate width.

Abdomen darkened. Male hypopygium (Plate 2, fig. 29) with the tergite, 9t, separated from the sternite, 9s, by membrane; basistyle entirely fused with sternite except for a delicate ventral suture. Ninth tergite, 9t, with the caudal margin having a broad V-shaped notch, the lateral lobes thus formed obliquely truncated, with abundant setigerous punctures; dorsal portion of tergite entirely without a median depressed line. Outer dististyle, *od*, with the cephalic lobe flattened, the posterior portion directed caudad and mesad into a powerful spine that terminates in a blackened point and bears another similar black spine on side before tip (*od, va*, ventral aspect). Inner dististyle, *id*, with a blackened detached blade on inner face near base; outer margin of style with long delicate setæ in an almost continuous row, as in most species of *Indotipula*. Eighth sternite, 8s, unarmed.

Habitat.—New Guinea.

Holotype, male, Stephansort, Astrolabe Bay, March 30, 1900 (*Biró*).

This specimen had earlier been referred to *Tipula* (*Tipulodina*) *venusta* Walker by Riedel,¹⁰ but certainly does not pertain to that subgenus or species. It is allied to *Tipula omissinervis* de Meijere, *T. dentata* de Meijere, and *T. divergens* de Meijere, all from various parts of New Guinea. The coloration of the legs of the present fly readily separates it from all of the three allies indicated. It seems certain that a new subgeneric group will be required for these species, falling close to *Acutipula* Alexander, *Indotipula* Edwards, and *Tipulodina* Enderlein.

LIMONIINÆ

LIMONIINI

LIMONIA (LIMONIA) PACATELLA sp. nov. Plate 1, fig. 8.

Belongs to the *pacata* group; mesonotal præscutum with cephalic and lateral portions broadly obscure brownish yellow, the central portion of disk dark brown; dorsal pleurites largely covered by a broad, brownish black, longitudinal stripe.

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

¹⁰ Loc. cit.

Rostrum and palpi brownish black. Antennæ black throughout; flagellar segments oval, the terminal segment considerably longer than the penultimate. Head brownish black.

Mesonotal præscutum with cephalic and lateral portions broadly obscure brownish yellow, the restricted central portion of disk dark brown, the latter color thus virtually restricted to the posterior portion of the usual median stripe; scutal lobes dark brown, the median region of scutum narrowly pale; posterior sclerites of notum brown. Pleura obscure brownish yellow dorsally, with a broad, brownish black, longitudinal stripe extending from the cervical region to the abdomen, inclosing the root of halteres; ventral sclerites, including the entire sternopleurite and meral region, abruptly light yellow. Halteres blackish, the extreme base of stem obscure yellow. Legs with fore coxæ weakly darkened basally; remaining coxæ and trochanters yellow; femora and tibiæ brown, the tips still darker; tarsi paling to dirty brownish white. Wings (Plate 1, fig. 8) with a brownish tinge, the oval stigma darker brown; a very vague darkening along cord and vein Cu_1 ; veins brown. Venation: Sc relatively long, Sc_1 ending about opposite three-fourths the length of Rs, Sc_2 at its tip; free tip of Sc_2 and R_2 in transverse alignment; Rs weakly angulated at origin, nearly three times the basal section of R_{4+5} ; cell 1st M_2 open by atrophy of m; m-cu at fork of M; anal veins strongly convergent at bases.

Abdominal tergites dark brown; sternites light yellow. Ovipositor with cerci very small and slender at tips; hypovalvæ stouter, their bases conspicuously blackened.

Habitat.—Western Java.

Holotype, female, Soekaboemi, altitude 1,800 feet, June 3, 1933 (M. E. Walsh).

The nearest described ally is *Limonia (Limonia) subprolixa* Alexander (Mindanao), which differs in the larger size, more uniform coloration of the mesonotum, the scarcely or but slightly darkened thoracic pleura, and the details of venation, as the longer Rs and more extended cell 2d A. I am not at all certain that *L. (L.) pacatina* Edwards (North Borneo) belongs to this same group, despite the close resemblance in structure of the male hypopygium. Cell 1st M_2 is closed and the general appearance is rather different from the other members of the *pacata* group.

LIMONIA (LIBNOTES) RIEDELELLA sp. nov. Plate 1, fig. 9.

Libnotes species RIEDEL, Ann. Mus. Nat. Hungarici 18 (1921) 134.

The specimen upon which this description is based was received by me from Doctor Szilady in fragmentary condition, almost the only parts of the body remaining being the wings and legs. Since the chief specific characters in the subgenus lie in these two organs, I do not hesitate to describe this very distinct species as new, using some of the characters earlier mentioned by Riedel in his brief account of the fly as cited above (No. 17).

Male.—Length, about 15 millimeters; wing, 18.

Having the general appearance of *Limonia (Libnotes) affinis* (de Meijere). General coloration of entire body pale yellow. Legs yellow; femora before tips with a relatively narrow brown ring; tibiae yellow, the tips narrowly dark brown, with a moderately broad brown subbasal ring, placed about its own length beyond the base and about one-half wider than the subapical ring on femora; tarsi yellow, the tips of segments one and two, and all of segments three and four, brown. (Riedel describes the tibia as having a subterminal dark ring but in the detached legs that I associate with the above fly, the coloration is more as noted.) Wings (Plate 1, fig. 9) yellowish, with a restricted brown pattern, including two larger areas at tip of Sc and tip of R₁, respectively; other smaller dark seams on veins, including the cord, outer end of cell 1st M₂, the supernumerary crossveins in radial field, a spot on R₃ before midlength and on the outer third of M₁₊₂; small marginal clouds on M₃, M₄, Cu₁, and the anal veins; axillary region darkened; veins yellow, darker in the clouded areas. Macrotrichia at base of costa small and relatively sparse. Venation: Free tip of Sc₂ and R₂ in transverse alignment, R₁₊₂ extending just beyond this level as a scarcely apparent spur; radial veins very strongly deflected caudad; a supernumerary crossvein in each of cells R₃ and R₅, the former just beyond midlength, the latter just beyond one-third the length of cell.

Habitat.—New Guinea.

Holotype, a fragmentary male, Grajet Island, May 1, 1901 (Biró).

There are only two described species of *Libnotes* having two supernumerary crossveins in the radial field of the wing (*regalis* Edwards, of Formosa; *diphragma* Alexander, of western China). The present fly differs notably from both of these flies in the pattern of the legs and wings. It should be noted that

the relative position of the supernumerary crossveins is nearly the same in all species (that in cell R_5 being far proximad of the one in cell R_3 , more or less in transverse alignment with the basal section of M_3). I name this fine species in honor of my old friend and coworker on the Tipulidæ, Postamtrat M. P. Riedel.

LIMONIA (LIBNOTES) DJAMPANGENSIS sp. nov. Plate 1, fig. 10.

General coloration of thorax almost uniformly reddish brown; rostrum, palpi, and antennæ black; legs reddish brown, only the terminal tarsal segments brownish black; wings with a weak brownish tinge, cells C and Sc more strongly infumed; stigma virtually lacking; R_2 and free tip of Sc_2 nearly in transverse alignment; tips of outer radial veins only slightly decurved; R_s longer than cell 1st M_2 , only moderately oblique; m and basal section of M_3 in transverse alignment; m-cu at near two-thirds the length of cell 1st M_2 ; abdomen reddish brown, the subterminal segments blackened; ovipositor with valves very short, the blackened cerci bifid at tips.

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

Rostrum black, a little longer than the scape; palpi black. Antennæ black throughout; basal flagellar segments oval, the middle ones more cylindrical with long verticils that are fully twice the length of the segments; outermost segments even more elongate, the terminal segment nearly twice as long as the penultimate. Head dark gray, the anterior vertex immediately cephalad of the eyes more golden-yellow; posterior vertex with a median dark vitta; anterior vertex reduced to a hairlike line, the eyes actually contiguous for a distance.

Pronotum blackish above, more brown on sides. Mesonotum almost uniformly reddish brown, the humeral and lateral portions of præscutum vaguely darker. Pleura reddish brown. Halteres relatively long and slender, black, the bases narrowly yellow. Legs with the coxæ and trochanters reddish brown; remainder of legs reddish brown, the outer tarsal segments brownish black. Wings (Plate 1, fig. 10) with a weak brown tinge, cells C and Sc much more strongly infumed; stigma so small as to be virtually lacking, including a tiny cloud at point of union of free tip of Sc_2 and R_2 ; certain of the longitudinal veins, especially Cu and the anterior branch of R_s , narrowly seamed with brown; wing tip and entire apical and posterior border very narrowly bordered with brown; axilla restrictedly darkened; veins brownish black to black. Venation: Free tip of Sc_2 and R_2 almost in transverse alignment, the latter only moderately long; outer radial veins at margin only weakly de-

curved; Rs longer than cell 1st M_2 , only moderately oblique; cell 1st M_2 elongate, m and basal section of M_3 subequal and in transverse alignment; m-cu at near two-thirds the length of cell; anal veins convergent.

Abdomen reddish brown, unmarked except for extensively blackened areas on segments seven to nine, segment eight entirely blackened. Ovipositor with valves very short, piceous, the cerci with the tips bifid by apical notches; hypovalvæ a little exceeding the cerci.

Habitat.—Western Java.

Holotype, female, Djampang Tengah, altitude 1,500 to 2,000 feet, March, 1933 (*M. E. Walsh*).

By Edwards's key to the species of *Libnotes*,¹¹ the present fly runs to those species included between couplets 28 and 53, disagreeing in characters with all species beyond couplet 29. It is most similar to species such as *Limonia (Libnotes) ferruginata* Edwards (Buru), *L. (L.) rufata* Edwards (North Borneo), and *L. (L.) simplex* (Osten Sacken) (Ternate and North Borneo), differing in the coloration of the body, legs, and wings, venational details, structure of the anterior vertex, and nature of the ovipositor.

LIMONIA (LIBNOTES) MOPSA sp. nov. Plate 1, fig. 11.

Allied to *nigricornis*; general coloration of mesonotal præscutum almost concealed by a brownish black dorsal shield, comprised of three confluent stripes; rostrum, palpi, and antennæ black throughout; legs brown; wings faintly tinged with brown, cells C and Sc, with the small stigma, darker brown; wing apex and posterior border as far back as vein Cu_1 very narrowly seamed with brown; Sc_2 at tip of Sc_1 ; veins beyond cord unusually long, the distal section of M_{1+2} nearly three times the second section; m-cu at midlength of cell 1st M_2 .

Female.—Length, about 5 millimeters; wing, 5.3.

Rostrum and palpi black. Antennæ black throughout; flagellar segments with very short, glabrous, apical pedicels; terminal segment strongly narrowed on outer half, longer than penultimate; longest flagellar verticils only slightly exceeding the segments. Head dark gray, lighter gray in front; anterior vertex reduced to a linear strip.

Pronotum obscure yellow. Mesonotal præscutum with ground color almost concealed by three confluent brownish black stripes, the humeri and lateral borders broadly obscure yellow; poste-

¹¹ Journ. Fed. Malay St. Mus. 14 (1928) 74–80.

rior sclerites of notum almost uniformly dark brown. Pleura, especially the dorsal sclerites, infuscated. Halteres dark brown, the base of stem yellow. Legs with coxæ and trochanters obscure yellow; remainder of legs uniformly brown. Wings (Plate 1, fig. 11) with a faint brown tinge, cells C and Sc, together with the small inconspicuous stigma darker brown; wing apex and posterior border as far back as vein Cu_1 very narrowly and insensibly seamed with brown; veins dark brown. Venation: Sc_1 ending just beyond fork of Rs, Sc_2 at its tip; Rs long, gently arcuated; free tip of Sc_2 and R_2 both pale, in approximate transverse alignment; veins beyond cell 1st M_2 elongate, last section of M_{1+2} nearly three times the second section; M_4 a little longer than cell 1st M_2 ; m and basal section of M_3 both short and subequal; m-cu at midlength of cell 1st M_2 , about two-thirds as long as the distal section of Cu_1 ; anal veins parallel at bases.

Abdominal tergites dark brown, the pleural region and sternites more yellowish; cerci small and slender; hypovalvæ blackened at bases.

Habitat.—New Guinea.

Holotype, female, Stephansort, Astrolabe Bay, 1900 (*Biró*). Paratopotype, female.

By Edwards's key to the species of *Libnotes*,¹² the present fly runs to *Limonia (Libnotes) nigricornis* (Alexander), of western Java, which is apparently still the nearest ally. The two flies agree in the general appearance but are readily told by the coloration of the thorax and by the venation, especially the long medial veins and short m of the present fly. The types earlier had been determined tentatively by Riedel¹³ as being *Limonia (Geranomyia) argentifera* (de Meijere), which they superficially resemble, but in reality they pertain to the subgenus *Libnotes*, as described. Both specimens are females.

LIMONIA (IDIOGLOCHINA) FLAVALIS sp. nov. Plate 1, fig. 12; Plate 2, fig. 30.

General coloration of body, legs, halteres, and wings yellow; Sc unusually short, the distance on costa between tip of Sc_1 and the origin of Rs about equal to twice the length of the latter vein.

Male.—Length, about 5 to 6 millimeters; wing, 5.5 to 6.5.

Rostrum yellow, about one-half the remainder of head; palpi dark brown. Antennæ yellow, only the outer segments darkened;

¹² Loc. cit. ¹³ Ann. Mus. Nat. Hungarici 18 (1921) 131, No. 9.

flagellar segments with the lower face strongly produced, more accentuated on the intermediate segments. Head gray pruinose; anterior vertex about one-third wider than the diameter of scape; posterior vertex with indications of an impressed median line.

Pronotum brownish yellow. Mesonotum chiefly obscure yellow, the præscutum with the lateral brown stripes reddish brown, distinct; intermediate stripes much paler, scarcely darker than the ground, separated by a capillary pale vitta; mediotergite somewhat more darkened. Pleura reddish yellow, sparsely pruinose. Halteres yellow. Legs yellow, the terminal tarsal segments darker. Wings (Plate 1, fig. 12) yellow, the veins darker yellow. Both anal veins with macrotrichia at outer ends. Venation: Sc very short, the distance on costa between tip of Sc₁ and origin of Rs about equal to twice the length of the latter vein; R₁ and R₂ forming a common, gently arcuated vein, R₁ with three strong trichia, R₂ glabrous, m-cu at fork of M.

Abdominal tergites light yellowish brown; sternites and hypopygium yellow. Male hypopygium (Plate 2, fig. 30) with the setæ at apices of lobes of tergite, 9t, unusually strong and powerful.

Habitat.—New Guinea.

Holotype, male, Seleo, Berlinhafen, 1896 (*Biró*). Paratopotype, male.

Limonia (Idioglochina) flavalis is best characterized by the light yellow coloration of the body and appendages. The structure of the male hypopygium is remarkably uniform and monotonous throughout this entire group (*de-beauforti*) of the subgenus.

LIMONIA (ALEXANDRIARIA) CINEREICAPILLA sp. nov. Plate 1, fig. 13.

General coloration of entire body pale yellow or reddish yellow; outer flagellar segments darkened; legs and wings pale yellow; Sc short, Sc₁ ending far before origin of Rs, the distance on costa between the two veins about one-half longer than Rs alone; free tip of Sc₂ some distance before R₂; m-cu before fork of M, longer than distal section of Cu₁.

Female.—Length, about 6 millimeters; wing, 5.8.

Rostrum and palpi pale. Antennæ with basal four or five segments yellow, the remaining segments passing into dark brown; flagellar segments oval, the verticils about equal in length to the segments; terminal segment a little larger than the penultimate. Head entirely light silvery white.

Mesothorax entirely pale reddish yellow. Halteres pale yellow throughout. Legs pale yellow, the outer tarsal segments very faintly darkened. Wings (Plate 1, fig. 13) pale yellow, the costal border slightly more saturated; veins pale yellow. Macrotrichia of veins relatively numerous, including a series of four or five on basal half of Rs; all outer radial and medial branches with trichia. Venation: Sc short, Sc₁ ending far before origin of Rs, the distance on costa about one-half longer than Rs; Rs and basal section of R₄₊₅ subequal and in approximate oblique alignment; free tip of Sc₂ some distance before R₂; m-cu before fork of M, longer than the distal section of Cu₁.

Abdomen uniformly pale reddish yellow. Cerci long and straight.

Habitat.—New Guinea.

Holotype, female, Seleo, Berlinhafen, 1896 (*Biró*).

I am under the belief that when the male sex of the present fly is discovered it will be found to belong to the subgenus *Idioglochina* rather than to *Alexandriaria* where it must now be referred. If the above belief is well founded, another subgenus of *Limonia* will be added to the list of groups in the genus showing this reduced venation of the medial field (at present including *Dicranomyia* Stephens and *Euglochina* Alexander). The present fly is readily told from the other regional species of *Alexandriaria* having a uniformly pale color by the entirely silvery white head.

HELIUS (HELIUS) SUBARCUARIUS sp. nov. Plate 1, fig. 14; Plate 2, fig. 31.

Allied to *arcuarius*; antennæ short; general coloration of mesonotal præscutum brownish black medially, paling to dark reddish brown on sides; dorsal pleural region dark brown, the ventral sclerites paler; legs brownish black, the extreme outer tarsal segments brownish white; wings dusky, the stigma and cells C and Sc dark brown; wing margin narrowly darkened; anterior branch of Rs not running close to R₁; cell 1st M₂ nearly three times as long as wide; male hypopygium with the mesal lobe of basistyle conspicuous; outer dististyle slender, the tip simple.

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

Rostrum black, subequal in length to remainder of head; palpi black. Antennæ black throughout; flagellar segments short-cylindrical, with an abundant short erect pubescence; antennæ

(male) about as long as the head, including rostrum. Head blackish; anterior vertex reduced to a linear strip that is about equal in width to two ommatidia.

Pronotum dark brown. Mesonotal præscutum brownish black medially, paling on sides to dark reddish brown; lateral stripes not differentiated; posterior sclerites of notum dark brown, the median area of scutum and lateral portions of scutellum somewhat paler. Pleura with dorsal sclerites and all of pteropleurite and pleurotergite dark brown, the sternopleurite and meral region paling to testaceous-yellow. Halteres with stem dirty white, the knobs brown. Legs with fore coxæ dark brown, the remaining coxæ more testaceous-brown; trochanters testaceous; femora brownish black, the bases narrowly pale; remainder of legs black, the extreme outer tarsal segments paling to brownish white. Wings (Plate 1, fig. 14) with a dusky tinge, cells C and Sc, together with stigma, dark brown; outer margin of radial field to wing apex narrowly darkened, the color continued as an even narrower seam to opposite end of vein 2d A; veins black. Venation: Basal section of R_{4+5} subequal to r-m; anterior branch of Rs not strongly arcuated and running close to R_1 , as is the case in *arcuarius*; cell 1st M_2 long and relatively narrow, nearly three times as long as wide; m-cu about one-half its length beyond the fork of M; m-cu about one-half the distal section of Cu_1 .

Abdominal tergites dark brown; sternites obscure brownish yellow. Male hypopygium (Plate 2, fig. 31) with the mesal lobe of basistyle, *b*, large and conspicuous, with spinous setæ. Outer dististyle, *od*, slender, gently curved, the tip simple. Interbase, *i*, with base dilated, the apex greatly produced into a long curved spine, which, on distal third, bears a nearly hyaline flange back from tip.

Habitat.—Western Java.

Holotype, male, Djampang, altitude 1,500 to 2,000 feet, August, 1933 (*M. E. Walsh*).

The nearest ally of the present fly seems to be *Helius* (*Helius*) *arcuarius* Alexander (Luzon). This latter species differs in the even more arcuated anterior branch of Rs, which is nearly perpendicular to a point opposite the fork of Sc, thence running parallel and very close to R_1 . The hypopygial details, especially the shorter and stouter outer dististyle, and the stout mesal lobe of the basistyle, are similarly distinct.

HEXATOMINI

LIMNOPHILA (ELÆOPHILA) MARMOREA sp. nov. Plate 1, fig. 15; Plate 2, fig. 32.

General coloration dark brown, variegated with gray; femora yellow, the tips vaguely darkened; wings (male) broad, with a heavy dark pattern, including a broad, continuous band at cord that is interrupted only by a small pale area beyond tip of vein Sc; major dark areas in costal field wider than the interspaces, beyond the cord inclosing only single darkened spots; male hypopygium with the outer dististyle bearing a slender lobule on outer margin.

Male.—Length, about 5 millimeters; wing, 5.5 by 1.8.

Rostrum and palpi black. Antennæ broken. Head gray.

Pronotum dark brown, heavily pruinose. Mesonotal præscutum with the ground color grayish brown, the lateral borders broadly and conspicuously dark brown; posterior ends of lateral and intermediate stripes indicated by narrow dark lines before suture; interspaces with a series of four or five dark dots extending from the suture cephalad; scutal lobes variegated with pale; posterior sclerites of notum blackish, the mediotergite with paler pollinose areas. Pleura dark, variegated by silvery and grayish areas. Halteres broken. Legs with the coxæ blackened; trochanters yellow; femora yellow, with faint indications of a darker subterminal ring, best delimited internally; tibiæ and tarsi yellow, the terminal segments of the latter darkened. Wings (Plate 1, fig. 15) broad (male), whitish subhyaline, with a very heavy, dark brown, banded and dotted pattern, including major areas and crossbands beyond arculus; a complete parallel-sided band at level of origin of Rs; a complete band at cord, expanded at cephalic end and broken only by a small pale area in cell Sc₁ beyond the fork of vein Sc; large areas at wing tip and at end of vein R₃; outer end of cell 1st M₂ darkened; abundant dots in all the interspaces; veins yellow, darker in the clouded areas. Costal fringe short. Venation: Sc₁ ending just beyond fork of Rs, Sc₂ near its tip; cell 1st M₂ large, with m-cu at near one-fifth its length; supernumerary crossvein opposite origin of Rs.

Abdomen brownish black. Male hypopygium (Plate 2, fig. 32) with the outer dististyle, *od*, bearing a slender lobule on outer margin, more basad than the numerous spinules before the apical spine; apical notch oval. Phallosomic armature, *p*, relatively conspicuous.

Habitat.—Western Java.

Holotype, male, Soekaboemi, altitude 1,800 feet, March 8, 1933 (M. E. Walsh).

In its small size, the present fly suggests *Limnophila* (*Elæophila*) *dietziana* Alexander (Japan) and *L. (E.) serrulata* Alexander (western China). It is more nearly allied to the larger *L. (E.) granulata* Edwards (North Borneo), which likewise has the wings of the male greatly dilated opposite the termination of vein 2d A. The present fly has the dark wing pattern much heavier, restricting the ground color, more conspicuously so in the costal and apical fields. The darkened femoral rings are very much reduced and the male hypopygium is slightly different.

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

Belongs to the *nepalensis* group; mesonotum deep velvety black, opaque; antennal flagellum extensively yellow; legs black, the femoral bases broadly yellow; an extensive elongate-oval white area before cord; no macrotrichia on Rs, R₂₊₃₊₄, or R₃; R₂ very oblique in position; inner end of cell 1st M₂ strongly arcuated, m-cu close to its outer end; abdomen black throughout; tergites one to five shiny, the narrow caudal borders opaque.

Female.—Length, about 16 millimeters; wing, 12.

Rostrum and palpi black. Antennæ (female) 10-segmented; scape and pedicel black; flagellar segments one to four light yellow; succeeding segments brownish black; basal flagellar segments with long coarse verticils on all faces. Head black.

Mesonotum and pleura entirely deep velvety black, opaque. Halteres short, black throughout. Legs with the coxæ and trochanters black; remainder of legs black, the femoral bases broadly yellow, on fore legs including a little more than basal half, on midlegs approximately the basal two-thirds, on posterior legs a little more than the basal three-fourths. Wings (Plate 1, fig. 16) dark brown, the prearcular and adjoining regions conspicuously bright yellow, the extreme wing base again narrowly blackened; an elongate-oval white area before cord, extending from vein R₁ to 2d A, widest in cell R; veins dark brown, yellow in the pale areas. No macrotrichia on Rs, R₂₊₃₊₄, or R₃; sparse but conspicuous trichia on outer sections of M₁₊₂ and M₃. Venation: Sc₁ ending beyond distal end of R₂, Sc₂ far from its tip; R₂ very oblique in position, R₂₊₃ short; inner end of cell 1st M₂ strongly arcuated, with m-cu close to its outer end.

Abdomen black throughout, tergites one to five shiny except for narrow caudal margins, the succeeding segments opaque

black; genital shields black; ovipositor with valves elongate, the cerci blackened at bases, slender.

Habitat.—Western Java.

Holotype, female, Goenoeng Malang, Djampang, altitude 3,000 feet, July 10, 1933 (*M. E. Walsh*).

The four Javanese species that show the following group characters are separated by the key that follows:

Mesothorax opaque velvety black, unmarked (blue-gray in *diengensis* type, this possibly due to immersion in spirit). Wings with cell M_1 lacking. Base of wing yellow; a conspicuous whitish area before cord; no white or yellow areas on wing beyond cord.

Key to Javanese species of Hexatoma.

1. Cell 1st M_2 small, its inner end only slightly arcuated, m-cu at midlength; distal section of Cu_1 nearly two times m-cu; antennal flagellum black.
diengensis Alexander.
- Cell 1st M_2 with its inner end arcuated, lying nearly as far basad as inner end of cell R_4 ; m-cu near outer end of cell 1st M_2 ; distal section of Cu_1 subequal to m-cu; antennal flagellum either black or yellow.... 2.
2. R_2 very oblique in position, at or close to fork of R_{2+3+4} ; antennal flagellum chiefly light yellow..... 3.
- R_2 subtransverse, subequal to R_{2+3} ; antennal flagellum black.
atricornis sp. nov.
3. Abdomen with segments two to five conspicuously yellow; vein R_3 with macrotrichia *salakensis* Edwards.
- Abdomen black throughout, the basal portions of tergites one to five shiny, the margins opaque; vein R_3 without macrotrichia.
malangensis sp. nov.

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

Belongs to the *nepalensis* group; mesonotum deep velvety black, opaque; antennæ black throughout, 11-segmented (female); legs black, the femoral bases yellow; wings broad, intensely blackened, the prearcular cells narrowly yellow; a conspicuous white discal area before cord; an abundant series of macrotrichia on vein R_3 ; R_2 subequal in length to R_{2+3} , subtransverse; inner end of cell 1st M_2 strongly arcuated; abdomen entirely black, the incisures of the tergites opaque, the intermediate portions polished; genital shield entirely opaque black.

Female.—Length, about 18 millimeters; wing, 14.

Rostrum and palpi black. Antennæ black throughout, 11-segmented (female); flagellar segments gradually decreasing in length to the fifth, the succeeding three subequal; terminal segment scarcely one-half longer than penultimate; flagellar seg-

ments with long coarse setæ, distributed on all faces. Head dark blackish gray; anterior vertex very wide.

Mesonotum and pleura entirely deep velvety black. Halteres short, black throughout. Legs with coxæ and trochanters black; remainder of legs black, the femoral bases obscure yellow, narrowest on forelegs where about one-fifth is included, broader on the middle and hind legs where one-fourth to nearly one-third is brightened. Wings (Plate 1, fig. 17) broad, the ground color intensely blackened; prearcular region to just beyond level of h bright yellow, the extreme base again darkened; an irregularly oval white discal area, extending from cell R_1 to cell M, widest in cells R and M, narrowest in cell R_1 where it does not reach vein R_1 ; anal cells a trifle paler than the remainder of the darkened ground; veins black, a trifle paler in the white discal area, light yellow in the prearcular field. Macrotrichia of veins relatively abundant, including complete series on R_3 (about 35 to 40), on R_{2+3} (about 6), and on R_{2+3+4} ; M, Cu, and 1st A, with all branches, glabrous. Venation: Sc_1 extending to shortly beyond R_2 , Sc_1 long; R_2 fully its own length beyond fork of R_{2+3+4} and thus subequal to R_{2+3} , subtransverse in position, without trichia; inner end of cell 1st M_2 strongly arcuated; m-cu at outer end of cell, subequal to or slightly longer than the distal section of Cu_1 .

Abdomen entirely black, the bases of tergites broadly shiny black to nacreous, the apical third or fourth opaque velvety black, the extreme bases of segments similarly opaque; sternites opaque black; genital shield entirely opaque black; ovipositor with valves black, the tips narrowly brown.

Habitat.—Western Java.

Holotype, female, Djampang, altitude 1,500 to 2,000 feet, May, 1933 (*M. E. Walsh*).

The relationships of the present fly have been discussed under the preceding species.

HEXATOMA (ERIOCERA) SALAKENSIS (Edwards).

Eriocera salakensis EDWARDS, *Treubia* 6 (1925) 167-168.

Described from a single female, taken at Tjitjoeroek, Salak, western Java, altitude 3,250 feet, March 6, 1921 (*Karny*).

A male is before me, herewith characterized as allotype.

Male.—Length, about 18 millimeters; wing, 13.

Characters as in female, as described by Edwards, with the following differences: Antennal flagellum, excepting outer segments, light yellow. Wings with the very oblique R_2 at or just

before fork of R_{2+3+4} . Abdomen relatively long for the male sex, somewhat as in *acrostacta*.

Allotype, male, Selabintanah, Mount Gedeh, western Java, altitude 3,000 feet, December, 1932 (*M. E. Walsh*).

HEXATOMA (ERIOCERA) BENGALENSIS CONSTRICTA subsp. nov.

Limnophila bicolor MACQUART, Dipt. exot. 1 (1838) 66, pl. 7, fig. 2.

Eriocera bicolor VAN DER WULP, Mid-Sumatra Exped., Diptera (1892) 11, pl. 1, figs. 5-6.

Eriocera bicolor DE MEIJERE, Tijd. voor Ent. 54 (1911) 57-58.

Hexatoma (Eriocera) bengalensis ALEXANDER, Philip. Journ. Sci. 52 (1933) 148 (renaming of *bicolor*, preoccupied).

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

Rostrum and palpi dark. Antennæ black, the scape pruinose; extreme base of first flagellar segment pale yellow; 10-segmented (female), segments gradually decreasing in length to the penultimate; last segments about one-fourth longer than the penultimate.

Mesonotal præscutum with the ground color gray, with a narrow velvety black median vitta that is dilated on anterior half of sclerite, on posterior half constricted into a mere line; the usual four præscutal stripes are more plumbeous, faintly shiny; posterior interspaces feebly dusted with gray; a large circular velvety black spot on margin of præscutum, in the region of the pseudosutural fovea. Halteres short, black throughout. Legs with coxæ and trochanters blackish, pruinose; femora chiefly black, the bases restrictedly obscure yellow, more evident on fore femora; tibiæ and tarsi black. Wings with the broad discal band slightly widened behind, extending from vein R to posterior margin; cells C and Sc more brownish yellow than remainder of wing; entire basal third of wing darkened, excepting the broad proximal ends of both anal cells. Venation: R_{2+3+4} and R_{2+3} subequal, both shorter than basal section of R_5 ; R_2 transverse, about one-third R_{2+3} ; m-cu at near three-fourths the length of cell 1st M_2 ; cell M_1 present, subequal in length to its petiole.

Basal abdominal tergite velvety black on disk, bordered by orange; segments two and three orange; segments four to six, inclusive, black, the extreme bases, especially laterally, obscure orange; seventh and succeeding segments, including genital shield, orange.

Habitat.—Western Java.

Holotype, female, Djampang Tengah, altitude 1,500 to 2,000 feet, February, 1933 (*M. E. Walsh*).

The type specimen of *bicolor* (*bengalensis*) came from Bengal. I am by no means convinced that the Javan specimens also referred to *bengalensis* really belong here. The present fly differs from other Javan and Sumatran material that has been referred to this species in the increase in dark color at the wing base, restricting the pale yellow of this field to the proximal ends of the anal cells.

Macquart's description of his *bicolor* indicates a species with the basal three abdominal segments fulvous-orange, the remaining segments black with only the valves of the ovipositor fulvous. Moreover, his figure and description of the pattern of the mesonotum differs in several important regards from that of the present fly. Van der Wulp¹⁴ indicates that certain specimens occur in which the costal cell is darker brown than in normal individuals, which have the costal field yellow like the basal and discal bands.

GYNOPLISTIA (GYNOPLISTIA) BIRÓANA sp. nov. Plate 1, fig. 18; Plate 2, fig. 33.

Mesothorax black, the pteropleurite conspicuously silvery; halteres black, the base of stem obscure reddish; femora yellow, the extreme tips darkened; tibiae brownish black, the posterior tibiae more brownish yellow with darkened tips; wings with the ground color light yellow, the prearcular and costal regions clear yellow; four transverse brown fasciae, the basal two narrow and interrupted, the outer two, including the cord and apex, very broad and continuous, almost confluent with one another; macrotrichia of veins beyond cord sparse; cell M_1 present, deep; cell 1st M_2 small; abdomen with basal tergite darkened, segments two to four bright orange; remaining segments purplish black; median region of tergite of male hypopygium produced caudad into a narrow lobe; a single simple dististyle.

Male.—Length, about 11 millimeters; wing, 10.

Rostrum and palpi light yellow. Antennae broken. Posterior portions of head entirely light yellow.

Pronotum and propleura velvety black. Mesonotum brownish black, with faint reddish tinges. Pleura black, the pteropleurite dusted with silvery throughout its entire length. Halteres black, the extreme bases of stems obscure reddish. Legs with the coxae and trochanters black; femora light yellow, the tips very narrowly darkened; tibiae and tarsi brownish black, the posterior tibiae more brownish yellow, the tips darker; tarsi relatively short, brownish black. Wings (Plate 1, fig. 18) with the ground

¹⁴ Loc. cit.

color light yellow, the prearcular and costal regions clearer yellow; four transverse brown fasciæ, the basal pair narrow, the outer pair very broad and almost confluent; basal fascia postarcular in position, interrupted in cubital field, not crossing R; second band at origin of Rs, extending from R to M, broadly interrupted in cell M, recurring in cells Cu and 1st A; the broad outer bands include the cord and apex, confluent except for vague indications of pale washes at their union, the band at cord somewhat more suffused; veins brown, luteous in the yellow costal and prearcular fields. Macrotrichia of veins relatively sparse, there being two on R₃, six or seven on M₁, lacking elsewhere on veins M, Cu, or anals; costal setæ at wing base very long and conspicuous. Venation: Basal section of R₅ long and gently arcuated; cell M₁ deep, about one-half longer than its petiole; cell 1st M₂ small, its inner end slightly arcuated; m-cu at about one-fourth the length of the cell; vein 2d A strongly sinuous.

Abdomen with basal tergite darkened; segments two to four, inclusive, bright orange; remainder of abdomen, including hypopygium, purplish black. Male hypopygium (Plate 2, fig. 33) with the median area of tergite, 9t, produced caudad into a narrow median lobe, its tip gently notched. Apex of basistyle, b, produced into a small acute spine and a longer straight rod; a single dististyle, d, its basal portion straight, before apex suddenly narrowed.

Habitat.—New Guinea.

Holotype, male, Simbang, Huon Gulf, 1899 (*Biró*).

This fine species is named in honor of the collector, Ludwig Biró, whose name will always be associated with notable discoveries in Papua. It is most generally similar to two other species from New Guinea, *Gynoplistia* (*Gynoplistia*) *fulviceps* Walker (northwest) and *G.* (*G.*) *nigrithorax* Alexander (southeast), agreeing in the brightly colored head and darkened thorax, differing from the former in the large size, coloration of the legs, and in the wing pattern, as the conspicuous bright yellow costal field. From the latter species, it differs in the coloration of the head, uniformly darkened thoracic pleura, coloration of legs, and the different wing pattern, especially the pale and broken basal bands. The type specimen had earlier been recorded¹⁵ as doubtfully being *fulviceps*, which it rather

¹⁵ Riedel, *Ann. Mus. Nat. Hungarici* 18 (1921) 137.

closely resembles. The two badly preserved females of the same species mentioned by Riedel were not sent to me.

ERIOPTERINI

TRENTEPOHLIA (MONGOMA) AURICOSTA sp. nov. Plate 1, fig. 19.

General coloration of thorax bright orange, the præscutum and pleura immaculate; antennæ black; scutellum black; mediotergite blackened, with a transverse yellow line at near midlength; apices of knobs of halteres yellow; legs brown to brownish black, the tips of fore and middle tibiæ and all tarsi light yellow; all femora with a basal series of small spines; wings whitish subhyaline, the costal region light yellow; apex of wing narrowly darkened; m-cu at fork of M; abdominal tergites black; sternites obscure yellow, blackened medially, the intermediate sternites chiefly pale; genital segment (female) orange.

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

Rostrum and palpi black. Antennæ black throughout; flagellar segments long-cylindrical, with short verticils. Head light gray; posterior vertex with median carina; eyes opposite anterior vertex separated by a line narrower than the carina.

Cervical region brown. Pronotum and mesonotal præscutum bright orange, immaculate; scutal lobes blackened on mesal portions, the more lateral parts obscure orange; scutellum black; mediotergite chiefly blackened, yellowish laterally, with a narrow obscure yellow line across the sclerite at midlength. Pleura orange, more polished than the notum. Halteres with basal half of stem light yellow; outer half of stem and base of knob black; apex of knob conspicuously light yellow. Legs with coxæ and trochanters yellow; femora brown, passing into dark brown or brownish black on outer ends; tibiæ dark brown, the tips paler, very broadly so on fore legs, more obscurely on posterior legs; fore and middle tarsi light yellow, posterior tarsi more obscured. Fore and middle femora near base with a series of about a dozen small erect black spines; posterior femora with three or four shorter spines; posterior tibiæ before tips with four or five strong black setæ among the other vestiture. Wings (Plate 1, fig. 19) whitish subhyaline, cells C and Sc clear light yellow; stigma dark brown; a paler brown wash from stigma around margin to wing tip; a broad dark brown seam along vein Cu in cell M; narrower and less evident dark seams along Rs, R₂, R₃₊₄, and distal section of R₅; a darkened spot at point of divergence of anal veins; veins black, C, Sc, and R light

yellow. Venation: Rs elongate, exceeding R_{2+3+4} ; vein R_3 sub-erect and sinuous, cell R_3 very wide at base; m-cu at fork of M; apical fusion of veins Cu_1 and 1st A slight but distinct.

Abdominal tergites black, narrowly bordered laterally with obscure yellow; sternites obscure yellow, blackened medially, the fourth and fifth sternites chiefly pale; sixth to eighth sternites, inclusive, entirely and intensely blackened; genital segment orange; ovipositor with cerci pale horn color.

Habitat.—Western Java.

Holotype, female, Bibidjilan, Djampang, altitude 2,000 feet, September, 1933 (*M. E. Walsh*).

The nearest ally of the present fly is *Trentepohlia (Mongoma) flavicollis* Edwards, likewise from western Java. The latter species is before me (Djampang, western Java, July, 1933, *Walsh*). The apices of the knobs of the halteres are orange, a character not mentioned by Edwards. Both of these species are separable from *cariniceps* and its near allies by the smaller physical size and by the position of m-cu at or very close to the fork of M.

TRENTEPOHLIA (MONGOMA) AURANTICOLOR sp. nov. Plate 1, fig. 20.

Belongs to the *cariniceps* group; mesonotum and pleura clear yellow to orange-yellow; rostrum light yellow; head brownish yellow; halteres strongly infumed, the basal portion of stem yellow; legs light brown, the tarsal segments more yellowish; wings whitish subhyaline, the prearcular and costal regions clear light yellow; stigma lacking; veins dark; inner end of cell M_3 lying far basad of cells R_5 and $2d M_2$; m-cu at or only a short distance beyond the fork of M; veins Cu_1 and 1st A narrowly separated at margin; abdominal tergites obscure yellow, with a conspicuous dark brown median stripe that is narrowly interrupted at the incisures; genital segment chiefly pale.

Female.—Length, about 13 millimeters; wing, 9.

Rostrum and palpi light yellow. Antennæ yellow, the outer segments a trifle more obscure; flagellar segments of outer half of organ with a powerfully developed black seta on lower face, on tenth to twelfth segments of flagellum these considerably exceeding the segments in length; on more basal segments these setæ gradually shorter and less differentiated from the remaining setæ. Head brownish yellow, the postvertical carina conspicuous.

Cervical sclerites, pronotum, mesonotum, and pleura entirely bright yellow to orange-yellow. Halteres strongly infumed, the

basal portion of stem light yellow. Legs unusually long and powerful, as in the group; coxæ and trochanters light yellow; remainder of legs chiefly light brown or brownish yellow, the femoral bases clearer yellow; femoral tips narrowly and insensibly brightened; outer tarsal segments yellow; posterior and middle femora with the usual black spines at bases; posterior tibiæ with three powerful black setæ near tip. Wings (Plate 1, fig. 20) whitish subhyaline, the prearcular and costal regions clear light yellow; stigma lacking; veins dark brown, those in the yellow areas more luteous. Venation: Rs a trifle longer than basal section of R₅; R₂ nearly equal in length to R₃₊₄; vein R₄ only moderately decurved at outer end; inner ends of cells R₅ and 2d M₂ nearly in transverse alignment, of cell M₃ lying far proximad; m-cu at or only a short distance beyond fork of M; veins Cu₁ and 1st A distinctly separate at margin.

Abdominal tergites obscure yellow, with a conspicuous dark brown or brownish black median stripe that is narrowly interrupted at the bases of the segments; sternites chiefly obscure yellow; genital segment darkened medially above, the apex and lateral portions yellow; cerci reddish horn color.

Habitat.—Western Java.

Holotype, female, Selabintanah, Mount Gedeh, altitude 3,000 feet, April 15, 1933 (*M. E. Walsh*).

The regional members of the *cariniceps* group may be separated by the key accompanying the following group discussion.

The species are all of large to very large size; mesothorax yellow or orange-yellow, immaculate; median carina of posterior vertex conspicuous. The bases of femora in most species have series of few to many black spinous points arranged in a single, or, more rarely, a double row, while the posterior tibiæ before tips often have a series of long slender setæ arranged in a single series. The apical fusion of veins Cu₁ and 1st A is often very slight or lacking, and this character is apparently slightly variable within the limits of a single species.

Key to species of the cariniceps group.

- | | |
|---|---------------------------|
| 1. Veins Cu ₁ and 1st A distinctly separate at margin..... | 2. |
| Veins Cu ₁ and 1st A slightly fused backward from margin..... | 5. |
| 2. All femora with spines near base..... | 3. |
| No spines on fore femora..... | 4. |
| 3. Head chiefly black; flagellar segments each with two dorsal setæ; mesosternum with a group of black bristles on either side of mid-line (North Borneo) | <i>spiculata</i> Edwards. |

- Head ocherous; flagellar segments each with one longer dorsal seta; mesosternum bare or with inconspicuous pale setæ only (North Borneo) *lutescens* Edwards.
4. Outer costal region strongly infumed; m-cu its own length or more beyond fork of M; Cu₁ and 1st A widely separated at margin; genital shield (female) blackened (Western Java)..... *separata* sp. nov.
- Prearcular and costal regions clear light yellow; m-cu at or only a short distance beyond fork of M; Cu₁ and 1st A narrowly separate at margin; genital shield (female) chiefly pale (Western Java).
auranticolor sp. nov.
5. Head black 6.
Head ocherous 8.
6. Wing veins pale; abdomen uniformly yellow (Mentawi Islands, Western Sumatra) *siporensis* Edwards.
- At least some of the wing veins darkened; abdominal tergites more or less darkened 7.
7. Stigmal area small or lacking; legs brown, the tarsi paler, more yellowish brown (Sumatra) *nigriceps* de Meijere.
- Stigma distinct; legs ocherous (North Borneo)..... *spiculata* Edwards.
8. No spines at bases of femora (Sumatra and North Borneo).
cariniceps Enderlein.
- At least the hind femora with spines..... 9.
9. Mesonotum dull, pleura shiny; all femora armed basally with spines, these numerous, ten to twenty in number; abdominal sternites dark (North Borneo) *spiculata* Edwards.
- Both mesonotum and pleura shiny; only the posterior femora with spines, these only three or four in number; abdominal sternites ocherous (North Borneo) *fortis* Edwards.

I have included *lutescens* and *spiculata* in two places in the above key, the character of the apical fusion of veins Cu₁ and 1st A apparently being variable in these instances.

TRENTEPOHLIA (MONGOMA) SEPARATA sp. nov. Plate 1, fig. 21.

Belongs to the *cariniceps* group; mesonotum and pleura yellow; rostrum obscure yellow; head brown; halteres, including knobs, dusky; legs light brown, the outer tarsal segments paling to yellow; wings whitish subhyaline, the stigma and outer three-fourths of cells C and Sc infumed; vein R₄ long and sinuous, strongly decurved at outer end; m-cu its own length, or more, beyond the fork of M; veins Cu₁ and 1st A distinctly separated at margin; abdominal tergites with a broad, continuous, dark brown, median stripe; sternites yellow; dorsal shield of ovipositor blackened.

Female.—Length, about 12 to 13 millimeters; wing, 9.5 to 10.

Rostrum obscure yellow; palpi yellow, the terminal segment darkened. Antennæ with scape and pedicel light yellow; flagel-

lum brown; flagellar segments cylindrical, with short verticils, none exceeding the segments in length. Head brown; anterior vertex reduced to a narrow stripe; carina on posterior vertex relatively low and indistinct.

Cervical sclerites brownish yellow. Pronotum and mesonotum yellow, the posterior sclerites of the latter more obscure. Pleura yellow. Halteres dusky, the base of stem yellow. Legs with the coxæ orange-yellow; trochanters yellow; femora yellow basally, passing into brown, the tips again narrowly and insensibly brightened; tibiæ and basitarsi light brown, the outer tarsal segments paling to yellow; middle and hind femora with a series of eight to ten erect black spines near base; fore femora with these spines reduced to weak setæ, little evident; posterior tibiæ near tips with a series of about four black setæ, differentiated from the remaining vestiture. Wings (Plate 1, fig. 21) whitish subhyaline; stigma and outer three-fourths of cells C and Sc infumed, the basal fourth light yellow; wing tip narrowly and insensibly darkened; veins brown. Venation: R_2 a little longer than R_{3+4} ; vein R_4 long and sinuous, strongly decurved on outer fourth, cell R_3 thus very wide; inner ends of cells R_5 and M_3 a little more proximad than that of cell 2d M_2 and about in alignment with one another; m-cu its own length or more beyond fork of M; veins Cu_1 and 1st A distinctly separated at margin, the distance a little shorter than m.

Abdominal tergites broadly and conspicuously dark brown, the lateral borders obscure yellow, the caudal borders very narrowly and insensibly pale, scarcely breaking the dorsal vitta; sternites yellow, the subterminal segments darkened; tergal shield of ovipositor blackened; cerci horn-colored, strongly upcurved.

Habitat.—Western Java.

Holotype, female, Djampang Tengah, altitude 1,500 to 2,000 feet, February, 1933 (*M. E. Walsh*). Paratopotype, female.

Trentepohlia (Mongoma) separata is told from other allied species of the *cariniceps* group by the key provided with the preceding species. The Javanese record of *cariniceps*¹⁶ is erroneous and refers either to the present fly or some closely allied form.

GONOMYIA (LIPOPHLEPS) WALSHÆ sp. nov. Plate 1, fig. 22.

Mesonotum reddish brown to brown; pleura obscure brownish yellow, with a longitudinal white stripe, bordered above and below by narrow brownish lines; legs brown, the femora unva-

¹⁶ Alexander, Proc. U. S. Nat. Mus. 49 (1915) 173.

riegated; wings uniformly pale brown; costal region clear light yellow; stigma barely indicated; Sc relatively short; abdominal tergites with brown discal triangles, the posterior lateral angles conspicuously yellow.

Female.—Length, about 4.5 millimeters; wing, 4.2.

Rostrum and palpi black. Antennæ with scape and pedicel yellow above, darker beneath; flagellum black. Head above chiefly yellow.

Pronotum and anterior lateral pretergites light yellow. Mesonotum reddish brown, darker brown on disk, the median region even darker; scutal lobes infuscated, the median region yellow with a dusky line; scutellum dark brown, the caudal margin paler; mediotergite brownish gray, paler laterally. Pleura obscure brownish yellow, with an unusually distinct and clearly defined pure white longitudinal stripe, extending from behind the fore coxæ to the base of abdomen, bordered both above and beneath by darker brown, the latter broader, on sternopleurite. Halteres chiefly yellow. Legs with the fore coxæ darkened, mid- and hind-coxæ testaceous-yellow with only the extreme bases darkened; trochanters brownish yellow; remainder of legs brown, the femora entirely unvariegated; terminal tarsal segments blackened. Wings (Plate 1, fig. 22) with a uniform pale brown tinge, unvariegated by darker or paler areas; costal border clear light yellow; stigma long and narrow but scarcely darker in color than the ground; extremely vague indications of a dusky streak in center of cell R_4 ; axillary region weakly darkened; veins pale brown, Sc light yellow. Macrotrichia of veins relatively abundant, including a series along the entire length of the anterior branch of Rs and on Rs itself except at extreme base; complete series on all branches of M and Cu beyond cord, and at tips of both anal veins. Venation: Sc relatively short, Sc_1 ending a distance before origin of Rs that is a little shorter than r-m; anterior branch of Rs long and nearly straight; m-cu about one-third its length before fork of M.

Abdominal tergites with the disk of each segment chiefly covered by a brown triangle, the point directed behind leaving the narrow lateral margins and broad caudal-lateral angles yellow; sternites obscure yellow, with a dark median line.

Habitat.—Western Java.

Holotype, female, Soekaboemi, altitude 1,800 feet, June 1, 1933 (M. E. Walsh).

I take unusual pleasure in naming this species in honor of the collector, Mrs. M. E. Walsh. By Edwards's key to the Orien-

tal species of *Lipophleps*,¹⁷ the present fly runs to *Gonomyia* (*Lipophleps*) *flavomarginata* Brunetti. I have before me for comparison a specimen of this latter species, determined by Edwards. It has broader wings that are evidently variegated by dark and light areas; anterior branch of Rs shorter and more divergent from the posterior branch, without macrotrichia. Edwards¹⁸ supplies some additional significant data concerning Brunetti's paratypes.

ERIOPTERA (METERIOPTERA) SZILADYI sp. nov. Plate 1, fig. 23; Plate 2, fig. 34.

General coloration brownish yellow; halteres with brownish black knobs; legs yellow; wings tinged with brownish; vein 2d A nearly straight; abdomen brownish yellow, with a dark brown subterminal ring; male hypopygium with the outer dististyle a simple pale rod, its blackened apex with a comb of teeth.

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

Rostrum and palpi dark. Antennæ with scape and pedicel obscure yellow; six basal flagellar segments dark brown, each truncate-fusiform; longest verticils subequal to the segments. Head in the unique type apparently dark-colored.

Pronotum testaceous-yellow. Mesonotum brownish yellow, the præscutum with a faint and narrow brownish median line; central portion of scutum restrictedly darkened; cephalic half of mediotergite darkened, the posterior half pale. Pleura pale yellow. Halteres yellow, the knobs brownish black. Legs with the coxæ and trochanters pale yellow; remainder of legs yellow, only the outer two tarsal segments darkened. Wings (Plate 1, fig. 23) relatively narrow, tinged with brownish; veins and macrotrichia darker. Venation: Sc₁ ending opposite fork of Rs, Sc₂ just beyond origin of Rs; veins beyond cord almost straight, the extreme tip of Cu₁ deflected slightly cephalad; anal veins divergent, vein 2d A very weakly sinuous at extreme tip only, cell 1st A widest at margin.

Abdominal tergites obscure brownish yellow, the sternites a trifle paler; subterminal segments dark brown, the hypopygium light yellow. Male hypopygium (Plate 2, fig. 34) with the apical lobe of basistyle, *b*, slender. Outer dististyle, *od*, a simple pale rod, nearly straight to very gently arcuate, the apex oblique, blackened, with a comb of seven or eight teeth. Inner dististyle, *id*, entirely pale, expanded at apex into a conspicuous head,

¹⁷ Journ. Fed. Malay St. Mus. 14 (1928) 104–105.

¹⁸ Rec. Indian Mus. 26 (1924) 301.

the outer angle narrowed into a spine, near the apex of head with several weak tubercles.

Habitat.—New Guinea.

Holotype, male, Sattelberg (Sattelberg), Huon Gulf, September 20 to 30, 1898 (*Biró*).

I take great pleasure in dedicating this very distinct fly to Dr. Z. Szilady, custodian of the Diptera in the Hungarian National Museum. In the poorly preserved material available, I cannot detect a fusion segment at the base of the antennal flagellum but from the venation and structure of the male hypopygium, I believe the present fly to be correctly referred to the subgenus *Meterioptera*. In the simple outer dististyle of the hypopygium it is more nearly allied to the group of species that centers about *Erioptera* (*Meterioptera*) *javanensis* de Meijere than to those near *E. (M.) notata* de Meijere. The plain yellow legs and coarsely toothed apex of the outer dististyle furnish quite distinct characters from those of other described members of the *javanensis* group.

TOXORHINA (CERATOCHEILUS) BIRÓI sp. nov. Plate 1, fig. 24; Plate 2, fig. 35.

General coloration dark brown, pruinose; præscutum with three scarcely delimited brown stripes; wings with a faint brown tinge, cell Sc more infumed; anterior branch of Rs sinuous, nearly perpendicular; cell 1st M_2 open by atrophy of m; abdominal segments uniformly dark brown; male hypopygium with two dististyles, the outer simple, entire; mesal face of basistyle with a densely setiferous cushion; arms of ædeagus long.

Male.—Length, excluding rostrum, about 4.5 millimeters; wing, 5.

Rostrum broken off at extreme base. Antennæ with scape and pedicel light yellow; flagellum broken. Head gray, with conspicuous black setæ on posterior vertex; anterior vertex a little narrower than diameter of scape.

Mesonotum almost uniformly brown, the posterior sclerites somewhat darker and more pruinose than the præscutum, the latter with the ground color gray, with three very poorly delimited dark brown stripes. Pleura chiefly pale brownish yellow, the propleura and anepisternum a little darker, the pteropleurite and pleurotergite pale. Halteres dusky, the base of stem yellow. Legs with the coxæ obscure yellow, weakly infumed basally; trochanters testaceous; remainder of legs broken. Wings (Plate 1, fig. 24) with a faint brownish tinge, cell Sc more infumed

but with cell C undarkened; veins brown. Macrotrichia throughout entire length of Rs and its posterior branch; nearly complete dense series on outer sections of vein M_{1+2} and M_3 . Venation: Anterior branch of Rs sinuous but nearly perpendicular, the distance on costa between it and tip of R_{1+2} less than the length of the vein itself; Sc_1 ending about opposite one-fourth the length of Rs, Sc_2 just beyond this origin; cell 1st M_2 open by atrophy of m; m-cu shortly before fork of M, a little longer than the distal section of Cu_1 .

Abdomen dark brown, the hypopygium a little brighter. Male hypopygium (Plate 2, fig. 35) with the entire mesal face of basistyle, *b*, produced into a cushion that is provided with a double or triple row of long powerful setæ, the caudal end of the cushion further produced caudad as a glabrous obtuse blade. Outer dististyle, *od*, a simple curved spine from a dilated base. Inner dististyle, *id*, with the spine on outer border relatively small. Arms of ædeagus, *a*, long and relatively slender.

Habitat.—New Guinea.

Holotype, male, Sattelberg (Sattelberg), Huon Gulf, September 20–30, 1898 (*Biró*).

The species is dedicated to the memory of Ludwig Biró, former custodian of the Hungarian National Museum. It is most similar to *Toxorhina* (*Ceratocheilus*) *romblonensis* Alexander (Philippines) in the open cell 1st M_2 and nearly erect anterior branch of Rs. All other Oriental and Australasian members of the subgenus so far described have cell 1st M_2 normally closed. The present fly is readily told from *romblonensis* by the lack of a black dorso-longitudinal pleural stripe, the different coloration of the præscutum and abdomen, and the undarkened costal cell. Riedel¹⁹ had earlier examined this specimen and noted its resemblance to *Ceratocheilus* but did not complete the identification.

¹⁹ Ann. Mus. Nat. Hungarici 18 (1921) 135, No. 21, as *Teucholabis* (?) sp.

ILLUSTRATIONS

[Legend: *a*, Ædeagus; *b*, basistyle; *d*, dististyle; *dd*, dorsal dististyle; *g*, gonapophysis; *i*, interbase; *id*, inner dististyle; *od*, outer dististyle; *od, va*, outer dististyle, ventral aspect; *p*, phallosome; *s*, sternite; *t*, tergite; *vd*, ventral dististyle.]

PLATE 1

- FIG. 1. *Dolichopeza* (*Nesopeza*) *nebulicola* sp. nov., venation.
2. *Dolichopeza* (*Nesopeza*) *subcuneata* sp. nov., venation.
3. *Scamboneura* *minahasa* sp. nov., venation.
4. *Scamboneura* *subfaceta* sp. nov., venation.
5. *Macromastix* *risbeci* sp. nov., venation.
6. *Macromastix* *caledoniana* sp. nov., venation.
7. *Tipula* *leucosticta* sp. nov., venation.
8. *Limonia* (*Limonia*) *pacatella* sp. nov., venation.
9. *Limonia* (*Libnotes*) *riedelella* sp. nov., venation.
10. *Limonia* (*Libnotes*) *djampangensis* sp. nov., venation.
11. *Limonia* (*Libnotes*) *mopsa* sp. nov., venation.
12. *Limonia* (*Idioglochina*) *flavalis* sp. nov., venation.
13. *Limonia* (*Alexandriaria*) *cinereicapilla* sp. nov., venation.
14. *Helius* (*Helius*) *subarcuarius* sp. nov., venation.
15. *Limnophila* (*Elæophila*) *marmorea* sp. nov., venation.
16. *Hexatoma* (*Eriocera*) *malangensis* sp. nov., venation.
17. *Hexatoma* (*Eriocera*) *atricornis* sp. nov., venation.
18. *Gynoplistia* (*Gynoplistia*) *biróana* sp. nov., venation.
19. *Trentepohlia* (*Mongoma*) *auricosta* sp. nov., venation.
20. *Trentepohlia* (*Mongoma*) *auranticolor* sp. nov., venation.
21. *Trentepohlia* (*Mongoma*) *separata* sp. nov., venation.
22. *Gonomyia* (*Lipophleps*) *walshæ* sp. nov., venation.
23. *Erioptera* (*Meterioptera*) *sziladyi* sp. nov., venation.
24. *Toxorhina* (*Ceratocheilus*) *birói* sp. nov., venation.

PLATE 2

- FIG. 25. *Dolichopeza* (*Nesopeza*) *nebulicola* sp. nov., male hypopygium, details.
26. *Dolichopeza* (*Nesopeza*) *insolida* sp. nov., male hypopygium, details.
27. *Dolichopeza* (*Nesopeza*) *subcuneata* sp. nov., male hypopygium, details.
28. *Dolichopeza* (*Nesopeza*) *cuneata* Edwards, male hypopygium, details.
29. *Tipula* *leucosticta* sp. nov., male hypopygium, details.
30. *Limonia* (*Idioglochina*) *flavalis* sp. nov., male hypopygium.
31. *Helius* (*Helius*) *subarcuarius* sp. nov., male hypopygium.
32. *Limnophila* (*Elæophila*) *marmorea* sp. nov., male hypopygium.
33. *Gynoplistia* (*Gynoplistia*) *biróana* sp. nov., male hypopygium.
34. *Erioptera* (*Meterioptera*) *sziladyi* sp. nov., male hypopygium.
35. *Toxorhina* (*Ceratocheilus*) *birói* sp. nov., male hypopygium.

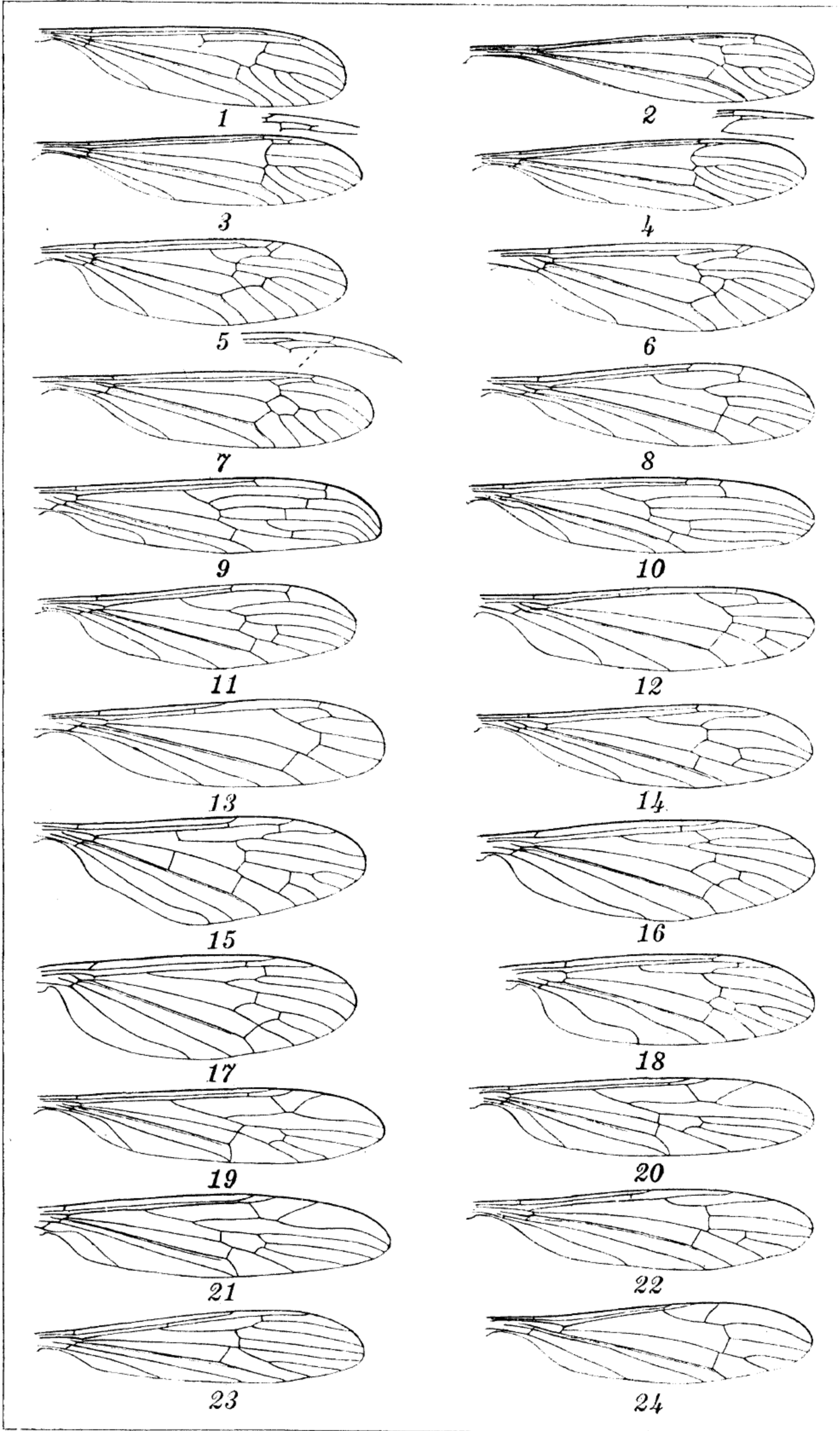


PLATE 1.



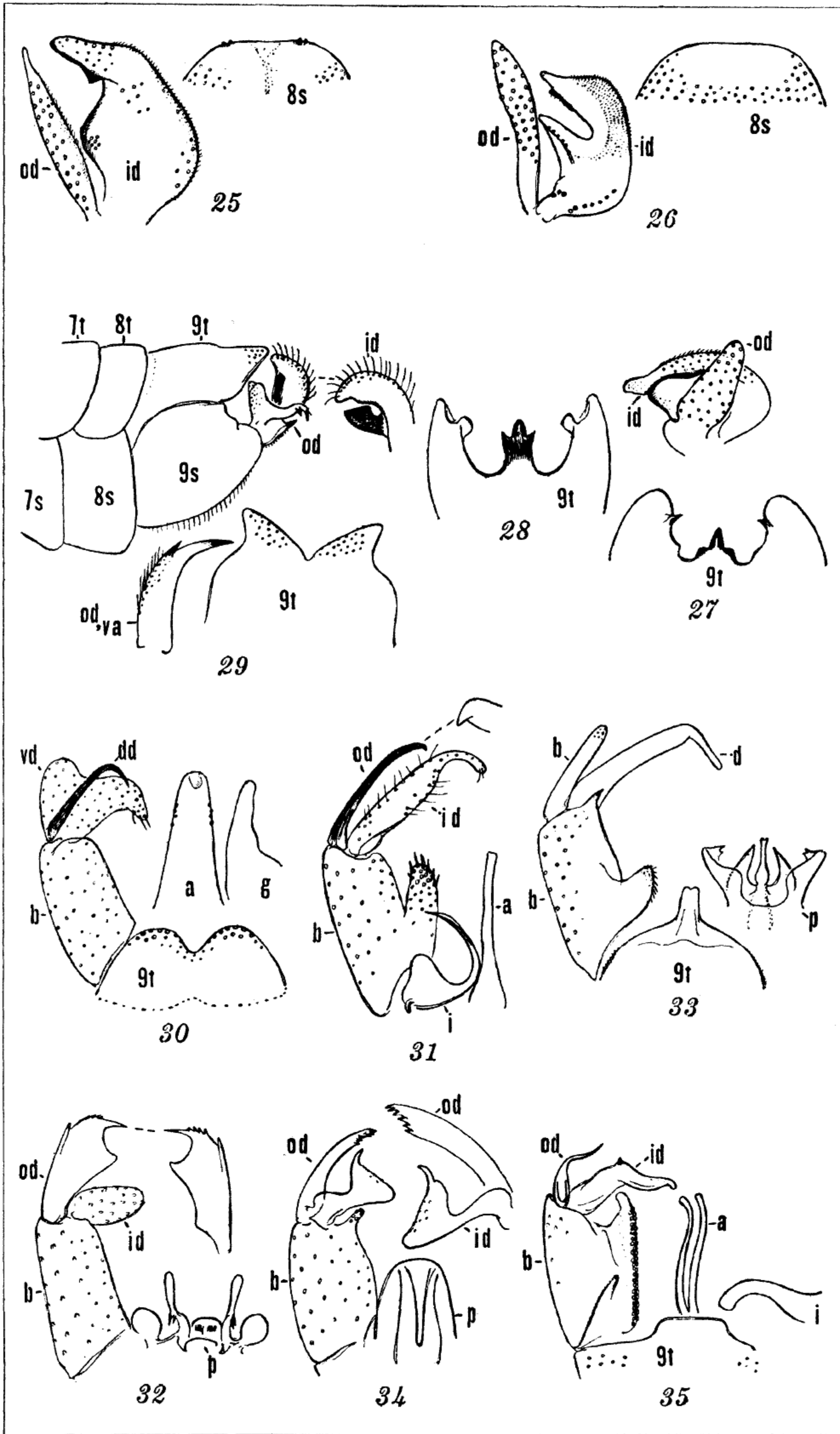


PLATE 2.