

NEW OR LITTLE-KNOWN SPECIES OF ASIATIC TIPULIDAE (DIPTERA). V

BY CHARLES P. ALEXANDER
*Amherst, Massachusetts*¹

In continuing the studies on the crane flies that were collected in the eastern Himalayas of northeastern India by Dr. Fernand Schmid I am discussing various species in the subfamily *Cylindrotominae* and in the tribe *Limoniini* of the vast subfamily *Limoniinae*.

CYLINDROTOMINAE

- ALEXANDER, C. P. *Diptera, Fam. Tipulidae, Subfam. Cylindrotominae. Genera Insectorum, Fasc. 187: 1-16, 2 pls., with 26 figs., 1927.*
PEUS, FRITZ. *Die Fliegen der Palaearktischen Region (Erwin Lindner). 17. Cylindrotomidae. Lief. 169: 1-80, 2 pls., 82 figs., 1952.*
TAKAHASHI, MITSUO. *A revision of the Japanese Cylindrotominae (Diptera: Tipulidae). Trans. Shikoku Ent. Soc., 6: 81-91, 16 figs., 1960.*

The *Cylindrotominae* is the smallest of the three subfamilies into which the family *Tipulidae* has been divided. The group is unusually well represented in the Himalayan region, particularly by the genera *Cylindrotoma* and *Phalacrocer*.

Genera of the Cylindrotominae

CYLINDROTOMA Macquart, 1834.	Holarctic, Oriental
Type — <i>distinctissima</i> (Meigen)	Western Palaearctic
PHALACROCERA Schiner, 1863.	Holarctic, Oriental
Type — <i>replicata</i> (Linnaeus)	Western Palaearctic
TRIOGMA Schiner, 1863	Holarctic
Type — <i>trifulcata</i> (Schummel)	Western Palaearctic
LIOGMA Osten Sacken, 1869.	Holarctic, Oriental
Type — <i>nodicornis</i> Osten Sacken	Eastern Nearctic
STIBADOCERA Enderlein, 1912.	Oriental, Australasian
Type — <i>bullans</i> Enderlein	Oriental
STIBADOCERELLA Brunetti, 1918.	Oriental
Type — <i>pristina</i> Brunetti	Oriental
(Synonym — <i>Agastomyia</i> de Meijere, 1919; type <i>albitarsis</i> de Meijere)	

¹ Contribution from the Entomological Laboratory, University of Massachusetts.

STIBADOCERODES Alexander, 1927.	Australasian
Type — <i>australiensis</i> Alexander	Australasian
STIBADOCERINA Alexander, 1929.	Neotropical (Chile)
Type — <i>chilensis</i> Alexander	Neotropical (Chile)
DIOGMA Edwards, 1938.	Palaeartic
Type — <i>glabrata</i> (Meigen)	Western Palaeartic
CYTTAROMYIA Scudder, 1877.	Fossil (Tertiary)
Type — <i>fenestrata</i> Scudder	Tertiary

Cylindrotoma deserrata n. sp.

General coloration of mesonotal praescutum almost uniformly brownish gray, the four stripes virtually confluent, each narrowly bordered by darker brown, pleura yellow, ventral sternopleurite brownish gray; legs black, femoral bases yellowed, narrowest on fore legs; wings yellowed, conspicuously patterned with light brown at cord and outer end of cell *1st M*₂; basal abdominal segments yellowed, restrictedly patterned, outer segments darker; ovipositor with apical blades of tenth tergite without marginal teeth.

Female. — Length about 11 mm; wings 11 mm; antenna about 2.2 mm.

Rostrum brownish yellow; palpi black. Antennae with scape obscure yellow, restrictedly darkened apically, pedicel light brown, flagellum black, first segment narrowly yellowed at base; flagellar segments slightly produced beneath, longer than their verticils. Front yellowed, vertex blackened throughout, heavily gray pruinose to appear brown.

Pronotal scutum fulvous, scutellum, pretergites and lateral borders of praescutum continuously light yellow. Mesonotal praescutum with disk appearing almost uniformly brownish gray, comprised of four virtually confluent stripes, each narrowly bordered by darker brown; lateral interspace with a narrow impressed line that extends from the humeri to the transverse suture, with indications of yellow pollinosity; scutal lobes similarly patterned with brownish gray, median area vaguely brightened; scutellum yellowed, parascutella slightly darker; postnotum yellowed anteriorly, posterior half of mediotergite and a narrow linear area on katepaurotergite brownish gray. Pleura yellowed, ventral sternopleurite extensively brownish gray, ventral anepisternum more fulvous. Halteres dark brown, base of stem yellowed. Legs with all coxae and trochanters yellow, remainder of legs black, the femoral bases broadly yellowed, narrowest on fore legs where about the proximal third is included, on the other legs approximately the basal half. Wings yellowed, conspicuously patterned with light brown, including broad seams at cord, outer end of cell *1st M*₂, and as a spot at origin of *Rs*; paler brown seams along veins *M*, *Cu*, and outer end of *2nd A*, including the margin; veins dark brown, *Sc*, *R*, *Cu* and *2nd A* more brownish yellow. Venation: *Rs* from about one-fifth to two-fifths longer than *R*₂₊₃; petiole of cell *M*₁ about one-half

to two-thirds m ; $m-cu$ close to fork of M .

Basal abdominal segments yellowed, lateral borders narrowly infuscated, posterior tergal incisures narrowly blackened, outer segments darker; ovipositor brownish black. Ovipositor (Fig. 10) with apex of tenth tergite, t , divided into two flattened blades, margins without teeth as in allied species, the darkened inner part of blade subtended outerly by pale membrane that is extended outwardly to the rounded apex.

Holotype. — ♀, Nyukmadong, Kameng, North East Frontier Agency, Assam, 6800 feet, April 19, 1961 (Schmid).

The most similar regional species is *Cylindrotoma nigratarsis* Alexander which has the apical blades of the tenth abdominal tergite of the female with about ten conspicuous marginal teeth.

Cylindrotoma simplex n. sp.

Allied to *trichophora*; thorax yellow, patterned with brown; antennae of male long, about one-half the wing, flagellar segments nearly cylindrical, with sparse black verticils and abundant long erect setae; wings fulvous brown, prearcular and costal fields more fulvous yellow; male hypopygium with terminal arms of phallosome subequal in length and diameter, tips pale and rounded, unmodified, all filaments with rudimentary tubules extending back from the apex.

Male. — Length about 10.5 mm; wing 9.8 mm; antenna about 4.8 mm.

Rostrum yellow, palpi black. Antennae (Fig. 7) black throughout; flagellar segments nearly cylindrical, with sparse black verticils and abundant long erect setae that are about one-third the verticils. Head obscure yellow, center of vertex extensively infuscated, sparsely pruinose; anterior vertex broad.

Pronotum yellow, scutum with vague indications of three darker areas. Mesonotal praescutum yellow with four stripes, intermediate pair confluent, darkened on anterior third, paler behind, especially at midlength, lateral stripes brownish gray, confluent across the suture with a similar area on each scutal lobe, narrowly bordered by blackish; posterior sclerites of notum and the pleura light yellow. Halteres infuscated, base of stem yellowed. Legs with coxae and trochanters yellow; femora yellow basally, tips blackened; tibiae brownish black, tips blackened; tarsi black. Wings strongly fulvous brown, prearcular and costal fields more fulvous yellow, stigma scarcely differentiated from the ground; veins brown, more yellowed in the brightened fields. Venation: R_s nearly twice R_{2+3} ; inner end of cell $1st M_2$ pointed.

Abdomen long, yellowed, lateral tergal borders narrowly blackened, posterior margins of fourth and succeeding segments similarly darkened; sternites light yellow, similarly but less evidently patterned with darker, outer segments slightly darker, hypopygium black. Male hypopygium

(Fig. 11) much as in *trichophora* except for the very different phallosome, *p*; this structure has the terminal arms longer than the united base, the central arm or aedeagus only a trifle broader than the laterals or apophyses, all three arms with their tips rounded, pale, with an atrophied tubular duct extending from the end basad, in the apophyses reaching to about one-fourth the length, in the aedeagus longer, the penis filament emerging at near two-thirds the length of the aedeagus.

Holotype. — ♂, Lachung, Sikkim, 8610 feet, July 5, 1959 (Schmid).

The structure of the phallosome readily separates the present species from *Cylindrotoma trichophora* sp.n. *C. seticornis* Alexander is more distantly related. The antennae of four regional members of the genus are shown (figs. 6-9), all being drawn to scale to show relative lengths and vestiture.

Cylindrotoma trichophora n. sp.

General coloration of thorax yellow, praescutum and scutum conspicuously patterned with grayish areas that are narrowly bordered by brown; antennae of male relatively long, exceeding one-third the wing, flagellar segments cylindrical, with long verticils and conspicuous erect dark setae; femora yellowed, tips brownish black; wings light brown, weakly patterned with darker brown; abdomen brownish yellow, with pale brown markings, terminal segment brownish black; male hypopygium with apex of basistyle extended into a slender lobe; dististyle a relatively stout yellow blade; phallosome with all three arms subequal, tips blunt, triangular, darkened, the central arm or aedeagus with subtending linear blades, the apex extended into a decurved point.

Male. — Length about 9.5 mm; wing 8.5 mm; antenna about 3.5 mm.

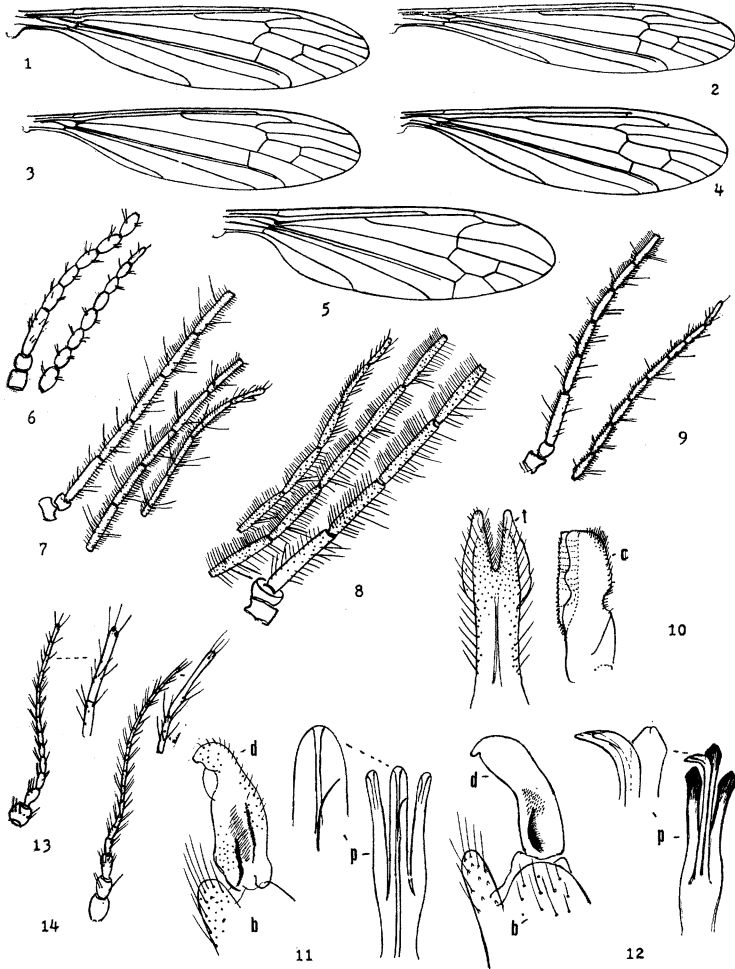
Rostrum brownish yellow, with sparse long black setae, palpi black. Antennae (Fig. 9) black, base of scape and apex of pedicel narrowly

Text-figs. 1-14. — Fig. 1, *Cylindrotoma trichophora* n. sp., venation; Fig. 2, *Phalacrocera angustaxillaris* Alexander, venation; Fig. 3, *Phalacrocera nigrolutea* n. sp., venation; Fig. 4, *Phalacrocera sikkimensis* n. sp., venation; Fig. 5, *Stibadocera nigronitida* n. sp., venation; Fig. 6, *Cylindrotoma nigratarsis* Alexander, male antenna; Fig. 7, *Cylindrotoma simplex* n. sp., male antenna; Fig. 8, *Cylindrotoma seticornis* Alexander, male antenna; Fig. 9, *Cylindrotoma trichophora* n. sp., male antenna; Fig. 10, *Cylindrotoma deserrata* n. sp., ovipositor, female; Fig. 11, *Cylindrotoma simplex* n. sp., male hypopygium; Fig. 12, *Cylindrotoma trichophora* n. sp., male hypopygium; Fig. 13, *Phalacrocera manipurana* Alexander, male antenna; Fig. 14, *Phalacrocera messura* n. sp., male antenna.

Symbols: *b*, basistyle; *d*, dististyle; *p*, phallosome; *t*, tergite.

more brightened; flagellar segments long-cylindrical, the verticils shorter than the segments, with further abundant erect dark brown setae, the longest about one-third the verticils. Head yellow, posterior vertex with a broad transverse black area, surface sparsely pruinose to appear opaque.

Pronotum yellow, scutum very weakly darkened medially. Mesonotal praescutum yellow, with four gray stripes that are narrowly bordered by brownish black, intermediate pair separated only by a blackened interspace; lateral stripes crossing the suture to unite with a single similar



area on each scutal lobe; posterior sclerites of notum and the pleura light yellow. Halteres with stem light brown, base orange, knob brownish black. Legs with coxae and trochanters yellow; femora yellow basally, passing gradually into light brown, tips brownish black; tibiae light brown, base and tip narrowly darkened; tarsi brown, terminal segment black. Wings (Fig. 1) light brown, paler behind, stigma almost concolorous, brownish orange; very vague pale brown clouds over cord and along vein *Cu* in cell *M*; veins brownish black, those of anterior third of wing, including all of *R*, somewhat paler brown. Venation: *R*_s about one-fourth to one-third longer than cell *1st M*₂; petiole of cell *M*₁ longer than *m*; *m-cu* at near one-fifth *M*₃₊₄.

Abdomen long, brownish yellow, patterned longitudinally with pale brown; ninth segment, including the hypopygial appendages, brownish black. Male hypopygium (Fig. 12) with the tergal lobes broadly rounded. Basistyle, *b*, strongly produced into a slender lobe provided with long yellow setae. Dististyle, *d*, a relatively stout yellowed blade, terminating in a small decurved lobe, near base of style with a densely setiferous area. Phallosome, *p*, with all three arms subequal in length and diameter, tips darkened, terminating in a blunt triangular point, central arm bearing the penis filament, subtended by paired linear blades, the apex of each extended into a decurved point, as illustrated.

Holotype. — ♂, Karponang, Sikkim, 9900 feet, August 23, 1959 (Schmid).

The most similar regional species as regards antennal structure is *Cylindrotoma seticornis* Alexander, similarly from high altitudes in Sikkim. This differs in the much longer antennae (fig. 8), general coloration of the body, wings and legs, and especially in the hypopygial structure, including the basistyle, dististyle and phallosome, the latter with the arms very unequal. The antennae of the more distantly related *C. nigratarsis* Alexander (fig. 6), are short with sparse vestiture.

***Phalacrocera messura* n. sp.**

Size large (wing of female 12.5 mm); general coloration of mesonotum reddish brown, pleura testaceous yellow; antennae 16-segmented, flagellar segments nearly cylindrical, terminal segment nearly twice the penultimate; wings weakly suffused with brown, stigma darker.

Female. — Length about 10.5 mm; wing 12.5 mm; antenna about 1.4 mm.

Rostrum light brown, palpi darker brown. Antennae (Fig. 14) 16-segmented; scape and pedicel yellowed, flagellum brown; flagellar segments nearly cylindrical, about two-thirds their longest verticils; terminal seg-

ment elongate, nearly twice the penultimate. Head brownish yellow, front paler.

Prothorax testaceous yellow. Mesonotum reddish brown, the praescutum with confluent stripes to form a discal shield, humeral region more yellowed. Pleura testaceous yellow, sternopleurite more darkened; dorsopleural region yellow. Halteres weakly infuscated. Legs with coxae yellowish brown, posterior pair clearer yellow; trochanters yellow; femora yellowed, tips light brown; tibiae and tarsi brownish yellow, terminal tarsal segment dark brown; claws of female small, simple, smooth. Wings weakly suffused with brown; stigma long-oval, darker brown; veins light brown. Longitudinal veins beyond cord and *Rs* with extensive series of trichia, lacking on *Cu* and the Anals. Venation: *Rs* nearly three times *R*₂₊₃; inner end of cell *1st M*₂ subacute; *m-cu* about one-third its length beyond fork of *M*; cell *2nd A* of moderate width.

Abdomen light brown, the outer segments, including the genitalia, darker brown, hypovalvae and tips of cerci more yellowed. Ovipositor with cerci compressed-flattened, suboval in outline, dorsal edge indistinctly serrulate.

Holotype. — ♀, Manu, Sikkim, 4920 feet, May 10, 1959 (Schmid).

In its general appearance the present fly is most similar to *Phalacrocera manipurana* Alexander, which is readily told by the reduced number of antennal segments, there being twelve in the type female (fig. 13), shown for comparison with the present fly. Takahashi (Trans. Shikoku Ent. Soc., 6:85, 1960) has referred the species of this group to the genus *Liogma* Osten Sacken, from which they disagree chiefly in antennal structure. The strict position in genera of the various species that have been referred to *Phalacrocera* must be held in some question at the present time. The range in number of antennal segments from 12 to 16 and the very long flagellar verticils should be emphasized.

Phalacrocera nigrolutea n. sp.

General coloration of thorax polished black, variegated with yellow, especially on the thoracic pleura; front and broad anterior vertex silvery white; legs brown, posterior tarsi extensively yellowed; wings weakly tinged with brown, stigma darker; *Sc*₁ lacking, *Rs* relatively short, its branches longer.

Female. — Length about 8.5 mm; wing 7.5 mm; antenna about 1.3 mm.

Rostrum light yellow; palpi with basal segment yellow, remainder light brown. Antennae with scape and pedicel light yellow, first two or three flagellar segments slightly more obscure yellow, remainder brown, darker

outwardly; flagellar segments cylindrical, shorter than the verticils. Front and broad anterior vertex silvery white, posterior vertex polished black, occiput and genae yellow.

Prothorax light yellow. Mesonotal praescutum and scutal lobes polished black, interspaces of the former faintly impressed, humeral region very restrictedly yellow; median area and posterior margins of scutum obscure yellow; scutellum black with a conspicuous median yellow area; postnotum black, surface microscopically corrugated. Pleura light yellow, conspicuously patterned with black on mesepisternum and on the posterior pretergites. Halteres obscure yellow, base of stem clear yellow, knob elongate, pale brown. Legs with all coxae and trochanters light yellow; femora light brown, bases broadly more yellowed; tibiae light brown, tips broadly darker; tarsi brown, on posterior legs extreme apex of basitarsus and all of segments two through four yellow, much brighter than the remainder. Wings (Fig. 3) weakly tinged with brown, the long-oval stigma darker brown; veins stout, brown. Venation: Sc_1 lacking; R_s relatively short, less than either of its branches or about twice cell $1st M_2$, the latter rectangular in outline; $m-cu$ before fork of M .

Abdomen with proximal three tergites obscure yellow, clearest at base; outer segments darkened, becoming brownish black before the light orange ovipositor; sternites more uniformly yellow.

Holotype. — ♀, Nafra, Kameng, North East Frontier Agency, Assam, 4000 feet, June 24, 1961 (Schmid).

The most similar species is *Phalacrocera angustaxillaris* Alexander (Kambaiti, northeastern Burma, altitude 7000 feet, June 4, 1934; Malaise) which differs from the present fly in body coloration, the narrower wings, and in the venation. In this species R_s is longer than either of its branches whereas in the present fly it is shorter.

Phalacrocera sikkimensis n. sp.

Head yellowed, posterior vertex with a brown transverse band; mesonotal praescutum with three polished chestnut yellow stripes that are separated by darker brown interspaces; wings relatively broad, brownish yellow, costal border and stigma slightly darker; R_s long, arising at about four-sevenths the wing length.

Female. — Length about 10 mm; wing 11 mm; antenna about 1.4 mm.

Head with rostrum small, yellowed, palpi short, brown. Antennae short, brown. Head yellowed, the posterior vertex with a brown transverse band.

Pronotum very reduced, obscure yellow. Mesonotal praescutum with three polished chestnut yellow stripes that are separated by narrow darker

brown interspaces; scutal lobes chestnut; remainder of notum ferruginous yellow, the pleura clearer yellow. Halteres infuscated, base of stem restrictedly yellow. Legs with coxae and trochanters yellow; femora brownish yellow, base clear yellow, tips more darkened; tibiae and tarsi somewhat darker, terminal segment brownish black. Wings (Fig. 4) brownish yellow, cells *C* and *Sc*, with the stigma, slightly darker brown; veins yellowish brown. Wings broader than in *manipurensis*; macrotrichia on outer radial veins, distal sections of M_{1+2} and M_3 , and on M_4 . Venation: *Rs* long, base at about four-sevenths the wing length, in *manipurensis* shortly before midlength, cell 2nd *A* slightly broader.

Abdomen discolored by contained eggs, obscure yellow, subterminal segments, including the hypovalvae, blackened. Cerci short and broad, compressed-flattened, dorsal margin of outer half with a series of small brown tubercles.

Holotype. — ♀, Zema, Sikkim, 8900 feet, June 11, 1959 (Schmid).

The nearest relative of the present fly is *Phalacrocer* *manipurensis* Alexander, described from Manipur, Assam, which differs in the coloration of the wings and mesonotum, and in the broader wings with slightly different venation.

Stibadocera nigronitida n. sp.

General coloration of body black, the praescutum and scutum more polished; wings tinged with brown, costal border darker brown, the color extended distally to the wing tip.

Female. — Length about 8.5 mm; wing 8.5 mm; antenna about 2.2 mm.

Antennae short, black; flagellar segments cylindrical, the first subequal in length to the combined second and third. Head black.

Thorax uniformly black, the praescutum and scutum more polished; praescutal interspaces with deep impressed lines that are united at the suture, the lateral ends of the latter obliterated; punctures on mesonotum conspicuous, lacking on scutal lobes and parascutella. Pleura black, punctured, the extensive dorsopleural region yellow. Halteres with stem dirty yellow, the small knob infuscated. Legs with coxae blackened, trochanters paler; remainder of legs light brown. Wings (Fig. 5) tinged with brown, prearcular region and costal field darker brown, the color extended distally to the wing tip; veins brown. Macrotrichia on vein R_{4+5} and distal sections of M_{1+2} and M_3 . Venation: *Rs* long, *r-m* at its fork; *m-cu* beyond midlength of M_{3+4} ; distal section of *Cu*₁ bent strongly backward, forming almost a straight line with *m-cu*. In one wing of type an adventitious crossvein in cell R_5 at near midlength, just beyond outer end of cell 1st M_2 (not shown in figure).

Abdominal tergites black, sternites somewhat paler. Ovipositor with

cerci oval in outline, outer end obtusely rounded.

Holotype. — ♀, Talung Dzong, Kameng, North East Frontier Agency, Assam, 7800 feet, June 6, 1961 (Schmid).

Stibadocera nigrinitida is told readily from the reddish brown *S. quadricellula* (Brunetti) by the uniformly black body coloration.

LIMONIINAE

LIMONIINI

Limonia (*Atypophthalmus*) *gausapa* n. sp.

General coloration of mesonotal praescutum obscure yellow with a broad light brown central stripe; antennae of male relatively long; wings tinged with brown, stigma darker brown; male hypopygium with the basistyle and dististyle unusually complex in structure, the former with the large ventromesal lobe unequally bilobed; dististyle complex, on mesal face with a concentration of very long yellow setae, the longest exceeding the style in length.

Male. — Length about 6 mm; wing 6 mm; antenna about 1.5 mm.

Female. — Length about 7 mm; wing 6.5 mm.

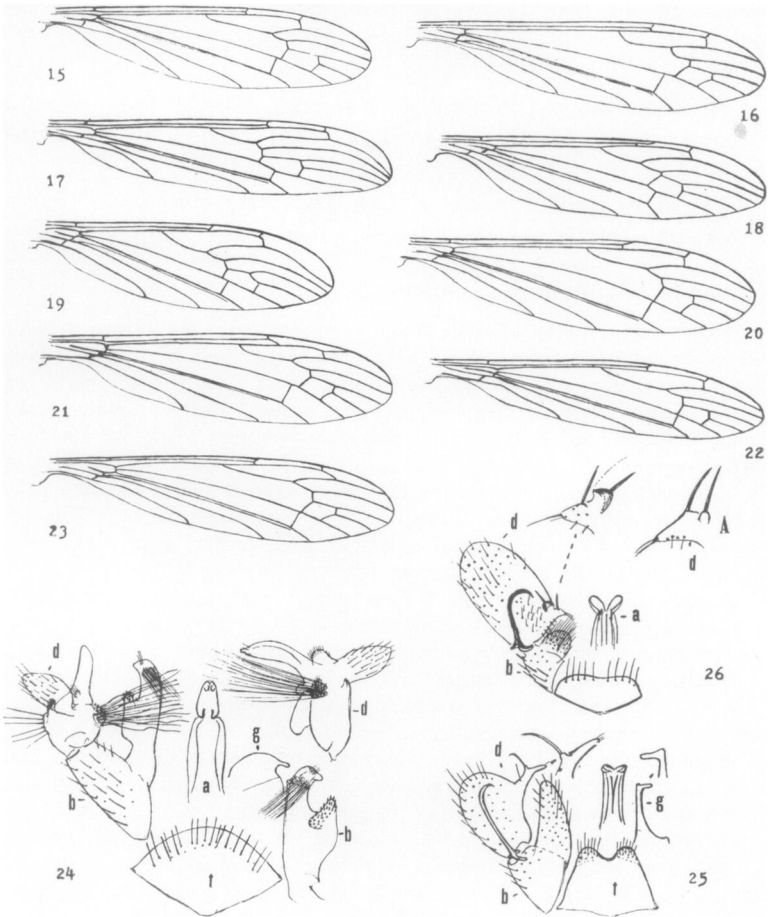
Rostrum and palpi black. Antennae relatively long; scape and pedicel obscure yellow, flagellum black; flagellar segments long-oval, exceeding their verticils; terminal segment elongate, nearly twice the penultimate, narrowed at outer end. Head dark brown, gray pruinose, vertex with long black setae.

Pronotum dark brown, scutellum obscure yellow. Mesonotal praescutum obscure yellow with a broad light brown central stripe and more yellowed sublateral stripes, lateral borders dark brown; scutal lobes dark brown, median area and the posterior sclerites paler brown. Praescutal interspaces and the scutum with long erect setae, posterior sclerites glabrous. Pleura light yellow beneath, dorsally with a broad dark brown stripe that

Text-figs. 15-26. — Fig. 15, *Limonia* (*Atypophthalmus*) *gausapa* n. sp., venation; Fig. 16, *Limonia* (*Dicranomyia*) *chimera* n. sp., venation; Fig. 17, *Limonia* (*Libnotes*) *laterospinosa* n. sp., venation; Fig. 18, *Limonia* (*Libnotes*) *perluteola* n. sp., venation; Fig. 19, *Limonia* (*Libnotes*) *scoliacantha* n. sp., venation; Fig. 20, *Limonia* (*Limonia*) *achates* n. sp., venation; Fig. 21, *Limonia* (*Limonia*) *alboangusta* n. sp., venation; Fig. 22, *Limonia* (*Limonia*) *habra* n. sp., venation; Fig. 23, *Limonia* (*Limonia*) *pristomera* n. sp., venation; Fig. 24, *Limonia* (*Atypophthalmus*) *gausapa* n. sp., male hypopygium; Fig. 25, *Limonia* (*Dicranomyia*) *chimera* n. sp., male hypopygium; Fig. 26, *Limonia* (*Euglochina*) *bulbibasis* n. sp., male hypopygium.

Symbols: *a*, aedeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *t*, tergite.

pales to light brown on the katapleurotergite. Halteres with stem yellowed, knob dark brown. Legs with fore coxae weakly darkened basally, remainder of coxae and all trochanters light yellow; femora yellowed basally, passing into light brown outwardly, remainder of legs light brown; claws of male long and slender, near base with a single long erect spine and additional microscopic points. Wings (Fig. 15) tinged with brown, stigma subcircular, darker brown; veins light brown. Longitudinal veins beyond general level of origin of *Rs* with strong trichia, including also a few at end of vein *2nd A*. Venation: *Sc* relatively long, *Sc*₁ ending about opposite two-thirds the long *Rs*, *Sc*₂ near its tip; cell



1st M_2 rectangular, gently widened outwardly, a little shorter than distal section of M_{1+2} ; *m-cu* at or shortly before fork of M .

Abdominal tergites dark brown, sternites weakly bicolored, yellow, the apices slightly darker, more evident on the outer segments; hypopygium yellowed. Male hypopygium (Fig. 24) with the tergite, *t*, large, posterior border strongly convex, cephalic margin more strongly convex, especially at the midline. Basistyle, *b*, with a conspicuous ventromesal lobe that is almost as extensive as the body of the style, unequally bilobed, the longer outer lobe with a fringe of long very delicate setae that are directed backward. Dististyle, *d*, complex, as figured; mesal face with a concentration of very long stout yellow setae. Phallosome as figured; gonapophyses, *g*, appearing as flattened pale blades that terminate in a lateral fingerlike lobe.

Holotype. — ♂, Amatulla, Kameng, North East Frontier Agency, Assam, 1800 feet, May 24, 1961 (Schmid). ♀, pinned with type.

The most similar species is *Limonia (Atypophthalmus) kurma* Alexander which has the hypopygial structure entirely different.

Limonia (Dicranomyia) chimera n. sp.

Size medium (wing of male 6 mm); praescutum dark brown medially, sides broadly obscure yellow, pleura brownish yellow, slightly darker above; antennae of male relatively long, about one-third the wing; legs light brown, claws simple; wings light brown, stigma slightly darker; male hypopygium with tergal lobes conspicuously darkened, provided with long setae; ventromesal lobe of basistyle elongate; ventral dististyle with rostral prolongation bearing two very unequal spines, the outer stout, slightly curved, from a basal tubercle, inner spine reduced to a long seta; gonapophysis with mesal-apical lobe long and slender, near apex bent at a right angle into a short narrow lobe.

Male. — Length about 5.1-5.2 mm; wing 6 mm; antenna about 2 mm.

Rostrum and palpi black. Antennae relatively long, as shown by the measurements; black throughout; flagellar segments long, with short apical pedicels, verticils very small and inconspicuous, about one-fifth the segment, terminal segment elongate, slightly exceeding the penultimate. Head dark brown; ommatidia of eyes large.

Pronotum brownish yellow. Mesonotal praescutum dark brown medially, the usual discal stripes confluent, sides broadly obscure yellow; scutal lobes dark brown; remainder of notum somewhat paler brown. Pleura brownish yellow, dorsally more darkened to form a diffuse stripe that includes the propleura. Halteres very long, stem light brown, restrictedly paler at base, knob brownish black. Legs with coxae and trochanters yellow; remainder of legs light brown; claws long and slender, simple.

Wings (Fig. 16) uniformly suffused with light brown, stigma short-oval, slightly darker brown; veins light brown. Veins beyond cord with trichia. Venation: *Sc* long, *SC*₁ ending from about midlength to two-thirds *Rs*; cell 1st *M*₂ subequal in length to distal section of *M*₃; position of *m-cu* unusually variable, from slightly beyond fork of *M* to some distance before, in cases to one-third the length of *m-cu*.

Abdominal tergites and hypopygium dark brown, the proximal sternites more brownish yellow. Male hypopygium (Fig. 25) with the tergite, *t*, unusually long, only a little shorter than the diameter across base; lateral lobes conspicuously darkened, slightly wider than the central emargination; tergal setae restricted to the lobes. Basistyle, *b*, with ventromesal lobe unusually long, the setae coarse. Dorsal dististyle a long slender rod, its outer third curved, apex a slightly decurved black spine; ventral style, *d*, subequal in area to the total basistyle; body oval, rostral prolongation conspicuous, narrowed and produced beyond the outer spine; spines two, very unequal, the stout outer one slightly curved, arising from a conspicuous basal tubercle; inner spine reduced to a slender bristle. Gonapophysis, *g*, with mesal-apical lobe long and slender, straight, apex bent at a right angle into a narrower lobe. Aedeagus, *a*, elongate.

Holotype. — ♂, Jhum La, Kameng, North East Frontier Agency, Assam, 7800 feet, May 14, 1961 (Schmid). *Paratopotypes*, 5 ♂♂, with the type. *Paratype*, 1 ♂ Domkho, Kameng, 6900 feet, May 11, 1961 (Schmid).

Various small-sized species of *Limonia* with the wings unpatterned and vein *Sc* long have two rostral spines on the ventral dististyle of the male hypopygium and appear correctly to be placed in the subgenus *Dicranomyia*. These include *Limonia* (*Dicranomyia*) *aspropoda* Alexander, *L. (D.) indefessa* Alexander and some others, all with the hypopygial details quite distinct from the present fly and differing further in details of coloration and venation.

Limonia (*Euglochina*) *bulbibasis* n. sp.

Allied to *cuneiformis*; legs with all basitarsi blackened at proximal ends; male hypopygium with inner spine of the ventral dististyle arising from a conspicuous semioval lobe.

Male. — Length about 8.5 mm; wing 8 mm; antenna about 1.2 mm.

Female. — Length about 7 mm; wing 6.5 mm.

Rostrum light yellow; palpi brown. Antennae dark brown; flagellar segments elongate with strongly developed apical pedicels; longest verticils

about one-half longer than the segment. Head brownish gray.

Pronotum light brown. Disk of mesonotal praescutum with three confluent brown stripes, lateral and humeral regions yellowed; posterior sclerites of notum yellowed, scutal lobes brown. Pleura yellow. Halteres with stem light brown, base narrowly yellowed, knob dark brown. Legs with all coxae and trochanters yellow; femora yellowish brown; tibiae yellowish brown at base, darker outwardly, tips still darker; tarsi snowy white, proximal ends of basitarsi blackened, very narrow on fore legs, more extensive on middle and hind pairs, including the proximal fourth to fifth. Wings tinged with brown, the oval stigma slightly darker brown; veins brown. Venation: *Sc* short, *Sc*₁ and tip of *2nd A* about on a transverse level, the distance on *R* before origin of *Rs* about one and one-half to twice the distal section of *R*₄₊₅; cell *1st M*₂ closed, subequal to or shorter than the longest veins beyond it.

Abdominal tergites brownish black, basal sternites paler. Male hypopygium (Fig. 26) generally as in *cuneiformis*, differing especially in the armature of the ventral dististyle. Ninth tergite, *t*, transverse, posterior border nearly truncate, cephalic margin slightly produced medially; ten major setae immediately behind the posterior border. Basistyle, *b*, with ventromesal lobe oval, about one-half the size of the style, with very abundant setae. Dorsal dististyle a strongly curved hook, apex suddenly narrowed: ventral style, *d*, large and fleshy, its area exceeding three times that of the basistyle; rostral prolongation small, with two subequal spines, the basal one from summit of a conspicuous semioval lobe that is bent backward. Gonapophysis with mesal-apical lobe narrowly obtuse at apex.

Holotype. — ♂, Kongai, Manipur, Assam, altitude 3900 feet, July 7, 1960 (Schmid). *Allotype*, ♀, Huiahu, Manipur, altitude 3800 feet, July 2, 1960. *Paratype*, ♂, Mynso, Khasi-Jaintia, altitude 3500 feet, April 20, 1960 (Schmid).

The most similar regional species is *Limonia (Euglochina) cuneiformis* (de Meijere) which likewise has cell *1st M*₂ of the wings present. In this species the entire tarsi of all legs are snowy white while the rostral prolongation of the ventral dististyle of the hypopygium is normal, the inner spine not arising from a basal tubercle; shown for comparison with the present fly (Fig. 26 A).

Limonia (Geranomyia) brevibasis n. sp.

Allied to *fortibasis*; mesonotal praescutum reddish brown with three brownish black stripes, the lateral pair broad; legs light brown; wings brownish yellow, restrictedly patterned with brown, appearing as five or six costal areas; male hypopygium with the ventral dististyle very large

and fleshy, the rudimentary dorsal style lying in a furrow close to its base; rostral prolongation very close to base of ventral style, long and slender, near its origin with a longer curved spine; gonapophyses with mesal-apical lobe pale, the apical spine subtended by a small point on outer margin.

Male. — Length excluding rostrum, about 7-8 mm; wing 6-7 mm; rostrum about 2-2.5 mm; antenna about 1.2-1.4 mm.

Rostrum, palpi, antennae and head dark brown. Antennae with flagellar segments oval, slightly exceeding the verticils; terminal segment about one and one-half times the penultimate.

Pronotum dark brown, light yellow posteriorly. Mesonotal praescutum dark reddish brown with three brownish black stripes, the central one becoming obsolete far before the suture, lateral stripes broad, praescutal margins slightly pruinose; scutum and scutellum yellow, the latter with a brown central line, in the type the scutal lobes almost uniformly brownish black, being a direct continuation across the suture of the lateral praescutal areas, parascutella more chestnut; postnotum dark brown to brownish black, sparsely pruinose; darkened pattern of mesonotum in certain paratypes paler brown. Pleura chestnut yellow to yellow, with a darkened dorsal stripe, clearly defined in the holotype, paler in other specimens. Halteres weakly darkened, base of stem yellowed. Legs with coxae and trochanters light yellow, remainder of legs light to medium brown. Wings brownish yellow, restrictedly patterned with brown, appearing as five or six costal areas, placed beyond *h*, at supernumerary crossvein in cell *Sc*, origin of *Rs* and fork of *Sc*, in cases separate, in others confluent; stigmal area largest, outer costal darkenings at tip of *Rs* and less evidently on *R*₄₊₅; very narrow to scarcely indicated brown seams over posterior cord and outer end of cell *1st M*₂; veins brown, more yellowed in prearcular field and the costal interspaces. Venation: *Sc* long, *Sc*₁ ending about opposite two-thirds *Rs*, *Sc*₂ near its tip; *m-cu* close to fork of *M*.

Abdominal tergites and hypopygium dark brown, sternites light yellow. Male hypopygium (Fig. 27) generally as in *fortibasis*. Dorsal dististyle, *d*, greatly reduced in size, appearing as a small pale rod lying in a furrow close to base of the ventral style, the latter very large, its area more than four times that of the basistyle; rostral prolongation very close to base of style, unusually long and slender, decurved outwardly, with a few apical setae; at its base in the axil with an even longer curved spine that narrows very gradually into a long point, the more dilated base scarcely differentiated. Gonapophysis, *g*, with mesal-apical lobe pale, relatively broad, outer margin before the terminal spine with a small point.

Holotype. — ♂, Bhairabkunda, Kameng, North East Frontier Agency, Assam, 700-1000 feet, March 5, 1961 (Schmid).
Paratypes, ♂, Nakhu, Kameng, 4800 feet, July 5, 1961; ♂ ♀,

Salari, Kameng, 4300 feet, July 10, 1961 (Schmid).

The most similar regional species is *Limonia* (*Geranomyia*) *fortibasis* Alexander, which differs in the more extensive darkened wing pattern and in hypopygial structure, especially the long dorsal dististyle and conformation of the ventral style and its prolongation.

Limonia (*Libnotes*) *laterospinosa* n. sp.

Allied to *longinervis*; mesonotal praescutum with four light brown stripes on disk, lateral borders yellowed, scutal lobes dark brown; femora light brown, tips narrowly paler; wings very faintly tinted, costal field with three small pale brown spots, cord and outer end of cell *1st M*₂ not seamed with darker; male hypopygium with rostral prolongation of ventral dististyle long and slender, yellowed, with two basal spines that are directed basad; mesal-apical lobe of gonapophysis long and slender, with a lateral tooth; apex of aedeagus with lateral angles produced, incurved.

Male.—Length about 9 mm; wing 8.5 mm.

Rostrum and palpi brown. Antennae brown, broken beyond the third segment; first flagellar segment oval. Head brown.

Pronotum dark brown above, narrowly yellowed on sides. Mesonotal praescutum broadly yellowed laterally, the disk with four light brown stripes, the intermediate pair vaguely separated by a capillary more greenish line, lateral stripes very faint to nearly obsolete; scutal lobes extensively dark brown, posterior callosities yellow, median area light yellow, continued backward onto central part of the otherwise very pale brown scutellum, parascutella yellowed; mediotergite uniformly light brown, pleurotergite light yellow. Pleura light yellow, metapleural region tinged with green. Halteres with stem light brown, base narrowly yellow, knob dark brown. Legs with coxae light yellow, fore pair with basal half conspicuously brown; trochanters yellow; femora light brown, tips narrowly paler; remainder of legs light brown, outer tarsal segments darker; claws with a conspicuous outer spine and about five crowded more basal denticles. Wings (Fig. 17) very faintly tinted, prearcular and costal fields light yellow; three small pale brown spots in costal field, one in cell *Sc* above origin of *Rs*, not involving cell *C*, second area at fork of *Sc*, the last over the free tip of *Sc*₂ in the stigmal region; no darkening over cord or outer end of cell *1st M*₂. Venation: *Sc* long, *Sc*₁ ending some distance beyond fork of *Rs*, as shown, *Sc*₂ longer, near its tip; *R*₂ slightly distad of the subobsolete free tip of *Sc*₂; cell *1st M*₂ long, gently widened outwardly, *m* and basal section of *M*₃ in transverse alignment, the latter a little shorter; *m-cu* at midlength of *M*₃₊₄; Anal veins gently convergent beyond origin.

Abdominal tergites light brown, apices narrowly obscure yellow, sternites yellowed, base of abdomen with a greenish tinge; hypopygium darker brown. Male hypopygium (Fig. 28) with the tergite, *t*, transverse, pos-

terior border with two broad rounded lobes that are separated by a small V-shaped emargination, posterior ends of lobes more thickened, with more numerous setae. Basistyle, *b*, with the ventromesal lobe large, apex broadly rounded. Dorsal dististyle, *d*, a long, very slender rod, outer third curved strongly to the acute tip; ventral style subequal in area to the basistyle without the lobe, oval, apex more narrowed, provided with very long setae; rostral prolongation yellowed, long and slender, narrowed to the nearly acute tip; rostral spines two, near proximal end of prolongation, directed basad. Gonapophyses, *g*, with mesal-apical lobe blackened, long and slender, with a conspicuous lateral tooth at near midlength. Aedeagus, *a*, stout, lateral borders thickened, posteriorly extended beyond the central genital openings, the tips strongly incurved.

Holotype. — ♂, Domkho, Kameng, North East Frontier Agency, Assam, 6500 feet, June 8, 1961 (Schmid).

The most similar species is *Limonia (Libnotes) longinervis* (Brunetti) which differs in the body coloration and wing pattern. The darkened wing markings in this species include the cord and outer end of cell *1st M*₂ but Brunetti's figure of his species (Fauna British India, Diptera Nematocera, p. 403, pl. 7, Fig. 14, 1912) shows the darkened pattern much heavier than actually occurs, as discussed by Edwards (Rec. Indian Mus., 26:298, 1924).

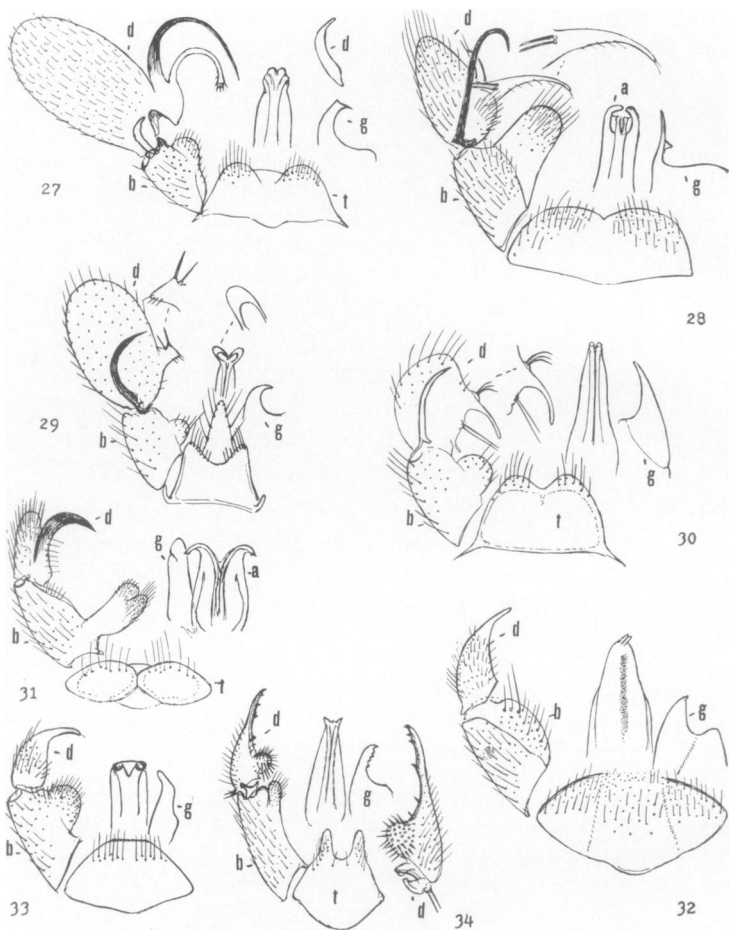
Limonia (Libnotes) perluteola n. sp.

Size relatively large (wing of male 9.5 mm); general coloration of thorax and abdomen light yellow, head brown; halteres yellow, legs with femora and tibiae yellow, tarsi dark brown; wings clear light yellow, stigma very small, only slightly darker than the ground, *Sc*₁ ending opposite two-thirds the basal section of *R*₄₊₅; male hypopygium with the ventral dististyle very large, its rostral prolongation small, with two unequal spines.

Male. — Length about 9 mm; wing 9.5 mm; antenna about 1.8 mm.

Rostrum yellowed; palpi yellow, terminal segment subequal in length to the penultimate but more slender, long-oval. Antennae brownish yellow; basal flagellar segments suboval, the outer ones slightly longer, exceeding their verticils. Head brown.

Thorax uniformly light yellow; scutum and praescutal interspaces with sparse pale yellow setae. Halteres light yellow. Legs with coxae and trochanters light yellow, femora and tibiae slightly darker, especially the latter; tarsi dark brown, much shorter than the tibiae; claws of male long and slender, with a single well-developed spine before midlength, the more proximal denticles less evident. Wings (Fig. 18) almost entirely clear light yellow, the prearcular and costal fields somewhat clearer yellow, including the veins; stigma a trifle darker, small and narrow, transverse; veins yellow. Macrotrichia of veins black, long and conspicuous but



Text-figs. 27-34. — Fig. 27, *Limonia (Geranomyia) brevibasis* n. sp., male hypopygium; Fig. 28, *Limonia (Libnotes) laterospinosa* n. sp., male hypopygium; Fig. 29, *Limonia (Libnotes) perluteola* n. sp., male hypopygium; Fig. 30, *Limonia (Libnotes) scoliacantha* n. sp., male hypopygium; Fig. 31, *Limonia (Limonia) achates* n. sp., male hypopygium; Fig. 32, *Limonia (Limonia) alboangusta* n. sp., male hypopygium; Fig. 33, *Limonia (Limonia) habra* n. sp., male hypopygium; Fig. 34, *Limonia (Limonia) pristomera* n. sp., male hypopygium.

Symbols: *a*, aedeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *t*, tergite.

relatively sparse on outer veins but including also the outer end of *1st A*. Venation: *Sc* long, *Sc*₁ ending about opposite two-thirds the length of basal section of *R*₄₊₅, *r-m* short; cell *1st M*₂ shorter than any of the veins beyond it; *m-cu* at near one-third *M*₃₊₄; Anal veins gently divergent.

Abdomen entirely yellow. Male hypopygium (Fig. 29) with the tergite, *t*, long, the lateral border a little shorter than the cephalic margin; posterior border broadly emarginate, lobes conspicuous, with several long marginal and apical dark colored setae. Basistyle, *b*, relatively small, its area less than one-fourth that of the ventral dististyle; ventromesal lobe small. Dorsal dististyle, *d*, a curved sickle, narrowed gradually into a long acute spine; ventral style large and fleshy, the prolongation small, triangular, with two unequal spines, the outer one stouter, arising from a strong basal tubercle, inner spine immediately behind, subequal in length but slender, from a small tubercle. Gonapophysis, *g*, with mesal-apical lobe gently curved to the narrowly obtuse tip. Aedeagus narrow, terminating in two oval divergent lobes.

Holotype. — ♂, Chumtang, Sikkim, 5120 feet, July 18, 1959 (Schmid).

Limonia (Libnotes) perluteola is most similar to species such as *L. (L.) forcipata* (de Meijere), *L. (L.) luteithorax* Alexander, and some others, less similar to *L. (L.) nigriceps* (van der Wulp), *L. (L.) signaticollis* (van der Wulp), *L. (L.) trimaculata* (Brunetti), and various other species. Until more is known concerning the limits of the subgenus *Goniodineura* van der Wulp I am continuing to refer the present group of species to the subgenus *Libnotes* Westwood where they were assigned by Edwards in his key to the species of the subgenus (Jour. Fed. Malay States Mus., 14:74-80, 1928) in which the species run to couplet 53 and beyond. *Goniodineura* was based primarily on a venational peculiarity of the type species, *nigriceps*, that is lacking in virtually all other species having this general appearance and presumably represents a specific rather than a subgeneric character. If *Goniodineura* is to be maintained as being distinct from *Libnotes*, the most important characters for separation will be found in the hypopygial structure, particularly the spines of the rostral prolongation.

Limonia (Libnotes) scoliacantha n. sp.

Size medium (wing of male 6.5 mm), mesonotum almost uniformly

fulvous yellow, pleura obscure yellow; wings tinged with brown, stigma very slightly darker brown, Sc_1 ending nearly opposite the fork of R_s , outer radial branches gently convergent, $m-cu$ at about one-third its length beyond the fork of M ; abdomen brown, hypopygium yellow; male hypopygium with posterior border of tergite gently emarginate, rostral prolongation of ventral dististyle very long and slender, with three short flattened spines.

Male. — Length about 6.5 mm; wing 6.5 mm.

Rostrum black, slender, mouthparts paler; maxillary palpi brownish black. Antennae with scape and pedicel dark brown, the former elongate; flagellum paler brown, flagellar segments oval, with small verticils. Head dark grey, with long coarse black setae; eyes large, broadly contiguous above to obliterate the anterior vertex.

Pronotum brownish yellow. Mesonotum almost uniformly fulvous yellow, the lateral praescutal borders clearer yellow; long but relatively sparse black setae on pronotum, praescutum and scutal lobes. Pleura obscure yellow. Halteres short, stem obscure yellow, knob slightly darker. Legs with coxae and trochanters yellow; remainder of legs broken. Wings (Fig. 19) tinged with brown, prearcular and costal regions slightly more yellowish brown; stigma and extreme axillary margin very slightly darker brown; veins brown. Venation: Sc_1 ending nearly opposite fork of R_s , Sc_2 near its tip; free tip of Sc_2 before R_2 the distance subequal to the latter; R_s gently arcuated, the branches generally parallel to one another, R_3 and R_{4+5} gently convergent outwardly, cell R_2 at margin very extensive; cell *1st* M_2 subequal to vein M_4 ; m longer than basal section of M_3 ; $m-cu$ about one-third its length beyond fork of M ; Anal veins nearly parallel at base, *2nd* A long.

Abdomen brown, hypopygium yellow. Male hypopygium (Fig. 30) with the tergite, t , large, the length about four-fifths the greatest breadth; posterior border with a V-shaped emargination, the margins thickened, provided with long dark setae. Basistyle, b , slightly larger than the ventral dististyle; ventromesal lobe relatively small, oval, with relatively few long setae. Dorsal dististyle a slender very gently curved rod; ventral style with the rostral prolongation very long and slender, gently decurved outwardly, rostral spines three, placed at base of prolongation, from a low common tubercle, gently curved, flattened, less than one-half the prolongation; on inner margin of style below the rostrum with two modified setae, one longer. Gonapophysis, g , with mesal-apical lobe pale, straight, narrowed very gradually to the nearly acute tip. Aedeagus elongate, relatively narrow, the genital tubes approximated.

Holotype. — ♂, Lingsoka, West Bengal, 3930 feet, September 7, 1959 (Schmid).

The most nearly related species is *Limonia (Libnotes) sharva* Alexander, which differs especially in coloration and wing vena-

tion and in the details of hypopygial structure.

Limonia (Limonia) achates n. sp.

Size small (wing of male 6.3 mm); mesonotal praescutum brown, margins broadly brownish yellow; antennae with proximal flagellar segments rounded, outer ones short-oval; legs light brown; wings strongly tinged with brown, stigma slightly darker; male hypopygium with ventromesal lobe of basistyle shallowly bilobed at apex; dististyle with a powerful blackened hook; apex of gonapophysis obtuse; aedeagus very broad, terminating in two divergent curved points.

Male.—Length about 7-7.5 mm; wing 6.3-7 mm; antenna about 2-2.2 mm.

Rostrum small, brown, shorter than the labial palpi; maxillary palpi longer, brown, first and last segments subequal in length. Antennae brownish black; proximal flagellar segments rounded oval, with short broad apical pedicels, outer segments oval, slightly longer, the pedicels more constricted, terminal segment with outer third narrowed; verticils shorter than the segments. Head dark brown.

Cervical region and pronoum brownish black. Mesonotal praescutum with a brown central stripe, surface opaque, sides broadly brownish yellow; scutal lobes uniformly dark brown, central region paler; scutellum dark brown, parascutella small, yellowed; mediotergite light brown. Pleura dark brown, dorsal sternopleurite and ventral meron paler. Halteres with stem yellowed, knob brownish black. Legs with fore coxae light brown, remaining coxae and all trochanters yellowed; remainder of legs light brown; claws of male long, with a slender subbasal spine. Wings (Fig. 20) strongly tinged with brown, stigma oval, slightly darker brown; very narrow to scarcely apparent pale brown seams at cord and over outer end of cell *1st M*₂; veins brown. Longitudinal veins beyond level of origin of *R*_s with long macrotrichia, including also a short series on outer fifth of vein *2nd A*. Venation: *Sc* relatively long, *Sc*₁ ending about opposite four-fifths *R*_s, *Sc*₂ slightly removed, *Sc*₁ alone a little shorter than *r-m*; free tip of *Sc*₂ and *R*₂ pale, in transverse alignment; cell *1st M*₂ subequal to distal section of vein *M*₃; *m-cu* at fork of *M*.

Abdomen, including hypopygium, dark brown. Male hypopygium (Fig. 31) with the tergite, *t*, transverse, consisting of two oval halves, as shown, each with about seven long setae on posterior half. Basisyle, *b*, with ventromesal lobe very conspicuous, basal in position, proximal part narrowed, apex shallowly bilobed. Dististyle, *d*, with body narrow, yellow, the beak a powerful blackened cleaverlike hook, curved to the acute tip. Gonapophysis, *g*, a stout flattened blade, apex obliquely truncate. Aedeagus, *a*, very broad, at apex produced outwardly into two divergent curved points that include the penis tubes.

Holotype. — ♂, Jhum La, Kameng, North East Frontier Agency, Assam, 7800 feet, May 13, 1961 (Schmid). *Paratopotype*, ♂, 9000 feet, May 31, 1961 (Schmid).

Various other small members of the subgenus similarly have the wings unpatterned or virtually so and with the male hypopygium generally as in the present fly, including the bilobed ventral lobe of the basistyle and the general features of the dististyle. Such species include especially *Limonia (Limonia) acinacis* Alexander and *L. (L.) bifaria* Alexander, which differ conspicuously in the hypopygial details, particularly the gonapophyses and aedeagus.

***Limonia (Limonia) alboangusta* n. sp.**

Size above medium (wing about 13 mm); general coloration brownish black, posterior sclerites of notum yellowed; femora dark brown, tips narrowly and abruptly white; wings strongly tinged with brown, restrictedly patterned with darker brown and with whitened areas on disk; male hypopygium with dististyle slender, the outer third narrowed; base of mesal-apical lobe of gonapophysis broad.

Male. — Length about 9.5-10 mm; wing 12.5-13 mm; antenna about 2.5 mm.

Rostrum and palpi black, the former less than one-half the remainder of head. Antennae relatively long, black, base of first flagellar segment yellowed; flagellar segments shorter than their longest verticils, terminal one longer than the penultimate. Head brownish black; anterior vertex narrow.

Cervical region and pronotum black, elongate, especially the pronotal scutum. Mesonotum with praescutum obscure brownish yellow with a broad black central stripe and more extensive lateral areas that are only slightly darker than the ground; scutal lobes brownish black; posterior sclerites of notum yellowed; setae of scutum and scutellum long and conspicuous, virtually lacking on mediotergite. Pleura brownish black. Halteres dark brown, base of stem restrictedly yellow. Legs with coxae dark brown; trochanters brownish yellow; femora yellowed basally, passing into dark brown, tips narrowly and abruptly white; tibiae yellowish brown, tarsi darker brown; claws of male long, only gently curved, with a long spine before midlength, together with a smaller more basal spine and some microscopic points. Wings (Fig. 21) strongly tinged with brown, stigma scarcely differentiated from the ground; restricted darker brown markings at origin of *Rs* and over cord and outer end of cell *1st M*₂; conspicuous whitened areas beyond *Sc* in costal field, centers of cells *R*₂ and *1st M*₂, and in outer end of cell *M* and the

adjoining part of cell *Cu*; veins brown. Venation: *Sc* long, *Sc*₁ ending about opposite midlength of *Rs*, *Sc*₂ longer; *R*₁₊₂ subequal to *R*₂₊₃; *m-cu* shortly beyond fork of *M*.

Abdominal tergites dark brown, apices of segments two and three broadly yellow, segments four and five narrowly yellowed subapically; outer segments blackened, with very narrow pale apical borders; basal sternites yellowed. Male hypopygium (Fig. 32) with the tergite, *t*, transverse, with both the posterior and cephalic borders convex; central part of tergite of type damaged and not shown in the figure, presumably about as shown by the stippled line. Basistyle, *b*, with ventromesal lobe very large, occupying the entire mesal face of style. Dististyle, *d*, slender, nearly as long as the basistyle, outer third narrowed. Gonapophysis, *g*, with mesal-apical lobe broad-based, gradually narrowed outwardly, terminating in a small obtuse knob. Aedeagus broad, midportion for almost the whole length with a row of microscopic reticulations to form a darkened band.

Holotype. — ♂, Bomdi La, Kameng, North East Frontier Agency, Assam, 8000 feet, April 29, 1961 (Schmid). *Paratopotype*, ♂.

Other allied species that have the labial palpi short include *Limonia* (*Limonia*) *brachylabis* Alexander and *L.* (*L.*) *hostilis* Alexander, both differing from the present fly in the coloration of the legs and wings and in the details of the male hypopygium, particularly the dististyle and gonapophysis.

Limonia (*Limonia*) *habra* n. sp.

General coloration of mesonotum light brown, the sides broadly yellow, pleura with a conspicuous dark brown longitudinal stripe; wings weakly darkened, very restrictedly darkened at origin of *Rs* and over the cord; male hypopygium with apex of tergite truncate and narrowly blackened; basistyle with ventromesal lobe hemispherical; dististyle yellow, outer third narrowed into a rod; aedeagus very broad, genital tubes stout, their orifices widely separated.

Male. — Length about 6.5 mm; wing 6.8 mm; antenna about 1.7 mm. Rostrum and palpi dark brown. Antennae brown, proximal flagellar segments short-oval, outer ones more elongate-oval with evident apical pedicels; terminal segment about one-half longer than the penultimate, apical third strongly narrowed. Head dark brown.

Pronotum brown, darker on sides, pretergites yellow. Mesonotal praescutum with sides broadly yellow, disk with a light brown central stripe that widens behind at the suture; scutum yellowed medially, lobes brown; scutellum brown, parascutella more yellowed; mediotergite brown,

lateral borders and dorsal pleurotergite light yellow. Pleura yellow ventrally, above with a conspicuous dark brown longitudinal stripe, broader anteriorly, behind on pteropleurite and katapleurotergite dark brown. Halteres elongate, stem yellowed, knob dark brown. Legs with fore coxae brownish yellow, remaining coxae and all trochanters yellow; femora light brown, bases yellowed, tips more narrowly brownish yellow; tibiae and tarsi light brown. Wings (Fig. 22) weakly darkened, the short-oval stigma darker brown; very vague darkened seams over *Rs* and cord; veins brown. Longitudinal veins beyond general level of origin of *Rs* with macrotrichia, with a few others on outer end of vein *2nd A*. Venation: *Sc* long, *Sc*₁ ending about opposite two-thirds the long *Rs*, *Sc*₂ slightly removed; *m-cu* close to fork of *M*.

Abdominal tergites dark brown, sternites obscure yellow, more infuscated laterally, hypopygium more yellowed. Male hypopygium (Fig. 33) with the tergite, *t*, large, widest across base, narrowed outwardly, apex truncated and narrowly blackened; some distance back from posterior margin with a transverse row of about 16 long setae. Basistyle, *b*, with ventromesal lobe rounded, hemispherical. Dististyle, *d*, about one-third as large as basistyle, yellow, outer third narrowed into a long rod, tip slightly decurved. Gonapophysis, *g*, shaped as figured, outer end narrowed. Aedeagus, *a*, very broad, genital openings widely separated, placed at outer angles of the organ, genital tubes stout, united into a common duct shortly before the orifices.

Holotype. — ♂, Talung Dzong, Kameng, North East Frontier Agency, Assam, 7800 feet, June 6, 1961 (Schmid).

Certain hypopygial features suggest various other regional species but the general appearance and coloration, especially of the wings, is quite distinct.

***Limonia (Limonia) pristomera* n. sp.**

General coloration of thorax obscure yellow; mouthparts very reduced, palpi one-segmented; legs light brown; wings uniformly suffused with pale brown; male hypopygium with tergal lobes long and slender; ventromesal lobe of basistyle small, placed far distad; dististyle oval, extended into a long blackened beak, lower margin with four or five short black spinoid setae, base of style on mesal face with a rounded lobe that bears coarse black bristles.

Male. — Length, about 6 mm; wing 6.8 mm; antenna about 1.2 mm.

Mouthparts very reduced, the maxillary palpi with a single large pyriform segment provided with a few long setae, the surface with further circular areas that are delimited by short setae. Antennae with scape only about one-half longer than the pedicel, pale brown, remainder of organ brownish black; proximal flagellar segments very short, about as broad

as long, the outer ones slightly longer, terminal segment subequal to the penultimate; verticils short, all segments densely covered with short darkened setulae presenting a roughened appearance. Head dark brown; anterior vertex narrow, about one-third the diameter of scape.

Pronotum testaceous yellow, relatively small, compressed. Mesonotal praescutum obscure yellow with a darker central stripe, lateral borders obscure brownish yellow; posterior sclerites obscure yellow, scutal lobes a trifle darker; pronotum, praescutum and scutum with sparse erect setae. Pleura obscure yellow, sternopleurite and pteropleurite clearer ivory yellow. Halteres infuscated, especially the knob. Legs with coxae and trochanters obscure yellow; remainder of legs light brown; claws of male long and smooth, unmodified except for a slight basal tubercle that bears two long yellow setae. Wings (Fig. 23) uniformly suffused with pale brown, stigma not differentiated; veins very delicate, pale brown, only slightly darker than the ground. Macrotrichia of veins black, abundant, including R_s and veins beyond cord and distal end of basal section of Cu_1 ; in type a single trichium at end of vein 2nd A . Venation: Sc_1 ending opposite midlength of the long R_s , Sc_2 at its tip; free tip of Sc_2 erect, far before the oblique R_2 ; $m-cu$ at fork of M .

Abdomen brown, the hypopygium a trifle paler. Male hypopygium (Fig. 34) with the body of tergite, t , transversely oval, posterior border produced caudad into two unusually long and slender lobes that are separated by a wider U-shaped emargination, the surface with dense scabrous points; setae long but sparse, not reaching tip of lobe. Basistyle, b , elongate, ventromesal lobe unusually small, placed close to outer end of style, with relatively short black setae. Dististyle, d , a little shorter than the basistyle, proximal end dilated, with a rounded lobe on mesal face at base, provided with coarse black bristles, outer half of style extended into a slender rod or beak, heavily sclerotized, apex and lower margin with four or five short black spinoid points; at extreme base of outer face of style with a small tubercle that bears two modified pale spines that may represent the usual rostral spines found in various subgenera in *Limonia*. Gonapophysis, g , with mesal-apical lobe long and slender, sclerotized, straight, tip curved into a small black spine, margin of lobe irregularly erose. Aedeagus relatively slender, genital tubes approximated.

Holotype. — ♂, Bomdi La, Kameng, North East Frontier Agency, Assam, 8800 feet, April 29, 1961 (Schmid).

Other species of *Limonia* that have the mouthparts greatly reduced include *Limonia (Limonia) citrofocalis* (Edwards), of Borneo, and *L. (L.) luteitarsis* Alexander, of Kumaon, both quite different from the present fly in coloration and in hypopygial structure.

Helius (Helius) aka n. sp.

General coloration of mesonotal praescutum brown, virtually unpatterned, posterior sclerites and pleura darker brown; antennae of male long, about seven times the rostrum, flagellar segments with dense short erect setae; wings weakly infuscated, with an extensive pale brown pattern, *r-m* before fork of *Rs*, cell *1st M*₂ large, rectangular; male hypopygium with both dististyles slender, the outer darkened, terminating in a small outer hook.

Male. — Length, including rostrum, about 7 mm; wing 6 mm; rostrum alone about 0.6 mm; antenna about 4 mm.

Female. — Length, including rostrum, about 8 mm; wing 8 mm.

Rostrum of male dark brown, relatively short, only about one-seventh the length of antennae and only a little longer than the first flagellar segment of the latter; palpi pale brown, terminal segment equal to the preceding three combined. Antennae of male very long, as shown by the measurements, dark brown throughout; flagellar segments very long cylindrical, progressively shorter outwardly, terminal segment about one-fourth the penultimate, vestiture of segments consisting of short erect setae over the entire length excepting the narrow base, verticils not differentiated. In female antennae short, only about twice the proportionally elongate rostrum. Head dark brown.

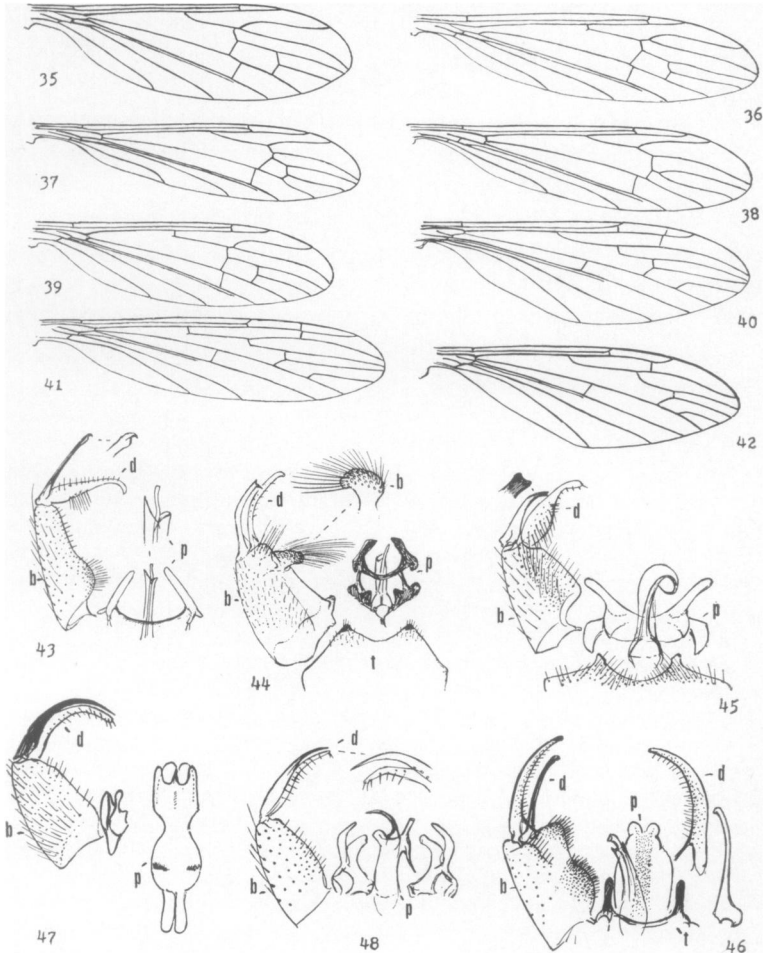
Pronotum dark brown. Mesonotal praescutum lighter brown, virtually unpatterned; posterior sclerites of notum dark brown, central region of scutum and the parascutella paler; mesonotal vestiture short and sparse, especially on praescutum, longer and more yellowed on scutellum. Pleura chiefly dark brown, more yellowed ventrally, including the lower sternopleurite and meron. Halteres with stem obscure yellow, the small knobs dark brown. Legs with coxae testaceous yellow, fore pair darker basally; trochanters yellow; femora brown, bases narrowly yellowed; tibiae light brown, tarsi still paler brown. Wings (Fig. 35) broad, weakly infuscated, with an extensive pale brown pattern, including major clouds at origin of

Text-figs. 35-48. — Fig. 35, *Helius (Helius) aka* n. sp., venation; Fig. 36, *Helius (Helius) dafta* n. sp., venation; Figs. 37, 38, *Helius (Helius) garcianus* n. sp., venation; Fig. 39, *Helius (Helius) manuely* n. sp., venation; Fig. 40, *Orimarga (Orimarga) amaurospila* n. sp., venation; Fig. 41, *Orimarga (Orimarga) celestia* n. sp., venation; Fig. 42, *Orimarga (Orimarga) euryptera* n. sp., venation; Fig. 43, *Helius (Helius) aka* n. sp., male hypopygium; Fig. 44, *Helius (Helius) dafta* n. sp., male hypopygium; Fig. 45, *Helius (Helius) garcianus* n. sp., male hypopygium; Fig. 46, *Helius (Helius) manuely* n. sp., male hypopygium; Fig. 47, *Orimarga (Orimarga) amaurospila* n. sp., male hypopygium; Fig. 48, *Orimarga (Orimarga) euryptera* n. sp., male hypopygium.

Symbols: *b*, basistyle; *d*, dististyle; *p*, phallosome; *t*, tergite.

Rs, cord, and distal ends of outer radial cells, with narrower darkenings at arculus and outer end of cell *1st M*₂; stigma darker brown, costal region uniformly pale brown. Venation: *r-m* shortly before fork of *Rs*; cell *1st M*₂ large, rectangular, subequal in length to or a little shorter than distal section of vein *M*₃; *m-cu* at near one-third to one-fourth the length of vein *M*₃₊₄.

Abdomen dark brown, hypopygium paler brown. Male hypopygium (Fig. 43) with basistyle, *b*, slender, mesal face of basal half expanded, provided with a concentration of long yellow setae. Dististyles, *d*, terminal,



outer style very slender, smooth, outer apical angle with a small curved point; inner style slightly longer, relatively slender, its diameter at base about one-half that of apex of basistyle, gradually narrowed outwardly, outer fourth gently decurved; surface of style with numerous setae, those at near midlength of lower face elongate, setae of outer surface shorter and more scattered. Phallosome, *p*, including the outer bladelike apophyses, interconnected by a narrow bridge; aedeagus straight, at apex with two unequal points, penis filament short and nearly straight, only slightly protruding.

Holotype. — ♂, Talung Dzong, Kameng, North East Frontier Agency, Assam, 7800 feet, June 6, 1961 (Schmid). Allotopotype, ♀, pinned with type.

Helius (Helius) aka is named for one of the aboriginal tribes of Kameng. Other regional members of the genus that have the rostrum short and antennae long, the wings patterned and with *r-m* before the fork of *Rs*, include also *H. (H.) manueli* sp. n., and probably also *H. (H.) boops* Alexander and *H. (H.) sigillatus* Alexander, still known only from the female sex. All of these differ from the present fly in wing venation and pattern, length of the rostrum, and where the male sex is known, in hypopygial structure.

Helius (Helius) daffa n. sp.

Mesonotal praescutum obscure brownish yellow, with three confluent darker brown stripes; rostrum very short, antennae very long; wings weakly infuscated, weakly patterned with pale brown areas, *Rs* angulated and spurred near origin, *r-m* about its own length before fork of *Rs*; male hypopygium with both dististyles slender, mesal face of basistyle near apex with an oval lobe that bears very long yellow setae; aedeagus simple, straight.

Male. — Length including rostrum, about 6 mm; wing 7 mm; rostrum alone about 0.4 mm; antenna about 4.5 mm.

Rostrum very short, only about as long as a single antennal segment, black above, yellowed beneath; palpi black, longer than rostrum, terminal segment subequal to the combined basal three. Antennae of male elongate, nearly two-thirds the wing; proximal segments obscure yellow, flagellum excluding base of first segment black, segments long-cylindrical, with dense erect setae throughout the length, these longer than the diameter of segment, modified verticils lacking. Head blackened.

Cervical region and pronotum dark brown. Mesonotal praescutum obscure brownish yellow, with three confluent darker brown stripes, the median one broader; scutal lobes dark brown, posterior callosities and

median region obscure yellow; scutellum dark brown, parascutella paler; postnotum light brown. Pleura yellowish brown. Halteres yellowed, knob weakly infuscated. Legs with coxae and trochanters yellow; femora and tibiae yellowish brown, tarsi slightly more yellowed. Wings (Fig. 36) very weakly infuscated, prearcular and costal fields slightly more yellowed, stigma brown; small paler brown areas at arculus, origin of R_s and over the anterior cord; veins brown, paler in the brightened fields. Longitudinal veins beyond level of origin of R_s with conspicuous black trichia, lacking on Anal veins and basal section of Cu_1 excepting the outer end. Venation: R_s angulated and spurred near origin; $r-m$ about its own length before fork of R_s ; cell $1st\ M_2$ subrectangular, about as long as vein M_3 ; $m-cu$ shortly beyond fork of M .

Abdominal tergites and hypopygium black, basal sternites yellowed, outer segments darker. Male hypopygium (Fig. 44) with posterior border of tergite, t , emarginate, lateral angles produced into small rounded black knobs. Basistyle, b , with mesal face glabrous except for an oval lobe that lies far distad, provided with yellow setae of exceptional length, the longest exceeding the outer dististyle, the inner setae shortest, stem of the lobe short. Outer dististyle, d , slender, yellow, apex blackened, unequally bispinous; inner style about one-third longer, only a little stouter than the outer style, slender throughout, apex obtuse. Phallosome, p , complex, aedeagus unusually simple, straight.

Holotype. — ♂, Nakhu, Kameng, North East Frontier Agency, Assam, 4800 feet, July 3, 1961 (Schmid). *Paratopotype*, ♂.

The specific name, *dafla*, is that of an aboriginal people in Kameng. Of the regional members of the genus having elongate antennae and short rostrum in the male sex the present fly is closest to *Helius* (*Helius*) *aka* sp. n., differing very conspicuously in hypopygial structure.

Helius (*Helius*) *garcianus* n. sp.

Allied to *serenus*; general coloration of thorax reddish yellow, praescutum with a narrow brown central stripe, scutal lobes dark brown; rostrum shorter than antennae; wings weakly tinged with brown, costal border and outer end of cell R_3 slightly more darkened, cell $1st\ M_2$ small, $m-cu$ at or before fork of M ; male hypopygium without a lobe on mesal face of basistyle, phallosome with apices of gonapophyses obtusely rounded.

Male. — Length, including rostrum, about 6-6.5 mm; wing 5.5-5.8 mm; rostrum alone about 0.4-0.45 mm; antenna about 0.9-1.0 mm.

Female. — Length, including rostrum, about 6-6.5 mm; wing 5.6-6.5 mm; rostrum about 0.5 mm; antenna about 0.8 mm.

Rostrum dark brown, subequal in length to remainder of head, shorter than antennae, as shown by the measurements; palpi dark brown. Antennae dark brown; proximal flagellar segments short-oval, outer ones more elongate, terminal segment smaller; verticils of outer three or four segments long but shorter than in *verticillatus*, exceeding the segments. Head dark brown, front, anterior vertex and orbits light gray; anterior vertex nearly twice the diameter of scape.

Cervical region blackened. Pronotal scutum dark brown, scutellum testaceous yellow. Mesonotal praescutum reddish yellow, with a narrow brown central stripe; scutal lobes dark brown, central area and scutellum more reddened; central part of mediotergite darkened, sides reddened. Pleura reddened, paler ventrally. Halteres with stem yellowed, knob brownish black. Legs with coxae reddened; trochanters yellow; remainder of legs light brown, outer tarsal segments pale. Wings (Figs. 37, 38) weakly tinged with brown, cells *C* and *Sc*, together with the outer end of *R*₃ slightly more darkened; stigma elongate, relatively large, darker brown; veins brown. Longitudinal veins beyond cord, together with *R*₅, with trichia, lacking on those veins comprising cell *1st M*₂. Venation: *Sc*₂ ending some distance before fork of *R*₅, branches of the latter gently divergent basally, *R*₄₊₅ bent strongly caudad, ending at wing tip, cell *R*₃ wide at margin; cell *1st M*₂ small, generally short-subrectangular, in the holotype broader beyond base, narrowing *r-m*; *m-cu* at or before fork of *M*, in cases to nearly one-half its length. In the paratype female (Fig. 38) the venation is abnormal, cell *M*₃ being open by atrophy of basal section of *M*₃, cell *M*₂ being very deep, its petiole shorter than basal section of *M*₁₊₂, the condition being virtually the same in both wings.

Abdominal tergites brownish black, sternites paler brown, subterminal segments more blackened to form a ring, male hypopygium castaneous. Ovipositor with valves, especially the cerci, very long and slender. Male hypopygium (Fig. 45) with posterior border of tergite, *t*, shallowly emarginate. Basistyle, *b*, without a mesal lobe. Outer dististyle, *d*, blackened, nearly straight, tip weakly bilobed; inner style about one-half longer, pale, basal three-fifths dilated, with blackened setae beneath, outer end narrowed, tip obtusely rounded. Phallosome, *p*, with apices of gonapophyses obtuse; aedeagus forming a short penefilum, the slender outer end about one-fourth the base.

Holotype. — ♂, Chapai, Kameng, North East Frontier Agency, Assam, 700 feet, February 26, 1961 (Schmid). *Allotopotype*, ♀. *Paratopotypes*, 3 ♂♂, with the type. *Paratypes*, 1 ♂, 1 ♀. Bhairabkunda, Kameng, altitude 700-1000 feet, March 5, 1961 (Schmid).

I am very pleased to name this species for Mr. Mauro Garcia, copy editor for the *Philippine Journal of Science*, who has handled

many parts of the series of reports on the crane-flies of Asia. The most similar regional species are *Helius (Helius) serenus* Alexander and *H. (H.) verticillatus* Alexander, which differ especially in the structure and vestiture of the antennae, details of venation, and in hypopygial details. The abnormal venation of the paratype described and figured is noteworthy. There seems to be no question but that the association with the present species is correct despite the striking differences in venation which is virtually identical on both wings of the specimen.

***Helius (Helius) manueli* n. sp.**

Size large (wing of male 9 mm); antennae of male unusually long, more than three times the rostrum or one-third the wing; body almost uniformly blackened; halteres yellow; wings with the prearcular field clear light yellow, more darkened outwardly, especially the cells beyond the cord; *r-m* shortly before fork of *Rs*, cell *1st M₂* large, rectangular; male hypopygium with both dististyles long and slender, especially the very narrow outer style; mesal face of basistyle with abundant setae.

Male.—Length, including rostrum, about 10-11 mm; wing 8.5-9 mm; rostrum alone about 1.0-1.1 mm; antenna about 3.6-4 mm.

Female.—Length, including rostrum, about 12 mm; wing 11 mm; rostrum alone about 1.2 mm; antenna about 1.8 mm.

Rostrum black; palpi brownish black, the elongate terminal segment paler, subequal in length to the preceding three combined; rostrum of male less than one-third the antenna, subequal in the female. Antennae with scape, pedicel and base of first flagellar segment obscure yellow, remaining segments brownish black, long-cylindrical, densely clothed with short erect setae, verticils not differentiated. Head brownish black.

Thorax almost uniformly brownish black in male, dark brown in the female; notal vestiture virtually lacking, the setae very small to microscopic; dorsopleural membrane dark brown. Halteres yellow. Legs with coxae black; trochanters yellow; fore femora blackened, basal fifth yellowed, middle femora with basal third brightened, posterior pair with nearly the proximal half; tibiae and tarsi brownish black to black in male, brown in female. Wings (Fig. 39) with prearcular field clear light yellow, costal field more brownish yellow, wing gradually darkening outwardly, beyond the cord brown with darker clouds at origin of *Rs* and along cord; stigma elongate, still darker brown; veins of the brightened fields light yellow, brown in the infuscated parts. Venation: *Rs* long, angulated and spurred near origin, *r-m* shortly before its fork, branches of the latter generally parallel, more divergent near margin; cell *1st M₂* large, rectangular, with *m-cu* beyond its base.

Abdomen brownish black. Male hypopygium (Fig. 46) with mesal

face of basistyle, *b*, with conspicuous concentrations of setae on the basal cushion and less extensively on a more distal enlargement. Dististyles, *d*, apical, both long and narrow, the glabrous outer style unusually slender, about three-fourths as long as the more arcuated inner style; both dististyles obtuse at tips, especially the outer one, inner style with numerous erect setae along mesal face, outer style glabrous.

Holotype. — ♂, Jhum La, Kameng, North East Frontier Agency, Assam, 7800 feet, May 14, 1961 (Schmid). *Allotopotype*, ♀, pinned with type.

Paratopotypes, 1 ♂, 1 ♀, with the types. *Paratype*, ♂, Shergaon, Kameng, 6400 feet, May 9, 1961 (Schmid).

This distinct species is named in honor of Dr. Canuto G. Manuel, past Commissioner of the National Institute of Science and Technology and editor of the *Philippine Journal of Science*. At this time I wish to express my deep appreciation for the privilege of publishing numerous papers on the crane flies of Asia and Australasia in this distinguished journal. These have been published over the past 47 years, the first of the series having appeared in volume 21 in October 1922. In a brief account² I have discussed my long friendship and relations with Richard Crittenden McGregor who was a member of the editorial board of the Journal from 1908 until his death on December 30, 1936. Succeeding editors of the Journal similarly have been kind and considerate in all of my relations with this outstanding scientific publication. It may be of interest to know that these papers in the Journal relate to the Asiatic and Australasian species of Tipulidae, are 89 in number and include the descriptions of 2056 species of these flies.

Helius (Helius) manueli is most similar to the smaller *H. (H.) aka* sp. n., which differs evidently in the proportionately longer antennae, wing pattern, and in the structure of the hypopygium. It may be noted that in the figure of the hypopygium here provided the outer dististyle is shown as lying inside the somewhat longer inner style.

² Alexander, C. P. Richard Crittenden McGregor. *Philippine Jour. Sci.*, 63: 359-361, plate, 1937.

Orimarga (Orimarga) amaurospila n. sp.

General coloration of head and thorax gray, mesonotal praescutum with four darker gray stripes; rostrum relatively long, subequal to the remainder of head; antennae black; wings brownish yellow, restrictedly patterned with pale brown areas that are indicated only by darkenings of the veins; wings of male broad, costal fringe very short, R_{1+2} shorter than R_{2+3} , basal section of R_{4+5} angulated to virtually square near origin, $m-cu$ about opposite two-thirds Rs ; male hypopygium with dististyles elongate, subequal to the basistyle.

Male.—Length about 7 mm; wing 5.8 x 1.7 mm.

Rostrum unusually long, subequal to remainder of head, brownish black above, paler beneath, palpi black. Antennae black; flagellar segments oval, with short verticils. Head gray.

Cervical region light brown. Pronotum gray. Mesonotal praescutum light gray with four faintly indicated darker gray stripes; posterior sclerites of notum dark brownish gray. Pleura brownish gray, dorso-pleural membrane obscure yellow. Halteres with stem whitened, knob light yellow. Legs with coxae and trochanters dark brown; remainder of legs broken. Wings (Fig. 40) brownish yellow, prearcular and costal regions clearer yellow; disk with a faint brown pattern that is indicated only by the darkened veins, including origin of Rs , R_2 , basal third of R_{4+5} , posterior cord, $m-cu$ and base of outer section of M_3 , remaining veins yellow. Wing of male unusually broad, as shown by the measurements, the greatest width opposite end of vein *2nd A*. Costal fringe very short; macrotrichia on distal section of R_{4+5} , outer two-thirds of distal section of M_{1+2} , M_3 and M_4 . Venation: Sc_1 ending opposite fork of Rs , Sc_2 near its tip; free tip of Sc_2 weakly preserved, almost in transverse alignment with the perpendicular R_2 ; R_{1+2} shorter than R_{2+3} , the latter about two-thirds Rs ; basal section of R_{4+5} long, angulated to virtually square near origin; M_{3+4} and M_4 subequal; $m-cu$ about opposite two-thirds Rs ; cell *2nd A* broad.

Abdomen dark brown. Male hypopygium (Fig. 47) with the dististyles long, subequal to the basistyle, the outer style curved very gently to the acute tip.

Holotype.—♂, Lifakpo, Kameng, North East Frontier Agency, Assam, 3100 feet, May 15, 1961 (Schmid).

The most similar regional species are *Orimarga (Orimarga) celestia* sp. n., and *O. (O.) javana* de Meijere, both having the wings more heavily patterned, the darkened spots being larger and including the wing membrane. In the present fly the relatively short R_{1+2} has only about six trichia whereas in *celestia* this vein is very long and has approximately 18 such trichia. The

broad wings in the male of this fly evidently is a sexual character only.

Orimarga (Orimarga) celestia n. sp.

General coloration of thorax brownish gray, praescutal stripes poorly indicated; rostrum brownish black, unusually long and slender; halteres clear light yellow; legs brownish yellow; wings pale yellow, restrictedly patterned with small brown spots that include the membrane adjoining the veins; R_s long, angulated and spurred near origin; R_{1+2} very long; R_2 and free tip of Sc_2 in transverse alignment; $m-cu$ about five times its length before fork of M .

Female.—Length about 9 mm; wing 7 mm.

Rostrum brownish black, unusually long and slender, about three-fourths the remainder of head; palpi black. Antennae black; proximal flagellar segments suboval with truncated ends, outer segments more oval; verticils short. Front and center of vertex light gray, remainder of head darker gray.

Pronotum brownish gray. Mesonotum gray, the praescutum with four very poorly differentiated brown stripes, scutal lobes similarly slightly infuscated. Pleura brown, dorsal sternopleurite paler. Halteres clear light yellow. Legs with coxae and trochanters testaceous yellow; remainder of legs obscure brownish yellow, including the tarsi. Wings (Fig. 41) pale yellow, the prearcular and costal fields clearer yellow; a restricted but conspicuous brown pattern that includes relatively small spots in cell Sc above the arculus, origin of R_s , fork of Sc , free tip of Sc_2 and R_3 , and as an interrupted series at tip of R_{1+2} , over the cord, $m-cu$, and the fork of M_{3+4} ; veins clear light yellow, brown in the patterned areas. Macrotrichia on longitudinal veins beyond cord, including R_{1+2} , R_3 , R_{4+5} and all outer medial branches. Venation: Sc_1 ending nearly opposite fork of R_s , Sc_2 near its tip; R_s long, angulated and spurred near origin; R_2 far retracted, in transverse alignment or placed immediately beyond the free tip of Sc_2 ; R_{1+2} very long, exceeding R_{2+3} ; cell M_3 relatively deep, veins M_{3+4} and M_4 subequal; $m-cu$ about opposite midlength of R_s or about five times its length before fork of M .

Abdomen dark brown; valves of ovipositor light horn yellow.

Holotype.—♀, Jhum La, Kameng, North East Frontier Agency, Assam, 9000 feet, May 31, 1961 (Schmid).

Orimarga (Orimarga) celestia differs from other regional members of the genus having patterned wings especially in the venation, including the very long R_{1+2} . Other somewhat similar species include *O. (O.) amaurospila* sp. n. and *O. (O.) javana* de Meijere, as discussed under the preceding species. In the Neo-

tropical region there are several species that have a comparable long vein R_{1+2} .

Orimarga (Orimarga) euryptera n. sp.

General coloration of thorax brownish yellow, anterior end of praescutum darker, pleura clearer yellow; wings of male broad, costal fringe conspicuous, Sc relatively short, Sc_1 ending about opposite two-thirds Rs , R_{2+3} longer than R_2 , $m-cu$ about opposite midlength of Rs ; male hypopygium with dististyles very slender outwardly, the outer style a long spine; phallosome complex, the inner armature including two pairs of slender spines.

Male.—Length about 5.5-5.8 mm; wing 4.4 x 1.4 to 4.8 x 1.6 mm; antenna about 0.85-0.9 mm.

Rostrum yellowish brown; palpi brown. Antennae dark brown; flagellar segments suboval, verticils small. Head brown.

Pronotum brown. Mesonotal praescutum on anterior end of central area, the remainder brownish yellow, the usual stripes scarcely indicated, lateral borders clearer yellow; scutum and scutellum yellowed, scutal lobes vaguely more darkened; mediotergite infuscated, pleurotergite yellow. Pleura yellow. Halteres with stem whitened, knob brown. Legs with coxae and trochanters yellowed; remainder of legs broken. Wings (Fig. 42) faintly tinged with brownish yellow, prearcular field and narrow costal border clearer yellow; veins very pale brown. Wings broad in male, widest about opposite termination of vein $2nd A$. Costal vein thickened on outer half, costal fringe long; macrotrichia of veins sparse, on distal section of R_{4+5} , M_{1+2} and M_3 . Venation: Sc relatively short, Sc_1 ending about opposite two-thirds Rs , Sc_2 at its tip; R_{2+3} about one-third longer than R_2 , the latter about two-thirds R_{1+2} ; basal section of R_{4+5} long, more than twice R_{2+3} ; m distad of level of R_2 ; $m-cu$ about opposite midlength of Rs .

Abdominal tergites brown, subterminal segment somewhat darker, sternites yellowed, hypopygium brownish yellow. Male hypopygium (Fig. 48) with dististyles, d , united for more than basal half, outwardly very slender. Phallosome, p , including lateral blades on either side, the outermost boomerang-shaped; inner armature including two pairs of slender spines, one recurved.

Holotype.— δ , Lingsoka, West Bengal, 3930 feet, September 7, 1959 (Schmid). *Paratopotypes*, 2 δ δ , one pinned with type.

Orimarga (Orimarga) euryptera differs from other somewhat similar light brown species, as *O. (O.) distivenula* Alexander and *O. (O.) peregrina* Brunetti, by the unusually broad wings of the male and in hypopygial structure, especially the phallosome.