LIX.—New or Little - known Tipulidæ (Diptera).—LXXXVII. Oriental-Australasian Species. By Charles P. Alexander, Ph.D., F.R.E.S., University of Massachusetts, Amherst, Massachusetts, U.S.A.

VIRTUALLY all the species discussed at this time were collected by Mr. P. Susai Nathan in the Nilgiri Hills, South India, and in Pahang, Malaya, by Mr. Noël L. H. Krauss, to both of whom I am much indebted for numerous Tipulidæ. The types of all the species are preserved in my collection of these flies.

Ctenacroscelis siva, sp. n.

Belongs to the brobdignagius group; thorax yellow, the præscutum with four grey stripes that are narrowly bordered by brown; thoracic pleura clear yellow, only the dorsal pleurotergite darkened; femoral tips narrowly blackened; wings rich brown, vaguely striped longitudinally with yellow, including a conspicuous area in the upper medial field; prearcular area infuscated; abdomen dark brownish grey, the median region of the tergites more reddish brown; male hypopygium with the caudal margin of tergite not bilobed, subtruncate to very feebly concave, the posterior border with abundant long black setæ; outer dististyle narrowed outwardly; inner dististyle with the outer expanded portion unequally bidentate.

 $\it Male.$ —Length about 35 mm.; wing 35.5×6.3 mm.

Frontal prolongation of head medium brown, nasus elongate; palpi black. Antennæ 12-segmented; proximal three or four segments brownish yellow, the outer ones passing into dark brown; flagellar segments subcylindrical, longer than the short scattered verticils. Head behind grey, the vertical tubercle more yellowed; a small circular brown spot immediately behind the root of antenna.

Pronotal scutum dark brown medially, yellow on sides. Mesonotal præscutum with the ground yellow, with four grey stripes that are narrowly bordered by brown, the intermediate pair with a common darkened inner stripe; scutal lobes each with two grey areas that are narrowly bordered by paler grey, the posterior callosities dark

brown; scutellum and parascutella pale yellow; mediotergite grev, the central and posterior areas broadly vellow. Pleura and pleurotergite almost uniformly pale vellow, the only darkening being the dorsal edge of the pleurotergite; ventral sternopleurite and meron whitened. Halteres brownish black. Legs with all coxæ and trochanters yellow; femora brownish yellow, the tips narrowly blackened; tibiæ and basitarsi brownish vellow, the remainder of tarsi passing into black; claws (male) toothed. Wings with a strong rich brown tinge. vaguely striped longitudinally with pale vellow, the most distinct marking being a long streak over the medial field, extending from the outer end of cell M through 1st M_{\circ} along the upper branch of media almost to the wing margin; less evident yellow streaks in cells M and Cu and in base of 2nd A; stigma yellow, scarcely differentiated from the ground; prearcular field chiefly infuscated: veins brownish yellow. Venation: Rs only slightly arcuated, shorter than R_{2+3} ; vein R_1 some distance before the outer radial fork, producing an element R_{1+2+3} ; vein R_3 only gently arcuated; petiole of cell M_1 subequal to m: m-cu at near three-fourths the length of M_{3+4} .

Abdomen dark brownish grey, the median tergal area reddish brown, this line becoming narrower and less distinct behind, the outer segments uniformly darkened; hypopygium chiefly darkened. Male hypopygium with the tergite large, gently narrowed outwardly, the caudal margin not lobed, very gently concave to subtruncate, the outer third or dorsal surface with dense black setæ. Outer dististyle strongly narrowed outwardly, the tip obtuse. Inner dististyle expanded at outer third, the oblique tip darkened and with abundant dense erect setæ and microscopic punctures; before apex, on side of the expanded part, with a small triangular tooth. Eighth segment with caudal margin unmodified.

Hab. South India.

Holotype, 3, Mango Range, Nilgiri Hills, altitude 3800 feet, May 20, 1949 (P. Susai Nathan).

The most similar regional species include Ctenacroscelis fulvolateralis (Brunetti) and C. majesticus (Brunetti), both of which differ conspicuously in the coloration of the body and wings, and in the structure of the male hypopygium. The unmarked pleura and the scarcely lobed

ninth tergite of the male hyopygium furnish important characters for the recognition of the present fly.

Ctenacroscelis albicostigma, sp. n.

Belongs to the brobdignagius group; mesonotal præscutum with borders yellow, the disk with four brownish-grey stripes that are broadly margined with dark brown, filling the interspaces; dark pleural stripe interrupted beneath the wing-root; wings brownish grey, the costal border darker brown; stigma conspicuously whitened; Rs straight, subequal to R_{2+3} ; vein R_4 angulated at about two-thirds its length; male hypopygium with the tergal lobes short, rounded at tips; outer dististyle truncated at apex; inner dististyle with outer and irregularly trilobed; eighth sternite with two lobes that bear long yellow setæ.

Male.—Length about 25 mm.; wing 32 mm.

Frontal prolongation of head dark brown, including the long nasus, the base above with a yellow line; palpi black, broken beyond the second segment. Antennæ with scape and pedicel yellow; flagellum broken. Head with the front and vertical tubercle yellow, the posterior and central parts of head obscure yellow, sparsely pruinose, the sides more infuscated.

Pronotum infuscated medially, yellow sublaterally, the sides brownish grev. Mesonotal præscutum with the borders and pretergites yellow, the disk with four brownish grey stripes that are broadly bordered by dark brown, filling the interspaces; central line of præscutum more intensely blackened, continued to the cephalic border: scutal lobes brown in front, light grey across the central portion, the posterior border rather narrowly dark brown; scutellum dark brown, the posterior third pale, parascutella infuscated; mediotergite grey, the sides broadly dark brown, this being the posterior extension of a conspicuous dorsopleural stripe that begins at the cervical region and is interrupted at the wing-root; remainder of pleura and pleurotergite vellow excepting the propleura and a narrow infuscation over the dorsal sternopleurite. teres pale brown, the knob darker, the base of stem restrictedly yellow. Legs with the coxe yellow, lightly patterned with pale brown; trochanters yellow; femora vellow, the tips broadly brownish black; tibiæ and tarsi yellow, the tips narrowly blackened, the outer tarsal segments uniformly black; claws (male) toothed. Wings brownish grey, the prearcular and costal fields darker brown; a darker brown seam on m-cu and more narrowly over the distal section of Cu_1 ; stigma yellowish white, conspicuous; obliterative areas over the anterior cord and basal section of vein M_3 narrow but conspicuous; veins light brown. Venation: Rs straight, subequal to R_{2+3} ; T_2 about twice vein R_{3+4} ; vein R_4 angulated at about two-thirds its length; petiole of cell M_1 about two-thirds m; m-cu beyond midlength of M_{3+4} .

Abdomen chiefly dark brown, vaguely more reddened in places, more extensively so on the sternites where the posterior borders are broadly of this colour; hypopygium chiefly darkened. Male hypopygium with the tergal lobes rounded, unusually short, the breadth across the base exceeding the length; surface with numerous short erect setulæ. Outer dististyle truncate at tip, the greatest width just beyond the base, equalling about two-thirds the length. Inner dististyle enlarged at apex, the outer end irregularly trilobed, the outer lobe darkened, with numerous setigerous punctures bearing short erect setæ, the lower apical lobes paler. Eighth sternite bilobed, the lobes provided with long yellow setæ.

Hab. Malaya.

Holotype, 3, Cameron Highlands, Pahang, altitude 4800 feet, July 1948 (N. L. H. Krauss).

Despite the loss of the antennæ I am referring this fly to the brobdignagius group without question. It is distinguished from all other species in Eastern Asia by the whitened stigma of the wings, as well as by the structure of the hypopygium, especially the ninth tergite, where the lobes are unusually small and rounded at the tips. The only other species known to me having the stigma white is Ctenacroscelis Præpotens (Wiedemann), still known only from Java, which differs in all details of coloration and structure of the male hypopygium.

Ctenacroscelis bitruncatus, sp. n.

Belongs to the *umbrinus* group, allied to *ochripes*; fiagellar segments only moderately dilated, the depth only about two-thirds the length, the apical necks very short; wings with cell M_4 short and broad, m-cu only a little

shorter than the distal section of vein Cu_1 ; male hypopygium with the lateral lobes of tergite subtruncate, the outer ends slightly dilated; apex of inner dististyle squarely truncate.

Male.—Length about 21-22 mm.; wing 24-26 mm. Female.—Length about 22-24 mm.; wing 22-23 mm.

Frontal prolongation of head brownish grey; nasus conspicuous; palpi brown, the terminal segment brownish black. Antennæ brown, the pedicel more yellowed; basal two flagellar segments subcylindrical, the succeeding ones conspicuously dilated on lower face, the extreme (at flagellar segment five or six) with the segment about two-thirds as deep as long, with a very short apical neck; terminal segment about one-fourth longer than the penultimate; flagellar verticils conspicuous. In ochripes, the intermediate flagellar segments are greatly expanded, the depth exceeding the length and with a distinct apical neck that is nearly one-half as long as the enlarged base. Head brown, the orbits narrowly but conspicuously yellow.

Pronotum yellow, the central part of the elevated scutum brown. Mesonotal præscutum with the groundcolour obscure buffy brown, the humeral region and broad lateral borders dark brown, the disk with four grevish brown stripes that are narrowly and vaguely bordered by brown, the median ground vitta very narrow; scutum vellow medially, each lobe with two grey areas that are narrowly bordered by brown, the areas confluent; scutellum and postnotum brownish grey, more or less patterned. parascutella pale; mediotergite more or less variegated with darker. Dark pleural stripe narrowed posteriorly. passing above the halteres. Halteres dark brown, the base of stem narrowly yellow. Legs with the blackened femoral tips broad, remainder of legs yellow; claws bidentate. Wings brownish yellow, darker brown bevond cord and in costal field; stigma pale brown; a conspicuous brown seam over m-cu, widened on posterior end; obliterative band at cord conspicuous; pale seams along outer veins, in the outer end of cell 1st A relatively conspicuous; veins brown. Venation: Cell 1st M, larger than in ochripes and differently formed; M_{2+4} subequal to or longer than the basal section of M_3 , with m-cu at or before midlength; cell M_A short and broad, with m-cu only a little less than the distal section of vein Cu_1 . The right wing of the allotype has a strong

spur from m-cu jutting into cell M_4 .

Abdominal tergites brownish black, the lateral margins broadly grey, the posterior borders very narrowly of the same colour; basal sternite more yellowed; hypopygium relatively small, darkened, the styli yellow. In the female, sternites more extensively pale. Male hypopygium with the tergite subquadrate in outline, the caudal margin with a deep U-shaped notch, the lateral lobes broad, subtruncate, the outer lateral angle produced slightly laterad; lobes with sparse setæ. Outer dististyle broad, rounded at tip, about one-half longer than wide. Inner dististyle a simple strongly curved flattened blade, the apex squarely truncate.

Hab. South India.

Holotype, \Im , Singara, Nilgiri Hills, altitude 3400 feet, October 1948 (*P. Susai Nathan*). Allotopotype, \updownarrow . Paratopotypes, 1 \Im , with the type; 1 \updownarrow , September 1948.

This fly is quite distinct from Ctenacroscelis ochripes (Brunetti), still known definitely only from Ceylon. The South Indian specimen of ochripes mentioned by Brunetti was later tentatively placed by Edwards with C. infindens (Walker), from Celebes and eastward. All of these species differ among themselves in the structure of the antennæ and male hypopygium, especially the tergite and inner dististyle.

Tipula (Formotipula) decurvans, sp. n.

General coloration velvety black, abdominal segments two to four reddish orange, restrictedly patterned on posterior lateral portions with black; wings uniformly grey, the stigma darker; Rs short, only about one-half longer than the strongly elevated R_{2+3} ; male hypopygium with the tergite narrowed caudad into a slender median beak, the apex microscopically notched to form two divergent points.

Male.—Length about 10 mm.; wing 11 mm.; antenna about 3.5 mm.

Frontal prolongation of head black, nasus and palpi similarly blackened. Antennæ black, the apex of the pedicel faintly reddened; flagellar segments only weakly incised. Head velvety black.

Thorax almost uniformly velvety black, very restrictedly variegated with more brownish grey pruincse

areas, including a small oval patch near the sides of præscutum behind the pseudosutural foveæ, and others on the scutellum, anepisternum and anapleurotergite. Halteres black. Legs brownish black throughout. Wings with a greyish suffusion, the extreme base more blackened; stigma oval, medium brown; veins brown. Venation: Rs shorter than in friedrichi, only about one-half longer than the strongly elevated R_{2+3} ; vein R_3 gently arcuate, cell R_2 at margin only about two-thirds as extensive as cell R_3 ; cell 1st M_2 small, pentagonal, m much shorter than the other elements; cell 2nd A shorter than in friedrichi.

First abdominal segment black, narrowly reddened medially; segments two to four, inclusive, reddish orange, the posterior lateral borders of the tergites and narrower similar areas on the ternites blackened; segments five to nine uniformly black; abdomen conspicuously hairy, the second tergite with two transverse groups of erect black setæ, the central portion of the sclerite glabrous. Male hypopygium with the ninth tergite strongly narrowed caudally into a slender, more or less decurved median beaklike point, its apex with a small V-shaped notch to form two divergent points. Basistyle produced caudad into a conspicuous obtuse lobe, the obliquely flattened inner or mesal face with abundant short setæ.

Hab. Tonkin.

Holotype, 3, Mountains at Chapa, altitude 4800 feet, August 15, 1934 (E. R. Tinkham); purchased from Tinkham.

Closest to Tipula (Formotipula) friedrichi Alexander, of the Szechwan-Tibet border, being distinguished by the uniformly grey wings, with the venational details distinct. The structure of the male hypopygium, particularly the tergite and basistyle, are likewise distinct.

Limonia (Pseudoglochina) biluteola, sp. n.

Size relatively large (wing, female, 7 mm.); mesonotum chiefly medium brown, the pleura and cephalic end of præscutum whitish yellow; tibia snowy white with two narrow dark brown rings; wings brownish grey, the prearcular and costal fields more saturated; stigma large, oval, dark brown, preceded and followed by extensive pale yellow areas; Sc long, Sc_1 ending opposite fork of the arcuated Rs; cell 2nd M_2 deep, about three times its

petiole; cell 2nd A unusually large and broad, the outer half of vein 2nd A nearly straight.

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

Rostrum whitened, the apex infuscated; palpi brownish black. Antennæ with scape and pedicel brown; flagellum broken. Front and anterior vertex yellowish white, the posterior part of head fulyous.

Pronotum and the cephalic end of the foreward projecting præscutum whitish vellow, the remainder of mesonotum medium brown, with a central pale stripe, more obscured on anterior end of præscutum, becoming more evident and clearly delimited on the scutellum, the postnotum more unicolorous. Pleura chiefly covered by a broad whitish yellow longtitudinal stripe, including all the sides excepting the dorsal half of the pleurotergite and the ventral part of the sternite which are dark brown. Halteres elongate, dark brown. Legs with the fore coxæ and trochanters infuscated, the remaining ones whitish yellow; femora yellow, the tips broadly dark brown or brownish black: remainder of legs snowy white, the tibiæ with two narrow dark brown rings, the outer one a trifle broader; ground space between the rings nearly four times as extensive as the outer one. Wings brownish grey, the prearcular and costal fields more saturated; stigma large, oval, dark brown, preceded and followed by extensive pale yellow areas; veins brown, more brownish vellow in the costal areas. Venation: Sc long, Sc_1 ending opposite fork of Rs, Sc, far from its tip; Rs only a trifle longer than the similarly arcuated basal section of R_{4+5} ; cell 2nd M_2 deep, about three times its petiole; m-cu close to fork of M; analyteins convergent near base, cell 2nd A unusually large and broad, vein 2nd A nearly straight on outer half.

Abdominal tergites chiefly dark brown, more intensely so on lateral and caudal parts of segments, the sublateral and central areas vaguely more yellowed; termites chiefly light yellow.

Hab. Malaya.

Holotype, \circlearrowleft , Cameron Highlands, Pahang, altitude 4800 feet, July 1948 (N. L. H. Krauss).

Among the described regional species, the present fly is closest to *Limonia* (*Pseudoglochina*) riukiuensis Alexander, which has the venation, including the large cell

2nd A, much the same, differing in the coloration of the body and wings and in the details of venation.

Paradelphomyia (Oxyrhiza) pleurolinea, sp. n.

Mesonotum dark chestnut-brown; pleura with a broad dark brown longitudinal stripe, sternopleurite paler brown, the two areas enclosing a broad obscure whitish stripe; wings with a strong brownish tinge, unpatterned; cell M_1 present; abdomen dark brown; male hypopygium with the outer dististyle expanded outwardly, broadest opposite the stout ventral spine.

Male.—Length about 4.5 mm.; wing 5 mm.

Rostrum and palpi black. Antennæ with scape and the enlarged pedicel brownish black; flagellum broken. Head brownish black; anterior vertex broad.

Pronotum brown, the pretergal region more testaceous. Mesonotum dark chestnut-brown, the central part of præscutum still darker, the surface sparsely pruinose. more heavily so on the postnotum. Pleura with a broad dark brown longitudinal stripe extending from the cervical region to the postnotum; ventral sternopleurite paler brown; between these two darkened stripes a broad obscure whitish line extends from and includes the fore coxæ, reaching the base of abdomen. Halteres elongate, dusky, the base of stem paler. Legs with the coxæ and trochanters vellow; remainder of legs broken. Wings with a strong brownish tinge, the oval stigma vaguely darker brown; wing base a triffe more yellowed; veins and macrotrichia dark brown. Wings broadest opposite midlength; sparse macrotrichia in outer cells, from R_1 (stigma) to M_3 inclusive. Venation: Sc_1 ending nearly opposite the fork of Rs, Sc, some distance from its tip, Sc_1 alone about three-fourths R_{2+3+4} ; Rs elongate, nearly two and one-half times R_{2+3+4} , the latter nearly as long as vein R_3 ; vein R_2 very faint, evidently at or close to the fork of R_{2+3+4} ; veins R_3 and R_4 divergent so cell R_3 at margin is considerably wider than cell R_2 ; cell M_1 more than one-half its petiole; m-cu at or beyond midlength of cell 1st M_{\circ} .

Abdomen dark brown. Male hypopygium with the outer dististyle expanded outwardly, broadest opposite the stout ventral spine, the two apical spines unequal, the

outer one smaller. Inner dististyle very broad at near midlength. No ventral fork of the ædeagus can be seen in the unique slide available.

Hab. Malaya.

Holotype, 3, Cameron Highlands, Pahang, altitude 4800 feet, July 1948 (N. L. H. Krauss).

Among the rather numerous species of the genus now known from southern and eastern Asia, this fly comes closest to *Paradelphomyia* (Oxyrhiza) flavescens (Brunetti) (furcata Brunetti), differing in the coloration and venation and in the structure of the male hypopygium.

Paradelphomyia (Oxyrhiza) perumbrosa, sp. n.

Allied to umbrosa; wings broader in male, widest just beyond the termination of vein $2nd\ A$; disk of wing infuscated, with pale and darker brown clouds; male hypopygium with the spines of the ventral fork of the ædeagus widely separated at base, long and very slender, the tips acute.

Wings much broader in male than in female, widest

Male.—Length about 4.5 mm.; wing 5 mm. Female.—Length about 4.5 mm.; wing 4.6 mm.

opposite cell 1st A just beyond the termination of vein 2nd A. In the female, wings widest at midlength or at cell Cu. Wings with much of the disk infuscated, particularly in the basal two-thirds where the pale ground-colour is restricted to major areas along the costal and anal borders; a series of about six costal darkenings, the first at arculus, second at origin of Rs, third over Sc_2 , extending virtually to tip of vein Sc_1 ; beyond cord the pale ground areas are subequal in extent to the darkenings. Macrotrichia of cells more abundant in female than in male, in the latter being virtually restricted to a few scattered trichia in outer ends of cells R_4 and R_5 . Venation: Sc_1 unusually short, only about two-thirds r-m, a

Male hypopygium with the outer dististyle much expanded outwardly, the usual ventral spine replaced by a

vein M₂. Knobs of halteres weakly infuscated.

triffe longer in the male; vein R_2 from one-third to one-half its own length beyond the fork of R_{2+3+4} ; m-cu nearly opposite one-third to two-fifths the length of cell 1st M_2 , the second section of M_{3+4} varying from about one and one-half to nearly two times the basal section of

darkened lobe, not spinous; apical spines unequal, the outer one smaller. Ventral fork of ædeagus with the spines widely separated at base, long and very slender, the tips acute.

Hab. Malaya.

Holotype, \Im on microscope slide, Cameron Highlands, Pahang, altitude 4800 feet, July 1948 (N. L. H. Krauss). Allotopotype, \Im .

Generally similar to *Paradelphomyia* (Oxyhiza) umbrosa (Edwards), described from Kedah, Malaya, differing in details of wing-pattern and venation.

Austrolimnophila Alexander.

Subgenus Limnophilaspis, subgen. n.

Rostrum short. Anterior vertex behind the antennal bases produced into a conspicuous median tubercle. Antennæ short, 16-segmented, with no indication of a fusion of the basal flagellar segments. Pronotum very reduced. Tuberculate pits and pseudosutural foveæ lacking. Legs with basitarsi very long, exceeding the tibiæ in length and much longer than the succeeding tarsal segments combined; femora and tibiæ with abundant elongate scales scattered among the normal setæ; tibial spurs lacking. Wings with anterior arculus lacking; cell M_1 present; m-cu at near midlength of cell 1st M_2 . Male hypopygium with the outer dististyle hairy, simple, pointed at tip. Ædeagus short.

Type of subgenus.—Austrolimnophila (Limnophilaspis) ecalcarata (Edwards): Oriental Region—Borneo.

Austrolimnophila (Limnophilaspis) brevisetosa, sp. n., of Malaya, likewise belongs here. The subgenus is separated from the Heterolimnophila Alexander, the other subgenus of Austrolimnophila that lacks tibial spurs, by the scaly legs, a character not previously noted in the tribe Hexatomini though not uncommon in the Eriopterini.

Austrolimnophila (Limnophilaspis) brevisetosa, sp. n.

General coloration of notum reddish brown; pleura yellow, with a narrow dorsal longitudinal brown stripe; halteres and legs dark; wings with a strong brownish tinge; trichia of wing veins relatively short; cell \boldsymbol{M}_1 deep; male hypopygium with each gonapophysis terminating in three acute spinous points.

Male.—Length about 6 mm.; wing 6.9 mm.

Rostrum obscure brownish yellow; palpi short, black. Antennæ with scape and pedicel black; flagellum broken. Head grey, the occipital region more reddened.

Pretergites obscure yellow. Mesonotum chiefly reddish brown, unpatterned, scutellum a little darker; postnotum brownish yellow, the mediotergite sparsely pruinose. Ventral pleurites light yellow, the dorsal sclerites more obscure, with a narrow dark brown longtitudinal stripe extending from the cervical region to the posterior edge of the pteropleurite. Halteres long, blackened. with the coxe and trochanters vellow: remainder of legs brownish black, the dark colour produced chiefly by the vestiture. Wings with a strong brownish tinge, the stigma very narrow, scarcely evident; pale longtitudinal streaks in cells M and 1st M_2 barely entering cell M_3 . and in cell 1st A behind the vein; veins brown. Macrotrichia of veins shorter and less conspicuous than in ecalcarata. Venation: $Sc \log_{1} Sc_{1}$ ending about opposite midlength of R_{2+3+4} , Sc_2 near its tip; R_{1+2} long, exceeding R_{2+3+4} ; inner end of cell 1st M_2 lying basad of cells R_4 or R_5 ; cell M_1 elongate, about one-half longer than its petiole; m-cu at near one-third the length of cell 1st M, and opposite r-m; m a little longer than the basal section of M_3 ; vein and cell 2nd A shorter than in ecalcarata.

Abdominal tergites dark brown, sternites yellow; subterminal segments slightly darker; hypopygium yellow. Male hypopygium with the outer dististyle setiferous, the apex bent at a right-angle into a black spine; inner dististyle longer, arcuated, the tip obtuse. Gonapophysis short and stout, terminating in three acute spinous points.

Hab. Malaya.

Holotype, 3, Fraser's Hill, Pahang, October 1948 (N. L. H. Krauss).

Although close to Austrolimnophila (Limnophilaspis) ecalcarata (Edwards), the present fly is evidently distinct in the shorter wings, shorter trichia of the wing veins, and in the details of structure of the male hypopygium. I have a paratype of ecalcarata for comparison.

Hexatoma (Eriocera) quadriaurantia, sp. n.

General coloration of thorax and abdomen orange; head dark brown, with two vertical tubercles that are

placed on the midline one immediately behind the other; præscutum with four orange stripes, the ground light grey; femora brownish yellow, the tips very narrowly blackened; wings with a deep fulvous brown tinge, unpatterned; R_{1+2} long, nearly twice R_{2+3} ; cell M_1 present, subequal to its petiole; outer two abdominal segments slightly darker brown.

Male.—Length about 18–20 mm.; wing 16–19 mm.; antenna about 3–3·1 mm.

Rostrum short, yellow; palpi dark brown. Antennæ (male) 8-segmented; scape brown, sparsely pruinose; pedicel and first flagellar segment light brown, the outer flagellar segments somewhat darker; flagellar segments decreasing in length outwardly, the last a trifle exceeding the penultimate. Head behind dark grey, cinnamon-brown in front; two vertical tubercles, placed one behind the other on the midline, the small anterior one cinnamon, the longer upper one grey.

Pronotum reddish brown. Mesonotal præscutum with the ground light grev, with four conspicuous orange stripes, the intermediate pair separated by a capillary dark brown line that is most intense in front, barely apparent behind; stripes narrowly bordered by pale brown; lateral præscutal borders more reddish grey; scutum light brown, the centres of the lobes orange; scutellum pale brown, sparsely pruinose; mediotergite brownish orange. Pleura and pleurotergite brownish orange, sparsely pruinose; dorsopleural membrane pruinose. Halteres short, black. Legs with the coxæ reddish, sparsely pruinose, the fore pair more heavily so; trochanters yellow; remainder of legs obscure yellow or brownish vellow, the femoral tips very narrowly to scarcely blackened. Wings with a deep fulvous brown tinge, the prearcular and costal fields somewhat darker; veins vellow. Macrotrichia on outer veins, including R_{1+2} to M_3 , very sparse and scattered on the medial veins. Venation: Sc_1 ending nearly opposite R_2 , Sc_2 about opposite fork of R_{2+3+4} ; R_{1+2} long, nearly twice R_{2+3} ; R_{2+3+4} about one-third longer than R_{2+3} or the basal section of R_5 ; cell M_1 present, subequal to its petiole; M_{1+2} nearly in longitudinal alignment with M_2 ; inner end of cell 1st M_2 truncate; m-cu from one and one-half to nearly two times the distal section of vein Cu_1 , placed at near midlength of cell 1st M_2 .

Abdomen orange, without polished rings; eighth and ninth segments slightly darker brown.

Hab. South India.

Holotype, &, Kollar, Nilgiri Hills, altitude 1000 feet, July 1947 (P. Susai Nathan). Paratopotypes, 1 &, with the type; 1 &, altitude 1250 feet, October 25, 1947 (P. Susai Nathan).

In its generally orange colour, the present fly agrees most nearly with *Hexatoma* (*Eriocera*) aurantia (Brunetti), of the Eastern Himalayas. This is a much smaller fly with the whole body deep orange, with the stem of the halteres yellow, only the knob being blackened.

Hexatoma (Eriocera) flavicosta (Edwards).

Eriocera flavicosta Edwards, Ann. & Mag. Nat. Hist. (9) viii. p. 85, pl. 10, fig. 4, 1921.

The type, a female, was from the Nilgiri Hills, altitude 3000 feet, taken August 21, 1888, by Sir George F. Hampson.

Allotype, ♂, Cherangoda, Nilgiri Hills, altitude 3700 feet, May 1949 (P. Susai Nathan).

Male.—Length about 22 mm.; wing 15 mm.; antenna about 3.6 mm.

Characters much as in the female, differing chiefly in minor details of coloration, and in the sexual characters. Antennæ short, 8-segmented (10 in female); scape and pedicel brownish black, sparsely pruinose; flagellum brown. Mesonotum of both sexes distinctly patterned, the præscutum with four brownish grey stripes that are bordered by dark brown, the median dark stripe broad and conspicuous. Abdominal segments four and five yellow basally, the subterminal segments intensely blackened: hypopygium obscure orange.

A female from the Mango Range, Nilgiri Hills, altitude 3800 feet, May 1949 (*P. Susai Nathan*), is smaller than the type of this sex and differs further in having the yellow abdominal pattern on segments three and four, the genital shield orange, the remainder of abdomen black.

Hexatoma (Eriocera) politovertex, sp. n.

General coloration of mesothorax black, grey pruinose, the præscutum without evident stripes; vertex grey, the præscutum without evident stripes; vertex grey, the tubercle appearing as a low rounded highly polished black knob; legs dark brown; wings with a brownish tinge, stigma lacking; macrotrichia on distal ends of outer radial veins; R_{2+3+4} nearly three times R_{2+3} ; R_{1+2} and R_2 subequal; R_{2+3} about one-half longer than R_2 ; abdominal tergites brownish black, without shiny rings; valves of ovipositor excessively long and slender.

Female.—Length about 10 mm.; wing 8.8 mm.

Rostrum exceedingly reduced, the end virtually flush with the front level of the eyes; palpi brownish black. Antennæ (female) 8-segmented; scape and pedicel light brown, flagellum darker; flagellar segments gradually decreasing in length, the first more dilated on proximal portion; verticils scattered over the segments. Head above grey; vertical tubercle appearing as a low rounded highly polished black knob.

Pronotum black, grey pruinose. Mesonotum uniformly black, grey pruinose, the præscutum without stripes: præscutal setæ erect and conspicuous. Pleura heavily grey pruinose; dorsopleural membrane dusky. Halteres with stem vellowish brown, knob blackened. Legs with the coxe grev pruinose; trochanters dark brown; remainder of legs dark brown, the femoral bases restrictedly paler. Wings with a brownish tinge, the costal region not or scarcely darker; stigma lacking; veins brown. Macrotrichia on outer ends of veins R_3 , R_4 and R_5 , lacking on the medial veins. Venation: h very oblique; Sc_1 ending about opposite r-m; $Rs \log R_{2+3+4}$ nearly three times R_{2+3} ; R_{1+2} not upturned, subequal to R_2 ; R_{2+3} about one-half longer than R_2 ; cell 1st M_2 subequal to outer section of vein M_{1+2} ; cell M_1 lacking; m-cumore than one-half its length beyond the fork of M. subequal to the distal section of Cu_1 : vein 2nd A sinuous on outer half.

Abdominal tergites brownish black, without shiny rings; basal sternites more obscure brownish yellow, the outer ones darkened. Ovipositor with valves exceedingly long and slender, especially the cerci which are virtually straight; genital shield brownish yellow, sparsely pruinose.

Hab. South India.

Holotype, \bigcirc , Mango Range, Nilgiri Hills, altitude 3800 feet, May 1949 (*P. Susai Nathan*).

By Edward's key to the Old World species of *Eriocera* (Ann. & Mag. Nat. Hist. (9), viii, pp. 70–78, 1921), the present fly runs to couplet 29, disagreeing with all species beyond this point by the lack of black marginal sports on the præscutum, in conjunction with the loss of cell M_1 of the wings. By the use of this key the fly runs with difficulty to Hexatoma~(Eriocera)~rufiventris~(Brunetti), to which it is only distantly related. The peculiar vertical tubercle appears to be somewhat as in H.~(E.)~pachyrhinoides~(Edwards), of Ceylon, an otherwise entirely distict fly.

Teucholabis (Teucholabis) progne, sp. n.

Mesonotum chiefly polished black, the humeral region of the præscutum extensively yellow; vertex polished brown; knob of halteres light yellow; femora yellow; wings broad, pale yellow, virtually unpatterned; stigma oval, brown; abdominal segments bicolored yellow and dark brown; male hypopygium with the outer dististyle an elongate flattened blade, the inner style much larger.

Male.—Length about 5.5–6 mm.; wing 5.5–6 mm.

Rostrum yellow, relatively long, nearly equal to remainder of head; palpi black. Antennæ with scape and pedicel yellow; flagellum broken. Head with vertex polished brown, the remainder of head more reddened.

Pronotum vellow. Mesonotum chiefly polished black, the humeral region of præscutum extensively obscure vellow: a spot before suture, median region of scutum, posterior callosities, and the scutellum lighter yellow; postnotum black. Dorsal pleurites, including pleurotergite, black, the ventral parts abruptly yellow, with indications of a more silvery stripe adjoining the black. Halteres with stem blackened, knob light vellow. Legs with all coxæ and trochanters yellow; femora yellow; remainder of legs broken. Wings broad, pale vellow, virtually unpatterned: stigma oval, brown: a vague darkened seam on anterior cord, best indicated by a deepening in colour of the veins. In cases, a vague dusky cloud before midlength of cell Cu: veins vellow, the cord darkened. Venation: Sc relatively long, Sc, ending opposite or just before midlength of Rs, Sc2 removed from the tip, Sc, alone subequal to R_2 ; veins R_4 and R_5 approximately parallel to one another for most of their length; cell 1st M_2 longer than vein \mathbf{M}_4 ; m–cu about one-third its length beyond fork of M.

Abdomen beyond the basal segments bicoloured, the segments yellow with their posterior margins broadly dark brown, the amount of dark colour increasing on the outer segments; hypopygium with the styli brownish black, the eighth and ninth segments otherwise yellow. Male hypopygium unusually simple. Basistyle unarmed. Two dististyles, the outer an elongate flattened blade; inner style much larger, appearing as a flattened blade, the inner apical angle produced laterad into a blackened spine; outer lateral angle of style with two strong setæ of unequal length. Ædeagus stout, without blackened or spinous points, weakly bilobed at tip, the surface with numerous scattered strong setæ. No modified sternal pockets on male abdomen.

Hab. Malaya.

Holotype, 3, Cameron Highlands, Pahang, altitude 4800 feet, July 1948 (N. L. H. Krauss). Paratopotypes,

 2 33.

The other regional species that have the wings unpatterned or virtually so include Teucholabis (Teucholabis) shanensis Alexander and T. (T.) solivaga Alexander, which differ from the present fly in the details of coloration and venation, and in the structure of the male hypopygium, where this is known.

Gonomyia (Idiocera) recens, sp. n.

Mesonotum dark grey, the præscutum with four narrow brown stripes; pleura reddish yellow, striped longitudinally with brown; femora obscure yellow, the tips not or scarcely darkened; wings whitish subhyaline, restrictedly patterned with darker; Sc short, Sc_1 ending opposite origin of Rs or virtually so; male hypopygium with the apical lobe of basistyle long and slender; three dististyles, the outer one forked near tip; apex of ædeagus obtuse.

Male.—Length about 6 mm.; wing 6 mm. Female.—Length about 7 mm.; wing 6.6 mm.

Rostrum and palpi black. Antennæ with scape dark, sparsely pruinose; flagellum obscure brownish yellow; in the female of what seems to be this same species the

flagellum is brownish black. Head dark grey, the posterior genæ more reddened.

Pronotum dark brownish grey; pretergites obscure vellow. Mesonotum dark grev, the præscutum with four narrow brown stripes, the lateral margins more reddened: scutum brownish grev, the lobes infuscated. the central part with a narrow dark brown line that is narrowed to a point at the scutellum, the latter brownish grey; postnotum brownish grey. Pleura reddish vellow, with a brown longitudinal stripe extending from the sides of the pronotum to the postnotum, passing above the root of the halteres. Halteres brownish black, the extreme base of stem reddened. Legs with the coxæ pale vellow, the fore pair a trifle darker; trochanters yellow; remainder of legs obscure yellow, the femora not or scarcely darker apically; tips of tibiæ narrowly infuscated; tarsi outwardly passing into black. Wings whitish subhyaline, restrictedly patterned with darker; stigma oval, dark brown; very vague darkenings at ends of veins R_4 and R_5 ; veins brown, paler at the base. Venation: Sc short, Sc_1 ending opposite or just beyond the origin of Rs, Sc, very far removed from its tip so Sc_1 alone is only a trifle shorter than Rs; distance on Cbetween veins R_{1+2} and R_3 about one-half r-m; tip of vein R_4 upcurved, widening cell R_4 at margin, it being a trifle more extensive than cell R_3 ; m-cu a little less than twice its own length before the fork of M.

Abdomen dark brown, narrowly brownish black on sides; hypopygium slightly brightened. Male hypopygium with the apical outer lobe of basistyle long and relatively slender, extending to the fork of the outer dististyle; inner lobe very small. Three dististyles, the outer forked near tip, its inner arm a short oval lobe, the outer one a long slender blade. Intermediate style a long simple rod, the tip acute. Inner dististyle bent at base, gradually narrowed outwardly, the blackened tip terminating in an acute spinous point. Apex of ædeagus without points or spines, obtuse.

Hab. South India.

Holotype, \Im , Singara, Nilgiri Hills, altitude 3400 feet, May 11, 1948 (*P. Susai Nathan*). Allotopotype, \Im , October 1948.

When compared with the related regional species, the present fly is closest to Gonomyia (Idiocera) hainanensis

Alexander, differing in coloration and venation, as the short vein Sc and very long vein Sc_1 .

Gonomyia (Gonomyia) resoluta, sp. n.

Mesonotum brownish yellow, the præscutum with three more or less confluent dark brown stripes; scutellum yellow, with a small dark spot at base; pleura virtually unpatterned; wings weakly suffused with greyish, the stigma pale brown; Sc long, Sc_1 ending nearly opposite midlength of the long Rs; cell R_3 unusually large, vein R_3 being longer than R_{2+3+4} and less oblique in position than usual in the subgenus; cell 1st M_2 small.

Female.—Length about 5 mm.; wing 5.2 mm.

Head missing.—Pronotal scutum obscure yellow, the scutellum and pretergites more whitened. Mesonotal præscutum with the ground brownish vellow, with three dark brown stripes that are confluent behind or virtually so, darkening the disk; scutum chiefly dark brown. the posterior lateral angles obscure yellow; scutellum vellow, with a small dark central spot at base; mediotergite infuscated and pruinose on central portions, the lateral borders, with the pleurotergite, light yellow. Pleura chiefly pale yellow, the mesepisternum vaguely more darkened vet virtually unpatterned. Halteres pale. knobs weakly darkened. Legs with the coxe yellow, vaguely infuscated, the anterior faces of the fore coxæ more evidently so; trochanters yellow; remainder of legs broken. Wings weakly suffused with greyish, the stigma pale brown, very diffuse; veins brown, those at base a little paler. Venation: $Sc \log_{1} Sc_{1}$ ending nearly opposite midlength of the long Rs, Sc₂ a short distance removed from the tip, Sc_1 alone shorter than m; cell R_3 unusually large, vein R_3 longer than R_{2+3+4} and less oblique in position than in affinis and allies; distance on costa between R_{1+2} and R_3 nearly as long as vein R_3 alone; vein R_4 long, more than twice R_3 ; cell 1st M_2 small, less than vein M_4 ; m-cu more than one-half its length beyond fork of M; anterior arculus lacking.

Abdominal tergites dark brown, sternites paler. Ovipositor with the valves very long, the cerci unusually slender.

Hab. Malaya.

Holotype, \bigcirc , Cameron Highlands, Pahang, altitude 4800 feet, July 1948 (N. L. H. Krauss).

The most similar regional species include Gonomyia (Gonomyia) affinis Brunetti and G. (G.) bryanti Alexander, which differ evidently in the venation, as compared above in the description.

Gonomyia (Lipophleps) ambiens, sp. n.

Mesonotum dark brown, virtually unpatterned, including the scutellum; pleura reddish brown, with a broad yellowish white longitudinal stripe that is narrowly bordered both above and below by darker brown; wings with an unusually strong brownish tinge, vaguely patterned with more greyish spots and streaks, particularly at near midlength; vein Sc very short, Sc_1 ending a distance before origin of Rs that is greater than the total length of this latter vein; abdominal sternites brown, the caudal margins ringed with yellow.

Female.—Length about 5 mm.; wing 4.3 mm.

Rostrum dark brown; palpi black. Antennæ broken. Head light yellow.

Pronotum and pretergites light vellow. Mesonotum almost uniformly dark brown, including the scutellum, the surface vaguely pruinose, more heavily so on the postnotum. Pleura dorsally dark reddish brown, the dorsopleural membrane vellow; a broad vellowish white longitudinal stripe extending from and including the fore coxæ, reaching the abdomen, passing beneath the halteres. the stripe bordered narrowly above and more broadly beneath by darker brown. Halteres with base of stem darkened, the outer part broken. Legs with the fore coxæ whitened, as described; middle and hind coxæ more vellowed, their bases narrowly infuscated: brownish vellow, a trifle darkened outwardly but not forming an evident ring; remainder of legs broken. Wings with an unusually strong brownish tinge, with vague more grevish spots and streaks, most conspicuous at near midlength of wing; costal border narrowly pale, the colour continued distad to beyond the wing tip. before and beyond the oval brown stigma more extensive and conspicuous; veins brown, yellow in the pale costal Costal fringe long and conspicuous. Venation: Sc very short, Sc_1 ending a distance before origin of Rsthat is greater than the length of the latter; Rs arcuated, its anterior branch generally straight, a trifle sinuous beneath the stigma; cell R_A at margin very wide, about one and three-quarters times that of cell R_2 ; m-cu at or just before the fork of M.

Abdominal tergites dark brown, virtually unicolorous, the extremely narrow yellow lateral and posterior margins of the segments barely evident; sternites brown, the caudal margins more extensively yellow.

Hab. South India.

Holotype, ♂, Singara, Nilgiri Hills, altitude 3400 feet, May 11, 1948 (P. Susai Nathan).

The most similar described species is Gonomyia (Lipophleps) nebulosa (de Meijere), of western Java, which differs in all details of coloration of the body and wings, particularly the pattern of the wings, mesonotum and pleura, and in the venation.

Gonomyia (Lipophleps) tetrastyla, sp. n.

Mesonotum brownish grey, the lateral borders of præscutum narrowly yellow; caudal border of scutellum yellow; pleura chiefly darkened, with a broad whitish longitudinal stripe; halteres yellow; legs brownish yellow, the tarsi darker; wings with a greyish tinge, the stigma scarcely indicated; abdomen conspicuously banded with dark brown and yellow; male hypopygium with three dististyles, all terminal in position, the intermediate one profoundly divided to give the appearance of four styles on either side; phallosome without blackened points.

Male.—Length about 3·3–3·5 mm.; wing 4·1–4·6 mm. Rostrum and palpi black. Antennæ with basal three segments yellow, the remainder of flagellum black; flagellar segments long-cylindrical, with very long verticils. Head light yellow.

Pronotum yellow, narrowly darkened medially; pretergites yellowish white. Mesonotum brownish grey, the lateral præscutal borders narrowly yellow; posterior callosities of scutum and the caudal border of scutellum yellow; mediotergite with the antero-lateral portions yellow, the remainder darkened pruinose. Pleura chiefly darkened, with a broad whitish longitudinal stripe extending from and including the fore coxæ, passing beneath the halteres to the abdomen, bordered on either side by a narrow darker brown line; dorsal pleurotergite and wingroot yellow. Halteres yellow. Legs with the middle

coxæ darkened basally, the remainder testaceous; trochanters yellow; femora and tibiæ brownish yellow; tarsi passing into brownish black. Wings with a greyish tinge, the prearcular and costal fields light yellow; stigma very pale brown, scarcely indicated; veins pale brown, yellow in the more proximal parts of the costal field. Venation: Sc_1 ending a short distance before origin of Rs, Sc_2 not far from its tip; Rs relatively long, strongly arcuated at origin; basal section of R_5 transverse, elongate, exceeding m; anterior branch of Rs very gently sinuous; m-cu at or close to fork of M; cell 2nd A broad, the vein gently sinuous.

Abdomen conspicuously banded dark brown and yellow, the tergites dark brown, their posterior borders broadly light yellow, the lateral margins very narrowly so; sternites with the pattern generally the same but more obscured, the yellow more reduced; hypopygium dark coloured. Male hypopygium with three dististyles, all terminal in position, the intermediate one profoundly divided to give the appearance of four styles on either side. Outer dististyle a long simple rod, slightly dilated beyond midlength, the tip narrowed into a long straight spine; intermediate style with its common base very short, the outer arm a long simple pale rod, the inner arm about two-thirds as long, at its tip strongly curved and narrowed into a black spine, the margin at point of curvature with a few strong setæ; inner style a cylindrical pale rod, with scattered coarse setæ. Phallosome broadly depressed-flattened, without darkened points.

Hab. South India.

Holotype, る, Singara, Nilgiri Hills, altitude 3400 feet, June 1948 (P. Susai Nathan). Paratopotypes, 3 ょう.

The most similar regional species is *Gonomyia* (Lipophleps) flavomarginata Brunetti, which differs in coloration and venation and especially in the quite different male hypopygium.

Molophilus (Molophilus) affrictus, sp. n.

Belongs to the *gracilis* group and subgroup; allied to *costalis*; mesonotum reddish brown; wings with a weak greyish tinge, the prearcular field narrowly whitened; male hypopygium with the basistyle terminating in two unequal lobes; three dististyles, two of which appear as curved hooks, the third a nearly straight rod.

Male.—Length about 3.5 mm.; wing 3.8 mm.

Rostrum and palpi black. Antennæ with scape dark brown, pedicel reddish brown; flagellum broken. Head brownish grey, more yellowed behind.

Pronotum and the very broad lateral pretergites pure white, conspicuous. Mesonotum reddish brown, the posterior sclerites slightly pruinose; scutellum and adjoining regions concealed in mounting. Pleura pale brown, vaguely patterned with paler; ventral sternopleurite yellow. Halteres with stem yellow, knob blackened. Legs with coxæ and trochanters yellow; remainder of legs broken. Wings with a weak greyish tinge, the prearcular field narrowly whitened; veins pale brown, trichia darker. Venation: Petiole of cell M_3 relatively long, about three and one-half times m-cu; vein 2nd A gently sinuous, ending just beyond m-cu.

Abdomen dark brown, hyopoygium more brownish yellow. Male hypopygium with the dorsal lobe of basistyle small and slender, finger-like; ventral lobe a much larger pale club, the setæ at apex recurved, near base of lobe with a low lobule or flange. Three sclerotized appendages, all of which appear to represent separate dististyles, including a strong curved hook, its apex drawn out into a slender spine; a small curved hook from a more dilated base: and a longer nearly straight rod, the surface with seven or eight strong appressed spines. Ædeagus long and slender, pale. Phallosomic plate oval, apparently glabrous.

Hab. Malaya.

Holotype, 3, Cameron Highlands, Pahang, altitude 4800 feet, July 1948 (N. L. H. Krauss).

The superficially similar *Molophilus* (*Molophilus*) malayensis Edwards, likewise first described from Cameron's Highlands, differs conspicuously in the structure of the male hypopygium. I have a paratype for comparison with the present fly.

Molophilus (Molophilus) laxus, sp. n.

Belongs to the gracilis group; general coloration of mesonotum reddish brown, the præscutum narrowly darkened medially; antennæ (male) elongate; wings with ceil M_3 unusually short, less than its petiole; male hypopygium with the apical lobe of basistyle unusually long and slender; two simple dististyles, each terminating in a long black spine.

Male.—Length about 3.8 mm.; wing 4 mm.

Rostrum dark brown; palpi black. Antennæ with scape and pedicel testaceous; only a part of the third segment remains, brown, elongate; from this single segment it seems evident that the antenna is elongate. Head above testaceous; anterior vertex greatly reduced, the eyes large.

Mesonotum chiefly reddish brown, the central region of præscutum more pruinose, with a capillary darker brown median vitta; scutellum more testaceous; central region of scutum and scutellum narrowly blackened: postnotum slightly darkened, the central area sparsely pruinose. Pleura and pleurotergite chiefiy dark brown, variegated by paler areas, particularly on the sternopleurite and pteropleurite: a group of unusually long setæ on posterior part of pteropleurite beneath the wing root. Halteres infuscated, the base of stem yellow. Legs with coxæ and trochanters testaceous yellow, remainder of legs brown, the femora somewhat paler at bases. Wings with a greyish tinge, the prearcular and costal fields a triffe more vellowed; veins and macrotrichia brown. Venation: Cell M₃ unusually short, less than its petiole; vein 2nd A short but sinuous, ending just beyond the level of origin of Rs.

Abdomen dark brown; hyopygium yellow. Male hypopygium with the basistyle at apex produced into a long slender rod that is only a little shorter than the remainder of style, narrowed near base, thence gently dilated, the tip narrowed and glabrous; mesal face of style with two lobes, at apex with a small clavate pale lobe, more cephalad with a stouter club-shaped appendage. Two elongate dististyles, both simple, with the distal third narrowed into a blackened spine; inner style with a few miscroscopic serrulations before tip. Phallosomic plate oval, glabrous. Ædeagus elongate, slender.

Hab. South India.

Holotype, ♂, Singara, Nilgiri Hills, altitude 3400 feet, May 12, 1948 (P. Susai Nathan).

The present fly is quite distinct from other Indian species including Molophilus (Molophilus) inconspicusus Brunetti M. (M.) assamensis Brunetti, M. (M.) genitalis (Brunetti), M. (M.) kempi Alexander, and others. It is closest to species such as assamensis and kempi, differing in venstion and in all details of structure of the male hypopygium.