

**New or insufficiently known African Crane Flies. IV.
(Tipulidae: Diptera)**

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(With 59 figures)

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In the present article I am discussing numerous species from Nigeria, collected by John Thomas Medler and Mrs. Jane Ann Medler, in conjunction with their major project on the insect fauna of this country. As now proposed the list of insects will consist of five volumes that will consider the many thousands of species of Nigeria presently known, a considerable proportion of which were discovered by the Medlers. One further interesting species was taken by my friend and former student, Dr. Ashley B. Gurney, in Natal. I am deeply indebted to the collectors of these specimens, the types of all being in the Alexander Collection that is to be deposited in the Smithsonian Institution (United States National Museum), Washington.

Tipulinae

1. *Leptotarsus (Longurio) gurneyi* sp. n.

Size relatively large, wing of male about 13 mm.; antennae short, 11-segmented; mesonotal praescutum gray with two conspicuous black intermediate stripes, pleura pale gray; halteres long and slender, yellow, knob black; legs black, femora yellowed basally; wings narrow, especially on proximal half, weakly infuscated, the central region not or scarcely paler; three medial branches, cord long, pale, cell *2nd A* very long and narrow; abdomen dark brownish gray, basal segment and hypopygium more yellowed; inner dististyle of male hypopygium spinoid setae.

Male. Length, about 12 — 12.5 mm; wing 12.5 — 13 mm; abdomen alone 8 — 8.5 mm; antenna, about 1.8 mm. Frontal prolongation of head short, light yellowish brown; palpi short, light yellowish brown; palpi short, black. Antennae short, 11-

segmented, black scape pruinose; flagellar segments long-oval, progressively smaller outwardly, terminal segment slightly larger than the penultimate. Head light gray, vertex with conspicuous black setae.

Pronotum gray. Mesonotal praescutum gray with two conspicuous intermediate black stripes, the median ground line narrow, lateral stripes very small and inconspicuous, especially behind; pseudosutural foveae conspicuous, black; posterior sclerites of notum light gray. Pleura very pale gray, vaguely more darkened on anepisternum and ventral sternopleurite, dorsopleural region yellowed. Halteres long and slender, stem yellow, knob black. Legs with coxae light gray, posterior pair more yellowed; trochanters yellow; remainder of legs black, femora yellowed basally, narrowest on fore legs. Wings (Figs. 1, 2) narrow, especially on proximal half; weakly infuscated, cells *C* and *Sc* slightly darker; central region of wing not or scarcely paler, posterior prearcular field restrictedly yellowed; veins brownish black, yellowed in prearcular field. Sparse scattered black trichia in distal section of R_{4-5} . Venation: Three medial branches; anterior cord pale, very oblique, *Rs* angulated and slightly spurred at origin; cell *1st M*₂ narrow, especially outwardly; cell *2nd A* very long and narrow; Anal veins shortly fused basally at the arculus. In the type series tendencies toward venational abnormalities are shown, particularly in one paratype (Fig. 2) where cell *M*₂ is open by the atrophy of *m*; other paratypes have weak adventitious crossveins, in one specimen with two such elements in cell *R*₃, immediately behind the base of cell *R*₂.

Abdomen dark brownish gray, basal segment obscure orange yellow; hypopygium slightly darker yellow. Male hypopygium (Fig. 5) with tergite, *t*, broadly transverse, posterior border with a broad shallow emargination, lateral lobes obtuse; outer half of tergite before the narrow border with a continuous band of relatively short pale setae. Basistyle, *b*, more than twice as long as the dististyles, *d*, the latter united basally, outer style long and narrow, apex obtuse, outer half with a long-oval excavated portion, setae pale; inner style narrowed on outer fourth. Phallosome, *p*, with aedeagus, *a*, long and slender, straight, more than one-half longer than the outer dististyle.

Habitat: Natal. Holotype, ♂, 49 km northeast of Kokstad, 3,500 feet, at edge of pine forest, February 12, 1974 (Gurney). Paratopotypes, 4 ♂♂.

This interesting fly is named for Dr. Ashley B. Gurney, who collected several interesting crane flies in South Africa. The only other regional member of the subgenus with the wing having three medial branches instead of the normal four is *Leptotarsus (Longurio) minusculoides* (Wood) which differs evidently in the 13-segmented antennae, shorter wings with distinctive venational details, and in hypopygial structure, including the presence of spinoid setae on the inner dististyle (Crane-flies of the South-West Cape, 1952, p. 151-154, fig. 45), described by Wood from Cape Province, South Africa. The most recent general discussion of the South African Tipulidae is by Alexander, South African Animal Life (Stockholm), vol. 10: 229-441, 124 figs.; 1964.

There are numerous species of the subgenus *Longurio* Loew in South Africa and Madagascar but surprisingly few in tropical continental Africa. For many years these species were assigned to the genus *Longurio* Loew, with certain aberrant members being referred to certain other subgeneric groups, including *Macromastix* Osten Sacken and *Habromastix* Skuse, chiefly on the basis of antennal characters. The recent assignment of many of these groups to the older genus *Leptotarsus* Guerin-Meneville is discussed in the following papers, Alexander, Studia Entomologica 12: 185-190, 1969, and Dobrotworsky, Australian Jour. Zool., 16: 481-486, 1968, and Supplementary series of the latter, No. 16: 11-43, 1972.

1 *A. Leptotarsus (Leptotipula) edwardsiana* (Alexander)

Habromastix edwardsiana Alexander; Canad. Ent., 52: 145-146; 1920.
Longurio edwardsiana Alexander; Ruwenzori Expedition 1934-35, vol. 1, no 7 (Tipulidae), p. 134; 1956.

Subgenus *Leptotipula* Alexander, Ann. South African Mus., 17: 160; 1917 (type, *limnophiloides* Alexander, Natal). Discussion, see South African Animal Life, as above, p. 249-250, fig. 14; 1964.

Types from Obuasi, Ghana (Ashanti), June 20, 1907 (W. M. Graham). Other records — Edea, Cameroon, May 23, 1922 (J. A. Reis). Ile-Ife, Western State, Nigeria, October 1973 (J. T. Medler).

The species has not been figured previously (Fig. 6, palpus; male hypopygium, venation). The very short terminal segment of the maxillary palpus should be noted. The genus belongs in the subfamily Tipulinae, formerly called the «Tipulidae Longipalpi» from the common occurrence of the lengthened terminal segment of the palpus, the reduced segment being found only in *Leptotarsus* and a few other primitive allied groups.

2. *Nephrotoma (Nephrotoma) cristiformis* sp. n.

Mesonotal praescutum orange yellow with three polished black stripes, posterior sclerites of notum and the pleura yellow to orange;

wings weakly suffused, cell *Sc* and stigma slightly darker; male hypopygium with inner dististyle distinctive, large, beak very broad, obtuse, dorsal crest large with about a score of delicate parallel lines, posterior extension of style small, pointed.

Male. Length, about 10 — 11 mm; wing, 10.5 — 12 mm; antenna, about 4.5 — 5 mm. **Female.** — Length, about 14 mm; wing, about 11 mm. Frontal prolongation of head yellow, nasus with long black setae; palpi brownish black. Antennae of male with scape and pedicel yellow, flagellum black; flagellar segments elongate, exceeding their verticils, basal enlargements slightly broader than the apices, more conspicuous in certain specimens. Head orange; occipital band more polished but scarcely delimited.

Pronotum orange, pretergites light yellow. Mesonotal praescutum orange yellow with three polished black stripes, lateral pair appearing outcurved to the margin; scutal lobes almost completely polished black, the broad central area light yellow; scutellum light brown, cephalic end yellowed, parascutella yellow; postnotal mediotergite yellow, posterior third more orange, the elevated dorsal half light yellow. Pleura with dorsopleural membrane light yellow, anepisternum and ventral sternopleurite more orange, meral region yellow. Halteres with stem light brown, knob darker brown, its apex vaguely paler. Legs with coxae yellowed, cephalic face of fore pair restrictedly brown to dark brown; trochanters yellow; fore and middle femora black, basal third obscure yellow, posterior femora chiefly yellow, apical fourth or fifth black; tibiae brown, tips narrowly black; tarsi passing into black; claws of male long, nearly straight, with a strong spine at near midlength. Wings weakly suffused, cell *Sc* and stigma slightly darker brown, basal end of latter with from about 7 to 15 strong black trichia; veins darker brown. Venation: *Rs* slightly longer than R_{2+3} ; cell M_1 short-petiolate to narrowly sessile.

Basal abdominal tergites orange, basal tergite broadly banded at base with brown, second tergite with a subbasal area additional to the posterior band; posterior borders of succeeding segments with broad blackened areas, tergite seven and base of eighth sternite blackened, sternites paler; hypopygium and preceding segment clear orange, including the eighth and ninth tergites and the narrow posterior border of the eighth sternite. Male hypopygium (Fig. 7) with tergite, *t*, terminating in two low more sclerotized plates, provided with small blackened spinules, the

slightly more produced lateral lobe with the spicules directed cephalad, the smaller pegs and sparse setae of inner lobe directed chiefly caudad. Outer dististyle, *d*, long, outwardly narrowed to a point; inner style distinctive, about as figured; large, the feebly sclerotized beak very broad, obtuse; dorsal crest membranous, hyaline, large, with about a score of delicate parallel lines that do not reach the outer margin; lower beak very obtuse, blackened; posterior extension of style small but conspicuous, with several setae; in face of style at base with a strong spine and a larger setiferous lobe. Phallosome, *p*, with aedeagus short, subtriangular; gonapophyses appearing as pale flattened ribbonlike blades, apices obtuse, at base with a slender needlelike pale spine. Eighth sternite large, apex obtuse, deeply emarginate, the aperture with a triangular inset that is covered with dense very short setulae; major sternal lobes with abundant moderately long incurved yellow setae.

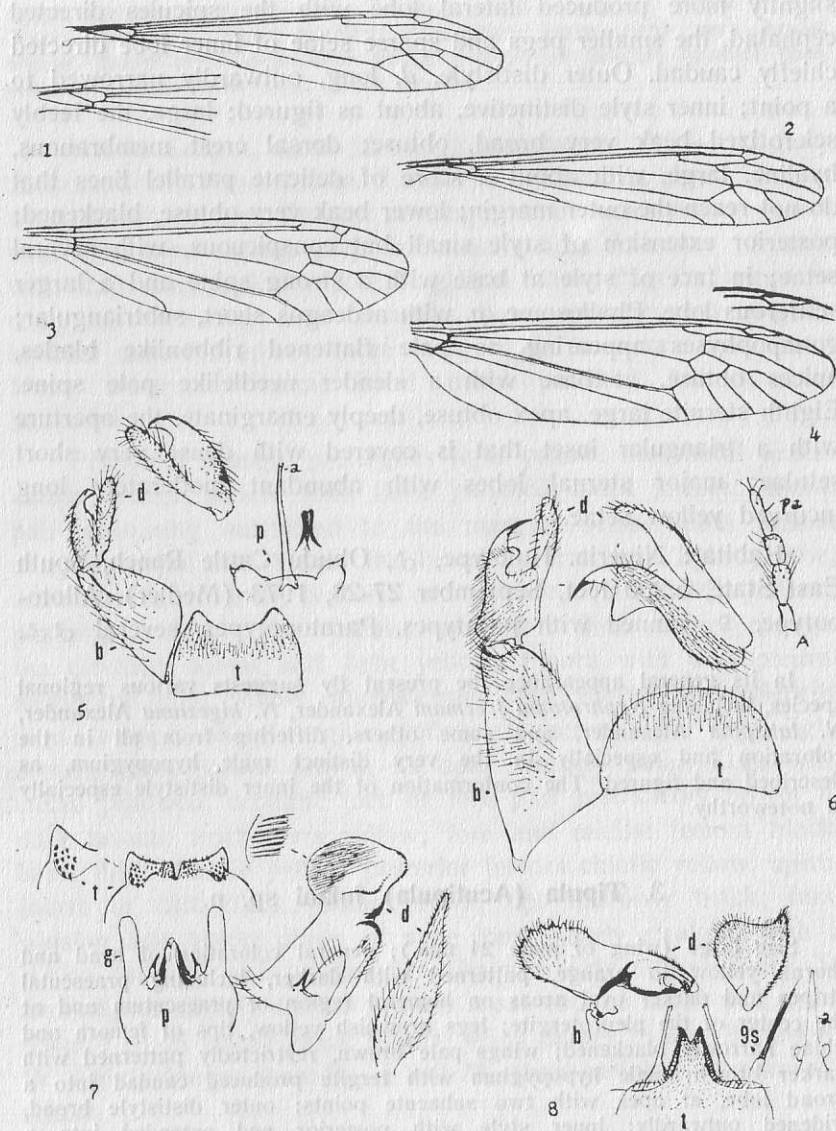
Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler). Allotopotype, ♀, pinned with paratypes. Paratopotypes, several ♂♂.

In its general appearance the present fly suggests various regional species, including *Nephrotoma freemani* Alexander, *N. kigeziana* Alexander, *N. latispina* Alexander, and some others, differing from all in the coloration and especially in the very distinct male hypopygium, as described and figured. The conformation of the inner dististyle especially is noteworthy.

3. *Tipula (Acutipula) fulani* sp. n.

Size large (wing of male 24 mm.); general coloration of head and thorax yellow to orange, patterned with darker, including praescutal stripes and darker oval areas on humeral region of praescutum and at the center of the pleurotergite; legs brownish yellow, tips of femora and tibiae narrowly blackened; wings pale brown, restrictedly patterned with darker brown; male hypopygium with tergite produced caudad into a broad lobe, at apex with two subacute points; outer dististyle broad, widened outwardly; inner style with posterior end extended into a massive lobe.

Male. Length, about 25 mm; wing, 24 mm. Frontal prolongation of head shorter than the remainder, orange, sides weakly more darkened; nasus long and slender, brown; palpi dark brown. Antennae with scape and pedicel yellow; flagellum broken. Anterior vertex yellow in front, remainder of head dark orange, posterior vertex vaguely more darkened medially; no vertical tubercle.



Figs. 1-2. *Leptotarsus (Longurio) gurneyi* sp. n.; venation. — Fig. 3. *Leptotarsus (Leptotipula) edwardsiana* Alexander; venation. — Fig. 4. *Tipula (Acutipula) fulani* sp. n.; venation. — Fig. 5. *Leptotarsus (Longurio) gurneyi* sp. n.; male hypopygium. — Fig. 6. *Leptotarsus (Leptotipula) edwardsiana* Alexander; male hypopygium; 6 A, maxillary palpus, male. — Fig. 7. *Nephrotoma (Nephrotoma) cristiformis* sp. n.; male hypopygium. — Fig. 8. *Tipula (Acutipula) fulani* sp. n.; male hypopygium. — (Symbols, Male hypopygium: a, aedeagus; b, basistyle; d, dististyles; p, phallosome; t, tergite).

Pronotum yellow. Mesonotal praescutum with ground color of disk brownish orange with four poorly indicated obscure orange stripes that are poorly delimited by very pale brown margins, humeral region more yellowed, with a very conspicuous brownish black oval spot; scutal lobes obscure orange, vaguely patterned with darker; scutellum pale brown, median region more yellowed, parascutella light yellow, the elevated anteromesal parte brown; mediotergite yellowed, clearer medially, in either side of this area with a dark brown lateral and posterior U-shaped mark, pleurotergite light yellow with a conspicuous central dark brown oval mark. Pleura light yellow; dorsopleural membrane before wing light brown. Halteres with stem yellow, knob dark brown. Legs with coxae and trochanters light yellow; femora and tibiae brownish yellow, tips narrowly black, the former broader; tarsi black; claw with the central spine long, basal point small and weak. Wings (Fig. 4) with ground pale brown, with a broad more whitened band along vein *Cu* in both cells *M* and *Cu*; stigma, cell *Sc*, and narrow seams over anterior cord and *m-cu* dark brown; a triangular brown area in prearcular field; extreme border of wing apex vaguely darkened; veins dark brown. Veins posterior to *R* glabrous excepting sparse small trichia on distal section of R_{4+5} . Venation as shown; *Rs* about two-thirds R_{2+3} , the latter approximately one-half R_3 ; *m-cu* slightly beyond two-thirds M_{3+4} .

Abdominal tergites light brown, segments five to seven slightly darker, with broad brown lateral borders; sternites more yellowed; segment eight uniformly cinnamon brown; hypopygium obscure yellow, apex of tergal lobe polished black. Male hypopygium (Fig. 8) with posterior border of ninth tergite, *t*, produced into a broad central lobe that divides into two subacute points, as shown; ventral surface on either side with a long slender pale rod. Outer dististyle, *d*, broad, widened outwardly; inner style larger, the relatively slender beak recurved, lower beak a narrower black spine, posterior end of style produced into a massive lobe, its outer end with microscopic points and conspicuous setae. Ninth sternite, *9s*, with a low basal lobe that bears a pencil of very long reddish setae. Aedeagus, *a*, long and slender, near base on either side with a small knob, apparently representing the apophyses. Eighth sternite unmodified.

Habitat: Nigeria. Holotype, ♂, Ile-Ife, Western State, May 17, 1971 (Medler).

The name, *fulani*, is that of a people widespread throughout western Africa. Other large sized African members of the subgenus include *Tipula (Acutipula) alphaspis* Speiser, Tanzania, Malawi; *T. (A.) angolana* Alexander, Angola; *T. (A.) bantu* Alexander, Zaire; *T. (A.) gaboonensis* Alexander, Gabon, Cameroon, and some others, all most readily distinguished by the very distinct hypopygial characters.

Limoniinae

Limoniini

4. *Limonia (Afrolimonia) crassibasis* sp. n.

Size medium (wing of male about 9.5 mm); head black; general coloration of thorax and abdomen yellow, pronotum and anterior part of praescutum with a narrow blackened median stripe; legs with femora light brown with a broad nearly terminal brownish black ring that is preceded by a narrow clearer yellow ring; wings yellow, prearcular and costal fields more saturated yellow, including the veins, remaining veins brown; male hypopygium with prolongation of the ventral dististyle conspicuously dilated at base, with three long spines, outer end relatively short; apex of aedeagus slightly narrowed, not conspicuously bilobed.

Male. Length, about 8.5 mm; wing, 9.5 mm. Female. — Length, about 11.5 mm; wing, 11.5 mm. Types mounted in balsam on slides. Rostrum and palpi black. Antennae with extreme base of scape blackened, remainder of organ yellow, outer segments slightly darker; proximal flagellar segments oval, the outer ones more elongate, especially the last. Head black.

Pronotum yellow, normally with a narrow blackened median stripe, in cases obsolete. Mesonotum yellow, praescutum anteriorly with a narrow central stripe that is narrowed behind; remainder of thorax yellowed. Halteres yellow, knobs weakly darkened. Legs with coxae and trochanters yellow; femora very light brown, bases more yellowed, with a conspicuous nearly terminal brownish black ring, preceded by a narrow clearer yellow ring, apices more narrowly yellow; tibiae brownish yellow, tips narrowly brown; basitarsi light brown, outer segments black. Wings (Fig. 9) yellow, prearcular and costal fields more saturated yellow, including the veins; remaining veins dark brown, conspicuous, with narrow darkened seams in membrane; stigma not differentiated. Venation: Sc long, Sc_1 about opposite four-fifths to five-sixths Rs , Sc_2 near tip; free tip of Sc_2 and R_2 in transverse alignment; outer radial veins moderately decurved outwardly,

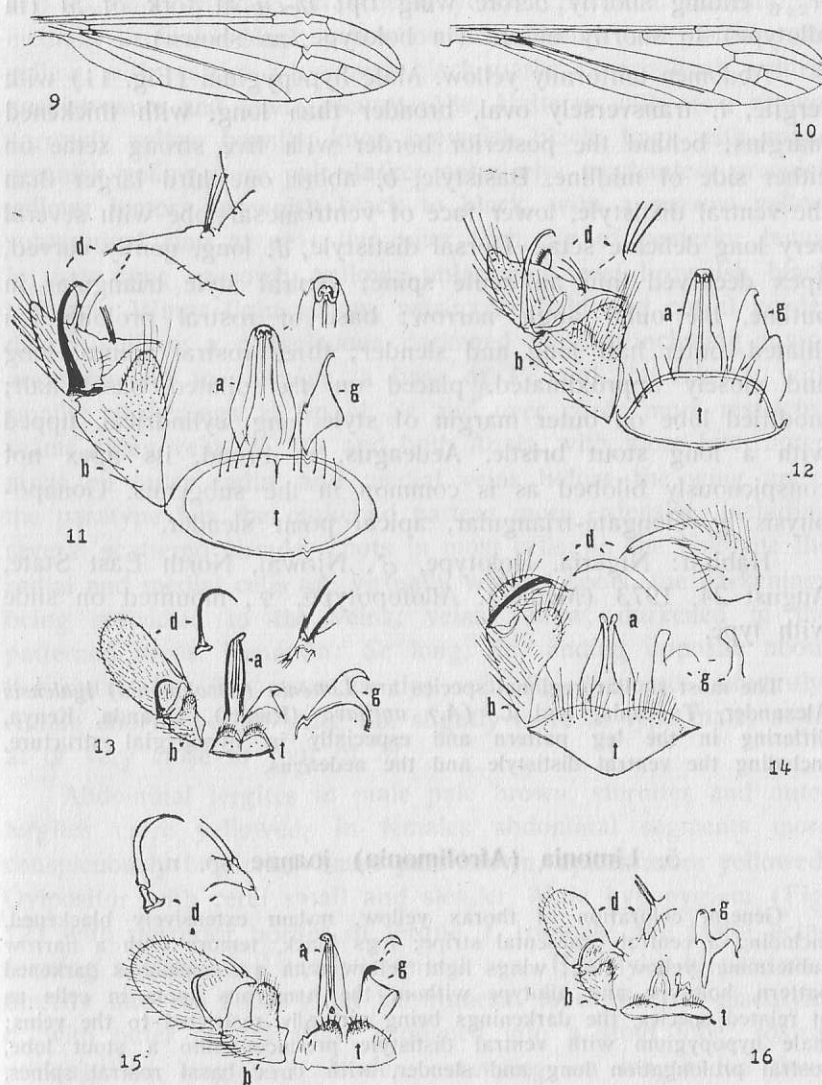


Fig. 9. *Limonia (Afrolimonia) crassibasis* sp. n.; venation. — Fig. 10. *Limonia (Dicranomyia) harmonia* Alexander; venation. — Fig. 11. *Limonia (Afrolimonia) crassibasis* sp. n.; male hypopygium. — Fig. 12. *Limonia (Afrolimonia) joanae* sp. n.; male hypopygium. — Fig. 13. *Limonia (Dicranomyia) subredundans* sp. n.; male hypopygium. — Fig. 14. *Limonia (Dicranomyia) harmonia* Alexander; male hypopygium. — Fig. 15. *Limonia (Geranomomyia) boki* sp. n.; male hypopygium. — Fig. 16. *Limonia (Geranomomyia) eremnopoda* sp. n.; male hypopygium. — (Symbols, Male hypopygium: a, aedeagus; b, basistyle; d, dististyles; g, gonapophysis; t, tergite).

R_{2+3} ending shortly before wing tip; $m-cu$ at fork of M (in allotype) to shortly before (in holotype, as shown).

Abdomen uniformly yellow. Male hypopygium (Fig. 11) with tergite, t , transversely oval, broader than long, with thickened margins; behind the posterior border with five strong setae on either side of midline. Basistyle, b , about one-third larger than the ventral dististyle, lower face of ventromesal lobe with several very long delicate setae. Dorsal dististyle, d , long, gently curved, apex decurved into an acute spine; ventral style triangular in outline, the outer angle narrow; base of rostral prolongation dilated, outer half long and slender; three rostral spines, long and closely approximated, placed on the dilated basal half; modified lobe on outer margin of style long, cylindrical, tipped with a long stout bristle. Aedeagus, a , broad, its apex not conspicuously bilobed as is common in the subgenus. Gonapophysis, g , elongate-triangular, apical point slender.

Habitat: Nigeria. Holotype, ♂, Njawai, North East State, August 24, 1973 (Medler). Allotopotype, ♀, mounted on slide with type.

The most similar regional species are *Limonia* (*Afrolimonia*) *igalensis* Alexander, Tanzania, and *L. (A.) uniflava* (Riedel), Uganda, Kenya, differing in the leg pattern and especially in hypopygial structure, including the ventral dististyle and the aedeagus.

5. *Limonia* (*Afrolimonia*) *joanae* sp. n.

General coloration of thorax yellow, notum extensively blackened, including a central praescutal stripe; legs black, femora with a narrow subterminal yellow ring; wings light yellow with a conspicuous darkened pattern, holotype and allotype without the numerous spots in cells as in related species, the darkenings being virtually restricted to the veins; male hypopygium with ventral dististyle produced into a stout lobe, rostral prolongation long and slender, with three basal rostral spines.

Male. Length, about 9 mm; wing, 9 mm. Female. Length, 8.5 — 9 mm; wing, 9 — 11 mm. Rostrum and palpi black. Antennae black; in paratype female with basal two segments yellowed. Head light gray; posterior vertex with a narrow black central line, anterior vertex narrow.

Pronotum obscure yellow, narrowly black medially. Mesonotal praescutum with a conspicuous black central stripe with small lateral areas before suture, sides broadly yellow; scutal lobes and sides of scutellum brownish black, central parts of scutum

and scutellum yellow, parascutella yellow; postnotal mediotergite medially brownish black, yellow on sides. Pleura and pleurotergite yellow, with restricted brownish black marks on propleura, ventral anepisternum and lower pleurotergite. Halteres with stem brown, narrowly yellow basally, knob brownish black. Legs with coxae greenish yellow, fore pair darker anteriorly; trochanters greenish yellow; femora brownish black to black, with a narrow yellow subterminal ring at near the outer fifth, tip of posterior femur in male type narrowly yellow; tibiae and tarsi brownish black to black. Wings light yellow, prearcular field and costal border darker yellow; a conspicuous darkened pattern including major areas beyond the arculus, a base of R_s and the stigma, with smaller darkenings at tip of Sc and over cord; more restricted seams along veins M , Cu and both Anals, with more interrupted areas on outer radial and medial veins before the wing apex; the paratype has the darkened pattern more extensive, including several scattered circular spots in most cells; in the holotype the radial and medial cells are virtually without spots, the darkenings being restricted to the veins; veins yellow, darkened in the patterned areas. Venation: Sc long, Sc_1 ending opposite about five-sixths R_s , Sc_2 near its tip; vein R_3 decurved outwardly, ending shortly before wing tip, slightly more in type male; $m-cu$ at or very close to fork of M .

Abdominal tergites in male pale brown, sternites and outer tergites more yellowed; in females abdominal segments more conspicuously bicolored, bases pale brown, apices more yellowed. Ovipositor with cerci small and slender. Male hypopygium (Fig. 12) with posterior border of tergite, t , truncate, the major setae forming a transverse nearly terminal row. Basistyle, b , produced directly into the short stout ventromesal lobe. Ventral dististyle, d , with outer caudal angle produced into a stout lobe; rostral prolongation long and slender, exceeding on length the three rostral spines.

Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler). Allotopotype, ♀, pinned with type. Paratopotype, ♀.

This attractive fly is named for Mrs. Jane Ann Medler who has greatly assisted her husband, John, in the vast project of making known the Nigerian insect fauna. The most similar species include *Limonia* (*Afrolimonia*) *ditiior* (Alexander), Rhodesia, Tanzania, Mozambique, Uganda, *L. (A.) lucrativa* Alexander, Zaire, and *L. (A.) poecila* (Alexander), Ghana, all differing among themselves in details of coloration and in hypopygial structure.

5 A. *Limonia (Dicranomyia) harmonia* Alexander

Limonia harmonia Alexander; Ruwenzori Expedition 1934-35, vol. 1, n° 7 (Tipulidae), p. 203 (in key); 1956.
Limonia harmonia Alexander; Studia Entomologica, 13: 271-272; 1970 (re-description of type female).

Holotype, ♀, Gitebe, Volcan Nyamuragira, Parc National Albert, Rwanda (as Belgian Congo), 2,324 meters, June 14-26, 1935 (DeWitte).

Allotype, ♂, Sapoba F. R., Middle Western State, Nigeria, August 11, 1973 (Medler).

Male. Length, about 8.5 mm; wing 9 mm; antenna, about 1.9 mm. Head and abdomen in balsam on slide. Characters generally as in the type female. Mouthparts, including palpi, dark brown, terminal segment of latter subequal to penultimate and more slender. Antennae brown, bases of flagellar segments narrowly whitened, segments progressively longer outwardly, each with a very long verticil that is about one-half longer than the segment (outer three segments broken).

Thoracic dorsum pale yellowish brown, pleura clearer yellow, especially ventrally. Halteres with knobs light brown. Legs virtually as in holotype; bases of coxae faintly tinted with green. Wings (Fig. 10) much as in the type, coloration slightly darker brown. Anal angle of wing scarcely developed; vein 2nd A converging toward 1st A, the latter cell narrowed beyond base.

Male hypopygium (Fig. 14) with tergite, *e*, transverse, posterior border slightly emarginate to form low very broad lobes with numerous long setae; anterior border strongly produced medially. Basistyle, *b*, with ventromesal lobe oval, slightly narrowed at base, setae long and conspicuous, subequal in length to the lobe. Dorsal dististyle, *d*, a strong rod, outer end curved gently into an acute point; ventral style small, scarcely one-fourth the basistyle and only slightly larger than the lobe of the latter; body of style oval, outwardly produced into the long slender rostrum, the latter without spines. Gonapophyses, *g*, with mesal-apical lobe pale, short, tip obtuse. Aedeagus, *a*, broad basally, strongly narrowed outwardly, penis tubes approximated, much narrower than the lateral flanges, apical lobes small, oval.

Allotype data as above.

Despite the wide separation in range of the holotype (Rwanda) and allotype (Nigeria) I consider them to be conspecific.

This unusually interesting species of *Limonia* has not been figured and the venation and male hypopygium are shown. Despite the very long vein Sc I am assigning the fly to *Dicranomyia* because of the hypopygial

characters of possessing two dististyles. In a recent paper (Insects of Micronesia, Diptera: Tipulidae, p. 741-831; 1972) I have discussed the genus *Limonia* in some detail, especially the venation, and have proposed the term *basal cord* (l. c., p. 746). Other pertinent references to this involved genus by the writer include Revista Entomologica, 21: 161-221; 1950. Philippine Journal of Science, 93: 427-478; 1964. Studia Entomologica, 10: 277-352; 1967.

5 B. *Limonia (Dicranomyia) neoguttula* Alexander

Limonia (Dicranomyia) neoguttula Alexander; Bull. de 1, IFAN, 20, ser. A, n° 1: 125-126, fig. 3 (venation), fig. 10 (male hypopygium); 1958.

Holotype, ♂, Mount Hampden Hostel, Southern Rhodesia, April 23, 1956 (H. C. Brayne). One additional male, Ile-Ife, Western State, Nigeria, July 10, 1972 (Medler).

The Nigerian record materially extends the range of the species as previously known. The present specimen shows the hypopygial structure somewhat better than in the type and the description should be amended. In the original account the mesal-apical lobe of the gonapophysis was described and figured as being a blackened, gently curved spine. In the new specimen this lobe is stouter and on the margin before apex bears a distinct flattened flange, this condition being only slightly indicated in the holotype.

6. *Limonia (Dicranomyia) subredundans* sp. n.

General coloration of thorax light brown, praescutum with four brown stripes, postnotum blackened; halteres light yellow; legs dark brown; wings yellowed, with a restricted brown pattern; a supernumerary crossvein near outer end of cell R_3 , subequal to or longer than distal section of vein R_3 ; abdominal tergites brown, sparsely pruinose, sternites yellowed; male hypopygium with tergite deeply emarginate, lobes with margins broadly thickened; ventral dististyle very large and fleshy, dorsal style a slender strongly curved rod; aedeagus long and narrow, apical lobe long-oval.

Male. Length, about 6 — 6.5 mm; wing, 7 — 7.5 mm.
 Female. Length, about 7 mm; wing, 7.5 mm. Rostrum and palpi black. Antennae black. Head brown.

Pronotum light brown, more yellowed behind. Mesonotal praescutum light brown, sides yellowed, disk with four pale brown stripes, darker posteriorly; scutum and scutellum light brown, sparsely pruinose; postnotum blackened, gray pruinose. Pleura light brown, more darkened ventrally. Halteres light yellow. Legs with coxae blackened; trochanters yellow; remainder of legs dark brown. Wings with ground yellowed, including the veins, more intense in costal region; a restricted brown pattern that includes

the arculus, extended to costal border, and at midlength of vein *R*, in some specimens more extensive; further darkened areas at tip of *Sc* and origin of *Rs*, stigma, and as narrow interrupted seams over the cord, the supernumerary crossvein in cell *R*₃, and the outer end of cell *1st M*₂; a small darkened cloud before tip of vein *2nd A* in cell *1st A*; very small darkenings at tips of veins *M*₃ to *2nd A* inclusive. Venation: *Sc* ending opposite or shortly beyond origin of *Rs*; a supernumerary crossvein near outer end of cell *R*₃, in length subequal to or longer than distal section of vein *R*₃; cells *1st M*₂ and *2nd M*₂ subequal; *m-cu* at or close to fork of *M*.

Abdominal tergites brown, sparsely pruinose, sternites more yellowed, lateral membranes darker; dististyles of male hypopygium yellow, in one specimen smaller, and darker, pale brown. Male hypopygium (Fig. 13) with posterior border of tergite, *t*, deeply emarginate, lobes conspicuous, broadly thickened on more than the outer half. Basistyle, *b*, small, in area slightly more than one-fourth the very large ventral dististyle, mesal-apical lobe large. Dorsal dististyle a long slender rod, at near two-thirds the length very strongly curved, tip an acute spine; ventral style with rostral prolongation slender, the two spines more than twice as long, from small basal tubercles, tips acute. Gonapophysis, *g*, with the mesal-apical lobe a short stout curved spine. Aedeagus, *a*, long and relatively narrow, apical lobe long-oval.

Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler). Allotopotype, ♀. Paratopotypes, 2 ♂♂, with types.

The most similar species is the larger *Limonia (Dicranomyia) redundans* Alexander, of Uganda and Kivu, where the wing length ranges between about 8 to 10 mm, and with the venation and hypopygial details slightly different.

7. *Limonia (Geranomyia) boki* sp. n.

General coloration of thorax dull orange, pleura more yellowed; rostrum, especially the labial palpi, very long; legs with femora yellow with a nearly terminal brown ring; wings brownish yellow, costal border clearer yellow; stigma short-oval, brown; *Sc* long, *m-cu* at or close to fork of *M*; abdominal tergites dark brown, sternites light yellow; male hypopygium with conspicuous darkened tergal lobes, basistyle with ventromesal lobe large; dorsal dististyle a curved sickle, outer fourth narrowed into a long slender spine; gonapophysis with mesal-apical lobe a short darkened hook; aedeagus unusually narrow.

Male. Length, excluding rostrum, about 6.5 mm; wing, 7.5 mm; rostrum about 4 mm. Female. Length, about 8 mm; wing, 7.5 mm; rostrum about 4 mm. Mouthparts, especially the labial palpi, very long, exceeding one-half the remainder of body, dark brown in color. Antennae brown, less than one-third the length of rostrum; flagellar segments oval, exceeding their verticils. Head dark brown.

Pronotum obscure yellow. Mesonotal praescutum almost uniformly dull orange, the four stripes scarcely differentiated, intermediate pair separated by a vague broad pale brown central line, interspaces with strong black setae; scutal lobes dull orange, the broad central area brown, extended caudad onto the disk of the otherwise yellow scutellum; mediotergite brown; pleurotergite and pleura almost uniformly pale yellow. Halteres with stem yellow, knob dark brown. Legs with coxae and trochanters pale yellow; femora yellow with a brown nearly terminal ring; tibiae and tarsi darker brown. Wings brownish yellow, costal border clearer yellow, stigma short-oval, brown; veins light brown, in costal field more yellowish brown. Venation: *Sc* long, *Sc*₁ ending beyond midlength of *Rs*, *Sc*₂ about one-half *Sc*₁; *r-m* short; *m-cu* at or close to fork of *M*.

Abdominal tergites dark brown, sternites light yellow. Male hypopygium (Fig. 15) with tergite, *t*, transverse, posterior border with two obtuse darkened lobes that are separated by a narrow emargination. Basistyle, *b*, with ventromesal lobe very large, about two-fifths the body of the style. Dorsal dististyle, *d*, a moderately curved sickle, outer fourth narrowed into a long slender spine; ventral style with rostral prolongation relatively small, with two subequal long spines at near midlength, dorsal spine from a small basal marginal tubercle, lower spine sessile, on face of prolongation. Gonapophysis, *g*, with mesal-apical lobe a short darkened hook. Aedeagus, *a*, unusually narrow, lateral flanges only about one-half wider than a single penis tube.

Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler). Allotopotype, ♀.

The specific name is that of a native Nigerian people. Other generally similar regional species include *Limonia (Geranomyia) euryphallus* Alexander, *L. (G.) nigropaxilla* Alexander, and *L. (G.) obsollescens* Alexander, all differing among themselves chiefly in hypopygial characters, including especially the tergite, both dististyles, and the aedeagus.

8. *Limonia* (*Geranomyia*) *eremnopoda* sp. n.

General coloration of thorax dull orange to yellow; legs brownish black; wings yellowed, restrictedly patterned with brown, including the stigma and areas at origin of *Rs* and the cord; costal fringe dense, the trichia relatively short; male hypopygium with the tergite very short, the width, across about six times the length; ventral dististyle about four times the basistyle, rostral prolongation with two closely approximated spines on short individual basal tubercles; gonapophysis with mesal-apical lobe yellow, straight, apex obtuse, with a microscopic point.

Male. Length, excluding rostrum, about 8 mm; wing, 6.8 mm; rostrum about 3.2 mm; antenna, about 1.4 mm.

Rostrum about one-half the wing, black throughout, including the maxillary palpi. Antennae with the pedicel and elongate scape black, slightly pruinose; flagellum brown, segments long-oval with short verticils. Head dull black, sparsely pruinose, setae black.

Pronotum yellowish brown, narrowly darkened medially. Mesonotal praescutum dull orange, lateral borders broadly yellow, anterior half with a narrow brown central vitta; scutum dull orange, lobes vaguely patterned with pale brown; posterior sclerites brownish yellow. Pleura above yellowish brown, ventral half clearer yellow. Halteres with stem light yellow, knob brown. Legs with coxae and trochanters yellow; remainder of legs brownish black, outer three tarsal segments very slightly paler brown. Wings (Fig. 17) yellowed, outer ends of radial cells more darkened, prearcular and costal fields clear light yellow; stigma subcircular, brown; small inconspicuous brown clouds at origin of *Rs*, cord and outer end of cell *1st M*₂; veins light brown, scarcely darker in the patterned areas; costal fringe dense, trichia subequal in length to the thickness of vein *C*; trichia on longitudinal veins beyond cord, including both outer radial branches, distal sections of *M*₁₊₂ and *M*₃, and outer half of second section of *M*₁₊₂. Venation: *Sc*₁ ending about opposite six-sevenths *Rs*, *Sc*₂ slightly removed; cell *1st M*₂ subequal in length to distal section of *M*₁₊₂; *m-cu* at fork of *M*.

Abdomen yellow. Male hypopygium (Fig. 16) with the tergite, *t*, very short, the transverse width being some six to seven times the length, posterior border nearly truncate, lobes virtually lacking; cephalic margin very shallowly concave to nearly straight. Basistyle, *b*, small, its area about one-fourth that of the ventral dististyle, ventromesal lobe with setae of lower margin very long and delicate. Dorsal dististyle, *d*, gently

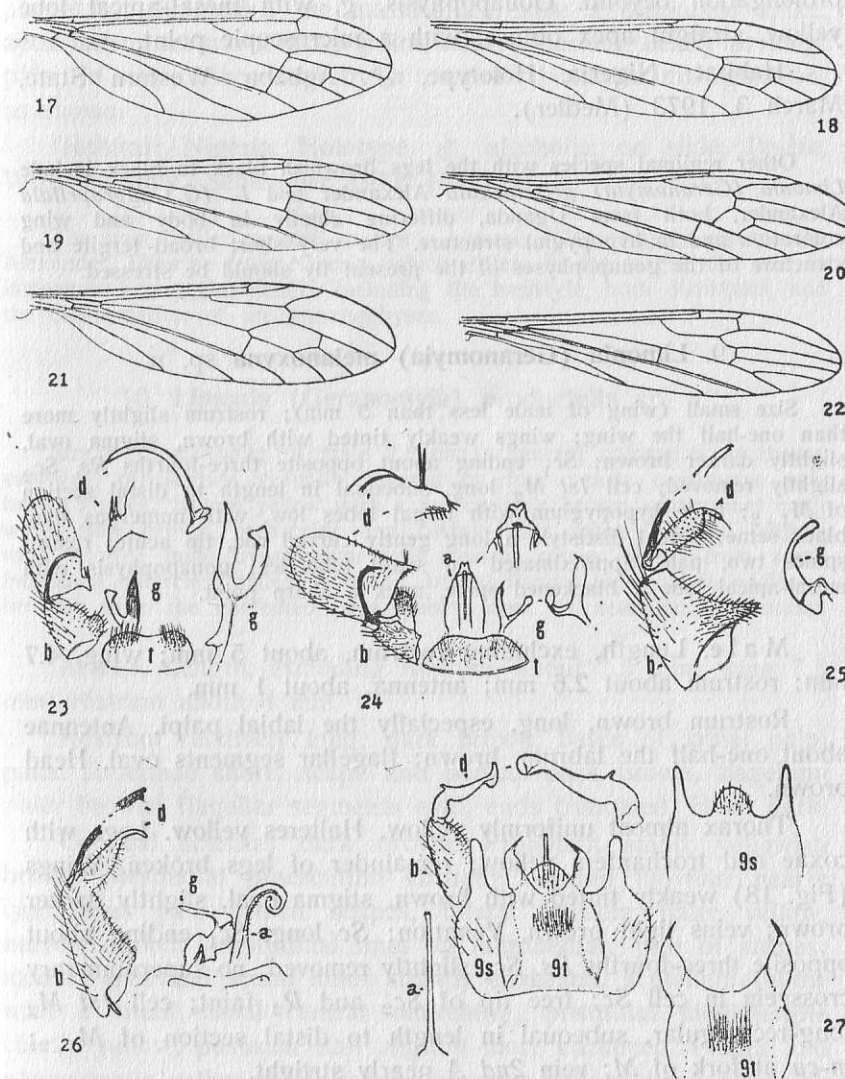


Fig. 17. *Limonia* (*Geranomyia*) *eremnopoda* sp. n.; venation. — Fig. 18. *Limonia* (*Geranomyia*) *melanoxyina* sp. n.; venation. — Fig. 19. *Helius* (*Helius*) *flavidibasis* sp. n.; venation. — Fig. 20. *Helius* (*Helius*) *subpauperculus* sp. n.; venation. — Fig. 21. *Helius* (*Prohelius*) *julani* sp. n.; venation. — Fig. 22. *Orimarga* (*Orimarga*) *rubrithorax* sp. n.; venation. — Fig. 23. *Limonia* (*Geranomyia*) *melanoxyina* sp. n.; male hypopygium. — Fig. 24. *Limonia* (*Geranomyia*) *productella* sp. n.; male hypopygium. — Fig. 25. *Helius* (*Helius*) *flavidibasis* sp. n.; male hypopygium. — Fig. 26. *Helius* (*Helius*) *subpauperculus* sp. n.; male hypopygium. — Fig. 27. *Helius* (*Prohelius*) *julani* sp. n.; male hypopygium. — (Symbols, Male hypopygium: a, aedeagus; b, basistyle; d, dististyles; g, gonapophysis; s, sternite; t, tergite).

curved, terminating in a slender spine. Ventral style fleshy, apex of rostral prolongation subtruncate; two closely approximated tubercles, the spines slightly unequal, subequal in length to the

prolongation beyond. Gonapophysis, *g*, with mesal-apical lobe yellow, straight apex obtuse, with a microscopic point.

Habitat: Nigeria. Holotype, ♂, Agbabu, Western State, March 3, 1973 (Medler).

Other regional species with the legs brownish black to black include *Limonia (Geranomyia) griseipeltata* Alexander and *L. (G.) nigropeltata* Alexander, both from Uganda, differing chiefly in body and wing coloration and in hypopygial structure. The very short broad tergite and structure of the gonapophyses of the present fly should be stressed.

9. *Limonia (Geranomyia) melanoxyina* sp. n.

Size small (wing of male less than 5 mm); rostrum slightly more than one-half the wing; wings weakly tinted with brown, stigma oval, slightly darker brown; Sc_1 ending about opposite three-fourths Rs , Sc_2 slightly removed; cell *1st M*₂ long, subequal in length to distal section of M_{1+2} ; male hypopygium with tergal lobes low, with numerous long black setae; dorsal dististyle a long gently curved rod, tip acute; rostral spines two, pale, approximated on small tubercles; gonapophysis with mesal-apical lobe a blackened spike, apex a sharp point.

Male. Length, excluding rostrum, about 5 mm; wing, 4.7 mm; rostrum about 2.6 mm; antenna, about 1 mm.

Rostrum brown, long, especially the labial palpi. Antennae about one-half the labrum, brown; flagellar segments oval. Head brown.

Thorax almost uniformly yellow. Halteres yellow. Legs with coxae and trochanters yellow; remainder of legs broken. Wings (Fig. 18) weakly tinted with brown, stigma oval, slightly darker brown; veins light brown. Venation: *Sc* long, Sc_1 ending about opposite three-fourths Rs , Sc_2 slightly removed; no supernumerary crossvein in cell *Sc*; free tip of Sc_2 and R_2 faint; cell *1st M*₂ long-rectangular, subequal in length to distal section of M_{1+2} ; *m-cu* at fork of *M*; vein *2nd A* nearly strtight.

Abdominal tergites brownish yellow, sternites paler, hypopygium darker brown. Male hypopygium (Fig. 23) with tergite, *t*, transverse, posterior border very shallowly emarginate, lobes low, each with about 20 long black setae. Basistyle, *b*, about one-half the ventral dististyle; ventromesal lobe rounded, with long pale setae. Dorsal dististyle, *d*, a long gently curved rod, terminating in an acute spine; ventral style large and fleshy, vestiture long; rostral prolongation unusually glabrous, apex pointed, at summit of prolongation with two approximated relatively short pale spines from very small tubercles. Gonapo-

physes, *g*, distinctive, the mesal-apical lobe a blackened spike, apex narrowed into a sharp point, basal extension nearly as long, paler in color, separated by a narrow U-shaped emargination, as shown.

Habitat: Nigeria. Holotype, ♂, alcoholic, on slide, Ile-Ife, Western State, September 1971 (Medler).

The most similar regional species is *Limonia (Geranomyia) nigropaxilla* Alexander, likewise from Nigeria, which differs in the larger size and in important hypopygial details, including the basistyle, both dististyles, and the conformation of the gonapophyses.

10. *Limonia (Geranomyia) productella* sp. n.

Size medium (wing of male 7.5 mm); general coloration of thorax yellowed, praescutum virtually covered by four nearly contiguous pale brown stripes; femore yellow with a narrow pale brown subterminal ring; wings pale brown, prearcular and costal fields more yellowed, stigma oval, brown; male hypopygium with rostral spines black, from small individual tubercles; aedeagus broad, lateral flanges subequal in width or broader than the combined penis tubes, apex of aedeagus protruding.

Male. Length, excluding rostrum, about 7.5 mm; wing 7.5 mm; rostrum about 4 mm.

Rostrum relatively long, dark brown, bases of labial palpi paler. Antennae short; scape and pedicel dark brown, flagellum paler brown; flagellar segments oval, ends truncated. Head dark.

Cervical sclerites dark brown. Pronotum small, yellowish brown. Mesonotal praescutum virtually covered by four nearly contiguous pale brown stripes, lateral borders paler yellow, narrow darker longitudinal lines on intermediate pair of stripes; median area and scutal lobes slightly darkened; scutellum yellow with a small basal central darkening; postnotal mediotergite chiefly yellow, posterior half slightly more darkened. Pleura and pleurotergite yellowed. Halteres with stem yellow, knob brownish black. Legs with coxae and trochanters light yellow; femora yellow with a narrow pale brown subterminal ring; tibiae and tarsi ela brown. Wings pale brown, costal and prearcular fields more yellowed; stigma brown, oval; veins brown, prearcular and costal veins more yellowed. Venation: *Sc* long, Sc_1 ending about opposite two-thirds Rs , Sc_1 and Sc_2 subequal; *r-m* shortened; cell *1st M*₂ subequal to distal section of M_{1+2} ; *m-cu* at or close to fork of *M*, subequal to distal section of Cu_1 .

Abdomen brownish yellow, outer segments, including hypopygium, slightly darker brown. Male hypopygium (Fig. 24) with

tergite, *t*, relatively narrow, posterior border very shallowly emarginate. Basistyle, *b*, about one-third the large fleshy ventral dististyle; ventromesal lobe large. Dorsal dististyle, *d*, long, the apical point small; ventral style large and fleshy; rostral prolongation small, apex obtuse; rostral spines black, placed close together on very small individual tubercles. Gonapophysis, *g*, with mesal-apical lobe slender, very slightly expanded before the small terminal point. Aedeagus, *a*, broad, lateral flanges subequal to or broader than the combined penis tubes; apex of aedeagus protruded (shown in subfigure).

Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler).

The most similar regional species are *Limonia (Geranomyia) euryphalus* Alexander, *L. (G.) nigropaxilla* Alexander, and *L. (G.) obsolescens* Alexander, all differing among themselves especially in hypopygial structure, including the phallosome.

11. *Helius (Helius) flavidibasis* sp. n.

Size large (wing about 10 mm); rostrum short, subequal in length to remainder of head; general coloration of head and thorax dull black, restrictedly patterned with yellow; legs black, tarsi dark brown; wings strongly darkened, patterned with darker brown, prearcular field light yellow; abdominal tergites black, sternites conspicuously bicolored, bases yellow, apices transversely blackened; male hypopygium with mesal lobe of basistyle with abundant strong black setae; outer dististyle a slender nearly straight black rod, apex nearly entire; gonapophyses smooth, apex slightly enlarged, obtuse.

Male. Length, about 12 mm; wing, 10 mm; rostrum about 1 mm. Female. Length, about 12 — 14 mm; wing, 9.5 — 10 mm; rostrum about 1.2 mm; antenna, 1.2 mm.

Rostrum black, relatively short, subequal in length to remainder of head; palpi black. Antennae short, subequal to rostrum, scape black, pedicel brownish yellow, flagellum black, first segment yellowed basally; flagellar segments long-oval, terminal one long and slender. Head dull black; anterior vertex narrow.

Cervical region black. Pronotum black, narrowly yellowed posteriorly. Mesonotal praescutum dull brownish black, restrictedly yellowed at suture; scutal lobes black, median area brownish yellow; scutellum black, parascutella brown; postnotum black. Pleura black, restrictedly yellowed at wing insertion; dorsopleural region testaceous brown. Halteres with stem pale, knob weakly

darkened. Legs with coxae black; trochanters brownish yellow; femora and tibiae black, tarsi paling to dark brown. Wings (Fig. 19) strongly light yellow; costal border slightly darker yellow, including prestigmal and poststigmal brightenings; stigma long-oval, dark brown; brown seams at outer end of *R*_s and anterior cord, less evident in cell *R*₃ and along vein *Cu*, the darkened pattern more conspicuous in the females; veins black, paler in the yellowed areas. Venation: Radial branches long and moderately divergent, cell *R*₂ at margin about one-half cell *R*₃; *m* gently arcuated; *m-cu* shortly beyond of *M*, in cases to nearly one-half its length.

Abdominal tergites black, second segment more yellowed on proximal half; sternites conspicuously bicolored, yellow, apices transversely blackened, including about the outer third of segment; hypopygium black. Ovipositor with valves very long and slender. Male hypopygium (Fig. 25) with basistyle, *b*, produced mesally into a stout lobe provided with abundant strong black setae. Outer dististyle, *d*, about one-half the length of the basistyle, appearing as a slender nearly straight black rod, outwardly gradually narrowed, apex nearly entire with very slight indications of two small denticles; inner style broad on basal three-fourths, with abundant long black setae, apex narrowed into a slender yellowed rod. Gonapophyses, *g*, appearing as paired strongly curved smooth structures, apex of each slightly enlarged, obtuse.

Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler). Allotopotype, ♀. Paratopotype, ♀.

The most nearly related regional species is *Helius (Helius) flavitarsis* (Alexander) which differs in coloration of the body, wings and legs and in details of hypopygial structure, particularly the gonapophyses.

12. *Helius (Helius) subpauperculus* sp. n.

Size small (wing less than 6 mm); general coloration of head and thoracic dorsum dark brown, pleura yellowish brown; rostrum relatively short, subequal in length to the antennae; legs dark brown, outer tarsal segments snowy white; wings weakly darkened, costal cells, stigma and outer wing margin narrowly darker brown; *m-cu* more than one-half its length before fork of *M*; abdomen dark brown; male hypopygium with outer dististyle shorter than the inner; aedeagus relatively short.

Male. Length, about 5.7 — 5.8 mm; wing, 5.3 — 5.8 mm. Rostrum dark brown, relatively short, subequal in length to antenna or to the remainder of head; palpi black. Antennae

black throughout; flagellar segments oval, the outer ones more elongate. Head dark brown.

Pronotum and cervical sclerites dark brown above, yellowish brown posteriorly and on sides. Mesonotal praescutum broadly brownish black medially, sides extensively brownish yellow, the narrow borders clearer yellow; scutal lobes brown, the mesal third of each darker; scutellum dark brown, pareaescutella paler brown; postnotal mediotergite dark brown, pleurotergite pale yellowish brown. Pleura similarly yellowish brown. Halteres with stem pale, clearer at base, knob dark brown. Legs with coxae and trochanters yellow; femora, tibiae and proximal parts of basitarsi dark brown, remainder of tarsi including more than half of basitarsi snowy white. Wings (Fig. 20) weakly darkened, cells *C* and *Sc*, stigma and extreme outer margin of cell R_3 slightly more infuscated; veins dark brown. *Rs* and longitudinal veins beyond cord with trichia. Venation: Sc_1 and Sc_2 subequal; branches of *Rs* widely divergent, cell R_3 at margin very extensive; *m-cu* more than one-half its length before fork of *M*.

Abdomen dark brown, terminal segments slightly darker; basistyles of hypopygium yellowish brown. Male hypopygium (Fig. 26) with the dististyles, *d*, terminal, outer style smaller, about one-third the length of the basistyle, appearing as a nearly straight rod narrowed gradually to the acute tip, with a smaller subterminal point to appear shallowly bidentate; inner style about one-half longer, basal two-thirds enlarged, the narrow apical portion gently curved. Phallosome, *p*, with aedeagus and gonapophyses about as figured.

Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler). Paratopotype, ♂.

The most similar regional species is *Helius (Helius) pauperculus* (Alexander), differing in the coloration. This is brownish yellow and yellow, with the abdominal tergites yellow, posterior borders narrowly darkened medially and with the legs brownish testaceous, the tarsi not snowy white.

Helius St. Fargeau

Subgenus **Prohelius** subgen. nov.

Rostrum relatively short, less than the remainder of head or the antennae. Antennae 16-segmented; scape and pedicel large; proximal three flagellar segments short and crowded, broader

than long, succeeding segments slender, progressively longer outwardly, shorter than their verticils.

Legs long and slender. Wings (Fig. 21) with *Rs* exceeding vein R_3 , the latter sinuous; cell R_3 at margin extensive, nearly four times cell R_2 ; cell *1st M*₂ large, with *r-m* at near midlength; first section of vein M_{1+2} long, nearly straight; *m-cu* beyond fork of *M*. Male hypopygium (Fig. 27) with a single dististyle.

Type of subgenus: *Helius (Prohelius) fulani* sp. n. (Ethiopian).

The present group is most readily separated from the seven other subgenera by the male hypopygium having a single dististyle, all others having two such styles. The various subgenera have been listed in an earlier paper by the writer (Philippine Jour. Sci., 95: 246-266; 1966). The earlier generic spelling *Prohelia* Fromentel, 1861 (Coelenterata) does not conflict with the present name.

13. **Helius (Prohelius) fulani** sp. n.

Size small (wing less than 5 mm); head and appendages brownish black; thoracic dorsum variegated brown and yellow, pleura brown, more extensive on ventral portions; halteres whitened; legs long, brown, tarsi extensively whitened; wings faintly suffused, patterned with brown, including the conspicuous subcircular stigma; *Rs* longer than vein R_3 , cell R_3 at margin very extensive, nearly four times cell R_2 ; cell *1st M*₂ very large, the inner end long-oblique, *m-cu* shortly beyond fork of *M*; abdomen conspicuously patterned brown and yellow; male hypopygium with a single dististyle.

Male. Length, about 4.8 — 5.2 mm; wing, 4 — 4.5 mm; rostrum, about 0.3 mm; antenna, about 0.75 mm.

Female. Length, about 5 — 6 mm; wing, 4 — 4.8 mm. Head, including rostrum, black; palpi brown, terminal segment very long, subequal to the basal three segments combined. Antennae about one-third longer than the rostrum, dark brown; proximal three flagellar segments very short and crowded, broader than long, succeeding segments progressively lengthened, shorter than the longest verticils. Anterior vertex narrow.

Pronotum and praescutum brownish yellow, narrowly more darkened medially; scutal lobes, scutellum and mediotergite brown, broadly more yellowed laterally. Pleura above brownish yellow, slightly patterned with brown, more extensively dark brown ventrally, including the sternopleurite. Halteres whitened. Legs elongate; coxae and trochanters brownish yellow; femora brown, tips more whitened; remainder of legs brown, outer tarsal

segments whitened. Wings (Fig. 21) faintly suffused, veins pale brown, prearcular and costal fields clear light yellow, including the veins; stigma conspicuous, subcircular, brown; vague restricted paler brown clouds at origin of *Rs*, wing apex in cell R_3 , and less evident at anterior cord and outer end of cell $1st\ M_2$. Weak trichia on veins R_1 , R_{4+5} , and distal section of M_{1+2} , with a few in outer section of M_3 . Venation: *Sc* long; *Rs* very long, exceeding vein R_3 , the latter sinuous; vein R_{4+5} long, decurved to the wing tip; cell R_3 widened outwardly, at margin nearly four times cell R_2 ; cell $1st\ M_2$ very large, its inner end long-oblique; distal section of M_{1+2} subequal to or slightly longer than cell $1st\ M_2$; *m-cu* shortly beyond fork of *M*.

Abdominal tergites yellow basally, posterior borders brown, more extensive on proximal segments, progressively narrower on outer ones; sternites dark brown basally, enclosing a circular yellow area; hypopygium chiefly obscure yellow, tergite darkened. Male hypopygium (Fig. 27) with tergite, *t*, very large, each outer angle produced into a lobe that terminates in a compact pencil of yellow setae that resembles a spine; dorsal surface of tergal plate darkened, at near midlength with a group of from about 30 to 40 strong black setae. Sternite, *s*, similarly extensive, posterior border with long slender lateral lobes and a broad shorter median extension provided with short setae. Basistyle, *b*, small in comparison with the tergite and sternite, unmodified. Dististyle, *d*, single, terminal in position, subequal in length or slightly longer than the basistyle, appearing as a pale irregularly sinuous lobe, stouter on proximal third, narrowed at midlength, with a small point on outer margin; outer end of style slightly expanded into an oval head. Aedeagus, *a*, a long very slender straight rod.

Habitat: Nigeria. Holotype, ♂, on slide, Gembu, North East State, August 21, 1973 (Medier). Allotopotype, ♀, with type. Paratopotypes, 13 ♂♀, all on separate slides.

The present fly is readily told from all other members of the genus by the hypopygial character of having a single dististyle.

14. *Orimarga (Orimarga) rubrithorax* sp. n.

Head light gray, posterior vertex blackened; thorax and abdomen polished reddish or orange; halteres brownish black; legs black; wings weakly darkened, veins dark brown; longitudinal veins beyond general level of cord with trichia; veins Sc_1 and Sc_2 subequal; *m-cu* opposite origin of *Rs*.

Female. Length, about 6 mm; wing, 4.8 mm.

Rostrum reddened; mouthparts black. Antennae broken. Head light gray, central area of posterior vertex blackened; anterior vertex broad, nearly equal to the exposed diameter of the eye.

Thorax almost uniformly polished dark orange or reddish. Pronotum as viewed from above with a conspicuous emargination to appear bilobed. Halteres brownish black. Legs with coxae and trochanters reddish; remainder of legs black, extreme bases of femora yellowed. Wings (Fig. 22) weakly darkened, especially cells *C* and *Sc*; veins dark brown. Longitudinal veins beyond general level of cord with trichia. Venation: *Sc* long, Cc_1 about opposite two-thirds *Rs*, Sc_2 at tip; R_2 nearly twice R_{1+2} ; R_2 and *r-m* nearly in transverse alignment; *m-cu* opposite origin of *Rs*.

Abdomen uniformly reddish orange.

Habitat: Nigeria. Holotype, ♀, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler).

The most similar regional species is *Orimarga (Orimarga) brevicula* Alexander, of Uganda, which differs in the coloration of the thorax and abdomen and in the light brow legs.

Hexatomini

15. *Hexatoma (Eriocera) setivena* sp. n.

Size medium (wing over 15 mm in female); head, prothorax and pleura darkened, mesonotum extensively yellowed; legs black; wings infuscated, costal field, stigma and a seam along vein *Cu* darker; veins beyond cord with numerous trichia, including veins M_{1+2} , M_3 and M_4 ; R_{2+3+4} about twice basal section of R_5 ; abdomen extensively yellow, especially the sternites and membrane; ovipositor with valves long and slender.

Female. Length, about 22 mm; wing, 15.5 mm; antenna, about 2 mm.

Alcoholic specimen, mounted on slide. Rostrum light brown; palpi short, darker brown. Antennae (female) 6-segmented, scape and pedicel dark brown, first flagellar segment yellowed, remaining segments light brown; scape large, pedicel much reduced, short-oval; first flagellar segment stout, especially basally, outer three segments cylindrical, with long verticils; second and third segments subequal in length, terminal one slightly longer. Head dark brown or brownish black, more yellowed posteriorly.

Prothorax brownish black. Mesonotum yellowed, praescutum dark brown near suture, disk with three vaguely indicated pale brown stripes, lateral borders narrowly brown. Pleura chiefly dark brown. Halteres short, stem obscure yellow, the large knob dark brown. Legs with coxae dark brown; trochanters yellowed; remainder of legs black, bases of fore femora slightly paler. Wings (Fig. 28) infuscated, the prearcular and costal fields, stigma and a broad seam in cell *M* chiefly along vein *Cu* darker brown; veins brown. Numerous trichia on longitudinal veins beyond cord, including the branches of *R* and veins M_{1+2} and M_3 over their entire lengths, on M_4 almost to base, with more sparse trichia on second section of M_{1+2} almost to base. Venation: R_{2+3+4} about twice the basal section of R_5 and three times R_{2+3} ; R_{1+2} about twice R_2 ; cell *1st M*₂ long-rectangular, slightly longer than vein M_4 .

Abdomen with tergites brownish yellow, intermediate segments with bases slightly clearer yellow; sternites and pleural membrane yellowed. Ovipositor with valves long and slender, especially the cerci that are more narrowed on outer halves.

Habitat: Nigeria. Holotype, ♀, on slide, Obudu Cattle Ranch, South East State, April 13, 1973 (Medler).

In its general appearance this species is most like *Hexatoma (Eriocera) commutabilis* (Alexander), Nigeria, and *H. (E.) commutabilis aurantiiventris* Alexander, Zaire, especially the latter, differing evidently in the trichiation of the wing veins and in the venational details.

Eriopterini

16. *Conosia minusculoides* sp. n.

Characters much as in *angustissima*, differing evidently in the small size (Wing of male to 6 mm).

Male. Length, about 7 — 8 mm; wing, 4.8 — 6 mm. Alcoholic specimens, mounted on slides. General coloration of entire body brown, proximal five or six abdominal segments paler, with abundant microscopic brown dots. Legs with coxae and trochanters yellow; femora brown, bases narrowly more yellowed; tibiae and basal tarsal segments more yellowed, outer segments dark brown. Wings (Fig. 29), in male only moderately dilated, widest opposite termination of vein *2nd A*; ground color pale with the characteristic darker brown spotted and dotted pattern of the genus; darkest markings over the relatively large. Venation:

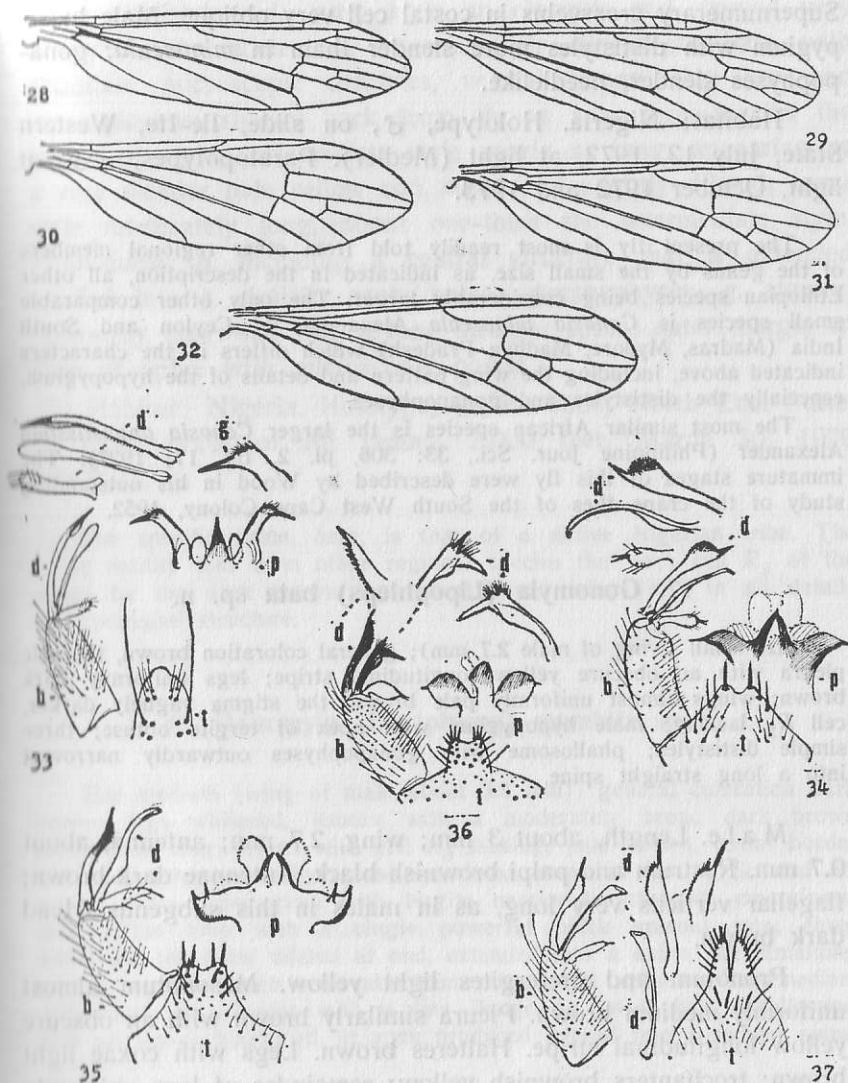


Fig. 28. *Hexatoma (Eriocera) setivena* sp. n.; venation. — Fig. 29. *Conosia minusculoides* sp. n.; venation. — Fig. 30. *Gonomyia (Lipophleps) bata* sp. n.; venation. — Fig. 31. *Gonomyia (Lipophleps) pachymera* sp. n.; venation. — Fig. 32. *Gonomyia (Lipophleps) teergospinosa* sp. n.; venation. — Fig. 33. *Gonomyia (Lipophleps) bata* sp. n.; male hypopygium. — Fig. 34. *Gonomyia (Lipophleps) mambila* sp. n.; male hypopygium. — Fig. 35. *Gonomyia (Lipophleps) pachymera* sp. n.; male hypopygium. — Fig. 36. *Gonomyia (Lipophleps) pulchripes* Alexander; male hypopygium. — Fig. 37. *Gonomyia (Lipophleps) teergospinosa* sp. n.; male hypopygium. — (Symbols, Male hypopygium: b, basistyle; d, dististyles; g, gonapophysis; p, phallosome; t, tergite).

oblique crossveins in costal cell; three conspicuous brown areas in the proximal radial field adjoining vein *R*, the larger at ends of veins R_{1+2} and R_3 ; marginal spot at end of vein *2nd A*

Supernumerary crossveins in costal cell very oblique. Male hypopygium with dististyles more slender than in *minuscula*; gonapophyses slender, needlelike.

Habitat: Nigeria. Holotype, ♂, on slide, Ile-Ife, Western State, July 12, 1972, at light (Medler). Paratopotypes, ♂♂, at light, October 1972 and 1973.

The present fly is most readily told from other regional members of the genus by the small size, as indicated in the description, all other Ethiopian species being considerably larger. The only other comparable small species is *Conosia minuscula* Alexander, of Ceylon and South India (Madras, Mysore, Madhya Pradesh) which differs in the characters indicated above, including the wing pattern and details of the hypopygium, especially the dististyles and gonapophyses.

The most similar African species is the larger *Conosia angustissima* Alexander (Philippine Jour. Sci., 33: 306, pl. 2, fig. 17; 1927). The immature stages of this fly were described by Wood in his outstanding study of the crane flies of the South West Cape Colony, 1952.

17. *Gonomyia (Lipophleps) bata* sp. n.

Size small (wing of male 2.7 mm); general coloration brown, thoracic pleura with an obscure yellow longitudinal stripe; legs uniformly dark brown; wings almost uniformly pale brown, the stigma vaguely darker, cell R_3 lacking; male hypopygium with apex of tergite obtuse; three simple dististyles; phallosome with gonapophyses outwardly narrowed into a long straight spine.

Male. Length, about 3 mm; wing, 2.7 mm; antenna, about 0.7 mm. Rostrum and palpi brownish black. Antennae dark brown; flagellar verticils very long, as in males in this subgenus. Head dark brown.

Pronotum and pretergites light yellow. Mesonotum almost uniformly medium brown. Pleura similarly brown with an obscure yellow longitudinal stripe. Halteres brown. Legs with coxae light brown; trochanters brownish yellow; remainder of legs uniformly dark brown. Wings (Fig. 30) pale brown, stigma only vaguely darker, costal border narrowly whitened; veins light brown. Longitudinal veins beyond cord with trichia, lacking on R_s and both Anals. Venation: Sc_1 ending just beyond origin of R_s ; cell R_3 lacking; $m-cu$ at fork of M .

Abdomen brown. Male hypopygium (Fig. 33) with the tergite, t , depressed-flattened, median region slightly more produced, not emarginate; on either side of midline with four relatively long setae, nearer the base of plate with several very long setae, the longest nearly twice as long as the entire plate.

Three dististyles, d ; outer style an elongate rod, curved very gently to the acute tip, lower margin almost to base with abundant microscopic denticles, ventral flange very low and inconspicuous, shortly back from tip at near three-fourths the length of style; intermediate style nearly as long, appearing as a very slender pale yellow rod, outer end slightly dilated; inner style moderately long, about one-third the intermediate style. Phallosome, p , including a central structure that is extended caudad into a straight acute spine; gonapophyses, g , stouter, outwardly narrowed into a long straight spine, outer margin at base of spine with microscopic points.

Habitat: Nigeria. Holotype, ♂, on slide, North East State, 10 miles north of Mi Jamag, 3,000 feet, March 30, 1970 (Medler).

The specific name, *bata*, is that of a native Nigerian tribe. The fly is readily told from other regional species that lack cell R_3 of the wings by the dark brown legs, unpatterned wings and in all details of hypopygial structure.

18. *Gonomyia (Lipophleps) mambila* sp. n.

Size medium (wing of male about 3.8 mm); general coloration dark brown; legs whitened, femora with a moderately broad dark brown subterminal ring; wings with cell R_3 lacking, pale brown, costal border and apex whitened, stigma and restricted areas at tip of Sc and R_4 brown; male hypopygium with tergite narrowed outwardly emarginate, each apical lobe with a single powerful black spinoid seta; three dististyles, the outer dilated at end, extended into a spine, the remaining apex a rounded knob with abundant microscopic spinules; intermediate style long and slender with a low flange on basal half; phallosome with apophyses blackened, at apex produced laterad into a slender spine.

Male. Length, about 4 mm; wing, 3.8 mm; antenna, about 1.0 mm. Alcoholic specimen, mounted on slide. Rostrum and palpi dark brown. Antennae with scape and pedicel brown, the latter large; flagellum with proximal segments yellowed, outers light brown, intermediate verticils very long. Head dark brown; eyes large.

Thorax generally dark brown, pleura restrictedly striped longitudinally with pale. Halteres with stem whitened, knob brown. Legs whitened, bases of coxae narrowly darkened; femora with a moderately broad subterminal dark brown ring, slightly

more extensive than the whitened apex; outer dorsal segments pale brown. Wings pale brown, costal border and apex whitened; stigma and very restricted brown areas at origin of R_s and end of vein R_4 , cord less evidently darkened, best evidenced by the darker veins. Venation: Cell R_3 lacking; $m-cu$ at fork of M .

Abdomen chiefly medium brown, patterned longitudinally with pale and slightly darker brown lines. Male hypopygium (Fig. 34) with tergite, t , broad, narrowed outwardly, apex shallowly emarginate to form two low lobes, each tipped with a relatively short stout spinoid seta, outer end of tergite with few longer and more slender black setae, the more basal ones long and narrow, lacking on median area. Dististyles, d , three, outer style longest and most powerful, outer end dilated, below extended into a terminal spine, apex above a rounded knob with abundant microscopic black spinules; intermediate style almost as long, very slender, terminating in a point, basal half with a low flange; inner style narrowed basally, outer two-thirds oval, terminating in two weak modified setae. Phallosome, p , including divergent darkened apophyses, each terminating in a strong black spine.

Habitat: Nigeria. Holotype, ♂, on slide, Ile-Ife, Western State, July 1970 (Medler).

The specific name, *mambila*, is that of a native Nigerian people. The most similar regional species include *Gonomyia (Lipophleps) pachymera* sp. n., *G. (L.) pulchripes* Alexander, and *G. (L.) tergospinosa* sp. n., all discussed and figured in this paper. All of these are most readily distinguished among themselves by hypopygial structure.

19. *Gonomyia (Lipophleps) pachymera* sp. n.

General coloration of body dark brown; wings pale brown, costal and apical areas whitened, with a restricted darker brown pattern, cell R_3 lacking; male hypopygium with tergite terminating in two lobes that are provided with powerful blackened setae; three simple dististyles; phallosome with powerful lateral arms that terminate in two small acute spines.

Male. Length, about 4.5 mm; wing, 3.5 mm; antenna, about 0.8 mm. Alcoholic specimen, mounted on slide. Rostrum and palpi dark brown. Antennae with scape and pedicel dark brown above, yellowed beneath; proximal two flagellar segments short and crowded, light yellow; remaining segments brown, long and

slender, verticils of intermediate segments very long, the extremes more than three times the segment. Head dark brown.

Mesonotum dark brown, pleura paler, especially dorsally. Legs with coxae brown, trochanters whitened; remainder of legs broken (probably with femora pale, ringed subterminally with dark, as in related species). Wings (Fig. 31) with ground pale brown, stigma and smaller areas at origin of rs , fork of Sc and tip of R_3 darker brown; cord broadly light brown; costal border whitened, more conspicuous before and beyond stigma and at wing apex; veins light brown, darker in the patterned areas. Venation: Sc_1 ending opposite origin of R_s ; two outer radial branches, cell R_3 lacking; $m-cu$ at fork of M .

Abdomen dark brown. Male hypopygium (Fig. 35) with tergite, t , terminating in two low lobes separated by a more shallow emargination; apical setae very powerful, blackened. Three dististyles, d , all simple; outer style terminating in an acute needlelike spine, the lower margin of outer end with abundant microscopic spinules; intermediate style slightly expanded at near one-third the length. Phallosome, p , complex; lateral arms powerful, with two small acute outer points.

Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,000 feet, March 22, 1971 (Medler).

Other related regional species that lack cell R_3 in the wings and with three simple dististyles include *Gonomyia (Lipophleps) mambila* sp. n., *G. (L.) pulchripes* Alexander, and *G. (L.) tergospinosa* sp. n., as discussed and figured in this paper. All are most readily told by the structure of the male hypopygium.

19 A. *Gonomyia (Lipophleps) pulchripes* Alexander

Gonomyia (Leiponeura) pulchripes Alexander; Ann. Mag. Nat. Hist., (9) 7: 316-317; 1921.

Type, ♂, from Efulan, Cameroon, May 7, 1920 (J. A. Reis). The male hypopygium is shown for comparison with the related species described in this paper (Fig. 36).

20. *Gonomyia (Lipophleps) tergospinosa* sp. n.

General coloration dark brown, thoracic pleura variegated with paler; wings pale brown, costal border and apex whitened, restricted darker areas at stigma and elsewhere; male hypopygium with tergite produced apically into two approximated lobes, each with about seven powerful black spinoid setae along outer margin.

Male. Length, about 3 mm; wing, 3.5 mm; antenna, about 0.85 mm. Rostrum and palpi dark brown. Antennae with scape and pedicel chiefly dark brown; proximal flagellar segments pale, outer ones passing into medium brown; flagellar segments long, the intermediate ones with very long verticils, as common in males in this subgenus. Head brown.

Thorax of type, on slide, fragmentary; dorsum dark brown, pleura similar, variegated with paler. Legs with coxae and trochanters pale; femora light yellow, with a very broad dark brown subterminal ring; remainder of legs pale yellow, outer tarsal segments slightly darkened. Wings (Fig. 32) pale brown, costal border broadly whitened, variegated with darker brown at stigma, fork of Sc and tip of vein R_3 ; veins light brown, slightly darker in the patterned areas. Venation: Sc_1 ending opposite origin of R_s ; $m-cu$ at fork of M .

Abdomen dark brown. Male hypopygium (Fig. 37) with tergite, t , narrowed outwardly, produced into two closely approximated stout lobes, on their outer margins with a series of about 7 or 8 unusually stout black spinoid setae, more cephalad on disk with several long slender black setae. Three dististyles, d , about as shown; outer style slightly dilated on outer third, the dorsal margin terminating in a powerful black spine, ventral edge of dilated part with microscopic spinules, the outer three or four longer and more conspicuous; intermediata style about equal in length but very slender, expanded at apex, at near midlength with a conspicuous flange; inner style long and narrow. Phallosome, p , in unique type fragmentary, apparently without major flattened blades, such as are found in allied species, including *pachymera* and *pulchripes*.

Habitat: Nigeria. Holotype, ♂, Ile-Ife, Western State, July 1970 (Medler).

Other generally similar regional species having cell R_3 of wings lacking and with a distinct wing pattern and darkened femoral ring include *Gonomyia* (*Lipophleps*) *mambila* sp. n., *G. (L.) pachymera* sp. n., and *G. (L.) pulchripes* Alexander, all most readily separated by hypopygial characters, as described and figured in this report.

21. *Trentepohlia* (*Paramongoma*) *pallilutea* sp. n.

General coloration of entire body yellow; wings pale yellow, veins only slightly darker; vein R_2 at or close to outer radial fork, basal section of R_5 short.

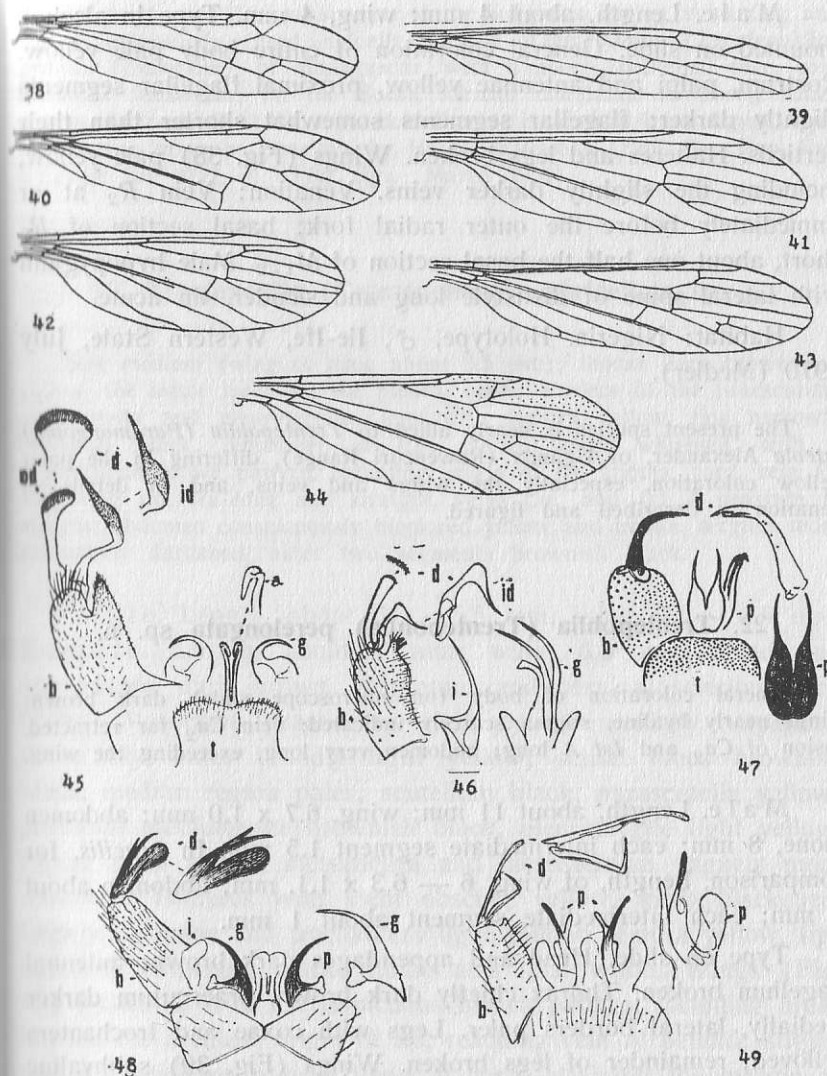


Fig. 38. *Trentepohlia* (*Paramongoma*) *pallilutea* sp. n.; venation. — Fig. 39. *Trentepohlia* (*Trentepohlia*) *perlongata* sp. n.; venation. — Fig. 40. *Trentepohlia* (*Trentepohlia*) *umbricellula* sp. n.; venation. — Fig. 41. *Eriopectera* (*Eriopectera*) *megalops* sp. n.; venation. — Fig. 42. *Eriopectera* (*Meteriopectera*) *pergracilis* sp. n.; venation. — Fig. 43. *Eriopectera* (*Podoneura*) *triangula* sp. n.; venation. — Fig. 44. *Trichotrimicra* *rectangula* sp. n.; venation. — Fig. 45. *Eriopectera* (*Eriopectera*) *megalops* sp. n.; male hypopygium. — Fig. 46. *Eriopectera* (*Meteriopectera*) *pergracilis* sp. n.; male hypopygium. — Fig. 47. *Tactocera* (*Dasymolophilus*) *diacanthophora* sp. n.; male hypopygium. — Fig. 48. *Eriopectera* (*Podoneura*) *triangula* sp. n.; male hypopygium. — Fig. 49. *Trichotrimicra* *rectangula* sp. n.; male hypopygium. — (Symbols, Male hypopygium: a, aedeagus; b, basistyle; d, dististyles; g, gonapophysis; t, interbase; id, inner dististyle; od, outer dististyle; p, phallosome; t, tergite).

Male. Length, about 4 mm; wing, 4 mm. Type in alcohol, mounted on slide. General coloration of entire body pale yellow. Rostrum, palpi and antennae yellow, proximal flagellar segments slightly darker; flagellar segments somewhat shorter than their verticils. Halteres and legs broken. Wings (Fig. 38) pale yellow, including the slightly darker veins. Venation: Vein R_2 at or immediately before the outer radial fork; basal section of R_5 short, about one-half the basal section of M_{1+2} . Male hypopygium with lateral spine of dististyle long and slender, tip acute.

Habitat: Nigeria. Holotype, ♂, Ile-Ife, Western State, July 1970 (Medler).

The present species is nearly allied to *Trentepohlia (Paramongoma) luteola* Alexander, of Uganda (Ruwenzori Range), differing in the paler yellow coloration, especially the wings and veins, and in details of venation as described and figured.

22. *Trentepohlia (Trentepohlia) perelongata* sp. n.

General coloration of body (on microscope slide) dark brown; wings nearly hyaline, stigma scarcely indicated; vein Cu_2 far retracted, fusion of Cu_2 and *1st A* long; abdomen very long, exceeding the wing.

Male. Length, about 11 mm; wing, 6.7 x 1.0 mm; abdomen alone, 8 mm; each intermediate segment 1.5 mm. In *gracilis*, for comparison, Length, of wing, 6 — 6.3 x 1.1. mm; abdomen about 6 mm; each intermediate segment about 1 mm.

Type on slide. Head and appendages dark brown; antennal flagellum broken. Thorax chiefly dark brown, praescutum darker medially, lateral borders paler. Legs with coxae and trochanters yellowed; remainder of legs broken. Wings (Fig. 39) subhyaline to nearly hyaline, stigmal region scarcely darkened; veins yellowed, poorly discernible in balsam mount. Macrotrichia of veins behind costa lacking or virtually so, with a few scattered small trichia on distal section of R_5 . Venation: Sc_1 ending about opposite fork of R_s , the latter subequal to basal section of R_5 ; cell R_5 very long, about three and one-half times its petiole (vein $R_{5+M_{1+2}}$); vein Cu_2 far retracted, about as in *gracilis*. Abdomen dark brown, very long, as shown by the measurements.

Habitat: Nigeria. Holotype, ♂, Badeggi, North West State, December 1968 (Medler).

Other tropical African species of the subgenus having veins Cu_2 and *1st A* extensively fused apically include *Trentepohlia (Trentepohlia) gracilis* (Enderlein), of Madagascar, with a poorly delimited race, *continentalis* Alexander, on the South African mainland. A closely allied species or race, *T. (T.) efflatouni* Pierre, is known from Egypt, bred from larvae taken at Ghezireh, by Hassan Efflatoun (Bull. Soc. Roy. Ent. d'Egypte for 1922, p. 83-85, figs.; March 1922).

23. *Trentepohlia (Trentepohlia) umbricellula* sp. n.

Size medium (wing of male about 6.5 mm); thorax dark brown and yellow, the latter including the pleura, broad borders of the praescutum, parascutella and pleurotergite; legs with femora yellow, tips narrowly brownish black, remainder of legs white; wings whitened, with a conspicuous brown pattern, including origin of R_s , stigma, cord, vein R_3 and wing tip; R_s long and straight, veins Cu_1 and *1st A* separate at margin; abdomen conspicuously bicolored yellow and brown, tergites more extensively darkened, outer two segments brownish black.

Male. Length, about 6 — 6.5 mm; wing, 6 — 6.5 mm. Female. Length, about 7 mm; wing, 6.5 mm. Head and appendages dark brown. Pronotum and cervical sclerites dark brown. Mesonotal praescutum dark brown medially, expanded posteriorly, sides broadly light yellow; scutal lobes brownish black, median region paler; scutellum black, parascutella yellow; postnotal mediotergite brownish black, pleurotergite light yellow. Pleura light yellow, mesopleura and mesosternum vaguely more darkened. Halteres with stem obscure yellow, knob blackened. Legs with coxae and trochanters light yellow; femora yellow, tips narrowly brownish black; tibiae and tarsi white. Wings (Fig. 40) whitened, with a conspicuous brown pattern, including areas beyond the arculus; origin of R_s , reaching vein M behind; stigma and a continuous narrow band at cord, attaining the margin at tip of Cu ; a brown seam over vein R_3 , about one-third as wide as the pale ground areas on either side; wing tip broadly paler brown, including cells R_3 to R_5 , narrowed into cell M_2 ; cells C and Sc paler brown, slightly darker than the remainder of ground; veins dark brown, some paler, as vein R_3 and the elements of the posterior cord. Venation: Sc_1 long; R_s long and straight; R_{2+3+4} slightly shorter than R_{3+4} , the two latter veins arched to widen the cell behind; petiole of cell R_5 about one-half longer than basal section of M_{1+2} ; veins Cu_1 and *1st A* not connected at margin.

Abdomen conspicuously bicolored, yellow and brown; tergites more extensively darkened, bases yellowed, broadest on seventh segment, involving nearly the basal half; sternites yellow, with about the outer third of segment brownish black; outer two segments including hypopygium brownish black.

Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler). Allotopotype, ♀, with type. Paratopotypes, 3 ♂ ♀, with type.

The present fly is related to *Trentepohlia (Trentepohlia) disconnectans* Alexander, of Rwandi (Parc National Albert, Volcano Nyamuragira, Gitebe), agreeing in the open cell *Cu* of the wings, differing in the slightly larger size and in details of body and wing coloration, including the pale yellow costal region.

24. *Erioptera (Erioptera) megalops* sp. n.

General coloration of head, thoracic dorsum and abdominal tergites dark brown; eyes of male very large and conspicuous; wings with ground whitish yellow, including the veins; disk with extensive pale brown areas before and beyond cord, slightly connected at fork of *M*; male hypopygium with inner dististyle elongate, base narrowed, outer half long and straight, narrowed to the acute apex; phallosome with gonapophyses narrowed outwardly into a gently curved rod.

Male. Length, about 5 — 5.5 mm; wing, 4.2 — 4.3 mm; antenna, about 1 mm. Slide material, in balsam. Rostrum dark brown, palpi paler, especially basally. Antennae light brown; basal segment of flagellum nearly glabrous, succeeding segments oval to long-oval, with conspicuous verticils. Eyes, at least in male, very large and bulbous, the ommatidia varying in size and shape on different parts of the eye, as in other allied species.

Thoracic dorsum dark brown, pleura paler. Halteres with stem yellow, the large knob dark brown. Legs with coxae and trochanters yellowed; remainder of legs broken. Wings (Fig. 41) small, in relation to size of body; ground whitish yellow, including the veins, with a conspicuous pale brown pattern that consists of a major area before and beyond the cord, barely contiguous at fork of *M*, the included veins pale brown, *Cu* and *R*₅ darker; stigmal area oval, darker brown; the whitened ground includes the prearcular and costal fields, the latter with extensive triangular invasions, wing apex broadly pale; posterior half of wing chiefly pale brown, vaguely paler in parts of the Anal cells.

Venation: As in the subgenus; vein *2nd A* strongly sinuous, as shown.

Abdominal tergites brown, basal sternites and hypopygium yellow, seventh segment dark brown. Male hypopygium (Fig. 45) with tergite, *t*, nearly truncate at apex, with abundant small setae. Basistyle, *b*, having the outer apical lobe with long setae, inner lobe narrower, with short vestiture. Dististyles, *d*, about as figured; outer style with distal half of lobe with microscopic blackened vestiture; inner style elongate, base narrowed, outer half long and straight, narrowed gradually to the pointed darkened apex, surface with small setae. Phallosome, *p*, with gonapophyses, *g*, narrowed apically into a slender gently curved rod, tip narrowly blackened; aedeagus, *a*, with apical branches subappressed, apices recurved.

Habitat: Nigeria. Holotype, ♂, Ile-Ife, Western State, July 1970 (Medler). Paratopotype, ♂.

The Ethiopian fauna includes numerous species of the typical subgenus *Erioptera*, some with the wing pattern similar to that of the present fly, including *Erioptera (Erioptera) angolana* Alexander, Angola, and *E. (E.) bequaerti* Alexander, Zaire, differing in size, especially the wings and eyes of the male, wing pattern and male hypopygium. The Nigerian *E. (E.) badicineta* Alexander and *E. (E.) parviclava* Alexander are less similar to the present fly.

25. *Erioptera (Meterioptera) pergracilis* sp. n.

Rostrum yellow, remainder of head grayish brown, anterior vertex more yellowed; mesonotum brownish gray, with a broken brown median line on praescutum, scutum and scutellum; knobs of halteres brownish black; wings brownish gray, costal border light yellow, including the veins, vein *2nd A* strongly bent at near three-fourths the length in male; male hypopygium with inner dististyle and interbase unusually long and slender.

Male. Length, about 4 mm; wing, 4 mm. Female. Length, about 4.5 — 4.8 mm; wing, 4 — 4.6 mm. Rostrum yellow; palpi black. Antennae black, scape slightly paler. Head grayish brown, with a central darker line, front and anterior vertex more yellowed.

Pronotum brown, yellowed laterally and behind. Mesonotal praescutum brownish gray with three brown stripes, the median long and narrow, lateral stripes short; pseudosutural foveae transverse, conspicuous; scutum light gray, lobes patterned with

brown, medially with a narrow line; scutellum yellow with a blackened central line, widened basally; postnotum gray. Pleura brownish gray, posterior sclerites clearer gray. Halteres with stem yellow, knob brownish black. Legs with coxae and trochanters obscure yellow; remainder of legs obscure yellow, appearing darker because of the abundant setae, outer tarsal segments darker. Wings (Fig. 42) brownish gray, cells *C* and *Sc* light yellow, including the veins, remaining veins brown, slightly darker in female. Venation: *Sc*₂ far retracted, *Sc*₁ very long; vein *2nd A* strongly bent, in male at near three-fourths its length, in female at about two-thirds.

Abdomen brown, darker in female. Male hypopygium (Fig. 46) with the inner dististyle, *d*, narrowed basally, distal half a long slender decurved spine. Interbase, *i*, unusually long and slender, needle-like, base dilated. Phallosome, with gonapophyses, *g*, small and weak, subtending the still smaller pale aedeagus.

Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler). Allotopotype, ♀. Paratopotypes, 6 ♀♀.

There are relatively few Ethiopian species of *Meterioptera* Alexander, chiefly in South Africa. The various species are separated by the coloration of the wings and in venational details, and in hypopygial characters, especially the inner dististyle, interbase and gonapophyses. The species that are most similar to the present fly include the South African *Erioptera* (*Meterioptera*) *persinuata* Alexander and *E. (M.) subaurea* Bergroth, of South Africa and Rhodesia.

26. *Erioptera* (*Podoneura*) *triangula* sp. n.

General coloration of thorax light gray, praescutum with three narrow black stripes, scutellum obscure yellow with a narrow central darkening; legs black, femora with a narrow yellow ring at or beyond two-thirds the length; wings light yellow, with darker brown marks and clouds; apical fork of vein *2nd A* shallow; male hypopygium with spines of outer dististyle unequal, axial spine longer; interbase pale yellow; gonapophyses appearing as long curved spines, the basal expansion a small subtriangular yellow head.

Male. Length, about 4.5 — 5 mm; wing, 4 — 5 mm. Rostrum and palpi dark brown. Antennae with scape and pedicel light yellow, flagellum dark brown. Head dark brown.

Pronotum brownish gray, broadly blackened medially. Mesonotal praescutum light gray with three narrow black stripes,

the lateral pair slightly broader, more than twice the interspaces, pseudosutural foveae black; scutum gray, each lobe with a broad longitudinal black area, with a less conspicuous more lateral marking; scutellum obscure yellow, with a narrow central darkening, parascutella brown; postnotum black, pruinose. Pleura gray, vaguely more grayish yellow on posterior sclerites; dorso-pleural membrane light yellow. Halteres with stem light yellow, knob brownish black. Legs with fore coxae black, midcoxae obscure yellow, posterior pair gray; trochanters obscure brownish yellow; femora black, with a narrow yellow ring at near two-thirds to three-fourths the length, this color varying somewhat in clearness and intensity in different specimens; remainder of legs black. Wings (Fig. 43) with the restricted ground light yellow, with darker brown clouds and paler washes; darker areas at origin of *Rs*, *Sc*₂, stigma, tips of *R*₁₊₂ and *R*₃, anterior cord, *m-cu* and outer end of cell *1st M*₂; extensive paler brown washes in outer half of cell *R*, most of cells *Cu* and *1st A* and extensively in outer radial field, including virtually all of cells *R*₄ and *R*₅; veins light brown in the ground, darker in the patterned fields. Venation: *Sc*₁ ending shortly before *R*₂, *Sc*₂ far retracted; a short spur on basal section of *M*₃, jutting basad into cell *1st M*₂, this somewhat variable in length, usually shorter than in figure; *m-cu* more than its length before fork of *M*; apical fork of vein *2nd A* shallow.

Abdominal tergite and hypopygium brown, sternites more yellowed. Male hypopygium (Fig. 48) with the spines of the outer dististyle, *d*, unequal; inner style broadly obtuse, darkened. Basistyle, *b*, with the interbase a pale yellow extension. Phallosome, *p*, with the gonapophyses, *g*, appearing as strong curved black spines that narrow to an acute point, basal extension expanded into a subtriangular yellow blade that has suggested the specific name.

Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler). Paratopotypes, ♂, with type; 2 ♂♂, on slide, 5,200 feet, March 23, 1971 (John and Jane Medler).

The most similar species is *Erioptera* (*Podoneura*) *anthracogramma* (Bergroth), of South Africa, distinguished by details of coloration and the hypopygium, especially the phallosome.

27. *Trichotrimicra rectangula* sp. n.

Size small (wing about 4 mm); general coloration of head and thorax dark brownish gray; knobs of halteres dark brown; legs yellowish brown, vestiture short and inconspicuous; wings light gray, veins and trichia darker, cells of outer half of wing with abundant trichia, variable in numbers in different specimens; male hypopygium with outer dististyle long and slender, at near midlength with a long appressed spine; inner style smaller, at near two-thirds the length bent at a right angle, terminating in an acute point.

Male. Length, about 3.5 mm; wing, 4 mm. Female. Length, about 3.5 — 4 mm; wing, 3.8 — 4.2 mm. Rostrum dark brown; palpi black. Antennae black, scape paler. Head brownish gray.

Pronotum brownish gray. Mesonotum dark brownish gray, pseudosutural foveae and tuberculate pits black, in transverse alignment. Pleura dark brown, sternopleurite and meron yellowed. Halteres with base of stem light yellow, remainder dark brown. Legs with coxae and trochanters light yellow; femora yellowish brown, remaining segments slightly darker brown; vestiture short and inconspicuous. Wings (Fig. 44) light gray, veins and trichia slightly darker. Cells of outer half of wing with abundant trichia (shown in figure by stippling), in some specimens more numerous, virtually over the entire wing. Venation: R_2 oblique, shortly beyond anterior fork of R_2 , leaving a short vein R_{2+3} ; cell $1st M_2$ closed; $m-cu$ at or close to fork of M .

Abdomen dark brown. Ovipositor with cerci compressed-flattened, yellow, curved strongly upward into acute points. Male hypopygium (Fig. 49) with dististyles, d , distinctive; outer style long and slender, nearly straight, slightly dilated at near midlength of lower margin, with a long appressed spine; inner style shorter, at a right angle, terminating in an acute point. Phallosome, p , complex, the apophyses about as figured.

Habitat: Nigeria. Holotype, ♂, on slide, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler). Allotopotype, ♀. Paratopotypes, ♀ ♀.

Trichotrimicra rectangula is distinct from the regional *T. medleri* Alexander, especially in the quite different hypopygium.

28. *Tasiocera (Dasymolophilus) diacanthophora* sp. n.

Allied to *biacufera*; general coloration brownish black; legs brown, appearing darker from the dense vestiture; wings long and narrow, infuscated, base whitened; R_{2-3} about twice R_{2-3-4} ; vein $2nd A$ ending a short distance before level of origin of R_5 ; male hypopygium with dististyle a blackened curved blade, narrowed to an acute spine, back from apex with a darkened flange that is produced into an obtuse denticle, setigerous punctures small and scattered; phallosome a large blackened plate, posterior end produced into two long slender spines that are nearly parallel to one another.

Male. Length, about 3.3 mm; wing, 4.2 mm. Rostrum and palpi brownish black. Antennae with scape and pedicel dark brown; flagellum broken. Head dark brown.

Thorax almost uniformly very dark brown or brownish black, vestiture conspicuous. Halteres infuscated. Legs with coxae and trochanters dark brown, remainder of legs brown, appearing black from the dense vestiture; claws microscopically setuliferous, with a long slender basal spine. Wings long and narrow, infuscated, base more whitened, veins and trichia still darker. Venation: R_{2-3-4} relatively long, approximately three times the basal section of R_5 ; R_{2-3} about twice R_{2-3-4} , strongly arcuated at origin; cell M_2 open; cell $2nd A$ narrow, the vein ending a short distance before level of origin of R_5 .

Abdomen, including hypopygium, dark brown. Male hypopygium (Fig. 47) with tergite, t , large, posterior border subtruncate surface with very numerous long setae. Basistyle, b , with somewhat fewer setae. Dististyle, d , a blackened curved blade, narrowed to an acute spine, back from apex with a darkened flange that is produced into a major obtuse denticle, with indications of a smaller additional one; surface of style with about five small scattered setigerous punctures. Phallosome, p , a large blackened plate, posterior end conspicuously forked, produced into two long slender spines that lie approximately parallel to one another, median emargination very narrow, length of the entire plate about equal to the dististyle. Aedeagus relatively broad, apex blackened, decurved to a short stout point.

Habitat: Rwanda. Holotype, ♂, Parc National Albert, September 13, 1932 (L. Burgeon).

The most similar species is *Tasiocera (Dasymolophilus) biacufera* Alexander (Zaire, Uganda, Natal), which differs in details of hypopygial structure, including the phallosome.

Styringomyiini

Styringomyia Alexander; Crane-flies of New York. II. Cornell University Agricultural Experiment Station, Memoir 38: 957; 1920.

The somewhat remarkable crane flies of the genus *Styringomyia* Loew for more than the past half century have been placed in the tribe Eriopterini but it now appears that they should be placed in a separate tribe, as was done in 1920 by Alexander in the reference above cited. Recent studies on the ovipositor by Dr. Bo Tjeder have emphasized the isolated position of the genus and the inadvisability of retaining it in the Eriopterini. Papers that consider the genus in some detail include the following:

Alexander, C. P. Insects of Micronesia, vol. 12, n. 8: 841-847; 1972.

Edwards, F. W. Trans. Ent. Soc. London, 1914: 206-227, 7 plates with 81 figures; 1914.

29. *Styringomyia chelifera* sp. n.

General coloration of body yellow, restrictedly patterned with darker; legs yellow, unpatterned; wings yellow with a restricted brown pattern, vein *2nd A* broadly curved at apex, without a subterminal spur; male hypopygium with apical lobe of tergite long-produced into a narrow lobe that is densely fringed with long delicate setae; basistyle with a powerful clawlike structure near apex of mesal face; dististyle with three lobes, the outer short and broad, near outer end with about five strong black setae, inner lobes on margins with strong black peglike setae; phallosome with a pair of blackened wing-like plates that are margined apically with strong spines.

Male. Length, about 7 mm; wing, 4 mm. Female. Length, about 5 — 5.5 mm; wing, 3.5 — 3.7 mm. Types in balsam on slides. Palpi light brown, the elongate terminal segment more slender, with shorter setae. Antennae with scape brownish yellow, with a narrow brown dorsal line. Head brownish yellow, posterior vertex with darker spots.

In slide mounts thorax appearing almost uniformly yellow to pale brownish yellow, restrictedly patterned with brown. Halteres pale. Legs light yellow, terminal tarsal segment brown. Wings yellow, with a restricted brown area at *r-m*, slightly involving the bases of adjacent veins; small paler brown areas at outer end of cell *1st M*₂, *m-cu*, and outer end of vein *2nd A*; veins yellow, darker in the patterned areas. Costal fringe pale.

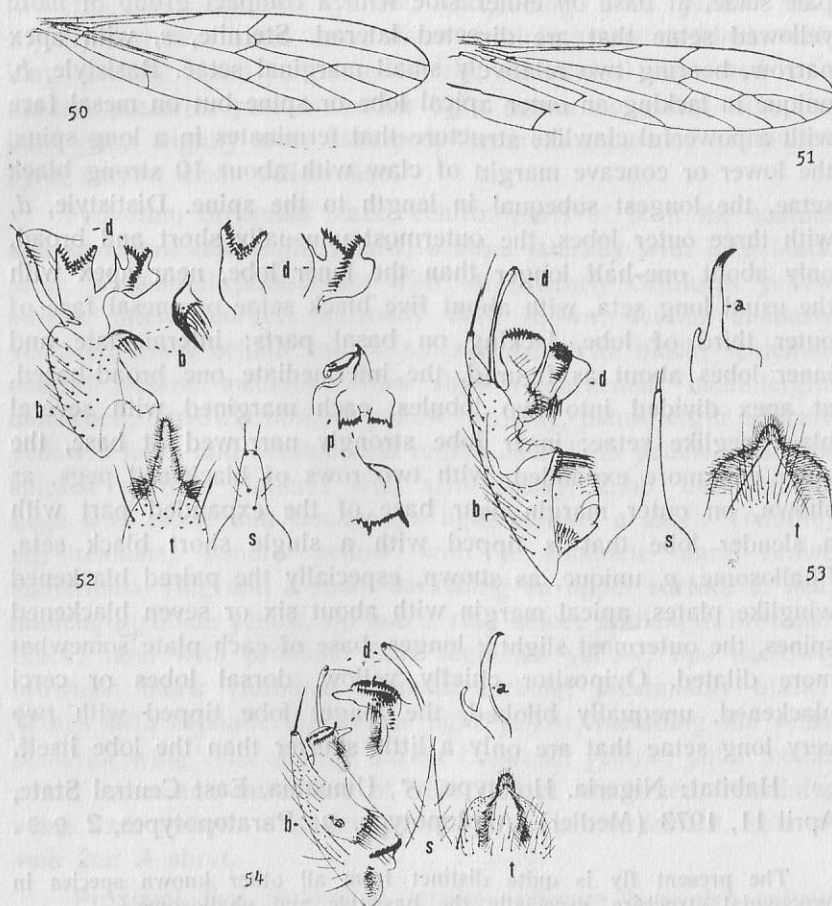


Fig. 50. *Styringomyia obuduensis* sp. n.; venation. — Fig. 51. *Styringomyia recurvata* sp. n.; venation. — Fig. 52. *Styringomyia chelifera* sp. n.; male hypopygium. — Fig. 53. *Styringomyia futani* sp. n.; male hypopygium. — Fig. 54. *Styringomyia obuduensis* sp. n.; male hypopygium. — (Symbols, Male hypopygium: a, aedeagus; b, basistyle; d, dististyle; p, phallosome; s, sternite; t, tergite).

Venation: Cell *M*₂ sessile, in cases broadly so; *m-cu* at near midlength of *M*₃₊₄; vein *2nd A* broadly curved at outer end, without a spur.

Abdomen yellow, posterior borders of tergites narrowly light brown, interrupted at midline to form two transverse areas. Male hypopygium (Fig. 52) with tergite, *t*, at apex long-produced into a narrow lobe, the sides densely fringed with long erect

pale setae, at base on either side with a compact group of more yellowed setae that are directed laterad. Sternite, *s*, with apex narrow, bearing two relatively small marginal setae. Basistyle, *b*, unique in lacking an outer apical lobe or spine but on mesal face with a powerful clawlike structure that terminates in a long spine, the lower or concave margin of claw with about 10 strong black setae, the longest subequal in length to the spine. Dististyle, *d*, with three outer lobes, the outermost unusually short and broad, only about one-half longer than the inner lobe, near apex with the usual long seta, with about five black setae on mesal face of outer third of lobe, lacking on basal parts; intermediate and inner lobes about as figured, the intermediate one broad-based, at apex divided into two lobules, each margined with several black peglike setae; inner lobe strongly narrowed at base, the outer end more expanded, with two rows of blackened pegs, as shown, on outer margin near base of the expanded part with a slender lobe that is tipped with a single short black seta. Phallosome, *p*, unique, as shown, especially the paired blackened winglike plates, apical margin with about six or seven blackened spines, the outermost slightly longer, base of each plate somewhat more dilated. Ovipositor chiefly yellow, dorsal lobes or cerci blackened, unequally bilobed, the longer lobe tipped with two very long setae that are only a little shorter than the lobe itself.

Habitat: Nigeria. Holotype, ♂, Umuahia, East Central State, April 11, 1973 (Medler). Allotopotype, ♀. Paratopotypes, 2 ♀.

The present fly is quite distinct from all other known species in hypopygial structure, especially the basistyle and phallosome.

30. *Styringomyia fulani* sp. n.

Size large (length of male about 9 mm); head yellow, patterned with brown; thoracic dorsum yellow, conspicuously patterned with dark brown and black, pleura yellow; legs yellow, conspicuously patterned with dark brown; wings with cephalic third light yellow, posterior cells slightly darker, with certain veins and adjoining membrane restrictedly patterned with brownish black; male hypopygium generally as in *obuduensis*, differing especially in the aedeagus and inner lobes of dististyle.

Male. Length, about 9 mm; wing, 6.2 mm. Rostrum obscure yellow, palpi with first segment brown, two and three black, yellowed basally. Antennae with scape dark brown below, yellowed above; pedicel brown at base, apex blackened; proximal

two flagellar segments yellow, succeeding ones yellow with slightly darkened bases, outer seven or eight segments black, with long verticils. Head yellow anteriorly, the central depressed area darker; posterior part of vertex light brown on either side, the inner parts slightly more darkened, the areas separated at midline by a narrow clear yellow line.

Pronotum brownish black, central parts of both the scutum and scutellum clear light yellow, scutum laterally with long black setae. Mesonotal praescutum with three nearly confluent yellow stripes, lateral borders narrowly dark brown; scutum similarly yellowed, lobes behind and on sides ringed with black; scutellum obscure yellow medially, sides slightly darkened; mediotergite blackened, narrowly obscure yellow medially, pleurotergite obscure yellow. Pleura and dorsopleural region clear light yellow, posterior spiracle narrow. Halteres with stem dusky, knob dark brown. Legs with coxae and trochanters light yellow; a single (middle) leg remains, femora yellow with a complete dark brown subterminal ring and a small darkening on upper surface at near midlength; tibiae yellow, tip and a ring before midlength brownish black; tarsi with proximal four segments yellow, tips narrowly brownish black (terminal segment lacking, presumably black). Wings with cephalic third clear light yellow, including the veins, posterior wing cells slightly darker brownish yellow; outer medial veins, *m-cu* and outer half of vein *2nd A* blackened, remaining veins dark yellow. Venation generally as in *obuduensis*, spur of vein *2nd A* short.

Proximal five abdominal tergites obscure brownish yellow, posterior borders narrowly dark brown; sternites chiefly obscure yellow, segments six and seven light brown, lateral margins yellow, hypopygium brownish yellow. Male hypopygium (Fig. 53) with tergite, *t*, broad, apical lobe small, with abundant setulae, as shown. Sternite, *s*, with base widened, the very long outer stem with two terminal modified setae. Basistyle, *b*, with a basal tubercle bearing a single modified spinoid seta; a group of blackened modified setae on face of style, with further modified setae about as shown. Dististyle, *d*, with beak of inner style very broad, obtusely rounded; apices of both inner arms of style with transverse rows of blackened spinoid setae. Phallosome, with the aedeagus, *a*, generally as in *obuduensis*, the basal lobe small, as shown.

Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler).

The most similar species is *Styringomyia obuduensis* sp. n., from the same general area, which differs in body coloration and different leg and wing patterns. There are differences in the two species in hypopygial characters, particularly the basistyle, dististyle and aedeagus.

31. *Styringomyia obuduensis* sp. n.

Size large (length of male 9 mm or more); general body coloration yellow, patterned with brown; legs yellow, fore and middle femora with two narrow brown areas, posterior femora with a single darkened ring at near midlength; wings light yellow, with a restricted dark pattern, including seams at *r-m*, base of cell *2nd M₂*, *m-cu*, and outer end of vein *2nd A*, the last with a short subterminal spur; male hypopygium with tergite terminating in a broad setuliferous cushion, sternite very long and slender, with two terminal modified setae; apex of basistyle with a single modified seta, face of style with a broad appressed lobe, its apex with numerous dark setae, near base of style with a transverse blackened sclerotized structure; dististyle with outer arm simple, smooth; inner arms low, with rows of blackened spinoid pegs. Phallosome with the aedeagus a simple slender pale rod, terminating in a small blackened point, on outer margin near base with a long gently curved pale rod.

Male. Length, about 10 mm; wing, 6 mm. Female. Length, about 9 mm; wing, 6.5 mm. Rostrum and palpi yellowed. Antennae with scape and pedicel medium brown, flagellum more yellowed. Head brownish yellow, with yellow setae.

Pronotum above light yellow, sides brown, with long black setae. Mesonotal praescutum with yellow stripes, interspaces light brown; scutum light yellow; scutellum light yellow, with two long erect black setae; mediotergite reddish to darker brown, center restrictedly yellowed. Pleura and pleurotergite very light yellow. Halteres with stem yellow, knob light brown. Legs with coxae and trochanters yellow; fore and middle femora yellow, with two narrow incomplete pale brown areas on outer half, posterior end beneath with several black setae; tibiae yellow with widely scattered black setae, tarsi paler yellow, terminal segment black; hind femora yellow with a single narrow light brown ring at near midlength, remainder of legs yellow, terminal segment black. Wings (Fig. 50) light yellow; small dark brown to blackish spots at *r-m*, base of cell *2nd M₂*, *m-cu*, and outer end of vein *2nd A*; veins light yellow, brown in the patterned areas. Venation: Cell *2nd M₂* very short-petiolate to sessile; *m-cu* shortly before midlength of *M₃₊₄*; vein *2nd A* with a short spur.

Abdominal tergites in male yellow, patterned with brown, including the narrow posterior borders, on the fourth and succeeding segments with a distinct median line; sternites more uniformly very light yellow, posterior borders with two small scarcely indicated pale brown spots. In female, tergal darkenings more diffuse, sternites yellow. Male hypopygium (Fig. 54) with tergite, *t*, broad, apical lobe small, rounded, with abundant setulae; very numerous longer yellow subterminal setae. Basistyle, *b*, at apex with a single modified spinoid seta; at near midlength of style with a broad appressed lobe, directed basad, apex truncate with a row of several strong black spinoid setae; near base of style with a transverse blackened sclerotized structure. Dististyle, *d*, about as figured; outer arm slender, apex slightly enlarged, with a long recurved seta; inner arm with a small pale beak, the armature including two parallel rows of blackened pegs or modified setae, near base of style with a pendant lobe that bears several erect setae. Phallosome, *p*, including the aedeagus that appears, as a long straight rod, narrowed outwardly, terminating in a small blackened point, on outer margin near base with a long gently curved pale rod.

Habitat: Nigeria. Holotype, ♂, Obudu Cattle Ranch, South East State, 5,200 feet, September 27-28, 1973 (Medler). Allotopotype, ♀. Paratopotype, ♂.

This large species is well distinguished by the hypopygial structure, especially the details of the basistyle and dististyle, and the aedeagus. The most similar species is *Styringomyia fulani* sp. n., differing in the hypopygium.

32. *Styringomyia phallosomica* sp. n.

Small (wing of male less than 4 mm); body almost entirely yellow, thoracic dorsum faintly patterned with reddish; legs yellow, femora with two very faint brown spots on outer margin; wings yellow, with four brown discal spots; vein *2nd A* with a conspicuous subterminal spur, costal fringe and conspicuous; male hypopygium with dististyle four-lobed, the elongate outer arm nearly glabrous; intermediate pair of arms with blackened pegs, inner arm small, boomerang-shaped; phallosome with aedeagus distinctive, apex with a transverse blackened knob, more basally with two pairs of blackened points, the distal ones pointed.

Male. Length, about 6 — 6.5 mm; wing, 3.6 — 3.8 mm. Rostrum yellow; palpi light brownish yellow. Antennae with scape

light yellow, on outer face with a narrow brown line pedicel brownish yellow; flagellum yellow, verticils longer than the segments. Head yellow; dorsal bristles black, the anterior pair longer, decurved.

Pronotum obscure yellow, the bristles directed strongly cephalad. Mesonotal praescutum yellow with four more reddish stripes, posterior sclerites of notum obscure yellow, bristles conspicuous, especially four longer ones on scutum and two on scutellum. Pleura yellowed, setae virtually lacking, with two small bristles on dorsal sternopleurite. Halteres obscure yellow. Legs with coxae and trochanters light yellow; remainder of legs yellow, femora with two very faint brown spots on upper surface, tibia with a similar very pale area before midlength, apex more evidently darkened; tarsi yellow, terminal segment brownish black. Wings yellow, costal parts more saturated; four restricted brown areas, on *r-m*, *m-cu*, outer end of cell *1st M*₂, and outer end of *2nd A*; veins yellow, darkened in the patterned areas. Costal fringe long and conspicuous. Venation: *m-cu* at near two-fifths *M*₃₋₄; vein *2nd A* with a conspicuous subterminal spur.

Abdomen yellow, posterior borders of tergites with two narrow darkenings that are separated at midline, seventh tergite with a similar longitudinal median line. Male hypopygium (Fig. 56) with apical tergal lobe, *t*, broad basally, outer half narrowed, terminating in a small setiferous lobule, base of lobe densely setuliferous, the lateral ones longer. Sternite, *s*, narrow, near apex with two long modified setae. Basistyle, *b*, with a single modified seta at apex of a slightly shorter glabrous basal lobe. Dististyle, *d*, with four lobes, the elongate outer arm pale, with the usual very long darkened apical seta, the stem unusually glabrous, with about five small pale setae on proximal half; intermediate lobes pale, each provided with modified black pegs, distributed as shown; fourth or inner arm small, glabrous, boomerang-shaped, outer half blackened. Phallosome, *p*, distinctive, the aedeagus as shown; base stout, distally with two pairs of blackened points, the outer ones acutely pointed, lower pair of lobes truncated, between them with a more slender curved rod; apex of aedeagus with a blackened transverse knob, as shown. The Benin paratype differs slightly in the conformation of the inner dististyle but is considered as being conspecific.

Habitat: Nigeria. Holotype, ♂, Sapoba F. R., Middle Western State, March 10, 1972 (Medler). Paratype, ♂, Benin, Middle Western State, April 18, 1973 (Medler).

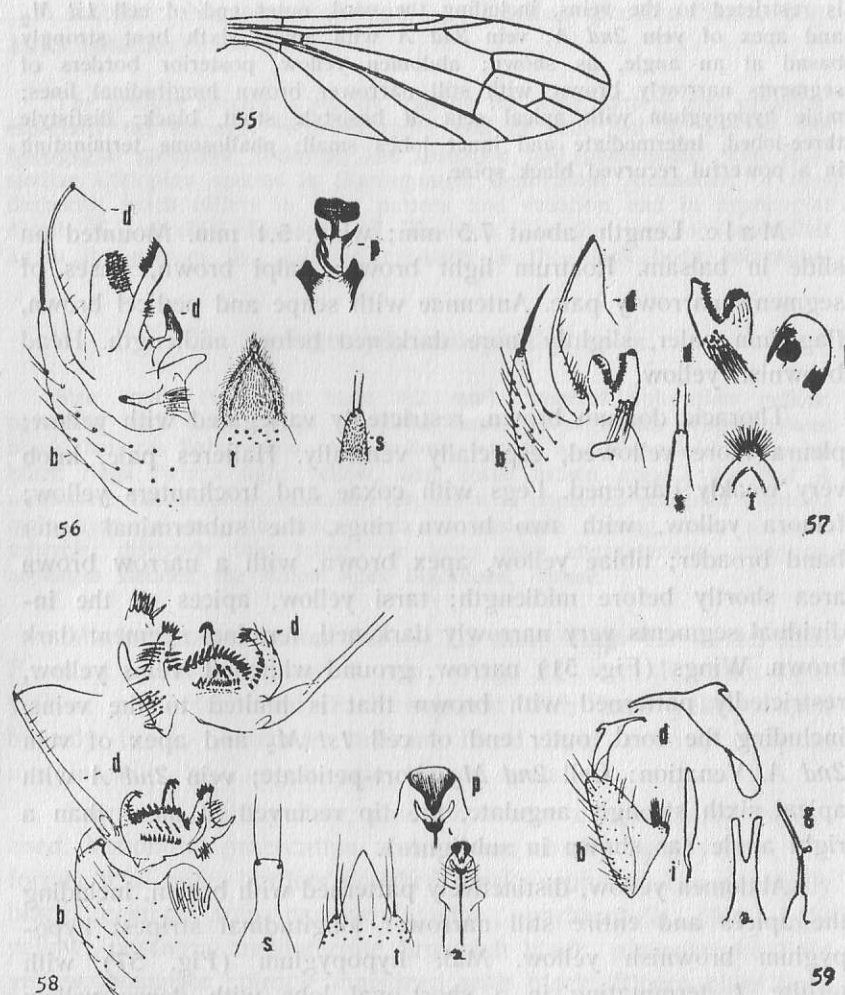


Fig. 55. *Toxorhina (Toxorhina) curtipennis* sp. n.; venation. — Fig. 56. *Styringomyia phallosomica* sp. n.; male hypopygium. — Fig. 57. *Styringomyia recurvata* sp. n.; male hypopygium. — Fig. 58. *Styringomyia stenophallus* sp. n.; male hypopygium. — Fig. 59. *Toxorhina (Toxorhina) curtipennis* sp. n.; male hypopygium. — (Symbols: Male hypopygium: *a*, aedeagus; *b*, basistyle; *d*, dististyles; *g*, gonapophysis; *i*, interbase; *p*, phallosome; *s*, sternite; *t*, tergite).

This interesting small species is most readily distinguished by hypopygial characters, especially the peculiar aedeagus.

33. *Styringomyia recurvata* sp. n.

General coloration of head and mesonotum brown, variegated by yellow, ventral pleura yellow; legs yellow, femora and tibiae each with two brown rings; wings narrow, whitened, with a darkened pattern that

is restricted to the veins, including the cord, outer end of cell *1st M*₂ and apex of vein *2nd A*; vein *2nd A* with apical sixth bent strongly basad at an angle, as shown; abdomen yellow, posterior borders of segments narrowly brown, with still narrower brown longitudinal lines; male hypopygium with apical seta of basistyle stout, black; dististyle three-lobed, intermediate and inner lobes small; phallosome terminating in a powerful recurved black spine.

Male. Length, about 7.5 mm; wing, 5.1 mm. Mounted on slide in balsam. Rostrum light brown; palpi brown, bases of segments narrowly pale. Antennae with scape and pedicel brown, flagellum paler, slightly more darkened before midlength. Head brownish yellow.

Thoracic dorsum brown, restrictedly variegated with yellow; pleura more yellowed, especially ventrally. Halteres pale, knob very weakly darkened. Legs with coxae and trochanters yellow; femora yellow, with two brown rings, the subterminal outer band broader; tibiae yellow, apex brown, with a narrow brown area shortly before midlength; tarsi yellow, apices of the individual segments very narrowly darkened, terminal segment dark brown. Wings (Fig. 51) narrow, ground whitened, veins yellow, restrictedly patterned with brown that is limited to the veins, including the cord, outer end of cell *1st M*₂ and apex of vein *2nd A*. Venation: Cell *2nd M*₂ short-petiolate; vein *2nd A* with apical sixth strongly angulate, the tip recurved at more than a right angle (as shown in subfigure).

Abdomen yellow, distinctively patterned with brown, including the apices and entire still narrower longitudinal stripes; hypopygium brownish yellow. Male hypopygium (Fig. 57) with tergite, *t*, terminating in a short-oval lobe with dense yellow setae. Sternite, *s*, extended into a long narrow lobe, with two terminal elongate setae. Basistyle, *b*, with apical seta black, stout, subequal in length to the lobe; proximal face of style at base with a small tuft of delicate setae. Dististyle, *d*, trilobed, outer lobe stout on basal half, outer end long and straight, terminal seta long, inner face of lobe at base with several delicate setae, more concentrated basally; intermediate and inner lobes small, with relatively few blackened pegs; inner lobe with a group of long setae that are directed basad. Phallosome, *p*, terminating in a powerful recurved straight black spine, below its base with two flattened dark plates, outer margin with a darkened expansion.

Habitat: Nigeria. Holotype, ♂, Ile-Ife, Western State, July 1973 (Medler).

The present species is readily told by the wing pattern and venation, especially the strongly recurved outer end of vein *2nd A*, and by the hypopygial structure, including the dististyle and phallosome. The most similar Ethiopian species is *Styringomyia denticulata* Alexander, of Madagascar, which differs in wing pattern and venation and in hypopygial details. *S. marshalli* Edwards, of Rhodesia, has the venation somewhat as in the present fly, differing evidently in the black body coloration.

34. *Styringomyia stenophallus* sp. n.

Size small (wing of male 4.2 mm); general coloration yellow, patterned with black; palpi bicolored, bases of segments yellow, apices black; halteres light yellow; legs yellow, femora and tibiae with brownish black rings; wings light yellow, with three brown areas, vein *2nd A* unspurred; basal seven abdominal tergites with darkened posterior borders; male hypopygium with apical seta of basistyle arising from a short tubercle; dististyle four lobed, the lobes with characteristic armature; aedeagus slender, the simple apex blackened, obtuse.

Male. Length, about 6.5 — 7.5 mm; wing, 4.2 — 4.5 mm. **Female.** Length, about 6 mm; wing, 3.5 mm. Rostrum light yellow; palpi bicolored, each segment with base yellow, apex broadly black. Antennae broken. Head light yellow, occipital margin with two vague pale brown spots.

Pronotum light yellow, anterior border conspicuously blackened. Mesonotal praescutum and scutum chiefly light yellow, the former with outer borders polished black; scutellum conspicuously black, central area narrowly yellow, parascutella clear light yellow; postnotal mediotergite brownish black, pleurotergite light yellow, posterior spiracle margined with black. Pleura clear light yellow. Halteres light yellow. Legs with coxae and trochanters light yellow, remainder of legs yellow, femora, with two narrow brownish black rings, interrupted beneath; tibia with a small dorsal spot shortly before midlength, tip conspicuously black; tarsi yellow, tip of basitarsus and terminal segment black. Wings light yellow, including the veins except in the darkened areas; three brown marks, the largest at *r-m* and bases of adjoining veins; second mark at outer end of cell *1st M*₂, involving the adjoining veins, third darkening smallest, on posterior half of *m-cu*. Costal fringe relatively long on basal half, progressively shorter outwardly. Venation: *R*₂₊₃ short, suberect; cell *2nd M*₂ narrowly sessile; *m-cu* at midlength of *M*₃₊₄; vein *2nd A* unspurred.

Abdomen light yellow, posterior borders of proximal five segments each with two narrowly separated brown areas, sixth and seventh tergites with borders continuously darkened, extended into a central line, longer on segment seven; outer segments yellow. Male hypopygium (Fig. 58) with tergite, *t*, relatively broad, apical lobe long-triangular, with abundant very small and delicate vestiture (not indicated in figure). Sternite, *s*, with apex relatively broad, the two apical setae widely separated. Basistyle, *b*, with the apical seta from a very short basal tubercle (seta broken). Dististyle, *d*, about as shown (see subfigure), outer arm moderately long, setulae near tip very small and delicate; inner three arms of style with a characteristic arrangement of the blackened pegs (see subfigure). Phallosome with aedeagus, *a*, narrow, apex obtuse, blackened, more basally with four setae on either side, together with a pale expansion.

Habitat: Nigeria. Holotype, ♂, near Siluko, Middle Western State, March 24, 1973 (Medler). Allotype, ♀, Benin, Middle Western State, April 8, 1973. Paratype, ♂, with allotype.

The present species is readily told by the structure of the dististyle and aedeagus, together with the widely separated modified terminal setae of the ninth sternite. The short basal tubercle of the apical seta of the basistyle producing a sessile appearance is noteworthy.

Toxorhinini

Subtribe Toxorhinaria

Toxorhinaria Alexander; Crane-flies of the Baltic Amber. Bernstein-Forschungen, Heft 2: 12; 1931.

A very distinct and isolated group in the Tipulidae that now appears to warrant tribal status. A detailed account of the nomenclatorial problems, characters of the genus *Toxorhina*, and other information, is found in Alexander, Revista de Entomologia, 18: 356-360, figs. 30-32; 1947.

As known, the genus *Toxorhina* Loew, 1850 (type, *fragilis* Loew) includes only the typical subgenus and *Ceratocheilus* Wesché, 1910 (type, *winn sampsoni* Wesché). The group is an ancient one, with one species, *Toxorhina (Ceratocheilus) eridanus* Meunier, 1917, occurring in the Baltic Amber (Upper Eocene), as discussed in the Alexander Amber paper cited above, 1931,

p. 124. As presently known, species are found in all major faunal areas excepting the Palaearctic, with two eastern Nearctic species, and about 35 species in each of the following regions: Australasian, Ethiopian, Neotropical and Oriental.

35. *Toxorhina (Toxorhina) curtipennis* sp. n.

General coloration brownish black, lateral borders of mesonotal praescutum broadly obscure yellow; legs black, genua and the terminal tarsal segment whitened; wings relatively short and broad, *Rs* short, less than one-half vein *R*₅, cell *2nd A* broad; male hypopygium with a single dististyle; arms of aedeagus short.

Male. Length, excluding rostrum, about 5.5 mm; wing, 3.3 mm. Rostrum broken beyond the black base. Antennae with scape black; remainder broken. Front and anterior vertex black, posterior parts of head black, gray pruinose; anterior vertex relatively broad, about two and one-half times the diameter of scape.

Cervical region and pronotum black. Mesonotal praescutum dull brownish black, narrowly attaining the cephalic end, the broad lateral borders abruptly obscure yellow; posterior sclerites of notum brownish black, vaguely pruinose. Pleura dull black, dorsally more intensely blackened. Halteres brownish black, base of stem slightly paler. Legs with coxae and trochanters intensely black; remainder of legs less markedly blackened, the restricted genua of the femur and tibia, together with the terminal tarsal segment, whitened. Wings (Fig. 55) relatively short and broad, anal angle conspicuous; membrane strongly darkened, more evident in costal field and as seams over *Rs* and *M*; veins darker brown. Trichia of veins behind costa very sparse, including series on outer end of vein *R* and on *R*₁₋₂, with very sparse scattered trichia on *Rs* and all outer branches from *R*₅ to *M*₃ inclusive, with usually only two or three such trichia to a vein. Venation: *Sc*₁ ending opposite origin of *Rs*, *Sc*₁ about one-half *Rs*, the latter longer than *R*₁; cell *1st M*₂ longer than the veins beyond it; *m-cu* close to fork of *M*; cell *2nd A* very broad.

Abdomen brownish black. Male hypopygium (Fig. 59) with setae of lobe on mesal face of cephalic end of basistyle, *b*, very long. Interbase, *i*, long and narrow. A single dististyle,

d, shaped as shown, terminal beak long and slender. Aedeagus, *a*, with the arms subequal in width to the interspace, relatively short, as shown.

Habitat: Nigeria. Holotype, ♂, Agbabu, Western State, March 3, 1973 (Medler).

Toxorhina (Toxorhina) curtipennis differs from all other regional species in the shape and venation of the wings and in hypopygial characters. The more similar such species are *T. (T.) grahami* (Wesché), Nigeria to Uganda; *T. (T.) mashona* Alexander, Rhodesia; *T. (T.) stenomera* Alexander, Tanzania; and *T. (T.) taeniomera* Alexander, Zaire and Cameroon.