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The Crane Flies of Madagascar in the Natural History Museum, Basel, collected by FRED KEISER

(Ptychopteridae and Tipulidae; Diptera)

by

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With 8 plates

In 1957 and 1958 Dr. FRED KEISER, with Mrs. KEISER, made extensive collections of insects, particularly the Diptera, in the several provinces of Madagascar¹. Dr. KEISER has kindly allowed me to study the crane flies of this collection, a large and most valuable series, adding materially to our previous knowledge of this particularly interesting and significant faunal region. Besides discussing this collection it has been suggested that it would be helpful to provide an illustrated key to the genera and higher groups of crane flies and to provide a list of the species at present recorded from the island, a total of 238. It is believed that this list of species, correlated with the bibliographic references, may prove of particular benefit to future workers on the subject. The greater majority of the species has been described by the writer in a series of eight reports (1951–1961) cited in the Bibliography. Materials for further parts under this title are available and are being prepared at this time.

The historical progress in our knowledge of the subject has been outlined in earlier papers (ALEXANDER, 1951: 33–34; 1959a: 173). In brief it may be stated that the earliest materials were described by BIGOT and KARSCH. The collections in the British Museum (Natural History) and the Paris Museum were considered by the writer in various early papers (1915–1950, Bibliography), the materials having been taken chiefly by CHARLES ALLAUD, E. BARTLETT, W. D. COWAN, FORSYTH-MAJOR, A. SAUZIER, P. CAMBOUE and A. GRANDIDIER. In the 1940's there was a re-awakening of interest through the accession of large collections from CHARLES LAMBERTON. The very extensive series of specimens received from Dr. RENAUD PAULIAN, collected by himself and colleagues and assistants in l'Institut Scientifique de Madagascar (P. GRIVEAUD, JEAN MILLOT, J. VADON; EMILE RAZAFIMANDIMBY, ANDRIA ROBINSON and P. SOGA) have provided the basis for this subsequent work on the fauna. In 1955–1956 (December–January) Dr. BRIAN STUCKENBERG, of the Natal Museum, Pietermaritzburg, accompanied Dr. R. F. LAWRENCE and Mr. E. MCCALLAN, and again in 1957, made very important collections throughout Madagascar and very generously made these specimens available for study, the resulting types being presented to the Institut Scientifique by prior arrangement. Small series of specimens

¹ Voyage to Madagascar with help from the Swiss National Fund for Scientific Research.

were sent to me by personal friends, Dr. HARRY HOOGSTRAAL, collected in 1948, and by NOËL L. H. KRAUSS in 1951–1952. The KEISER collection has proved to be one of the most important series of specimens yet received and I am particularly indebted to Dr. and Mrs. KEISER for the privilege of making this study. The types and uniques of the various species have been returned and will be preserved in the Natural History Museum, Basel, with duplicates, where available, being retained in the writer's personal collection of World Tipulidae.

The island of Madagascar may be divided into several natural regions which surround the Central Plateau like a girdle and which are characterized by distinctive differences in climate, topography, soils and vegetation. These regions are as follows:

- Central Madagascar (C–M): with a moderately warm climate and dry winters. The vegetation consists of cultivated farms and grasslands and remnants of native forests remain in the valleys and in the mountains.
- Eastern Madagascar (E–M): The climate is humid and warm, and evergreen tropical rain forests are prevalent.
- Western Madagascar (W–M): The climate is periodically dry. Much of the land is cultivated and savannas and forests occur along the rivers.
- Southern Madagascar (S–M): The climate is extremely dry. The vegetation is composed largely of bush or semidesert-type plants.
- Northern Madagascar (N–M): with a monsoon climate, savanna plains and mountain forests.

The following abbreviations locate the collecting sites in their respective administrative provinces:

Tan.:	Province of Tananarive	Tam.:	Province of Tamatave
Fia.:	Province of Fianarantsoa	Tul.:	Province of Tuléar
Maj.:	Province of Majunga	D.-S.:	Province of Diégo-Suarez

I. The Keiser Collections

PTYCHOPTERIDAE

Ptychoptera madagascariensis Alexander (fig. 38)

E–M: Périnet (Tam.), 1000 m., 1.XII.57

TIPULIDAE

TIPULINAE

Longurio (Longurio) luteinigra sp. n. (figs. 1, 9)

Size relatively small (wing of male about 11 mm); thorax and abdomen beyond the second segment polished black, the proximal two segments of the latter fulvous yellow; femora yellow, tips blackened; wings narrow, basal petiole conspicuous,

strongly suffused with brown, prearcular field yellowed, cell *2nd A* very long and narrow; male hypopygium with posterior border of tergite truncate.

Male.—Length about 9.5 mm; wing 11.2 mm; antennae about 0.6 mm.

Frontal prolongation of head black, vaguely paler beneath at base, relatively long, approximately three-fourths the remainder of head, without a nasus; mouth parts and palpi black. Antennae short, brownish black; first flagellar segment long and stout, subequal in length to the succeeding three segments combined; outer flagellar segments subcylindrical, verticils shorter than the segments. Head dull brownish gray with a major blackened area at narrowest part of vertex, on either side of the low more plumbeous vertical tubercle, the latter vaguely impressed medially; a larger paler brownish black area on posterior vertex immediately behind the anterior darkenings; front and anterior vertex surrounding the antennal bases obscure yellow.

Thoracic dorsum polished black, praescutal interspaces vaguely dusted with yellow pollen, isolating three more blackened stripes; posterior ends of pretergites immediately before wing root produced outwardly into slender points; dorsum virtually glabrous, the rounded protuberant scutellum with very sparse short setae. Pleura duller black, dorsal sternopleurite vaguely more dusted; dorsopleural membrane brown. Halteres medium brown, extreme base of stem obscure yellow. Legs with coxae brownish black; trochanters yellow; femora yellow, tips blackened; tibiae and the elongate tarsi brownish black; claws small, simple. Wings (fig. 1) strongly suffused with brown, the elongate prearcular field yellowed, stigma slightly darker brown; veins brown, yellowed in the brightened fields. Veins behind *R* glabrous; prearcular field elongate, petiolate. Venation: *Sc*₁ ending just beyond fork of *Rs*; vein *R*₁ beyond free tip of *Sc*₂ very short, the cell very small; *Rs* shorter than *R*₂₊₃; cell *M*₁ long-petiolate, cell *M*₄ deep, distal section of vein *Cu*₁ longer than *m-cu*, the latter at near three-fourths *M*₃₊₄; cell *2nd A* long and narrow.

Abdomen with basal two segments fulvous yellow, outer segments, including hypopygium, polished black. Male hypopygium (fig. 9) with the tergite, *t*, large, with abundant short black setae on less than outer half, lacking in a small subtriangular area at midline of margin, the latter virtually truncate. Basistyle, *b*, without setae on proximal half. Outer dististyle, *d*, with long setae; inner style with beak flattened, without major setae, tip obtuse; apex of body of style conically produced, with several blackened spinoid setae.

Holotype, ♂, E-M: Périnet (Tam.), 1000 m, 2. XII. 57.

The most similar species is *Longurio (Longurio) stenodiastema* Alexander, which likewise has a long narrow cell *2nd A*, very distinct in the entirely different coloration of the thorax and abdomen.

Longurio (Longurio) ganocephala Alexander

E-M: Périnet (Tam.), 1000 m, 3. XII. 57

The species name, as it appears on the type label, was written *ganocephala*, but was changed to *gonocephala* in the process of printing. The original spelling is preferred and should be used, being an allusion to the brightened coloration of the head. The abdomen of the present specimen, a female, is better preserved than in the type; brownish black or dark brown, the second to sixth tergites broadly orange yellow medially, the centers of the more proximal sternites more vaguely brightened.

Longurio (Longurio) macaria sp. n. (figs. 2, 10)

Size medium (wing of male 15 mm); mesonotal praescutum obscure yellow, with four brown stripes; femora yellowed, tips narrowly blackened, claws bidentate; wings pale yellow, conspicuously patterned with darker brown and abundant pale grayish

brown clouds, veins with abundant macrotrichia; male hypopygium with dorsal crest of inner dististyle with about 15 blackened spinoid points.

Male.—Length about 13.5 mm; wing 15 mm; antenna about 1.8 mm.

Frontal prolongation of head relatively long but slender, yellowish brown, vaguely darker on sides, the stout nasus concolorous; palpi black. Antennae short; proximal four or five segments light yellow, outer segments darker, elongate, with long black verticils. Head light brown, the very narrow high porrect vertical tubercle, orbits and sides of posterior vertex more yellowed.

Pronotal scutum very narrow, blackened in front, paler behind and on sides. Mesonotal praescutum obscure yellow, with four brown stripes, the intermediate pair separated by a capillary ground line, humeral region restrictedly darkened; scutum with ground grayish yellow, each lobe with two brown areas, the posterior borders broadly and conspicuously darker brown; scutellum grayish yellow, parascutella slightly darker; postnotum grayish yellow, posterior parts of both mediotergite and pleurotergites broadly darker; vestiture of praescutum and scutum very short and sparse, of scutellum and mediotergite longer, pale. Pleura grayish yellow, variegated with pale brown on sternopleurite and ventral anepisternum; dorsopleural membrane darker brown. Halteres pale brown, including the small knobs, base of stem narrowly yellowed. Legs with coxae and trochanters yellowed; femora yellow, tips narrowly blackened; tibiae infuscated, bases narrowly obscure yellow; tarsi elongate, brown; claws conspicuously bidentate, basal spine more slender, acute; epicondyle elongate, tufted with long black setae. Wings (fig. 2) with the ground pale yellow, conspicuously patterned with dark brown and abundant pale grayish brown clouded markings; darker areas include a virtually complete irregular band at arculus, extending from *h* to the axillary angle in base of cell *2nd A*, more expanded in bases of cells *R* and *M*; a second dark area at origin of *Rs*, most distinct along the vein; the remaining paler pattern irregularly reticulated and interconnected, isolating large ground areas in most cells; cells *Sc* and the broad *C* uniformly pale brown; stigma pale brown, not yellowed as in *tinctoria*; veins pale brown, anterior arculus yellow. Squama with a few setae; longitudinal veins beyond cord chiefly with abundant macrotrichia, becoming more sparse on basal veins but extending virtually to arculus; in *tinctoria* veins unusually glabrous. Venation: Cell *M*₄ much deeper than in *tinctoria*; *m-cu* shorter than distal section of *Cu*₁, gently sinuous.

Abdomen with basal tergite light yellow, second yellowed basally, posterior border yellow, preceded by a darkened transverse band; tergites three to five dark brown, posterior borders narrowly grayish yellow; segment six light yellow with a brown central line; sternites more uniformly obscure yellow; outer segments, including hypopygium, more infuscated. Male hypopygium (fig. 10) with the tergite, *t*, large, posterior border very gently concave, outer two-thirds of plate with abundant setae of moderate length, narrowly interrupted at midline except along posterior border. Outer dististyle, *d*, about three times as long as broad, apex and outer margin with long dark setae; inner style with long erect setae, dorsal crest with about 15 blackened spinoid points; beak of style a flattened blad, apex obtuse.

Holotype, ♂, E-M: Périnet (Tam.), 1. X. 58.

Among the previously described regional species, *Longurio* (*Longurio*) *macaria* is most similar to *L. (L.) tinctoria* Alexander, which has the wing pattern generally the same but differing evidently in the detailed arrangement of the markings. The conspicuous difference in trichiation of the wing veins, as discussed above, should be emphasized.

Longurio (*Longurio*) *stenodiastema* Alexander

E-M: Périnet (Tam.), 1000 m, 3. XII. 57.

Hovatipula cubitalbella sp. n. (figs. 3, 11)

Size medium (wing of male to 17 mm); mesonotal praescutum obscure yellow, disk with four brown stripes; femora obscure yellow, tips abruptly blackened; claws of male bispinous, epicondyle present; wings strongly infuscated, costal border darker, region of *m-cu* conspicuously whitened; veins unusually glabrous; male hypopygium with spinoid setae of inner dististyle relatively numerous, about 13 to 15 in number.

Male.—Length about 15 mm; wing 17 mm; antenna about 1.8 mm.

Female.—Length about 11 mm; wing 15 mm; antenna about 1.7 mm.

Frontal prolongation of head light brownish yellow; region of nasus very short and broad, dark brown, with numerous short black setae; palpi dark brown, very short as in the genus, the total length about equal to that of the antennal scape; proximal two segments subequal, less than twice as long as thick, third segment smaller, subglobular, terminal segment only a trifle longer, conical, shorter than the basal segment. Antennae 12-segmented; scape brownish yellow, a little darker above, pedicel brown, flagellum black, extreme bases of segments vaguely paler; first flagellar segment nearly twice as long as second, verticils inconspicuous; outer segments becoming progressively longer and more slender, with very long verticils. Head dark cinnamon, paler and more yellow pollinose behind and on genae; vertex narrowly dark brown to brownish black, the pattern extending forward and including the slender vertical tubercle.

Pronotum brownish yellow, scutum in front narrowly more darkened. Mesonotal praescutum obscure yellow, disk with four brown stripes, the intermediate pair narrowed and contiguous in front, humeral and lateral borders darkened; posterior sclerites of notum brownish gray, scutal lobes dark brown on lateral parts, scutellum vaguely yellowed behind; mediotergite more darkened behind, sides broadly pale, pleurotergite brownish yellow, katapleurotergite light yellow pollinose above; mesonotum virtually glabrous, scutellum with a few microscopic setae. Pleura yellow, ventral sternopleurite and meron darker; dorsopleural membrane obscure orange yellow. Halteres obscure yellow. Legs with coxae obscure yellow, trochanters clearer yellow; femora obscure yellow, tips abruptly black, the amount of latter slightly less on posterior legs, on fore femora including about the distal seventh; tibiae brownish yellow, tips more narrowly blackened; basitarsi brown, the tips and remainder of tarsi black; claws of male with a low protuberance at midlength, at base with a slender curved spine; terminal segment with a conspicuous epicondyle, fourth segment before apex slightly enlarged; in female, claws simple, epicondyle lacking. Wings (fig. 3) strongly infuscated, costal border, including stigma, darker brown, more extensive in the prearcular field; a conspicuous whitened area over *m-cu* and adjoining parts of Cu_1 ; vague yellowed marks before stigma and in cell *1st A* as a seam along vein *2nd A*; in male with a narrow darker seam over anterior cord and with a pale streak in base of cell *1st A* adjoining the vein; veins brown, darker in the patterned areas, *m-cu* yellowed. Veins unusually glabrous, beyond cord lacking even on R_{4+5} ; a sparse series of trichia on *R*; squama naked. Venation: Petiole of cell M_1 longer than *m*.

Abdominal tergites light brown, first segment more yellowed at base; a broken series of brown central areas, interrupted at posterior margins; lateral tergal borders and outer angles more gray pruinose; basal sternites yellowed, outer segments, including hypopygium, more infuscated. In female, tergites more brownish yellow, posterior borders narrowly darkened; cerci very small, brownish black, tips obtuse. Male hypopygium (fig. 11) with the tergite, *t*, closely united with the sternobasistyle; posterior border with a broad V-shaped emargination, the tergal plate with very abundant dense delicate rather short setae. Outer dististyle, *d*, a flattened spatula, tip obtuse, the length about twice the greatest width, with abundant setae, those of upper half very long, about equal to the diameter of style; inner style with beak slender; outer lobe of body rounded, with from 13 to 15 short blackened spinoid setae from elevated yellow bases.

Holotype, ♂, E-M: Moramanga (Tam.), 13.5 km south, 20. XII. 57.
Allotopotype, ♀, with the type.

Hovatiptula cubitalbella is distinguished from the other members of the genus by the almost uniformly darkened wings with a single very conspicuous whitened area over *m-cu* and the adjoining parts of vein *Cu*₁.

Keiseromyia gen. n. (figs. 12, 43)

Frontal prolongation of head relatively long, about one-half the remainder; nasus short and stout; terminal segment of palpus less than twice the penultimate. Antennae 13-segmented; proximal three or four flagellar segments with verticils concentrated on upper surface, lower face slightly protuberant with few verticils, outer segments more elongated. Head above flattened, vertical tubercle virtually lacking; margin of occipital region broadly obtuse, with no posterior elongation. Legs long and slender; tibial spur formula 1-1-2; claws small, dilated at base. Wings (fig. 43) with a series of about 8 or 9 crossveins in cell *C*, these variable in number and relative positions; cell *M* with a strong supernumerary crossvein beyond midlength; cell *M*₁ long-petiolate; *m-cu* at or before midlength of *M*₃₊₄; vein *Sc*₁ preserved. Male hypopygium (fig. 12) of the general type of *Longurio*; inner dististyle with four powerful blackened spinoid setae on outer margin, the outermost isolated.

Genotype: *Keiseromyia polyphragma* sp. n. (Ethiopian Region: Malagasian Subregion).

I take the greatest pleasure in dedicating this conspicuous fly to Dr. FRED KEISER distinguished student of the Diptera. The type species has the general appearance of a *Tipula*, but from the structure of the male hypopygium is closer to the complex of genera and subgenera that center about *Longurio* Loew. It appears to be closest to the Neotropical groups *Tanyptremna* Osten Sacken and *Pehlkea* Enderlein, especially the latter which likewise has a supernumerary crossvein in cell *M* but lacks the series of crossveins in cell *C*.

Keiseromyia polyphragma sp. n. (figs. 12, 43)

Mesonotal praescutum grayish brown with four darker brown stripes, the lateral borders still darker, posterior sclerites and pleura grayish yellow, conspicuously patterned with dark brown; antennae short; femora yellow, tips narrowly blackened; wings whitened, conspicuously patterned with brown; a series of supernumerary crossveins in cell, with a single further vein in cell *M*; proximal abdominal tergites bicolorous, their bases brown, apices yellowed; male hypopygium with posterior border of tergite very strongly convexly rounded; outer dististyle broad, inner style with four or five powerful blackened spinoid setae.

Male.—Length about 11 mm; wing 11 mm; antenna about 1.4 mm.

Frontal prolongation of head light brownish yellow, including nasus, dark brown beneath; palpi brownish black. Antennae light yellow, eighth and succeeding segments darker. Head yellowish gray, irregularly patterned with brown on the broad low anterior vertex, the posterior vertex less evidently infuscated; setae yellow, porrect.

Cervical region brownish yellow, blackened beneath. Pronotum obscure yellow. Mesonotal praescutum with the ground grayish brown, with two darker brown intermediate stripes that are confluent in front, vaguely divided behind, not reaching the suture; sub-lateral stripes similarly colored, lateral borders, including the polished humeral border, dark brown; scutum grayish yellow, each lobe chiefly covered by a single brown area, the conspicuous posterior callosities pale; scutellum grayish brown, posterior borders, with the parascutella, conspicuously brownish black; postnotum grayish yellow, posterior half of both mediotergite and pleurotergite conspicuously infuscated; mesonotal vestiture

sparse, longer and more conspicuous on the praescutum. Pleura grayish yellow, patterned with brown, including a diffuse transverse area extending from the dorsal pteropleurite beneath the wing root, broadly expanded over the mesepisternum, involving most of the anepisternum and sternopleurite except posteriorly; dorsopleural region light yellow. Halteres light brown, tips of the small knobs obscure yellow. Legs with coxae light brown, the tips and trochanters yellow; femora brownish yellow, tips broadly black, including about the distal eighth, preceded by a slightly clearer yellow ring; tibiae light brown, tips narrowly blackened; tarsi elongate, black. Wings (fig. 43) with the ground whitened, conspicuously patterned with brown, including a complete band at wing base and a second at arculus; other conspicuous seams over the costal crossveins, tending to form solid darkenings that include also cell *Sc* and broad dark areas over cord, outer end of cell *1st M*₂ and the supernumerary vein in cell *M*; stigma large, darkened; small vague brown marginal clouds, most evident at tips of *R*₁₊₂, *R*₃, *Cu*₁ and *2nd A*; basal half of cell *2nd A* clouded; longitudinal veins beyond cord inconspicuously seamed with very pale brown; cell *R* with a similar central cloud; veins brown, subcostal interspaces more yellowed. A few macrotrichia in outer end of cell *R*₃. Venation: Supernumerary crossveins in cells *C* and *M*, as indicated in the generic description; *R*s relatively long, subequal to *R*₂₊₃; cell *1st M*₂ relatively small; petiole of cell *M*₁, vein *M*₂ and *m-cu* all gently arcuate; vein *Cu*₂ attaining the wing margin; cell *2nd A* narrow.

Abdominal tergites bicolored, bases dark brown, apices yellowed; second tergite with a further darkened area at midlength; on third segment the dark color is less than the yellow apex, on outer segments becoming more extensive, the amount of yellow gradually reduced; sternites yellow, incisures vaguely darkened, outer segments more uniformly infuscated; hypopygium dark brown, the eighth segment still darker. Male hypopygium (fig. 12) with the posterior border of tergite, *t*, very strongly convex, apex obtuse, without major setae, the latter forming a broad band at near midlength of tergite. Outer dististyle, *d*, broad, apex obtuse, outer margin with long strong setae, those at apex smaller; inner style with beak gently curved, apex truncate; outer margin with a broad outer lobe and a smaller lobule that bears three blackened spinoid setae and a single isolated similar spine.

Holotype, ♂, C-M: Anbohitantely (Tan.), 10. VI. 58.

The present fly requires no comparison with other regional species, being entirely distinct in the generic characters indicated.

Ctenacroscelis brunneus (Bigot)

N-M: Joffreville (D.-S.), 11.V.58; Montagne d'Ambre (D.-S.), 26.V.58.

C-M: Tananarive (Tan.), 15.-20.X.57, 13. and 23.XII.57, 8.VII.58, 1.IX.58; Antalata, Lac Itasy (Tan.), 27.III.58.

E-M: Moramanga (Tam.), 21 km south, 21.XII.57; Périnet (Tam.), 2.-4.XII.57, 8.-13.IV.58, 23.IX.58, 4.-5.X.58. Ambatolahy (Fia.), 14.IX.58; Ranomafana (Fia.), 30.VII.58, 3.VIII.58; Anosimparihy (Fia.), 9.VIII.58; Marofody (Fia.), 18.VIII.58; Mananjary (Fia), 6.VIII.58.

This is the commonest and one of the largest Tipuline crane flies in Madagascar. The species is very close to the earlier described *Ctenacroscelis albovittatus* (Macquart), from Ile de France (Mauritius) and the exact relationships between the two remain uncertain.

Ctenacroscelis nampoïna sp. n. (fig. 13)

Size large (wing of male about 24 mm); mesonotal praescutum light cinnamon brown with four narrow brownish gray stripes that are bordered by darker brown; pleura with a broad silvery yellow longitudinal stripe, dorsopleural region broadly light yellow; femora light brown, gradually darkened outwardly, claws with median

tooth obtuse; wings brown, variegated by extensive more yellowed areas and a restricted darker pattern; abdomen light brown, segments vaguely patterned with darker; male hypopygium with tergal lobes very broad, tips obtuse, surface with dense long silken setae; inner dististyle distinctive, terminating in a slender beak, at midlength with a broad obtuse flange that is extended at margin into two acute points.

Male.—Length about 25 mm; wing 24 mm.

Female.—Length about 28 mm; wing 27.5 mm.

Frontal prolongation of head light brown above, including the long nasus, darker brown beneath; palpi dark brown, the third segment a little paler. Antennae short; scape and proximal three flagellar segments dark brown, pedicel light yellow, outer flagellar segments orange; flagellar segments cylindrical, longer than the inconspicuous setae. Head light brown on anterior vertex, the low tubercle with a capillary darkened line; posterior vertex darker brown, sides, with the genae, more pruinose.

Pronotum dark brown, sides broadly light yellow. Mesonotal praescutum light cinnamon brown with four narrow brownish gray stripes that are bordered by darker brown, lateral margins darker than the remainder of ground; scutum light brown, each lobe with two brownish gray areas that are narrowly bordered by darker brown; scutellum light brown, parascutella yellowed; mediotergite light brown, vaguely lined with darker brown, central region of posterior border narrowly gray; pleurotergite yellowed above, representing the posterior end of the dorsopleural stripe, katapleurotergite dark brown on posterior half, silvery white beneath. Pleura light brown, with a broad silvery yellow longitudinal stripe extending from the anterior margin of the sternopleurite to the katapleurotergite; dorsopleural region pale yellow, narrowly bordered beneath by darker brown; sides of sternopleurite with a darker brown oval area. Halteres pale brown, base of stem orange, knob darker brown, apex brownish yellow. Legs with fore coxae brown, apex obscure yellow, middle and hind coxae yellow, each with a narrow pale brown line at near midlength; trochanters obscure yellow; femora light brown, base more yellowed, gradually darkened outwardly, tibiae light brown, tarsi brownish yellow; claws large with a small acute basal spine and an obtuse protuberance at near midlength. Wings brown, variegated by extensive more yellowed areas, before anterior cord, near outer end of cell *M* and in bases of both Anal cells; posterior cord and vein *2nd A* narrowly seamed with darker brown; outer ends of veins R_{4+5} and M_1 narrowly bordered by yellow; cell *Sc* more cinnamon brown; veins brownish yellow. Veins with the exception of *C*, *R* and R_1 virtually glabrous, including all veins beyond cord; outer costal vestiture short and spinoid. Venation: *Rs* relatively long and more nearly straight than in *brunneus*; *m-cu* at near two-thirds M_{3+4} .

Abdomen brownish yellow to light brown, only vaguely patterned; basal tergite, lateral tergal borders and outer sternites slightly darker brown. Male hypopygium (fig. 13) with the tergal lobes, *t*, very broad, tips obtuse, separated by a U-shaped emargination and a short dorsal furrow; the whole tergite, excepting the median furrow, densely provided with long silken setae. Region of ninth sternite, *9s*, with a low obtuse lobe that bears a few very long setae. Outer dististyle, *d*, relatively narrow, basal two-thirds folded; inner style distinctive, as shown; very irregular in conformation, terminating in a slender beak, on inner margin produced into two acute points, these produced backward into a broad obtuse flange. Eighth sternite unmodified, the posterior border subtruncate to very gently convex, with abundant setae over the whole surface.

Holotype, ♂, E-M: Périnet (Tam.), 1000 m, 4.XII.57.

Allotopotype, ♀, same locality, 9.IV.58.

This quite distinct species is closest to *Ctenacroscelis sakarahana* Alexander, differing in the hypopygial structure, particularly the inner dististyle. The specific name is that of the great Merina King, ANDRIANAMPOINIMERINA, shortened to its familiar usage, NAMPOINA.

Ctenacrosceles radama sp. n. (fig. 14)

Size large (wing of male about 26 mm); mesonotal praescutum cinnamon with four more brownish gray stripes that are narrowly bordered by darker brown; pleura conspicuously striped longitudinally with yellow, silvery, dark and lighter brown; femoral tips broadly brownish black; wings relatively narrow, strongly infuscated, only vaguely patterned with darker brown and yellowed areas; vein R_{1+2+3} long; male hypopygium with the posterior border of tergite quadrispinose, the inner pair of spines long and slender, the lateral ones low and broad; inner dististyle a powerful sclerotized rod, angularly bent into a slender spine, the lower margin with a small erect spinule.

Male.—Length about 24 mm; wing 26 mm; antenna about 3 mm.

Frontal prolongation of head light brown above, including the long nasus, dark brown beneath; palpi brown, the first and last segments more blackened. Antennae relatively short; scape light brown, pedicel paler; first flagellar segment narrowly yellow at base, remainder of organ brownish yellow; flagellar segments cylindrical to subcylindrical, with abundant appressed black setae on dorsal surface, with sparse short verticils beneath, these shorter than the segments. Head above dark brown, orbits narrowly paler, genae gray; conspicuous blackened areas above and beneath the antennal fossae, the former interconnected in front of the narrow vertical tubercle, the latter simple, impressed in front, forked behind.

Pronotal scutum dark brown, broadly yellowish white on sides, scutellum variegated by more cinnamon areas. Mesonotal praescutum cinnamon brown with four more brownish gray stripes that are narrowly bordered by slightly darker brown, the lateral margins conspicuously darker brown; scutum with lobes chiefly covered by brownish gray areas that are inconspicuously ringed with darker brown; lateral margins and central area darker brown, especially near the suture; an obscure orange triangle adjoining the suture on either side of the median line; scutellum dark brown, with very long yellow setae, parascutella pale; mediotergite brown, posterior border gray, disk with narrow longitudinal brown lines, pleurotergite light brown above, the katapleurotergite bicolored, dark brown on dorsal half, light silvery below. Pleura conspicuously striped longitudinally with dark and pale brown, light yellow and silvery, arranged as follows: dorsopleural region broadly yellow, beneath it with a slightly broader brown stripe that is margined above and below by darker brown; a broad silvery band on sternopleurite and ventral pteropleurite, reaching the pleurotergite behind, as described; sternopleurite above with a narrow pale brown stripe, ventral sternopleurite and meron darker brown; metapleura pale. Halteres dark brown, base of stem obscure brownish orange. Legs with coxae light gray, conspicuously patterned with brown, including basal half of fore pair and a band at near midlength of remaining coxae; trochanters yellow; femora brownish yellow, tips broadly brownish black, preceded by a vague clearer yellow ring; tibiae brownish yellow, tarsi clearer yellow; claws with outer tooth obtuse. Wings relatively narrow, strongly infuscated, only vaguely patterned, including narrow darker brown seams on anterior cord, *m-cu* and in cell *1st A* adjoining vein *2nd A*; paler brown suffusions in costal and outer radial fields, including a narrow margin virtually around the wing; outer end of cell *1st M*₂ and fork of vein *M*₁₊₂ weakly clouded; a pale area before cord in cells *R* and *R*₁; bases of cells *1st A* and *2nd A* vaguely paler; veins brown. Venation: Vein *R*₁ beyond the free tip of *Sc*₂ some distance before fork, producing a long element R_{1+2+3} ; *m-cu* at near midlength of *M*₃₊₄; cell *1st M*₂ relatively narrow.

Abdominal tergites medium brown, the first segment, posterior margin of second and lateral tergal borders darker, sternites more brownish yellow; outer segments more uniformly brown. Male hypopygium (fig. 14) with tergite, *t*, distinctive; posterior border conspicuously quadrispinose, including two long slender glabrous inner spines, their bases broader, separated by a U-shaped emargination; lateral spines low and broad, with delicate setulae. Outer dististyle, *d*, relatively narrow, parallel-sided, apex obtuse; setae yel-

low, short and inconspicuous; inner style distinctive, appearing as a powerful sclerotized rod, beyond midlength angularly bent, narrowed into a slender curved spine; outer margin at bend with a low crest that bears a low obtuse point; lower margin at base of spine with a small erect spinule. Aedeagus, *a*, slender, heavily sclerotized, apex slightly bilobed.

Holotype, ♂, E-M: Ambodiwangy (Tam.), 23. XI. 57.

Ctenacroscelis radama is quite distinct from the only other regional species having the hypopygial tergite quadrispinose, *C. rogezianus* Alexander. This has the intermediate pair of spines broad, the lateral pair long and slender, and with both dististyles broader and differing in conformation. The species is named for King RADAMA I, son of Andrianampoinimerina.

Nephrotoma ambricola sp. n. (figs. 4, 15)

Size large (wing about 17 mm); mesonotal praescutum with three broad polished black stripes, more or less confluent to form a discal shield; scutellum and mediotergite yellow; frontal prolongation of head, palpi and antennae yellow; fore femora blackened on outer four-fifths, remaining femora obscure yellow, tips narrowly darkened, claws of male toothed; wings almost uniformly tinged with pale brown, base not brightened, stigma darker brown, without macrotrichia; cell M_1 broadly sessile, basal section of vein M_2 long, directed strongly basad; abdomen yellow with a more or less distinct brown median tergal stripe and a conspicuous black subterminal ring, genitalia yellow; male hypopygium with tergite produced into two slender submedian rods, the spicules in three groups; apex of aedeagus with a recurved hook on either side.

Male.—Length about 15 mm; wing 17 mm; antenna about 5.2 mm.

Female.—Length about 21–24 mm; wing 17–18 mm.

Frontal prolongation of head light yellow, more orange above, including the nasus, the latter tufted with black setae; palpi obscure yellow, terminal segment pale brown, corrugated. Antennae yellow; flagellar segments of male feebly incised, longest verticils nearly equal to the segments; antennae of female short. Head orange; vertical tubercle very low, entire; occipital brand small and scarcely differentiated.

Pronotum yellow, the sides, with the propleura, dark brown. Mesonotal praescutum with the ground yellow, disk with three broad polished brownish black or black stripes, in the holotype the ground interspaces narrowly indicated, in other specimens blackened so the disk appears more uniformly blackened; lateral stripes broadly outcurved to margin, isolating a small yellow area behind them; scutal lobes uniformly brownish black to black, lateral ends of suture more intensely blackened; median region of scutum behind more or less infuscated to isolate a triangular yellow area at point of the suture; scutellum testaceous yellow to light brown, parascutella clearer yellow; mediotergite bright yellow, the anapleurotergite more brownish yellow than the clear yellow katapleurotergite; setae of praescutum and scutum very small and sparse to virtually lacking, setae of mediotergite long, erect, pale. Pleura light yellow, ventral anepisternum more reddened. Halteres with stem obscure yellow, knob yellowed to darker. Legs with coxae yellow, with abundant long yellow setae; trochanters yellow; fore femora black, the basal fourth to fifth yellowed, remaining femora obscure yellow, tips narrowly blackened, including about the outer tenth; tibiae light brown, more yellowed basally, tips very narrowly darker; tarsi brown, passing into black; claws of male long, with a small tooth. Wings (fig. 4) almost uniformly tinged with pale brown, base not brightened; a scarcely evident darker cloud over anterior cord; cell *Sc* slightly darker, stigma darker brown, virtually without trichia; veins brown. Venation: Cell M_1 very broadly sessile, basal section of M_2 subequal to *m*, directed strongly basad; *m-cu* at or just beyond fork of vein M_4 .

Abdomen of male yellow, median region of tergites with a broad continuous black central stripe, beginning at posterior end of second segment; seventh segment, with the sixth tergite and eighth sternite, brownish black, forming a conspicuous ring; eighth tergite yellow, its basal and posterior borders narrowly darkened; hypopygium yellow. In female, abdominal segments yellow, base of first tergite black, intermediate tergites with posterior borders narrowly black, in cases the individual areas produced cephalad at mid-portion to form an interrupted longitudinal stripe, extreme lateral margins darkened; sixth segment and base of seventh intensely black, remaining segments orange. Ovipositor with cerci long, straight, tips narrowly obtuse. Male hypopygium (fig. 15) with the tergite, *t*, distinctive; narrowed posteriorly and provided with a more sclerotized outer shield that is further extended into two slender divergent rods or blades that are separated by a narrow median split; inner margins of lobes with blackened spicules, with a second more diffuse group of about 20 more basally; at cephalic end of the sclerotized plate on either side of a median furrow, on ventral surface with a broad hornlike extension directed laterad, the apex caudad, its outer margin with about 8 similar spicules; setae of tergal disk small, of the margins elongate, yellow. Midregion of ninth sternite produced ventrad into a slender pale fingerlike lobe; posterior lobes of sternite with long yellow setae. Outer dististyle, *d*, broadest at near midlength, about four times as long as wide, setae yellow; inner style with the beak portion unusually narrow, lower beak scarcely developed; outer margin at near midlength with a few strong black setae and a low sclerotized flange; region of the outer basal lobe with more numerous shorter setae; disk of style with retrorse yellow bristles, very small on beak, becoming progressively longer backward, the most basal setae large. Phallosome, *p*, with apophyses very broad, tips obtuse; aedeagus parallel-sided, apex truncated, midregion further produced, on either side with a small recurved sclerotized hook. Eighth sternite, *8 s*, with posterior border shallowly emarginate, lobes with relatively few setae, these becoming dense and abundant on either side of a median furrow.

Holotype, ♂, N-M: Montagne d'Ambre (D.-S.), 12.V.58.

Allotopotype, ♀, same locality, 24.V.58.

Paratopotypes, 3 ♀♀, same locality, 12.V.58.

Paratypes, 1 ♂, without abdomen, 4 ♀♀, N-M: Joffreville (D.-S.), 8.-10.V. 58.

Nephrotoma ambricola is a very distinct species, especially in the hypopygial structure, including the unique ninth tergite. In general appearance, the conspicuously blackened fore femora, in conjunction with the uniformly infuscated wings, most readily separates the fly from other species having yellow antennae and uniformly yellowed mesonotal scutellum and mediotergite, such as *N. madagascariensis* (Enderlein).

Nephrotoma costofumosa sp. n. (fig. 5)

General coloration orange and yellow, praescutum with three polished black stripes, the lateral pair outcurved; frontal prolongation of head and antennae yellow; femora yellow, tips very broadly black; wings obscure yellow, prearcular field clear orange yellow, with a heavy brown pattern that includes both cells *C* and *Sc*; abdomen orange yellow with a black subterminal ring.

Female.—Length about 19 mm; wing 13.5 mm.

Frontal prolongation of head light orange, including nasus, this tufted with long black setae; palpi with first segment yellow, second and third yellowish brown, terminal segment black, its base narrowly paler. Antennae yellow. Head uniformly fiery orange; vertical tubercle low, entire; occipital brand very small, almost concolorous, anterior margin very obtuse.

Pronotum uniformly orange. Mesonotal praescutum opaque orange with three polished black stripes, the anterior end of lateral pair a trifle paler, outcurved; posterior sclerites of notum orange, scutal lobes with a single polished black area, bordered in front and at outer margin across the suture by velvety black; scutellum slightly more testaceous; notum unusually glabrous, especially the praescutum, with yellow setae on scutellum and medio-tergite, a little longer on posterior parts of scutal lobes. Pleura orange yellow, ventral anepisternum, sternopleurite and meron extensively more reddened; dorsopleural region broadly orange yellow. Halteres yellow. Legs with coxae orange, the long setae yellow; trochanters orange; femora yellow, tips broadly and conspicuously black, on fore legs including the outer three-fifths, on posterior legs more than the outer fourth; tibiae brownish yellow, tips brownish black, spurs yellow; basitarsi brown, outer tarsal segments black. Wings (fig. 5) obscure yellow, the prearcular field clear orange yellow; a conspicuous brown pattern, including both cells *C* and *Sc*, with further seams over all veins at and beyond the cord, more expanded at apex; space between cubital branches darkened; axillary border in cell *2nd A* weakly darkened, the Anal veins less evidently so; stigma darker brown, with macrotrichia; veins dark brown, orange in the prearcular field. Venation: *Rs* arcuated; cell *M*₁ broadly sessile; *m-cu* shortly before fork of *M*₄.

Abdomen elongate, clear orange yellow, with a very conspicuous black subterminal ring, involving segments seven to nine and posterior border of six. Ovipositor horn-yellow; cerci straight, tips narrowly obtuse.

Holotype, ♀, E-M: Moramanga (Tam.), 13.5 km south, 20.XII.57.

Among the described regional species, *Nephrotoma costofumosa* is most similar to *N. xanthoplaca* Alexander, differing from this and from all other species by the conspicuous wing pattern, including the darkened costal border.

Nephrotoma flavonigra Alexander

E-M: Périnet (Tam.), 1000 m, 1.XII.57, 1 ♀.

Nephrotoma imerina Alexander

C-M: Ambatolampy (Tan.), 1.I.58.

Nephrotoma madagascariensis (Enderlein)

N-M: Montagne d'Ambre (D.-S.), 23.V.58.

C-M: Tananarive (Tan.), 20.X.57, 23.XII.57, 18.-22.VII.58.

E-M: Périnet (Tam.), 1000 m, 24.X.57, 21.IX.58. Ranomafana (Fia.), 27.-29.VII.58, 10. IX. 58.

Nephrotoma setirostra sp. n. (figs. 6, 16)

Size medium (wing about 12 mm); mesonotal praescutum light yellow with four narrow nacreous blue-black stripes that are narrowly bordered by velvety black, the lateral pair straight; head yellow, occipital brand very large, bordered by velvety black; femora broadly blackened, the bases more narrowly yellowed, claws of male toothed; wings subhyaline, cell *Sc* and stigma a little darker; abdomen almost entirely orange, without black markings; male hypopygium with eighth sternite produced into a compressed-flattened rostrum, its apex with abundant yellow setae.

Male.—Length about 10–12 mm; wing 11–12.5 mm; antenna about 3.8–4 mm.

Female.—Length about 14–15 mm; wing 12 mm.

Frontal prolongation of head light yellow, outer half of dorsal surface, with the elongate nasus, dark brown; palpi brownish black. Antennae with scape yellow, remainder

black; flagellar segments moderately incised, longer than their verticils. Head anteriorly light yellow, including the high impressed vertical tubercle; a small brown orbital spot on either side; occipital brand very large, subcircular in outline, narrowly bordered by velvety black.

Prothorax light yellow, sides of scutum narrowly infuscated. Mesonotal praescutum light yellow, with four nacreous blue-black stripes that are narrowly bordered by velvety black, lateral stripes straight; scutum light yellow, each lobe with a single nacreous area that is bordered anteriorly by velvety black; scutellum testaceous yellow, parascutella weakly darkened; mediotergite light yellow with a pale brown central line, expanded on posterior fourth of sclerite, pleurotergite light yellow, katapleurotergite restrictedly darkened beneath; notum unusually glabrous, with long sparse pale setae on praescutal interspaces, shorter on scutal lobes and scutellum, longer and porrect on mediotergite. Pleura yellow, including the dorsopleural membrane, with more reddened areas on ventral anepisternum, sternopleurite and meron. Halteres yellow. Legs with coxae and trochanters reddish yellow; femora blackened, bases yellowed, the black color most extensive on fore legs where more than the outer two-thirds is included, narrowest on posterior legs, including about the outer third; tibiae brownish black, paler basally; tarsi black; claws of male toothed. Wings (fig. 6) subhyaline, prearcular field and cell *C* light yellow, cell *Sc* and stigma a little darker; veins brown, somewhat more yellowed in the brighter areas. Stigma with numerous trichia. Venation: Cell M_1 narrowly sessile; *m-cu* shortly before fork of M_4 .

Abdominal tergites almost uniformly orange, lateral borders narrowly and vaguely infuscated; sternites more yellowed; no subterminal darkened ring. Male hypopygium (fig. 16) with outer angle of each tergal lobe, *t*, produced into a slender glabrous point, the margin with four spiculate areas, as shown. Outer dististyle, *d*, strongly narrowed on outer third; inner style with lower beak shorter, stouter and more blackened than the beak, the apical margin of latter straight, not elevated into a crest; region of outer basal lobe triangular, its upper margin with a series of strong black setae. Gonapophysis, *g*, with apical blade subtriangular in outline, lateral lobe a slender rod, its margin with microscopic tubercles. Eighth sternite, *8 s*, distinctive, produced into a conspicuous compressed-flattened rostrum, its apex with abundant yellow setae.

Holotype, ♂, C-M: Manjakatempo (Tan.), 5.I.58.

Allotopotype, ♀, same locality, 3.I.58.

Paratopotypes, ♂ ♀, same locality, 3.-6.I.58.

Paratypes, 1 ♂, 1 ♀, C-M: Ambatolampy (Tan.), 1.I.58.

The most similar regional species is *Nephrotoma bara* Alexander, to which species it runs in keys to the genus (ALEXANDER 1959; 217). The present fly is readily told by the uniformly orange yellow abdomen and the distinctive male hypopygium, including the conspicuous rostrum-like blade of the eighth sternite.

Nephrotoma xanthoplaca Alexander

E-M: Périnet (Tam.), 10.IV.58. Ranomafana (Fia.), 11.IX.58.

Nephrotoma xanthoplacodes sp. n.

Size large (wing of female 18 mm); mesonotal praescutum with disk blackened, including three nacreous stripes and velvety black interspaces; scutellum nacreous black, mediotergite yellow with a broad central black stripe; frontal prolongation of head, palpi, antennae and halteres yellow; fore femora black, the basal fifth yellowed; wings before cord strongly yellowed, including the veins, outer cells weakly darkened, stigma without macrotrichia; cell M_1 very broadly sessile, the oblique basal section

of vein M_2 nearly as long as m , $m-cu$ long, placed on M_4 shortly beyond the base; abdomen with basal tergite black, succeeding segments orange yellow, outer segments with a broad blackened subterminal ring; genital segments orange; cerci very long, straight.

Female.—Length about 22 mm; wing 18 mm.

Frontal prolongation of head clear yellow, including the long nasus; palpi yellow. Antennae yellow throughout, in female longest verticils unilaterally distributed on dorsal face, subequal in length to the segments. Head light orange yellow; vertical tubercle moderately high, entire; occipital brand very small, scarcely differentiated; setae of vertex short and inconspicuous.

Pronotum yellow, extensively light brown on sides, including also the propleura; pretergites light yellow. Mesonotal praescutum with disk chiefly covered by three broad nacreous black stripes, the lateral pair broadly outcurved to the margin; interspaces and narrow borders to the median stripe deep velvety black; humeral region and a subequal marginal spot yellowed; scutal lobes uniformly nacreous black, cephalic lateral portions intensely velvety black, including the ends of the suture, the darkened areas contiguous posteriorly, leaving a brown triangular mark in front at suture; scutellum nacreous black, parascutella yellowed; mediotergite yellow with a broad central brownish black darkening, parallel-sided on anterior half, more nacreous and slightly expanded on posterior part; pleurotergite light yellow, anapleurotergite a little more reddened; praescutum virtually glabrous, with a few short pale setae on interspaces behind, longer setae on posterior scutal lobes, longest on mediotergite, all setae pale yellow. Pleura yellow, restrictedly variegated with more reddened areas on ventral anepisternum and sternopleurite. Halteres pale yellow. Legs with coxae yellow, fore pair a trifle darker, all with long yellow setae; trochanters yellow; a single (fore) leg remains, femora intensely black with about the basal fifth yellowed; tibiae obscure yellow, gradually darkened outwardly, tips very narrowly infuscated; basitarsi light brown, outer tarsal segments blackened; claws yellowed basally, outer half black. Wings strongly yellowed before cord, especially the prearcular and costal fields, including the veins; outer cells weakly more darkened, narrowly so at wing tip; a restricted light brown cloud over anterior cord; stigma oval, dark brown, conspicuous, without macrotrichia; veins beyond cord light brown, darker on R_{2+3} and anterior cord. Venation: Cell M_1 very broadly sessile, the oblique basal section of M_2 nearly as long as m ; $m-cu$ long, on M_4 shortly beyond base; cell M_4 unusually broad at base, about one and one-half times the distance at apex.

Abdomen with first tergite and base of second black, succeeding segments orange yellow; a broad subterminal black ring including segment six, apex of five and base of tergite seven; a narrow blackened ring at apex of tergite seven, the sternite more extensively blackened; outer segments orange. Ovipositor with cerci very long, straight, tips narrowly obtuse.

Holotype, ♀, E-M: Moramanga (Tam.), 13.5 km south, 18.XII.57.

The most similar species is the smaller *Nephrotoma xanthoplaca* Alexander, which is most readily told in the female sex by the unpatterned mesonotal scutellum and mediotergite, the more extensively blackened femora, and the stigmal macrotrichia which are about 20 in number.

Tipula (Spinipula) spinimarginata Alexander (fig. 49)

E-M: Périnet (Tam.), 5.X.58, 1 broken ♀.

The specimen is larger than the type male, differing in slight colorational features, including narrow darkened femoral tips and a weak darkening over the pleural anepisternum and adjoining dorsopleural membrane. Without further material I must regard the identification as being correct. Ovipositor with cerci long and slender,

straight or very insensibly decurved; hypovalvae much broader, compressed-flattened, tips obtusely rounded.

The new subgenus *Spinitipula* is defined at the end of the section including keys to the genera and subgenera (Section II).

Tipula (Acutipula) bioculata Alexander

C-M: Mahatsinjo (Tan.), 13.VI.58, 1 ♂.

Tipula (Acutipula) octoplagiata Alexander

C-M: Manjakatempo (Tan.), 23.IV.58; Analavory (Tan.), 30.III.58; Ampefy, Lac Kavitaha, 27.III.58.

E-M: Périnet (Tam.), 3.XII.57, 10.-13.IV.58, 21.IX.58. Mananjary (Fia.), 16.VIII.58.

W-M: Ambongamaranitra (Maj.), 20.VI.58.

All of the above specimens are females. Some specimens have the eight darkened areas on the mesonotum much paler brown than others, in some cases being barely indicated.

Tipula (Acutipula) punctoargentea Alexander

E-M: Périnet (Tam.), 1000 m, 1.XII.57, 1 ♀.

The specimen is very large, much exceeding other available material (length about 33 mm; wing 32 mm), but appears to be correctly placed. The central area of the mesonotal praescutum is broadly yellowed, slightly darker anteriorly, much paler than the castaneous lateral stripes.

Tipula (Acutipula) tananariviana Alexander

C-M: Manjakatempo (Tan.), 23.IV.58; Analavory (Tan.), 30.III.58.

E-M: Périnet (Tam.), 23.X.57, 2.-5.XII.57 (at light), 8.-13.IV.58, 7.X.58; Soanierana-Ivongo (Tam.), 6.-7.XI.57; Antanambe (Tam.), 14.XI.57 (at light). Ranomafana (Fia.), 13.IX.58; Ifanadiana (Fia.), 23.VIII.58; Anosimparihy (Fia.), 9.VIII.58; Marofody (Fia.), 18.VIII.58.

LIMONIINAE

Limoniini

Limonia hovamendica Alexander

E-M: Périnet (Tam.), 24.X.57 (at light), 1 ♂.

Limonia (Rhipidia) near sigilla Alexander

Limonia (Rhipidia) sigilla Alexander; Ruwenzori Expe.l., 1934-1935, I, no. 7, Tipulidae, pp. 201, 220-222, fig. 71 (♂ hypopygium); 1956.

The type was from Southwestern Uganda.

E-M: Périnet (Tam.), 23.IX.58 (at light), 1 ♀.

This single broken specimen is very similar to continental *sigilla* but may well pertain to some other distinct closely allied species. It is the first representative of the *domestica* group to be recorded from Madagascar, the other members of the subgenus belonging to two different subgroups.

Antocha (Orimargula) pauliani Alexander (fig. 56)

E-M: Périnet (Tam.), 1000 m, 24.X.57 (at light), 30.XI.57, 3.XII.57, 20.IX.58.

Dicranoptycha atripes sp. n. (fig. 25)

General coloration of thorax blackened, pruinose; halteres with knob weakly darkened; legs uniformly dark brown, vestiture appressed; wings almost uniformly suffused with brown, including cell *Sc*, stigma darker; *Rs* relatively long, not angulated at origin, cell *1st M*₂ long; male hypopygium with outer dististyle capitate, the entire head densely spinulose; lateral gonapophysis a simple darkened horn.

Male.—Length about 9 mm; wing 12 mm.

Rostrum and palpi black. Antennae black, scape pruinose; flagellar verticils long but not so excessively so as in some regional species. Head dark gray; setae black.

Pronotum dark gray. Mesonotal praescutum with the disk blackened, subnitidous, sides more pruinose, posterior sclerites of notum more heavily pruinose; vestiture of praescutum relatively sparse and weak, of scutellum and mediotergite more conspicuous. Pleura heavily gray pruinose. Halteres with stem obscure yellow, knob weakly darkened. Legs with coxae and trochanters blackened, heavily gray pruinose; legs dark brown, appearing even darker because of the vestiture, femoral bases restrictedly light brown; vestiture of legs, including the scales, appressed, not outspreading and conspicuous as in *nox*. Wings almost uniformly suffused with brown, including cell *Sc*, prearcular field a little brighter; stigma darker brown, elongate; veins brown, those at wing base yellowed. Vestiture of veins consisting of linear scales. Venation: *Rs* relatively long, not angulated at origin, about three times the basal section of *R*₄₊₅; cell *1st M*₂ long, exceeding the distal section of vein *M*₃.

Abdomen, including hypopygium, black. Male hypopygium (fig. 25) with the outer dististyle, *d*, stout-stemmed, outwardly capitate, the transverse head conspicuously produced both anteriorly into an obtuse lobe and backwards into a shorter heel portion, the entire head densely provided with acute spinoid points; inner style expanded on basal three-fourths, the apex more narrowed, surface and margins with very strong setae. Lateral gonapophysis, *g*, appearing as a simple darkened horn that narrows to an acute point. Phallosome, *p*, of the unique type poorly preserved, appearing to include major blackened structures on either side, with a rounded flattened plate interconnected across the midline.

Holotype, ♂, E-M: Périnet (Tam.), 4.X.58.

The most similar species is *Dicranoptycha azrael* Alexander, which has the outer dististyle generally similar but differs in the other hypopygial details, including the inner dististyle and phallosome, and in the coloration of the wings and legs. The only other generally similar species with uniformly darkened legs is *D. nox* Alexander, with the hypopygial structure quite different, the wings strongly blackened, and with the femoral vestiture very long and outspreading to present a subpennate appearance.

Dicranoptycha aurogeniculata Alexander

E-M: Périnet (Tam.), 27.IX.58, 3.X.58.

Dicranoptycha diacaena sp. n. (figs. 19, 26)

Size medium (wing of male about 12 mm); thorax polished black; antennae and halteres black; legs black, femoral tips and tibial bases yellowed; wings very strongly blackened; male hypopygium with both dististyles narrowed and acute at tips, the inner style before apex with about four strong setae; gonapophysis narrowed into a slender rod; phallosome including two subequal sclerotized elements, the lower one bidentate near apex.

Male.—Length about 10–10.5 mm; wing 12–12.5 mm; antenna about 2 mm.

Rostrum, palpi and antennae black; flagellar verticils shorter than in some other local species. Head opaque dark brown.

Thorax black, surface nitidous; vestiture of praescutum of moderate length, of scutum and scutellum longer, especially the latter, of the mediotergite of medium length. Halteres black. Legs black, femoral tips and tibial bases light yellow, the former a little more extensive; vestiture of legs relatively short, appressed and inconspicuous. Wings (fig. 19) very strongly blackened, the prearcular and costal fields more intensely so; veins brown, with elongate scales. Venation: *Rs* about one-fifth longer than cell *1st M*₂; *m-cu* approximately its own length beyond fork of *M*.

Abdomen black. Male hypopygium (fig. 26) with both dististyles, *d*, narrowed to acute or subacute points; outer style more arcuated, terminating in a slender spine; no teeth on style excepting a few vague spinulae on outer part of the concave margin; outer surface at near midlength with short dense retrorse setulae; inner style less curved, provided with numerous setae, including four stronger bristles on outer margin before the subacute apex, the outermost seta largest. Gonapophysis, *g*, narrowed outwardly into a slender rod. Phallosome, *p*, including two approximately similar sclerotized elements, the lower one bidentate near apex.

Holotype, ♂, E-M: Vohiparara (Fia.), 13.IX.58.

Paratopotypes, 5 ♂♂, with the type.

While the present fly is generally similar to species such as *Dicranoptycha aurogeniculata* Alexander and *D. squamigera* Alexander in the blackened wings and the conspicuous yellow pattern of the femora and tibiae, it is quite distinct in the hypopygial structure, particularly the inner dististyle.

Dicranoptycha keiseriae sp. n. (figs. 20, 27)

General coloration gray, the praescutum with four entire brown stripes; femora and tibiae obscure yellow, tips abruptly blackened; wings brown, conspicuously patterned with white areas; *r-m* before fork of *Rs*; male hypopygium with outer dististyle smooth.

Male.—Length about 8–10 mm; wing 9–11 mm; antenna about 2.4–2.5 mm.

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

Rostrum black, sparsely pruinose; palpi black. Antennae with scape black, sparsely pruinose; pedicel and proximal two or three segments of flagellum brownish yellow, the outer segments black; flagellar segments suboval, the outer ones more elongate, a little shorter than the longest verticils. Head light gray, in cases with two linear light brown longitudinal stripes on vertex, separated by a narrow ground vitta, vertex with long sub-parallel black setae.

Pronotum gray, vaguely patterned with light brown. Mesonotal praescutum gray with four entire brown stripes, the intermediate pair separated by a dull gray line, lateral praescutal border narrowly more darkened; pseudosutural foveae black, conspicuous; scutum

gray, lobes patterned with brown, including a lateral mark that is continuous with the lateral praescutal stripe; scutellum gray, parascutella black; mediotergite lighter gray, blackened posteriorly and on sides; vestiture of notum short and sparse, virtually restricted to the praescutum. Pleura gray, restrictedly patterned with blackish on the anepisternum. Halteres obscure yellow. Legs with coxae blackened, pruinose; trochanters brownish black; femora obscure yellow, tips abruptly blackened, on posterior legs including about the outer seventh of segment; tibiae obscure yellow, base narrowly, the apex more broadly, blackened; tarsi black. Wings (fig. 20) brown, conspicuously patterned with white areas, prearcular field more yellowed; the white areas occur as more or less broken bands and isolated spots, arranged in four more or less separate groups; basal at about one-third the length of cell *R* and near outer end of cell *1st A* but not including cells *M* or *Cu*, the latter area continued basad as a narrow white line along vein *1st A* and outwardly along the *Dicranoptycha* fold in cell *Cu*, in cases the former expanded into a spot in cells *1st A* and *2nd A*; second white band nearly entire, including scarcely interrupted areas in cell *R*₁ and in outer ends of *R*, *M*, and *Cu*; third white grouping much broken, including a large area in stigmal region, involving cells *Sc*₁, *R*₁ and *R*₃, with a small outer spot in center of cell *1st M*₂ and near outer end of cell *M*₄; outer band an almost unbroken to more interrupted row of spots, one each in cells *R*₂, *R*₃, *2nd M*₂ and *M*₃, in cases this outer band almost complete and conspicuous, in others much reduced and broken; veins light brown, those of basal third of wing more yellowed. Venation: *Rs* subangulate to square and spurred beyond origin; *r-m* before fork of *Rs* a distance subequal to its own length; cell *1st M*₂ subequal in length to *Rs*, with *m-cu* at from near one-third to two-fifths the length.

Abdomen dull black. Ovipositor with valves elongate, cerci more slender and with scattered setae, tips acute; hypovalvae paler, tips obtuse. Male hypopygium (fig. 27) with posterior border of tergite, *t*, with separated low lobes. Outer dististyle, *d*, a smooth blackened hook, narrowed gradually to the acute tip; inner style a little longer, apex decurved, surface with long coarse yellow setae. Phallosome, *p*, and interbases about as shown.

Holotype, ♂, E-M: Vohiparara (Fia.), 12.IX.58.

Allotopotype, ♀, same locality, 13.IX.58.

Paratopotypes, 4 ♂♂, same locality, 12.-13.IX.58.

I dedicate this outstanding fly to Mrs. FRED KEISER, companion and helpmate on the Madagascar expedition 1957-1958, and the Ceylon one of 1953-1954. The fly is entirely different from all presently known recent species, about 60 in number, in the conspicuous pattern of the wings. The only other species with a somewhat comparable wing is *Dicranoptycha electrina* Alexander, described from the Baltic Amber, Upper Eocene². A few other regional forms have slightly patterned wings but nothing to compare with the present beautiful fly, such species including *D. polysticta* Alexander, *D. robinsoni* Alexander and *D. stictoneura* Alexander.

Dicranoptycha lataurata sp. n. (figs. 21, 28)

General coloration of the entire body polished black; legs black, femoral tips broadly bright yellow; wings strongly infuscated, veins with both scales and setae; male hypopygium with outer margin of outer dististyle spinose.

Male.—Length about 12-12.5 mm; wing 12.5-14 mm; antenna about 2.0-2.2 mm.

Female.—Length about 10-11 mm; wing 12.5-13 mm.

² ALEXANDER, C. P. (1931): *Crane-flies of the Baltic Amber (Diptera)*. Bernstein Forschungen (Amber Studies), Heft 2: 40-41, fig. 41 (wing).

Head and appendages dull black; setae of vertex black, porrect.

Thorax polished black; vestiture of notum conspicuous, black; in the paratypes thorax more opaque black. Halteres brownish yellow. Legs with femora black, tips broadly yellow, including the outer fourth or fifth; tibiae slightly paler, base uniformly darkened; segments with conspicuous scales as well as setae; bases of femora beneath with erect setae, more conspicuous on middle and hind legs. Wings (fig. 21) strongly darkened, costal border more suffused, the elongate stigma still darker; whitened streaks in cell *R* and the *Dicranoptycha* fold in cell *Cu*; veins pale brown. Veins delicate, provided with both setae and elongate scales. Venation: *Rs* slightly longer than *R*.

Abdomen, including hypopygium, black. Ovipositor with cerci short-triangular, with long pale setae. Male hypopygium (fig. 28) with outer dististyle, *d*, broad at base, outer half narrowed into a long spine, outer margin with seven or eight small appressed spines; inner style with apical setae unusually long and powerful.

Holotype, ♀, E-M: Périnet (Tam.), 25.IX.58.

Paratopotypes, 1 broken ♂, ♀, same locality, 20.-25.IX.58.

The most similar species is *Dicranoptycha pachystyla* sp. n., which has the hypopygium and ovipositor distinct. Other regional members of the genus that have the femoral tips abruptly yellow include *D. aurogeniculata* Alexander and *D. basitarsata* Alexander which have additional yellow pattern on the tibiae or basitarsi, or both.

Dicranoptycha longipennis sp. n. (figs. 22, 29)

Size relatively large (wing of male about 15 mm); general coloration of thorax brownish gray; flagellar verticils very long; femora obscure yellow, tips conspicuously black, preceded by a clearer yellow subterminal ring; wings long and narrow, bright brown, prearcular field yellowed, restrictedly patterned with darker over cord and outer end of cell *1st M*₂; male hypopygium with outer dististyle angularly bent at near midlength, apex and outer surface with abundant acute denticles; inner style narrow, nearly parallel-sided.

Male.—Length about 12–14 mm; wing 14–16 mm; antenna about 2.3–2.5 mm.

Female.—Length about 11–12 mm; wing 12.5–14 mm.

Rostrum and palpi brownish black. Antennae brownish black; verticils extremely long, about three times the length of segment or more. Head brownish gray.

Thorax almost uniformly brownish gray, praescutal stripes and scutal area scarcely differentiated; posterior sclerites of notum clearer gray; vestiture of notum abundant, erect, relatively delicate. Pleura blackened, gray pruinose; dorsopleural membrane light brown. Halteres yellow. Legs with coxae brownish black; trochanters brownish yellow; femora obscure yellow, tips conspicuously black, preceded by a subequal clearer yellow ring, the yellow color of femora obscured by darkened setae and scales; tibiae brownish yellow, vestiture darker, tips very narrowly blackened; tarsi brownish yellow, outer segments black. Wings (fig. 22) long and narrow, bright brown, prearcular field yellowed, costal border and arcular region slightly darker brown; very narrow darkened seams over cord and outer end of cell *1st M*₂, chiefly indicated by the more darkened veins; veins brown, yellowed in the prearcular field. Venation: *Rs* longer than cell *1st M*₂; *m-cu* about its own length or less beyond fork of *M*.

Abdomen long, especially in male, brownish black, in male the intermediate segments paler brown. Male hypopygium (fig. 29) with the outer dististyle, *d*, angularly bent at near midlength, gradually narrowed outwardly, apex obtuse; outer surface, including margin almost to base, with unusually numerous and conspicuous acute denticles; inner style narrow, nearly parallel-sided, apex obtuse; surface with long setae, those nearer base of lower margin shorter and more delicate. Phallosome, *p*, including a horn-like lateral apophysis, the top subacute, and a central blackened aedeagus, this narrowed outwardly, apex truncate.

Holotype, ♂, N-M: Montagne d'Ambre (D.-S.), 26.V.58.

Allotopotype, ♀, same locality, 12.V.58.

Paratopotypes, 3 ♂ ♀, same locality, 12.-24.V.58.

In its general appearance *Dicranoptycha longipennis* is much like a large *D. pholiota* sp. n., differing in the coloration of the more narrowed wings and especially in the hypopygial structure, including both dististyles and the phallosome.

Dicranoptycha pachystyla sp. n. (fig. 30)

General coloration intensely polished black to brown; legs black, femoral tips broadly yellow; wings strongly blackened; male hypopygium with outer dististyle subtriangular in outline, outer margin with abundant spicules; phallosome including a large blackened compressed-flattened plate, its outer margin concave, angles produced.

Male.—Length about 11.5–12 mm; wing 12.5–13 mm; antenna about 2 mm.

Female.—Length about 9.5 mm; wing 12.5 mm.

Rostrum and palpi dark brown. Antennae brown. Head dark brown.

Pronotum dark brown. Mesonotum polished black (in types), much paler brown in paratypes, surface polished; vestiture of praescutum relatively sparse, lacking on sides and anterior third, setae of scutellum and mediotergite much longer. Pleura polished black (types) to light brown, dorsopleural region dark brown. Halteres pale brown. Legs dark brown, tips of femora broadly yellow; vestiture not conspicuously outspreading, the scales appressed. Wings varying from dark to paler brown, costal border slightly darker; veins and margins vaguely seamed with slightly darker brown, restricting the ground to the centers of the cells; veins with long setae and interpolated setoid scales that are only slightly broader than the setae. Venation: *Rs* subequal to or slightly longer than *R*.

Abdomen dark brown. Ovipositor with cerci oval, with long pale setae. Male hypopygium (fig. 30) with the outer dististyle, *d*, distinctive, subtriangular in outline, apex produced; outer margin with abundant small blackened spicules, setae lacking; inner style narrowed outwardly, setae conspicuous. Phallosome, *p*, distinctive, including a large blackened compressed-flattened plate, apex concave, the outer angle produced, obtuse; lower angle bispinous, the intervening margin between the spines with several microscopic spinules.

Holotype, ♂, E-M: Vohiparara (Fia.), 13.IX.58.

Allotopotype, ♀, in copula with type but pinned separately.

Paratopotypes, 2 ♂♂, same locality, 12.IX.58.

The most similar species is *Dicranoptycha lataurata* sp. n., with the coloration of the wings and legs much the same, differing evidently in the hypopygial structure, particularly the outer dististyle and phallosome.

Dicranoptycha pholiota sp. n. (figs. 23, 31)

General coloration dull gray, praescutal disk with four poorly indicated dark brown stripes; head dull gray; legs obscure yellow but appearing much darker from abundant setae and appressed scales; wings yellowish brown, costal border darker brown, outer veins bordered by paler brown; veins with long conspicuous setae and linear scales; male hypopygium with outer dististyle relatively small, broad-based, surface with abundant appressed spinules and setae; inner style subtriangular, dilated outwardly, with strong setae; phallosome with a narrow central furcula.

Male.—Length about 9–10 mm; wing 10–12.5 mm; antenna about 1.5–1.7 mm.

Female.—Length about 9 mm; wing 11 mm.

Rostrum and palpi dark brown. Antennae relatively short; scape gray pruinose, pedicel black, flagellum brownish black, outer segments darker, more elongate, with very long verticils. Head dull gray; anterior vertex relatively narrow, about twice the diameter of the pedicel.

Pronotum dark brown. Mesonotum dull gray, praescutal disk with four poorly indicated dark brown stripes, margins narrowly gray, scutal lobes dark brown. Pleura brownish gray. Halteres obscure yellow, knobs more infuscated. Legs with coxae black, sparsely pruinose; trochanters brownish yellow; remainder of legs obscure yellow but appearing much darker from the abundant setae and appressed scales, tips of femora darker brown, bases narrowly clearer yellow. Wings (fig. 23) yellowish brown, costal border darker brown, veins beyond cord narrowly bordered by pale brown restricting the ground to centers of cells, prearcular field clearer yellow; veins light brown, more yellowed in prearcular field. Veins with long conspicuous setae and interpolated linear scales, the latter longer and more narrow than those of the legs. Venation: *Rs* subequal to or slightly longer than *R*; *m-cu* less than its own length beyond fork of *M*.

Abdomen elongate, above dark brown, including the hypopygium, intermediate sternites paler. Male hypopygium (fig. 31) with basistyle, *b*, with very long setae. Outer dististyle, *d*, relatively small, broad-based, curved strongly into a long spine; outer margin with abundant appressed spinules and setae, with further delicate setulae; inner style subtriangular, dilated outwardly, outer and lower surfaces with strong yellow setae. Phallosome, *p*, including a small narrow central structure that forks outwardly into two divergent points; surface of stem with microscopic appressed spinules.

Holotype, ♂, N-M: Joffreville (D.-S.), 25.V.58.

Allotopotype, ♀, same locality, 10.V.58.

Paratopotypes, 14 ♂ ♀, same locality, 8.-26.V.58.

Dicranoptycha pholiota is readily told from other similar species by the coloration of the body and wings, and especially the details of structure of the male hypopygium. Superficially such similar species include *D. breviterebra* Alexander, *D. spinigera* Alexander, and *D. longipennis* sp. n.

Dicranoptycha squamigera sp. n. (figs. 24, 32)

General coloration of body, antennae and halteres black; legs black, femoral tips light yellow, tibial bases more broadly pale yellow, proximal ends of basitarsi narrowly yellowed; legs, especially the femora, with abundant semierect setae and elongate scales; wings blackened, veins with long narrow scales; male hypopygium with outer dististyle slender, outer margin with a few weak denticles.

Male.—Length about 11–12 mm; wing 11.5 mm; antenna about 2 mm.

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

Rostrum, palpi and antennae black. Head dull black, with very abundant black setae.

Thorax uniformly black, subnitidous, dorsum with very abundant erect black setae, more sparse on lateral portions of praescutum. Pleura black. Halteres black. Legs black, femoral tips light yellow, including about the outer sixth of segment; tibiae black, bases more broadly pale yellow, including about the proximal fourth to almost one-third the segment; remainder of legs black, proximal ends of basitarsi narrowly yellowed; femora, especially the fore pair, appearing dilated from the very abundant semierect elongate setae and scales, on the yellowed portions the setae sparse and darkened, scales yellow, appressed, inconspicuous. Wings (fig. 24) strongly and almost uniformly blackened, the very long *Dicranoptycha* fold in cell *Cu* and a broader line along basal half of vein *M* more whitened; veins brown, the trichia brownish black. Macrotrichia of veins dilated into long slender scales. Venation: *Rs* longer than *R*; *m-cu* approximately its own length beyond fork of *M*.

Abdomen, including hypopygium, black, both the tergites and sternites with abundant erect black setae. Ovipositor with cerci blackened, triangular in outline, the scaphoid hypoalvae very reduced. Male hypopygium (fig. 32) with outer dististyle, *d*, slender, outer margin with a few weak denticles before the acute apex; inner style longer, the setae near the apex stout, conspicuous.

Holotype, ♂, E-M: Périnet (Tam.), 9.IV.58.

Allotopotype, ♀, with the type.

Paratopotypes, 4 ♂♂, with the types.

The most similar species is *Dicranoptycha basitarsata* Alexander, which likewise has the legs with the genua and proximal ends of basitarsi yellowed, differing evidently in the relative proportions of the pale markings, all yellow areas being subequal in extent, in the present fly very unequal, as described.

Hexatomini

Pseudolimnophila (*Pseudolimnophila*) *polytila* Alexander

E-M: Périnet (Tam.), 3.XII.57, 1 ♀.

The present specimen differs from the type in slight colorational details, including a more evident darkened subterminal ring on femora and with a few darkened spots in cell *C* of the wings.

Pseudolimnophila (*Pseudolimnophila*) *xantha* Alexander

C-M: Mahatsinjo (Tan.), 12.VI.58.

W-M: Amboromalandy (Maj.), 2.VII.58.

Pseudolimnophila (*Calolimnophila*) *albopicata* Alexander

C-M: Ambohitantely (Tan.), 9.VI.58.

E-M: Périnet (Tam.), 22.IX.58; Antanambe (Tam.), 15.XI.57.

The specimens differ slightly from the type in the reduction in number and extent of the darkened areas along vein *R*, but I regard the identification as being correct.

Pseudolimnophila (*Calolimnophila*) *octoseriata* Alexander

C-M: Mahatsinjo (Tan.), 12.VI.58.

Limnophila (*Nesolimnophila*) *grandidieri* Alexander

E-M: Périnet (Tam.), 1000 m, 2.XII.57. Vohiparara (Fia.), 12.IX.58.

Limnophila (*Nesolimnophila*) *luteifemorata* sp. n. (fig. 17)

General coloration of thorax gray, praescutum with four narrow brownish gray stripes; antennae with scape and pedicel blackened, flagellum yellow; legs very setiferous, femora immaculate light yellow or with a scarcely indicated darker sub-

terminal ring; wings whitened, with an abundant dotted brown pattern in all cells, additional to a few larger darkened areas, including ocellate markings at ends of the more posterior veins and in cell *2nd A*; male hypopygium with tergal lobes nearly truncate; outer dististyle terminating in a simple gently curved hook.

Male.—Length about 10–13 mm; wing 11–14 mm; antenna about 2.5–2.6 mm.

Female.—Length about 13.5–17 mm; wing 12–17 mm.

Rostrum brownish gray; palpi black. Antennae with scape black, pedicel brownish black, flagellum yellow; outer flagellar segments subcylindrical with very long verticils that exceed twice the length of the segments. Head brownish gray, anterior vertex and orbits light gray; setae of vertex very long, more or less porrect.

Prothorax dark gray. Mesonotum gray, praescutum with four narrow brownish gray stripes, the posterior interspaces with a paler brown line; pseudosutural foveae blackened, relatively small, no tuberculate pits; scutal lobes each with a darkened center; mediotergite with a central darkened line and a basal spot on either side; mesonotal setae long, yellow, erect, very conspicuous on praescutum and scutum, lacking on postnotum. Pleura with mesopleura brown, posterior sclerites dark gray; dorsopleural membrane obscure brownish yellow. Halteres with stem yellow, knob dark brown. Legs with coxae brown, tips yellow, less evident on mid-pair; trochanters yellow; remainder of legs light yellow, tips of tibiae and individual tarsal segments narrowly infuscated, terminal segment black; the allotype and paratypes show vague indications of a pale brown subterminal ring on femora; vestiture of legs long and conspicuous, light yellow. Wings with the ground whitened, with an abundant dotted brown pattern in all cells, including also larger spots at origin of *Rs*, cord, stigma, and ends of veins *R*₃ and *R*₄; more or less ocellate darkened markings along margin at ends of veins *M*₃ through *2nd A*, with a conspicuous ocellus at midlength of cell *2nd A*; veins brown, interspaces of *C*, *Sc* and *R* more yellowed. Bases of Anal veins before the squama with several very long setae; veins beyond cord with macrotrichia, lacking on basal veins from *Rs* through *2nd A*. Venation: *R*₁₊₂ and *R*₂ subequal; cell *1st M*₂ small, with *m-cu* near or beyond midlength.

Abdomen brown, with conspicuous erect yellow setae; in allotype the sternites more yellowed with darkened incisures. Ovipositor with both cerci and hypovalvae very long and slender, virtually straight. Male hypopygium (fig. 17) with the tergite, *t*, produced into nearly truncate lobes; sternal lobes, *s*, more pointed, separated by a rounded emargination. Outer dististyle, *d*, terminating in a simple gently curved hook; setae of lower margin sparse, a few of the outer ones longer; setae of outer surface lacking or virtually so; inner style truncated at apex. Gonapophysis, *g*, appearing as a slender curved yellow blade. Aedeagus, *a*, long and slender, very gradually narrowed to the acute tip, the lumen appearing convoluted.

Holotype, ♂, E–M: Ambodivoangy (Tam.), 23.XI.57.

Allotype, ♀, E–M: Ambodivoangy, distr. Maroantsetra (Tam.), III.52 (PAULIAN).

Paratopotype, ♂, with the holotype.

Paratypes, ♂ ♀, with the allotype; 1 ♂, 1 ♀, E–M: Maroantsetra (Tam.), III.55 (J.

VADON); ♂ ♀, Rogez District (Tam.), 900 m, VI., X., XII.46 (LAMBERTON).

Limnophila (*Nesolimnophila*) *luteifemorata* is most similar to *L. (N.) grandidieri* Alexander in the abundant spotted and dotted brown pattern of the wings, differing in the yellow femora and in the details of structure of the male hypopygium, particularly the tergite, sternite and outer dististyle.

Hexatoma (*Eriocera*) *vulcan* Alexander (fig. 69)

E–M: Périnet (Tam.), 1000 m, 4.XII.57, 1 ♀.

Hexatoma (Parahexatoma) angustatra sp. n. (fig. 7)

Body, antennae, halteres and wings uniformly blackened; femora light yellow with about the outer sixth abruptly black; tibiae yellowish brown, the extreme bases and broader tips darkened.

Male.—Length about 14 mm; wing 12.5 mm.

Rostrum, palpi and antennae black. Antennae short, flagellar segments with long coarse verticils throughout. Head black, subnitidous, anterior vertex conspicuously bilobed.

Thorax black, subnitidous, posterior parts of scutellum and mediotergite very inconspicuously dusted with yellow; vestiture of praescutum, scutum and scutellum delicate but conspicuous. Pleura black. Halteres black. Legs with coxae and trochanters black; femora light yellow, the tips rather broadly black, including about the outer sixth of the segment; tibiae yellowish brown, extreme bases darkened, tips broadly blackened, including about the distal fourth, tarsi black. Wings (fig. 7) strongly blackened, prearcular and costal fields more intensely so; stigma small, brown, narrowly encircled by pale; linear whitened streaks in centers of cell *R* and outer half of *M*, with a comparable line in cell 1st *A* immediately behind the vein; veins brown. Macrotrichia on longitudinal veins beyond cord, lacking on R_{1+2} and Cu_1 , present on M_4 excepting the basal fourth. Venation: Sc_1 ending nearly opposite *r-m*, Sc_2 about opposite fork of *Rs*; R_{2+3+4} about two and a quarter times R_{3+4} ; outer radial veins moderately decurved.

Abdomen uniformly black, subnitidous.

Holotype, ♂, E-M: Ambatolahy (Fia.), 14.IX.58.

Hexatoma (Parahexatoma) angustatra is readily told from other described species by the distinctive leg pattern. The antennal verticils are shorter than in *H. (P.) teresiae* Alexander, which otherwise is generally similar to the present fly except for the uniformly blackened legs.

Hexatoma (Parahexatoma) aurantivertex sp. n.

General coloration of entire body black; vertical tubercle orange, conspicuously bilobed; surface of head and thoracic dorsum sparsely yellow pollinose; antennae and halteres black; legs black, femoral bases broadly yellow; wings faintly tinged with brown, the prearcular field light yellow.

Male.—Length about 11 mm; wing 10.5 mm; antenna about 2.2 mm.

Rostrum and palpi black. Antennae of male 7-segmented, black throughout; all flagellar segments with long conspicuous verticils over the entire surface; first flagellar segment stout, a little shorter than the second and third combined; fourth segment elongate, subequal to the first; terminal segment slightly more than one-third the penultimate. Head black, more polished medially and behind, intensely dull black on orbits and sides of posterior vertex; vertical tubercle abruptly orange, anteriorly divided by a V-shaped notch into two conspicuous oval lobes; setae of head delicate and sparse.

Prothorax black, the sides projecting. Mesonotal praescutum with the ground obscured by sparse yellow pollen; disk with four polished black stripes, the intermediate pair united at posterior end some distance before the suture; scutum with central part yellow pollinose, each lobe with a polished black area; scutellum and mediotergite black, very sparsely pollinose. Pleura intensely black, subnitidous. Halteres black. Legs with coxae and trochanters black, the former with short relatively sparse setae, those of posterior coxae longer; femora black, the bases broadly yellow, including nearly the proximal third (posterior legs broken); tibiae and tarsi black. Wings faintly tinged with brown, the prearcular field light yellow; veins brown, those of prearcular field yellowed. Veins beyond

cord with macrotrichia, lacking on M_4 and Cu_1 . Venation: Outer radial veins moderately decurved, R_4 slightly upcurved at tip, not reaching the wing apex.

Abdomen, including hypopygium, black, the setae short and sparse.

Holotype, ♂, C-M: La Mandraka (Tam.), 4.IV.58.

In its conspicuously brightened vertical tubercle, *Hexatoma (Parahexatoma) aurantivertex* agrees with *H. (P.) rubrivertex* Alexander, differing in the coloration of the wings and legs. In the general coloration of the legs the fly is similar to *H. (P.) pauliani* Alexander, differing evidently in the coloration of the vertical tubercle and the wings.

Hexatoma (Parahexatoma) teresiae Alexander

E-M: Fampanambo (Tam.), 27.XI.57, 1 ♀.

Nosy Be: Ambanoro, 15.V.58, 1 ♀.

Elephantomyia (Elephantomyia) fuscodorsata Alexander

C-M: Manjakatempo (Tan.), 3.I.58 (at light), 1 ♂.

The posterior lateral parts of the intermediate abdominal tergites are vaguely obscure yellow.

Eriopterini

Conosia angustissima Alexander

E-M: Fampanambo (Tam.), 20.XI.57 (at light).

W-M: Tsaramandroso (Maj.), 16.VI.58.

The available specimens, all females, appear to belong to this species which is best differentiated by the narrowed wings of the male.

Conosia irrorata (Wiedemann)

C-M: Mahatsinjo (Tan.), 12.VI.58. Ambalamanakana (Fia.), 18.I.58.

E-M: Ifanadiana (Fia.), 1.VIII.58; Mananjary (Fia.), 6.VIII.58. Fampanambo (Tam.), 19.XI.57.

W-M: Ambongamaranitra (Maj.), 20.VI.58.

Conosia malagasya Alexander (fig. 76)

C-M: Tananarive (Tan.), 18.IX.58 (at light); Manjakatempo (Tan.), 4.I.58 (at light); La Mandraka (Tam.), 4.IV.58.

E-M: Moramanga (Tam.), 20.XII.57; Périnet (Tam.), 1000 m, 24.X.57, 3.XII.57, 21.IX.58. Vohiparara (Fia.), 15.IX.58.

The above series consisted almost entirely of females that were taken at light.

Trentepohlia (Trentepohlia) africana Alexander

E-M: Soanierana-Ivongo (Tam.), 6.XI.57; Fampanambo (Tam.), 21.XI.57.

As was indicated in an earlier reference (ALEXANDER 1953: 301), the specimens from Madagascar referred to in this species disagree in some regards from the holotype and other continental African material and probably represent a distinct race or species.

Trentepohlia (Trentepohlia) alluaudi Alexander (fig. 78)

E-M: Soanierana-Ivongo (Tam.), 7.XI.57; Fort-Dauphin (Tul.), 18.II.58.

Trentepohlia (Trentepohlia) nigrita sp. n. (fig. 8)

General coloration of thorax and abdomen polished black; antennae black; fore femora brown, bases yellowed; wings pale yellow, with a conspicuous brown pattern including the apex and a broad band at cord.

Male.—Length about 7 mm; wing 5.8 mm; antenna about 2 mm.

Rostrum and palpi black. Antennae black throughout, relatively long; flagellar segments long-subcylindrical, slightly exceeding their longest verticils. Head dull brownish black, opaque, sparsely pruinose; anterior vertex narrow and conspicuously carinate.

Thorax entirely polished black; praescutum with scattered setae on the interspaces. Halteres with stem brown, knob brownish black. Legs with fore and middle coxae black, posterior coxae obscure yellow; trochanters yellow; fore femora brown with the basal seventh yellowed, remaining femora paler, the tips narrowly blackened, especially the posterior pair; remainder of legs brownish black; fore femora with a row of about 13 stout black setoid spines on about the proximal seventh; mid femora with comparable setae in more or less double parallel rows; posterior femora likewise with similar setae, slightly longer, in a single row; tibiae dark brown to brownish black, tips darker, tarsi brownish black; posterior tibiae with a row of about five long conspicuous black setae near outer end. Wings (fig. 8) with the ground pale yellow, prearcular field and costal interspaces deep yellow; a conspicuous brown pattern including the apex as far basad as the cell forks and a comparable band at cord, the two areas narrowly interconnected along vein $R_5 + M_{1+2}$, the band at cord narrowed posteriorly over Cu_2 but reaching the margin; cell M uniformly darkened, extended backward over bases of cubital and anal cells; veins brown, flavous in the yellowed parts. Veins glabrous, including Sc ; distal section of R_5 and vein R_1 beyond origin of R_s to opposite Sc_2 each with about four scattered trichia. Venation: R_{1+2} faintly preserved; apical fusion of veins Cu_1 and $1st A$ moderately long, about one-third the former.

Abdomen, including hypopygium, black, subnitidous.

Holotype, ♂, E-M: Soanierana-Ivongo (Tam.), 7.XI.57.

By my key to the local species of *Trentepohlia* (ALEXANDER 1953: 293–294) the present fly runs to couplet 10, disagreeing with all regional members of the subgenus in the coloration of the legs, being further told by the uniformly blackened thorax and distinctive wing pattern.

Idiognophomyia keiseri sp. n. (figs. 18, 80)

Mesonotal praescutum and scutum polished plumbeous black, remainder of thorax yellow, restrictedly variegated with darker at posterior end of mediotergite; pleural anepisternum black; femore yellowed, tips black, preceded by a subequal clearer yellow ring; legs with abundant linear scales additional to the setae; wings light brown, R_s in longitudinal alignment with R_5 ; abdomen black, subterminal segments narrowly yellow; ovipositor with valves blackened, apices of both cerci and hypovalvae very obtuse; male hypopygium with inner dististyle extended into a very long slender straight spine.

Male.—Length about 6.5–7.5 mm; wing 7.5–8.5 mm; antenna about 2.6–3 mm.

Female.—Length about 6.5–7 mm; wing 7–9 mm; antenna about 2.3–3 mm.

Rostrum and palpi brownish black. Antennae black, scape more plumbeous; first flagellar segment long-oval, outer segments progressively longer, with long conspicuous verticils, the longest slightly exceeding the segment; outer three segments progressively shorter, the last a little less than the penultimate. Head plumbeous black, light gray pruinose except on disk of vertex; setae black.

Pronotal scutum orange, vaguely margined with light brown, scutellum and pretergites clear light yellow. Mesonotal praescutum and scutum polished plumbeous black, lateral praescutal borders more intensely black, humeral triangles light yellow; posterior callosities of scutal lobes darker yellow; scutellum and postnotum similarly polished yellow, the posterior third of mediotergite with paired brown areas that are darker behind; mesonotum glabrous except for a few black setae on scutum. Pleura yellow, anepisternum with a major blackened area, sternopleurite light brown; dorsopleural membrane pale yellow. Halteres with stem weakly darkened, knob yellow. Legs with coxae and trochanters light yellow, fore coxae slightly more reddened; femora yellowed, the color obscured by more darkened scales and setae, leaving a clear yellow ring before the subequal black apex; tibiae brownish yellow to brown, the tips, with the tarsi, darker, with abundant black setae. Wings (fig. 80) tinged with light brown, prearcular and costal fields clearer yellow; stigmal region beyond vein R_2 vaguely to scarcely more darkened; veins pale brown. Longitudinal veins beyond general level of cord with macrotrichia, including also R_s and outer third of $2nd\ A$. Venation: Sc long, Sc_1 ending about opposite R_2 , Sc_2 far retracted, at near midlength of R_s ; $r-m$ close to fork of R_s ; cell $1st\ M_2$ long; $m-cu$ variable in position, from just beyond fork of M to about its own length beyond.

Abdominal tergites black, sternites dark brown, the subterminal segments of both sexes narrowly yellowed, involving chiefly the ninth segment. The paratype female has the abdomen paler, especially the yellowed sternum, with the subterminal yellow ring more extensive, including the eighth and ninth segments. Ovipositor blackened; apices of both the cerci and hypovalvae very obtuse. Abdomen of female filled with gigantic eggs, each with a few longitudinal furrows. Male hypopygium (fig. 18) with both dististyles, d , very compact, virtually glabrous, the inner style produced mesad into a very long slender straight spine, this about twice as long as the style. Phallosome, p , including a conspicuous depressed-flattened central plate lying above the aedeagus.

Holotype, ♂, E-M: Vohiparara (Fia.), 13.IX.58.

Allotopotype, ♀, same locality, 12.IX.58.

Paratopotypes, 5 ♂ ♀, same locality, 12.-13.IX.58.

Paratype, 1 ♀, E-M: Périnet (Tam.), 24.IX.58.

This distinct fly is named in honor of Dr. Fred KEISER, collector of this outstanding series of crane flies. It is the first record for the genus *Idiognophomyia* Alexander for Madagascar, the other Ethiopian species being found in South Africa, these including the genotype, *Idiognophomyia capicola* (Alexander), *I. ignava* (Alexander) and *I. patula* (Alexander), the last with cell M_2 of the wings open by atrophy of basal section of vein M_3 . The present fly is entirely distinct from all of these in the striking coloration of the thorax and legs and in the structure of the male hypopygium, particularly the inner dististyle. *Idiognophomyia* Alexander was originally proposed as a subgenus of *Gnophomyia* Osten Sacken (Ann. Natal. Mus., 13: 403-404; 1956) but now appears to deserve generic status.

Erioptera (Podoneura) anthracogramma malagastica Alexander (fig. 89)

C-M: Manjakatempo (Tan.), 3.I.58 (mating pairs at light).

The status of *malagastica* as a valid subspecies remains in question.

2. Vein *Sc* very long, *Sc*₁ almost touching the free tip of *Sc*₂ (fig. 39); *R*₂₊₃ strongly angulated at near midlength; *m-cu* on *M*₄ some distance before base of cell 1st *M*₂; antennae of male excessively lengthened, approximately four times the wing.

Megistocera Wiedemann

Vein *Sc* shorter, *R*₂₊₃ not angulated; *m-cu* on *M* or on *M*₃₊₄, rarely on *M*₄ (in some *Nephrotoma*, where *Sc* is short and *Sc*₂ enters *R* close to origin of *Rs*); antennae not greatly lengthened, shorter than the wing 3
3. Apex of femur with a row or comb of small blackened spine-like setae; vein *R*₃ of wings strongly arcuated at near midlength, narrowing the cell; Anal region of wing extensive, cell 2nd *A* produced basad of level of arculus (fig. 40); size large.

Ctenacroscelis Enderlein

Femora without a comb of spinoid setae; vein *R*₃ not so arcuated, the cell not conspicuously constricted; Anal region of wing more normal, narrowed at or near region of the arculus (figs. 33, 44) 4
4. Wings with cell *M*₂ open by atrophy of basal section of *M*₃, the medial field thus appearing pectinate (figs. 45-47); *Dolichopeza* and allies 5

Wings with cell 1st *M*₂ closed (figs. 33, 40-42, 48, 49) 7
5. Vein *m-cu* beyond fork of *M* on *M*₃₊₄; *R*₁₊₂ reaching margin (fig. 47).

Hovapeza Alexander

Vein *m-cu* on *M* before the fork; *R*₁₊₂ more or less completely atrophied (figs. 45, 46); *Dolichopeza* 6
6. Base of vein *R*₁₊₂ preserved as a strong spur; no macrotrichia in wing cells (fig. 45).

Dolichopeza: *Prodolichopeza* subgen. n.

Vein *R*₁₊₂ atrophied (in the local species); outer wing cells with abundant macrotrichia (fig. 46). *Dolichopeza*: *Trichodolichopeza* Alexander
7. Cell *M*₁ sessile or very short-petiolate; *m-cu* on *M* at or before fork of *M*₄; vein *Sc* short, *Sc*₂ entering *R* opposite or shortly beyond origin of the short *Rs* (figs. 5, 6, 44) *Nephrotoma* Meigen

Cell *M*₁ petiolate; *m-cu* on *M*₃₊₄ or immediately beyond on base of *M*₄; vein *Sc* longer, *Sc*₂ entering *R* some distance beyond the usually longer *Rs* (figs. 33, 41, 42, 48, 49) 8
8. Vein *Sc*₁ preserved as a short spur (fig. 41); male hypopygium of primitive structure, the basistyle produced; inner dististyle commonly with rows or groups of modified spinoid setae (figs. 9-11); *Longurio* and allies 9

Vein *Sc*₁ atrophied (figs. 33, 48); male hypopygium more specialized, basistyle not produced; inner dististyle without modified spinoid setae; *Tipula* 10
9. Terminal segment of maxillary palpus very small, reduced to a small elongate cone, shorter than the third segment; head with the vertical tubercle a slender erect lobe; venation, fig. 42 *Hovatipula* Alexander

Terminal segment of maxillary palpus longer than the third, usually distinctly longer; vertical tubercle stout, not erect; venation, fig. 41 . . . *Longurio* Loew
10. Wings with cell 1st *M*₂ large, longer than *Rs*; cell 2nd *A* broad (figs. 33, 48). . .

Tipula: *Acutipula* Alexander

Wings with cell 1st *M*₂ small, shorter than *Rs*; cell 2nd *A* a narrow strip (fig. 49) .

Tipula: *Spinitipula* subgen. n.

LIMONIINAE

Lechriini

1. Anterior vertex produced into a lobe or corniculus; wings conspicuously patterned with brown; venation, fig. 50 *Ceratolimnobia*: *Ceratolimnobia* Alexander

Vertex without a corniculus; wings unpatterned; venation, figs. 35, 51

Ceratolimnobia: *Xipholimnobia* Alexander

Limoniini

- 1. Wings with vein R_2 lacking (fig. 58); rostrum more or less produced, at least as long as remainder of head *Helius* St. Fargeau
 Wings with vein R_2 present (figs. 52-57, 59); rostrum not produced, except in *Limonia: Geranomyia* where the labial palpi are greatly lengthened, approximately one-half the remainder of body or more 2
- 2. Wings with cell M_2 open; $m-cu$ far before fork of M (figs. 56, 57, 59) 3
 Wings with cell $1st M_2$ closed; $m-cu$ at or beyond fork of M , in rare cases a short distance before the fork (figs. 52-55, 60) 5
- 3. Cell M_2 open by atrophy of basal section of M_3 (fig. 57) *Thaumastoptera* Mik
 Cell M_2 open by atrophy of m (figs. 56, 59) 4
- 4. Wings with $m-cu$ approximately its own length before fork of M , lying beyond the level of fork of R_s , branches of the latter divergent, cell R_3 widened outwardly; anal angle of wing conspicuous (fig. 56) *Antiocha: Orimargula* Mik
 Wings with $m-cu$ approximately four or five times its length before fork of M , lying nearly opposite origin of R_s , branches of the latter convergent outwardly, narrowing cell R_3 ; anal angle reduced (fig. 59) *Orimarga* Osten Sacken
- 5. Wings with veins R_1 and R_{2+3} close together, outer part of cell R_1 narrow; veins R_{1+2} and R_2 lying far distad, beyond the level of outer end of cell $1st M_2$; a conspicuous pale line (the so-called *Dicranoptycha* fold) in distal half of cell Cu_2 , connecting basally with vein $1st A$ which thus appears to be forked; free tip of Sc_2 lacking (figs. 19-24, 60); legs and, in cases, the wing veins with long narrow scales additional to normal setae; claws simple *Dicranoptycha* Osten Sacken
 Wings with cell R_1 broader, with vein R_2 more basal in position except where the entire cord and the veins beyond it lie far distad (see *Limonia: Euglochina*, fig. 54); no *Dicranoptycha* fold; free tip of Sc_2 preserved, commonly in transverse alignment with vein R_2 (figs. 34, 52-55); legs without scales; claws commonly toothed or spined; *Limonia* Meigen 6
- 6. Mouthparts, especially the labial palpi, produced, longer than remainder of head, usually much longer *Limonia: Geranomyia* Haliday
 Mouthparts not conspicuously produced 7
- 7. Cord of wings lying far distad, at or beyond four-fifths the wing length; vein Cu_2 preserved (as a delicate line immediately behind vein Cu_1 (fig. 54)
Limonia: Euglochina Alexander
 Cord more normal in position, from about three-fourths the wing length (*Limonia: Thrypticomymia*, fig. 55) to about two-thirds the length (figs. 34, 52); vein Cu_2 preserved, lacking in *Limonia: Thrypticomymia*, fig. 55) 8
- 8. Wings without a distinct anal angle; free tip of Sc_2 preserved as an apparent cross-vein some distance before level of R_2 , R_{1+2} projecting beyond as a spur; both Anal veins arising close together at or beyond the arculus; vein Cu_2 lacking (fig. 55).
Limonia: Thrypticomymia Skuse
 Wings with anal angle more clearly developed; free tip of Sc_2 commonly in transverse alignment with R_2 , R_{1+2} usually atrophied; Anal veins not arising close together at the arculus; vein Cu_2 present (figs. 34, 52, 53) 9
- 9. Antennae with flagellar segments more or less branched or produced on the ventral face, more strongly so in male (producing a bipectinate, unipectinate or subpectinate condition) *Limonia: Rhipidia* Meigen
 Antennae with flagellar segments simple, not branched or produced 10
- 10. Vein Sc long, Sc_1 ending some distance beyond origin of R_s (figs. 34, 52)
*Limonia sensu strictu*¹
 Vein Sc short, Sc_1 ending close to origin of R_s , in cases slightly before or beyond (fig. 53) *Limonia: Dicranomyia* Stephens

¹ *Limonia sensu strictu*, as here construed, includes various groups that will probably be found to represent other undefined subgenera.

Hexatomini

1. Tibial spurs present 2
Tibial spurs lacking 12
2. Antennal segments reduced in number, commonly six or seven in male, nine or ten in female (*Hexatoma*) 3
Antennal segments commonly 16 in number 4
3. Cell M_2 of wings open (figs. 7, 72) *Hexatoma: Parahexatoma* Alexander
Cell $1st M_2$ closed (figs. 36, 69–71) *Hexatoma: Eriocera* Macquart
4. Wings with anterior arculus lacking (fig. 61); legs with flattened elongate scales additional to the normal setae *Austrolimnophila* Alexander
Wings with anterior arculus preserved (figs. 62–67); legs without scales 5
5. Radius 3-branched (figs. 73–75) 6
Radius 4-branched (figs. 36, 61–72) 7
6. Head produced into an elongate beak or rostrum, equal to or exceeding one-half the remainder of body; venation, figs. 74, 75 *Elephantomyia* Osten Sacken
Head not produced into a rostrum; venation, fig. 73 *Atarba* Osten Sacken
7. Wings with cell M_1 present (figs. 61–66) 8
Wings with cell M_1 lacking (figs. 67, 68) 11
8. Cell M_2 open by atrophy of m (fig. 65). *Limnophila: Hovalimnophila* subgen. n.
Cell $1st M_2$ closed (figs. 61–64, 66) 9
9. Pronotum large and massive; venation, fig. 64.
Limnophila, incl. *Nesolimnophila* Alexander
Pronotum smaller, the sides produced cephalad into small lateral lobes (*Pseudolimnophila*) 10
10. Cell R_3 of wings with a supernumerary crossvein (fig. 63).
Pseudolimnophila: Calolimnophila Alexander
Cell R_3 without a crossvein (fig. 62)
Pseudolimnophila: Pseudolimnophila Alexander
11. Vein R_{2+3+4} long, about two-thirds R_5 or about five times the basal section of R_5 ; cell $1st M_2$ elongate, nearly as long as distal section of vein M_{1+2} , with $m-cu$ at near midlength (fig. 68) *Ctenolimnophila* Alexander
(The reference of *Ctenolimnophila madagascariensis* to this genus remains in question. The critical character of the dististyles of the male hypopygium is unavailable at present and the strict generic position of this species must be held in question.)
Vein R_{2+3+4} shorter, about one-fourth R_5 or twice the basal section of R_5 ; cell $1st M_2$ shorter than the distal section of M_{1+2} , with $m-cu$ at near one-fourth its length (fig. 67) *Limnophila* Macquart, in part
12. Head produced into an elongate rostrum; venation, figs. 74, 75
Elephantomyia Osten Sacken
Head not produced into a rostrum; venation, fig. 73. *Atarba: Atarbodes* Alexander

Eriopterini

1. Wings with cell M_1 present; crossvein $r-m$ lying far distad, at or beyond the outer end of cell $1st M_2$; cell C with a series of weak crossveins (fig. 76).
Conosia van der Wulp
Wings with cell M_1 lacking; crossvein $r-m$ when present (lost by fusion of veins in *Trentepohlia*, figs. 8, 77–79) near the base of cell $1st M_2$, opposite to or more distal than $m-cu$; no supernumerary crossveins in cell C (figs. 37, 77–95) 2
2. Vein R_5 fused with M_{1+2} to form the anterior border of cell M_2 or $1st M_2$, thus obliterating $r-m$; veins Cu_1 and $1st A$ fused at wing margin, closing cell Cu (figs. 8, 77–79) (*Trentepohlia*) 3

- Veins R_5 and M_{1+2} separate, $r-m$ distinct; cell Cu widely open at wing margin (figs. 37, 80-95) 4
- 3. Cell $1st M_2$ closed, with four veins beyond it, the first being R_5 , the last M_4 (fig. 77).
Trentepohlia: *Mongoma* Westwood
Cell M_2 open by atrophy of veins m and M_3 , there being three outer medial veins, R_5 , M_{1+2} and M_4 ; (figs. 8, 78, 79, to show degrees of apical fusion of Cu_1 and $1st A$) *Trentepohlia*: *Trentepohlia* Bigot
- 4. Rostrum elongate, approximately one-half the remainder of body or more; setae of legs profoundly bifid; venation, figs. 93, 94. (*Toxorhina*) 5
Front of head not produced into a rostrum; setae of legs simple or scale-like, never bifid; venation, figs. 37, 80-92, 95. 6
- 5. Radius with three branches reaching margin, R_s 2-branched (fig. 93)
Toxorhina: *Ceratocheilus* Wesche
Radius with two branches, R_s appearing to be unbranched (actually vein R_5 with the other elements lost by atrophy), fig. 94. *Toxorhina*: *Toxorhina* Loew
- 6. Vein R_1 ending at near midlength of wing; anterior branch of R_s short, oblique to suberect, ending before three-fourths the wing length (fig. 95). *Styringomyia* Loew
Vein R_1 (or R_{1+2}) ending at or beyond two-thirds the wing length; anterior branch of R_s elongate, at origin extending generally parallel to the posterior branch, ending at or beyond four-fifths the wing length (figs. 37, 80-92). 7
- 7. Middle and hind coxae approximated, reducing the size of the meron which is not larger than the mid-coxa (*Gonomyia* and allies) 8
Middle and hind coxae more widely separated by the enlarged meron which exceeds the mid-coxa in size, producing a so-called "pot-bellied" appearance (*Erioptera* and allies) 13
- 8. Three branches of R_s reach the wing margin (figs 80-85) 9
Two branches of R_s reach the wing margin (fig. 86).
Gonomyia: *Lipophleps* Bergroth, in part
- 9. Vein R_2 lacking (figs. 82-85) 10
Vein R_2 present (figs. 80, 81) 12
- 10. Vein Sc long, Sc_1 ending about opposite midlength of R_s ; legs with abundant flattened scales (fig. 82) *Hovamyia* Alexander
Vein Sc short, Sc_1 ending about opposite origin of R_s ; legs without scales (figs. 83-85) (*Gonomyia* Meigen) 11
- 11. Wings with cell M_2 open by atrophy of basal section of M_3 ; $m-cu$ at least its own length before fork of M ; anterior arculus preserved (figs. 83, 84)
Gonomyia: *Idiocera* Dale
Wings with cell $1st M_2$ closed; $m-cu$ less than its own length before fork of M , in cases at the fork; anterior arculus lacking (fig. 85)
Gonomyia: *Lipophleps* Bergroth, in part
- 12. R_s in direct longitudinal alignment with vein R_5 , the latter thus without a basal section (fig. 80) *Idiognophomyia* Alexander
 R_s not in alignment with vein R_5 , the latter with a transverse basal section (fig. 81).
Gnophomyia: *Eugnophomyia* Alexander
- 13. R_s in direct longitudinal alignment with vein R_5 (figs. 91, 92) 14
 R_s not in direct longitudinal alignment with vein R_5 , the latter with a transverse basal section (figs. 37, 88-90) 15
- 14. Anal angle of wings lacking; cell $1st M_2$ closed or open; R_s in direct longitudinal alignment with R_5 ; $r-m$ at fork of R_s (fig. 91); male hypopygium with a single dististyle *Tasiocera*: *Dasymolophilus* Goetghebuer
Anal angle of wing more or less developed; R_s appearing to end in cell R_2 ; $r-m$ beyond fork of R_s ; cell M_2 open (fig. 92); male hypopygium with two dististyles.
Molophilus Curtis

15. Cell R_3 short, less than its petiole (veins R_{2+3+4} and R_{3+4}); fig. 87
Cheilotrichia Rossi
 Cell R_3 deep, much longer than its petiole (figs. 37, 88–90) 16
16. Sc_2 close to tip of Sc , subequal to Sc_1 (fig. 88); antennae of male elongate
Hoverioptera gen. n.
 Sc_2 far retracted (figs. 37, 89, 90); antennae short in both sexes (*Erioptera*) 17
17. Cell M_2 open by atrophy of m ; vein $2nd\ A$ simple (figs. 37, 90)
Erioptera: *Erioptera* Meigen
 Cell $1st\ M_2$ closed; vein $2nd\ A$ forked near tip (fig. 89)
Erioptera: *Podoneura* Bergroth

New genera and subgenera

In the preceding keys four new groups are indicated and are defined herewith.

DOLICHOPEZA: *Prodolichopeza* subgen. n. (fig. 45)

Characters as in typical *Dolichopeza* Curtis, with certain features suggestive of *Tipula*, as the presence of a nasus, antennal structure, the flagellar segments with conspicuous verticils, and the relatively short legs.

The venation is much as in *Dolichopeza*, particularly the characteristic medial field. Vein R_{1+2} with a long spur, extending from about one-third to one-half the distance to costal border. In the subgenus *Afrodolichopeza* Alexander, 1956, vein R_{1+2} reaches the margin. Both this subgenus and *Trichodolichopeza* Alexander have macrotrichia in the outer wing cells, lacking in the present group.

Subgenotype.—*Dolichopeza malagasya* Karsch (Malagasian Subregion).

By my key to the subgenera of *Dolichopeza* (1931: 270) it runs to *Dolichopeza*, s.s., which seems to be the closest ally. For further notes see KARSCH (1886: 63, 64); OSTEN SACKEN (1887: 238); ALEXANDER (1959a: 179).

TIPULA: *Spinitipula* subgen. n. (fig. 49)

Legs with spur-formula 1–1–2; spurs surrounded by a group of straight spinoid setae; claws simple. Wings with cell $2nd\ A$ very narrow; squama naked. Male hypopygium with margin of tergal plate densely provided with spinoid setae, larger on the incurved lateral margins of the plate. Outer dististyle small, oval, the length less than three times the width. Gonapophyses appearing as small oval blades. See ALEXANDER (1951: 42–43; 1955: 292–293).

Subgenotype.—*Tipula spinimarginata* Alexander (Malagasian Subregion).

Other included species: *Tipula citricornis* Alexander; *Tipula lactineipes* Alexander.

The nearest allied group seems to be *Oreomyza* Pokorny, which differs particularly in the fundamental structure of the male hypopygium. It appears that the narrow cell $2nd\ A$ of the wings and the group of bristles at apex of tibia are significant characters.

LIMNOPHILA: *Hovalimnophila* subgen. n. (fig. 65)

Antennae 16-segmented; pedicel enlarged, basal flagellar segments short-oval, outer ones elongate with very long verticils. Tibial spurs conspicuous, provided with coarse appressed setae. Wings with four branches of Media, cell M_2 open by atrophy of m , the outer veins forking into an upper vein, M_{1+2} , and a lower one, M_{3+4} , cell M_3 being much deeper; $m-cu$ far beyond fork of M , at or beyond midlength of M_{3+4} .

Subgenotype.—*Limnophila malitiosa* Alexander (Malagasian Subregion).

Originally I had placed this species in *Troglophila* Brunetti (now correctly *Taiwanomyia* Alexander), with a question. It now appears to be quite distinct and probably is closer to *Limnophila*, as placed above. It seems possible that various continental African species of *Limnophila*, such as *natalia* Alexander and some others, may be found to belong here, despite the conspicuous difference in venation.

HOVERIOPTERA gen. n. (fig. 88)

Antennae of male elongate, nearly as long as body; flagellar segments lengthened, with long outspreading verticils that slightly exceed the segments. Wings with vein *Sc* relatively short, *Sc*₁ ending before level of fork of *Rs*, *Sc*₂ near its tip. All veins with very long conspicuous macrotrichia. Male hypopygium with two dististyles, the outer deeply forked, inner style long and slender, simple. For further details, see ALEXANDER (1951: 57–59).

Genotype.—*Erioptera ambricola* Alexander (Malagasian Subregion).

In its general appearance most as in *Erioptera* Meigen, showing marked differences therefrom in the venation. The antennal structure suggests certain species of *Ormosia* Rondani and *Molophilus* Curtis, while the structure of the male hypopygium is somewhat like that of *Cheilotrichia* (*Empeda* Osten Sacken), especially in the dististyles.

Wing venation

In the foregoing key to the genera and subgenera, primary use was made of the exceedingly important characters of wing venation. It may be stated that virtually any genus of crane fly so far made known may be placed correctly through a study of the wings alone. Because of this vital importance I am emphasizing the venation and in the Bibliography (Section IV) have cited various references that will be helpful to other students of the family, particularly as concerns the writer's interpretation of the radial and subcostal fields. Such papers include ALEXANDER, 1918, 1927b, 1927c, 1929, 1934, 1942 and 1950b. General discussions on the COMSTOCK–NEEDHAM system of wing venation will be found in almost all recent texts on general entomology published in the United States, Europe, Australia and elsewhere.

III. List of species

In the accompanying list of the crane flies presently known from Madagascar I have adopted a double system of citation in the numerous species that have been described by the writer in the eight papers published in the Memoires l'Inst. Scient. Madagascar, Part I appearing in 1951, Part VIII in 1961. For these species the first reference is to the Part concerned, with the number of the species, as VI, 125, VIII, 179, etc.; the second reference for each species includes the year and pages, as 1959a: 173–174, 1961: 212–213. It is believed that these double references may be helpful in future work.

PTYCHOPTERIDAE

PTYCHOPTERA Meigen; key to species, 1957: 95.

Ptychoptera madagascariensis Alexander; 1937b: 142–143; 1957: 96.

P. pauliani Alexander; 1957: 96–98.

P. robinsoni Alexander; 1957: 98–99.

TIPULIDAE

TIPULINAE

- Megistocera filipes filipes* (Fabricius), as *Tipula*, 1805: 25; VI, 128; 1959a: 179.
Longurio (Longurio) cnephosus Alexander; VI, 125; 1959a: 173–174.
L. L. ganocephala Alexander; VII, 147; 1959b: 201–202.
L. L. luteinigra sp. n.; this report.
L. L. macaria sp. n.; this report.
L. L. millotiana Alexander; V, 103; 1958: 232–233.
L. L. stenodiastema Alexander; VIII, 176; 1961: 207–208.
L. L. tinctoria Alexander; VII, 148; 1959b: 202–204.
L. L. vulsura Alexander; III, 51; 1955a: 283–285.
Hovatipula cubitalbella sp. n.; this report.
H. kallion Alexander; VI, 127; 1959a: 176–179.
H. megalothorax (Alexander), as *Longurio*; III, 52; 1955a: 285–287.
H. pheletes Alexander; VI, 127; 1959a: 175–176.
Keiseromyia polyphragma gen. et sp. n.; this report.
Ctenacroscelis brunneus (Bigot), as *Tipula*, 1859: 121–122; III, 53; 1955a: 287.
C. nampoina sp. n.; this report.
C. pauliani Alexander; III, 54; 1955a: 287–290.
C. radama sp. n.; this report.
C. rogezianus Alexander; IV, 76; 1955b: 319–321.
C. sakarahana Alexander; VII, 149; 1959b: 204–205.
Dolichopeza (Prodolichopeza) malagasya Karsch, 1886: 63–64; VI, 129; 1959a: 179.
D. (Trichodolichopeza) semiophora Alexander; VI, 130; 1959a: 179–181.
Hovapeza costofuscata Alexander; V, 104; 1958: 233–234.
H. tisisphone (Alexander), as *Dolichopeza*; I, 1; 1951: 37–38.

NEPHROTOMA Meigen; key to species, 1959: 217.

- Nephrotoma ambricola* sp. n.; this report.
N. atamoor Alexander; VII, 157; 1959b: 218–220.
N. bara Alexander; VII, 158; 1959b: 220–222.
N. costofumosa sp. n.; this report.
N. flavonigra Alexander, 1920a: 509–510; VII, 159; 1959b: 222–223.
N. f. andohahelana Alexander; VII, 159A; 1959b: 223–224.
N. imerina Alexander, 1920a: 405–406; VII, 160; 1959b: 224–225.
N. madagascariensis (Enderlein), as *Pachyrrhina*, 1912: 17–18; VII, 161; 1959b: 225.
N. praecipua Alexander; VII, 162; 1959b: 225–228.
N. sakalava Alexander; VII, 163; 1959b: 228–230.
N. setirostra sp. n.; this report.
N. unicornis Alexander; VIII, 177; 1961: 208–210.
N. xanthoplaca Alexander, 1920a: 405–406; VII, 164; 1959b: 230.
N. xanthoplacodes sp. n.; this report.

TIPULA Linnaeus; key to species, 1959: 206–207.

- Tipula (Spinipitula) citricornis* Alexander; III, 56; 1955a: 292–293.
T. S. lactineipes Alexander; VIII, 178; 1961: 210–212.
T. S. spinimarginata Alexander; I, 4; 1951: 42–43; subgenus, this report.
T. (Acutipitula) amymona Alexander; I, 2; 1951: 38–40.
T. A. bartletti Alexander, 1920e: 150–151; VII, 150; 1959b: 207–209.
T. A. bioculata Alexander; VII, 151; 1959b: 209–210.
T. A. calcar (Alexander), as *Longurio*; V, 101; 1958: 229–230; 1959b: 206–207.
T. A. fumivena (Alexander), as *Longurio*; V, 102; 1958: 230–232; 1959b: 206–207.
T. A. globicauda Alexander; VII, 152; 1959b: 210–211.
T. A. hova Alexander, 1920e: 152–154; VII, 153; 1959b: 211.
T. A. lambertoniana Alexander; III, 55; 1955a: 290–292.

- T. A. obex* Alexander; VII, 154; 1959b: 212–214.
T. A. octoplagiata Alexander; I, 3; 1951: 41–42.
T. A. punctoargentea Alexander; VII, 155; 1959b: 214–215.
T. A. tananariviana Alexander; VII, 156; 1959b: 215–216.
T. A. vadoni Alexander; IV, 77; 1955b: 321–323.

LIMONINAE

Limoniini

- Limonia bethae* Alexander, 1945: 99–100; III, 59; 1955a: 297–298.
L. densifimbriata Alexander; III, 60; 1955a: 298–299.
L. hovamendica Alexander; III, 58; 1955a: 296–297.
L. renaudi Alexander; III, 57; 1955a: 293–296.
L. (Limonia) bilobata Alexander; IV, 78; 1955b: 323–324.
L. L. bisalba Alexander; VIII, 179; 1961: 212–213.
L. L. discobolina (Edwards), as *Limnobia*, 1923: 334–335; I, 5; 1951: 43.
L. L. galactopoda Alexander; VIII, 180; 1961: 213–214.
L. L. inusitata Alexander; VIII, 181; 1961: 214–215.
L. L. segnis Alexander; IV, 79; 1955b: 324–325.
L. L. thaumastopyga Alexander; VIII, 182; 1961: 215–217.
L. L. viridicolor Alexander; IV, 80; 1955b: 326–327.
L. (Dicranomyia) bidigita Alexander; V, 105; 1958: 234–236.
L. D. bilobula Alexander; V, 106; 1958: 236–237.
L. D. dilanio Alexander; V, 107; 1958: 237–239.
L. D. guttula (Alexander), as *Dicranomyia*, 1915: 80; V, 109; 1958: 240.
L. D. memnon Alexander; VI, 131; 1959a: 181–182.
L. D. tipulipes (Karsch), as *Dicranomyia*, 1886b: 51–52.
L. D. trilobula Alexander; V, 108; 1958: 239–240.
L. (Rhipidia) euterpe Alexander; VIII, 183; 1961: 217–218.
L. R. extraria Alexander; IV, 81; 1955b: 327.
L. R. gethosyne Alexander; VIII, 184; 1961: 218–219.
L. R. griveaudi Alexander; VIII, 185; 1961: 219–220.
L. R. trigracilis Alexander; V, 110; 1958: 240–241.
L. (Geranomyia) fimbriacosta Alexander; VIII, 186; 1961: 220–222.
L. G. memnonia Alexander; VIII, 187; 1961: 222–223.
L. G. sakalava Alexander; VIII, 188; 1961: 223.
L. (Thrypticomys) bigeminata Alexander; VIII, 189; 1961: 224–225.
L. T. multiseta Alexander; VIII, 190; 1961: 225.
Antocha (Orimargula) kraussi Alexander; III, 62; 1955a: 300–301.
A. O. pauliani Alexander; II, 25; 1953: 283–285.
Thaumastoptera stuckenbergi Alexander; VIII, 191; 1961: 226–227.
Heliopsis (Heliopsis) hova Alexander; IV, 82; 1955b: 328.
H. H. malagasicus Alexander; III, 61; 1955a: 299–300.
Orimarga (Orimarga) fulvithorax Alexander; III, 63; 1955a: 301–302.
O. O. plumbeithorax Alexander; III, 64; 1955a: 302–303.
O. O. sarophora Alexander; VIII, 192; 1961: 227–228.

DICRANOPTYCHA Osten Sacken: key to species, 1953: 280.

- Dicranoptycha acuterebra* Alexander; VII, 165; 1959b: 230–231.
D. atripea sp. n.; this report.
D. aurogeniculata Alexander; I, 6; 1951: 43–44; 1953: 281.
D. azael Alexander; II, 24; 1953: 282–283.
D. basitarsata Alexander; VI, 132; 1959a: 182–183.
D. breviterebra Alexander; VII, 166; 1959b: 233–234.

- D. diacaena* sp. n.; this report.
D. keiseriae sp. n.; this report.
D. lataurata sp. n.; this report.
D. longipennis sp. n.; this report.
D. nox Alexander; VII, 167; 1959b: 234–235.
D. pachystyla sp. n.; this report.
D. patens Alexander; VII, 168; 1959b: 235–236.
D. pholiota sp. n.; this report.
D. polysticta Alexander; II, 22; 1953: 279–280.
D. robinsoni Alexander; V, 111; 1958: 241–242.
D. rubronigra Alexander; III, 65; 1955a: 303–304.
D. spinigera Alexander; V, 112; 1958: 242–243.
D. squamigera sp. n.; this report.
D. stictoneura Alexander; II, 23; 1953: 281.
D. verticillata Alexander; V, 113; 1958: 244–245.

Lechriini

- Ceratolimnobia* (*Ceratolimnobia*) *munroi* Alexander, 1920b: 469–471; III, 66; 1955a: 304–305.
C. (Xipholimnobia) madagascariensis Alexander; VIII, 193; 1961: 228–229.

Hexatomini

AUSTROLIMNOPHILA Alexander: key to species, 1955 a: 306.

- Austrolimnophila* (*Austrolimnophila*) *acanthophallus* Alexander; III, 68; 1955a: 306–307.
A. A. aspidophora Alexander; III, 67; 1955a: 305–306.
A. A. deltooides Alexander; VII, 169; 1959b: 236–238.
A. A. exsanguis Alexander; IV, 83; 1955b: 329–331.
A. A. fulvipennis (Alexander), as *Pseudolimnophila*, 1921: 317–318.
A. A. lobophora Alexander; VII, 170; 1959b: 238–239.
A. A. macrophallus Alexander; V, 115; 1958: 246–248.
A. A. percincta Alexander; III, 69; 1955a: 309–310.
A. A. peremarginata Alexander; III, 70; 1955a: 310–311.
A. A. petasma Alexander; VIII, 194; 1961: 229.
A. A. platyterga Alexander; V, 114; 1958: 245–246.
A. A. recens (Alexander), as *Pseudolimnophila*, 1921: 318; IV, 84; 1955b: 331.
A. A. robinsoni Alexander; V, 116; 1958: 248–249.
A. A. saturnina Alexander; VIII, 195; 1961: 231.
A. A. striopleura Alexander; VII, 171; 1959b: 239–241.
A. A. tsaratanananae Alexander; III, 71; 1955a: 311–312.
A. A. volentis Alexander; I, 7; 1951: 44–46.

PSEUDOLIMNOPHILA Alexander: key to species, 1955 b: 333.

- Pseudolimnophila* (*Pseudolimnophila*) *polytila* Alexander; IV, 86; 1955b: 333–334.
P. P. xantha Alexander; IV, 87; 1955b: 334–335.
P. (Calolimnophila) alboapicata Alexander; IV, 85; 1955b: 331–332.
P. C. niveicoxa Alexander; V, 117; 1958: 249–250.
P. C. octoseriata Alexander; I, 8; 1951: 46–47.
Ctenolimnophila (*Campbellomyia*) *madagascariensis* Alexander; VI, 133; 1959a: 183–185.
Limnophila (*Hoalimnophila*) *malitiosa* (Alexander), as *Troglophila*; I, 9; 1951: 47–48.
L. (Nesolimnophila) grandidieri Alexander, 1920a: 316.
L. N. luteifemorata sp. n.; this report.
L. N. malagasya Alexander, 1920d: 358–360.
L. charis Alexander; III, 72; 1955a: 312–314.

- L. flavissima* Alexander; VI, 134; 1959a: 185–186.
L. sikorai Alexander; 1921: 318–319.
L. unispinifera Alexander; III, 73; 1955a: 314–315.
L. velitor Alexander; I, 10; 1951: 48–49.

HEXATOMA Latreille: key to species, 1955 a: 316–317.

- Hexatoma* (*Parahexatoma*) *angustatra* sp. n.; this report.
H. P. aurantivertex sp. n.; this report.
H. P. decurvata Alexander, 1937a: 6–7.
H. P. lambertoni Alexander; I, 12; 1951: 51–52.
H. P. nigrivertex Alexander; V, 120; 1958: 252.
H. P. pauliani Alexander; I, 13; 1951: 52–53.
H. P. rubrivertex Alexander; III, 74; 1955a: 315–316.
H. P. teresiae Alexander; VII, 172; 1959b: 241.
H. (Eriocera) dysantes Alexander; I, 11; 1951: 49–50.
H. E. laetipes Alexander; III, 75; 1955a: 317–318.
H. E. longisector Alexander; VIII, 196; 1961: 231–232.
H. E. madagascariensis Alexander (re-naming of *obscura*, preoccupied), 1933: 148.
H. E. obscura (Bigot), as *Physecrania*, 1859: 123–124; name preoccupied—see *madagascariensis*.
H. E. pusilloides Alexander; IV, 88; 1955b: 335–336.
H. E. vulcan Alexander; VI, 135; 1959a: 186–187.
Atarba (*Atarbodes*) *hemimelas* Alexander; VI, 136; 1959a: 187–188.
A. A. tergata Alexander; V, 118; 1958: 250–251.

ELEPHANTOMYIA Osten Sacken; key to species, 1955 b: 336–337.

- Elephantomyia* (*Elephantomyia*) *atropleura* Alexander; IV, 89; 1955b: 336.
E. E. barda Alexander; IV, 90; 1955b: 337–338.
E. E. flavicolor Alexander; V, 119; 1958: 251–252.
E. E. fuscodorsata Alexander; IV, 91; 1955b: 338–339.
E. E. hoogstraaliana Alexander; I, 14; 1951: 53–54.
E. E. isakana Alexander; IV, 93; 1955b: 339–341.
E. E. maculistigma (Enderlein), as *Aporosa*, 1912: 77–78; IV, 92; 1955b: 339.
E. E. pictivena Alexander; VIII, 197; 1961: 232–233.

Eriopterini

CONOSIA van der Wulp: key to species, 1955 b: 341.

- Conosia angustissima* Alexander, 1927a: 306; IV, 94; 1955b: 341.
C. irrorata (Wiedemann), as *Limnobia*, 1828: 574; IV, 95; 1955b: 341–342.
C. malagasya Alexander, 1921: 315; IV, 96; 1955b: 342–343.

TRENTEPOHLIA Bigot: key to species, 1953: 293–294.

- Trentepohlia* (*Mongoma*) *bicinctatra* Alexander; II, 32; 1953: 292–293.
T. M. cachani Alexander; II, 33; 1953: 294–295.
T. M. callisto Alexander; IV, 97; 1955b: 343–345.
T. M. hepatica Alexander; VI, 139; 1959a: 191–192.
T. M. latatra Alexander; II, 34; 1953: 295–296.
T. M. madagascariensis Alexander, 1920c: 40–41; II, 35; 1953: 296.
T. M. m. spectabilis Alexander; II, 35A; 1953: 296–298.
T. M. majestica Alexander; VI, 138; 1959a: 189–190.
T. M. mediofusca Alexander; VI, 140; 1959a: 192–193.
T. M. regifca Alexander; II, 36; 1953: 298–299.
T. M. scalator Alexander; II, 37; 1953: 299–300.

- T. (Trentepohlia) africana* Alexander, 1930: 1016; II, 41; 1953: 301.
T. T. alluaudi Alexander, 1920a: 219; II, 40; 1953: 301.
T. T. centrofusca Alexander; VI, 142; 1959a: 194–195.
T. T. exornata Bergroth, 1888: 135–137; Enderlein, 1912: 63; probably an erroneous identification of *africana*.
T. T. gracilis Enderlein, 1912: 61–62; II, 38; 1953: 300.
T. T. nigripes Alexander; II, 39; 1953: 300.
T. T. nigrita sp. n.; this report.
T. T. percelestis Alexander; V, 123; 1958: 255–256.
T. T. perigethes Alexander; VI, 141; 1959a: 193–194.
T. T. subtilis Alexander; II, 42; 1953: 301–302.
Hovamyia apicistyla Alexander; VIII, 199; 1961: 234–235.
H. armillata (Enderlein), as *Gonomyia*, 1912: 55–56.
H. immaculipes Alexander; IV, 100; 1955b: 347–348.
H. jacentia Alexander; I, 15; 1951: 55–56.
H. monilifera (Alexander), as *Gonomyia*, 1920a: 217–218.
H. polyperiscelis Alexander; VII, 175; 1959b: 244–246.
H. suffuscipes Alexander; I, 16; 1951: 56–57.
Gonomyia (Idiocera) lordosis Alexander; VII, 173; 1959b: 241–243.
G. I. malagastica Alexander; II, 26; 1953: 285–286.
G. I. stenophallus Alexander; V, 121; 1958: 253.
G. (Lipophleps) distenta Alexander; II, 28; 1953: 287–289.
G. L. dosis Alexander; IV, 99; 1955b: 346–347.
G. L. furcilla Alexander; II, 30; 1953: 291.
G. L. orantipes (Brunetti), as *Dicranomyia*, 1912: 380–381; 1953: 291–292.
G. L. perscabrosa Alexander; VIII, 198; 1961: 233–234.
G. L. pontifex Alexander; II, 27; 1953: 286–287.
G. L. quadrifilaris Alexander; VII, 174; 1959b: 243–244.
G. L. rogeziana Alexander; II, 29; 1953: 289–290.
G. L. syrraxis Alexander; IV, 98; 1955b: 345–346.
G. L. tristyla Alexander; V, 122; 1958: 254–255.
Idiognomyia keiseri sp. n.; this report.
Gnophomyia (Eugnophomyia) preclara Alexander; VI, 137; 1959a: 188–189.
Cheilotrichia (Cheilotrichia) guttipennis Alexander; VIII, 200; 1961: 235.
Hoverioptera ambricola (Alexander), as *Erioptera*; I, 17; 1951: 57–59.
Erioptera (Erioptera) galbinocosta Alexander; VI, 144; 1959a: 196–197.
E. E. genuatva Alexander; II, 43; 1953: 302–303.
E. (Podoneura) anthracogramma malagastica Alexander, 1950a: 88; II, 44; 1953: 303–304.
Tasiocera (Dasymolophilus) gracilior Alexander; V, 124; 1958: 256.
T. D. hova Alexander; I, 18; 1951: 59–60.
T. D. plurispina Alexander; VI, 143; 1959a: 195–196.
Molophilus (Molophilus) invidus Alexander; I, 19; 1951: 60–61.
M. M. scotoneurus Alexander; VI, 145; 1959a: 197–198.
M. M. thyellus Alexander; VI, 146; 1959a: 198–199.

STYRINGOMYIA Loew: key to species, 1953: 305–306.

- Styringomyia annulipes* (Enderlein), as *Pycnocypris*, 1912: 65–66; II, 48; 1953: 308.
S. clio Alexander; II, 49; 1953: 308–309.
S. denticulata Alexander; II, 50; 1953: 309–310.
S. lambertoni Alexander; II, 47; 1953: 306–308.
S. leucoplaga Alexander; II, 46; 1953: 304–305.
S. solocipennis (Enderlein), as *Pycnocypris*, 1912: 67; II, 45; 1953: 304.
Toxorhina (Toxorhina) serpens Alexander; I, 21; 1951: 62–63.
T. (Ceratocheilus) approximata Alexander; I, 20; 1951: 61–62.
T. C. madagascariensis Meunier, 1906: 27.

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SUMMARY

The Keiser collection of the crane flies of Madagascar includes 55 recognizable species of which 23 proved to be undescribed, one representing a noteworthy new genus, *Keiseromyia*. Section II provides a key to the genera and subgenera, with the higher groups, followed by the description of a new genus, *Hoveriotera*, and three additional subgenera. All genera in the key are illustrated by figures of the wing venation. Section III lists the species of Ptychopteridae and Tipulidae at present known from Madagascar, with cross references to the Bibliography in Section IV.

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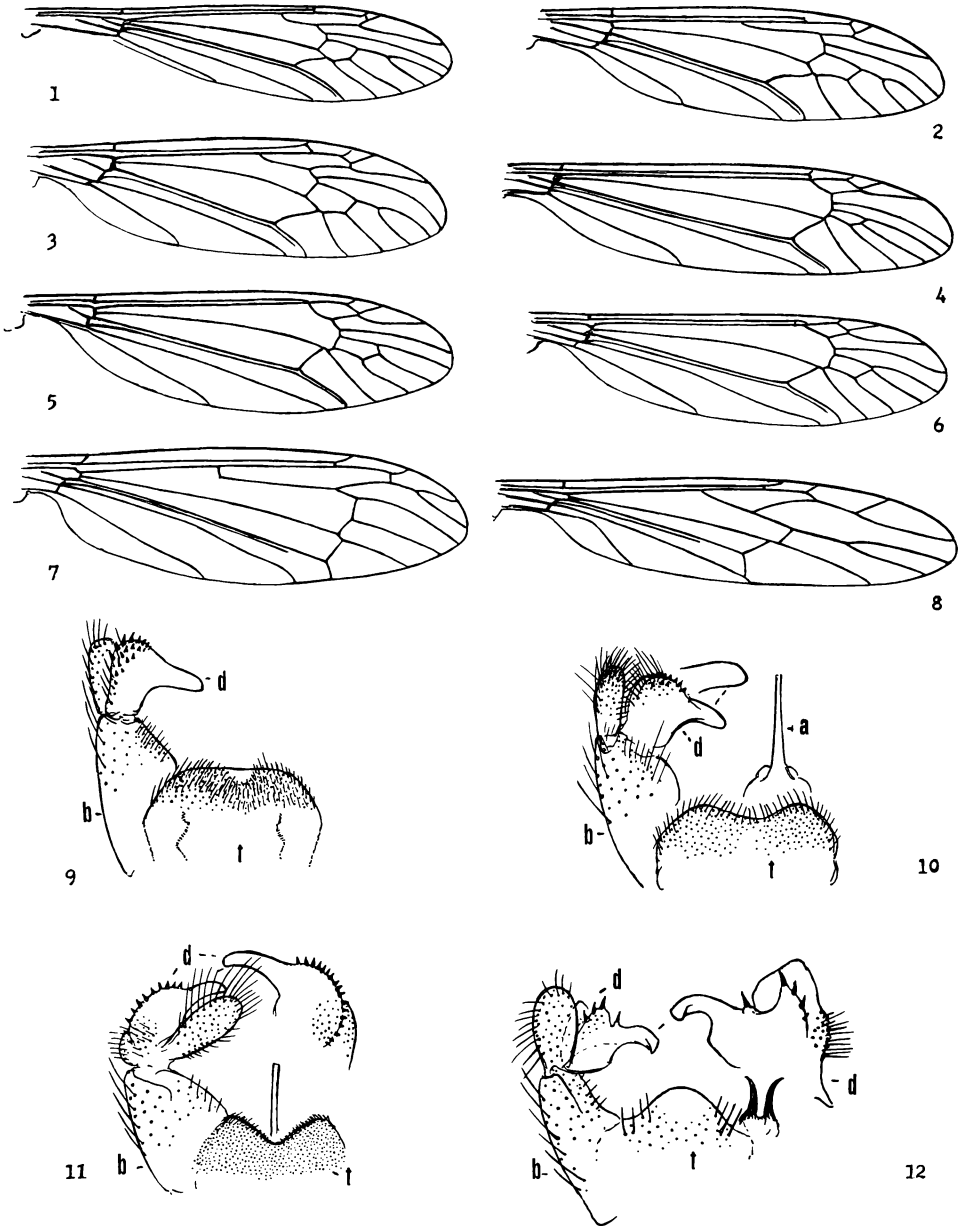


Fig. 1. *Longurio (Longurio) luteinigra* sp. n.; venation. - 2. *Longurio (Longurio) macaria* sp. n.; venation. - 3. *Hovatipula cubitalbella* sp. n.; venation. - 4. *Nephrotoma ambricola* sp. n.; venation. - 5. *Nephrotoma costofumosa* sp. n.; venation. - 6. *Nephrotoma setirostra* sp. n.; venation. - 7. *Hexatoma (Parahexatoma) angustatra* sp. n.; venation. - 8. *Trentepohlia (Trentepohlia) nigrita* sp. n.; venation. - 9. *Longurio (Longurio) luteinigra* sp. n.; male hypopygium. - 10. *Longurio (Longurio) macaria* sp. n.; male hypopygium. - 11. *Hovatipula cubitalbella* sp. n.; male hypopygium. - 12. *Keiseromyia polyphragma* gen. et sp. n.; male hypopygium. (Symbols: a, aedeagus; b, basistyle; d, dististyle; t, 9th tergite)

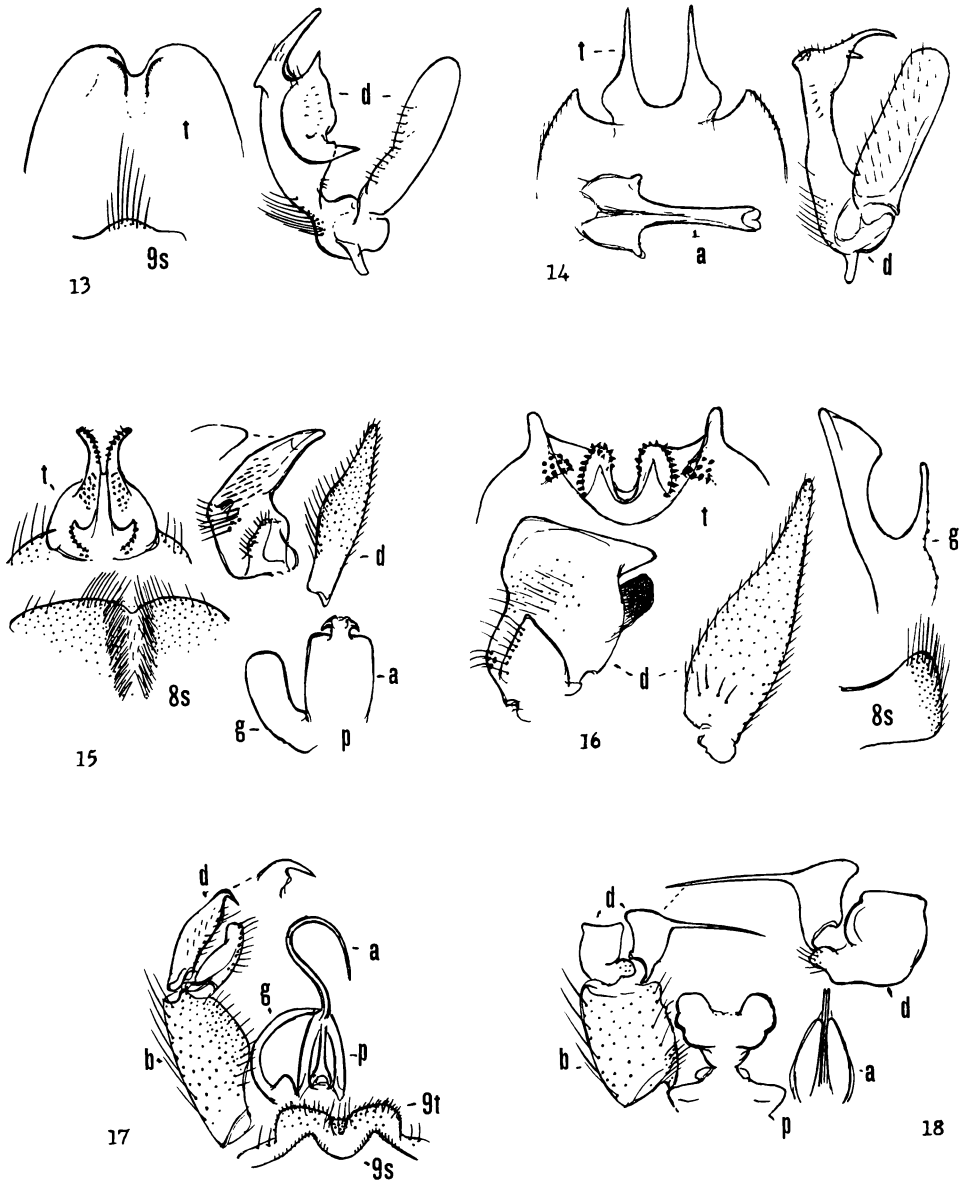


Fig. 13. *Ctenacroscelis nampoina* sp. n.; male hypopygium. — 14. *Ctenacroscelis radama* sp. n.; male hypopygium. — 15. *Nephrotoma ambricola* sp. n.; male hypopygium. — 16. *Nephrotoma selirostra* sp. n.; male hypopygium. — 17. *Limnophila (Nesolimnophila) luteifemorata* sp. n.; male hypopygium.

— 18. *Idiognophomyia keiseri* sp. n.; male hypopygium.

(Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; p, phallosome; s, sternite; t, tergite)

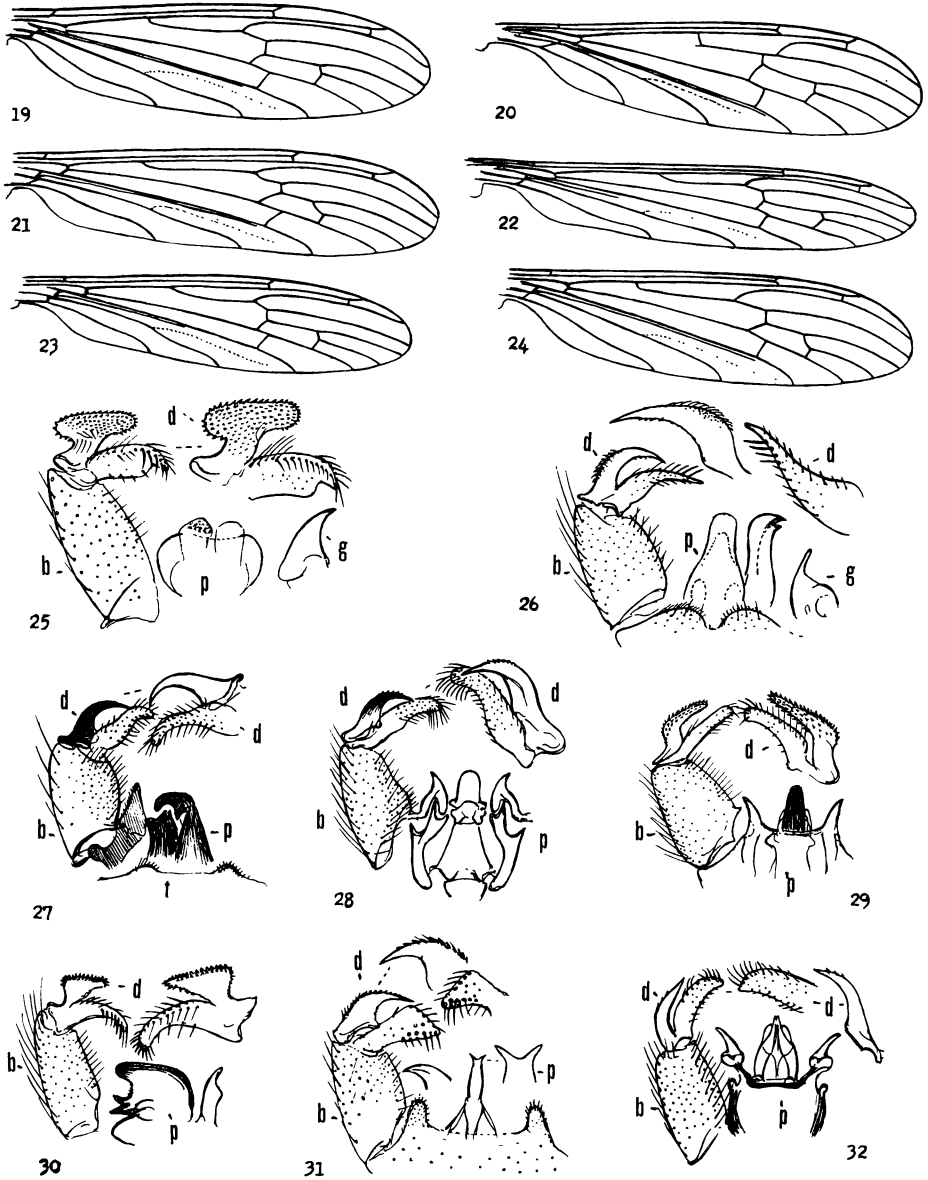
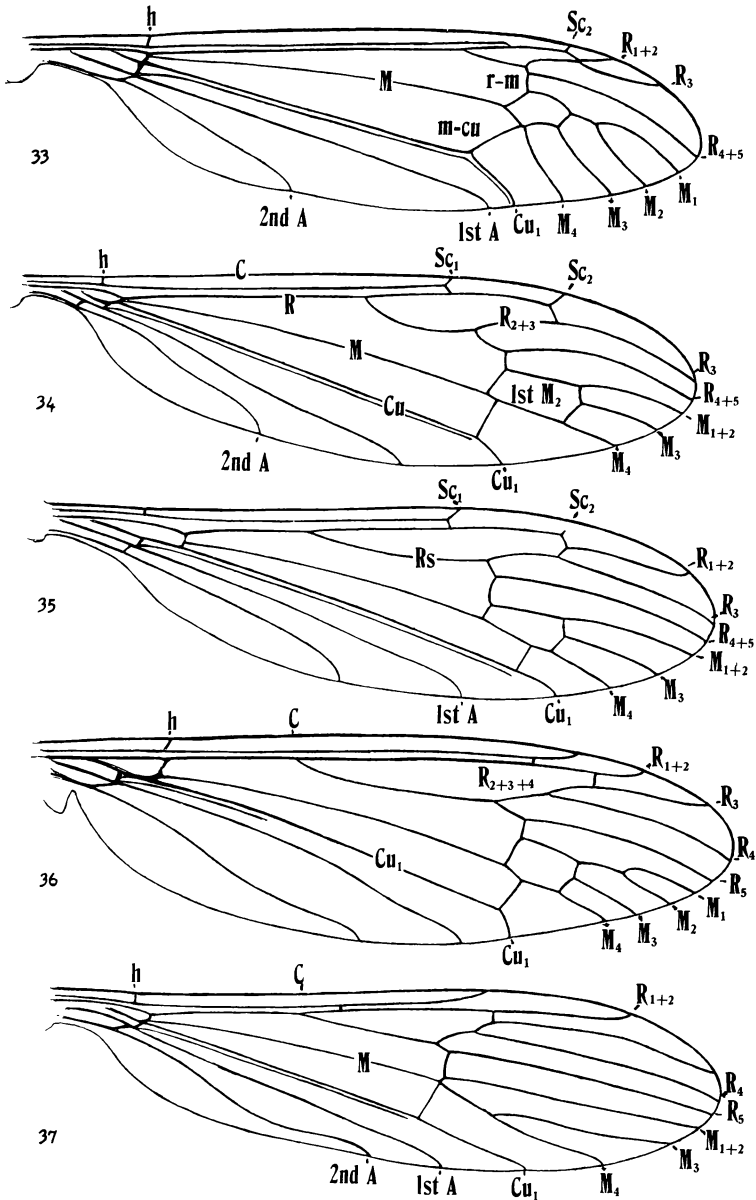


Fig. 19. *Dicranoptycha diacaena* sp.n.; venation. - 20. *Dicranoptycha keiseriae* sp.n.; venation. - 21. *Dicranoptycha lataurata* sp.n.; venation. - 22. *Dicranoptycha longipennis* sp.n.; venation. - 23. *Dicranoptycha pholiota* sp.n.; venation. - 24. *Dicranoptycha squamigera* sp.n.; venation. - 25. *Dicranoptycha atripes* sp.n.; male hypopygium. - 26. *Dicranoptycha diacaena* sp.n.; male hypopygium. - 27. *Dicranoptycha keiseriae* sp.n.; male hypopygium. - 28. *Dicranoptycha lataurata* sp.n.; male hypopygium. - 29. *Dicranoptycha longipennis* sp.n.; male hypopygium. - 30. *Dicranoptycha pachystyla* sp.n.; male hypopygium. - 31. *Dicranoptycha pholiota* sp.n.; male hypopygium. - 32. *Dicranoptycha squamigera* sp.n.; male hypopygium.

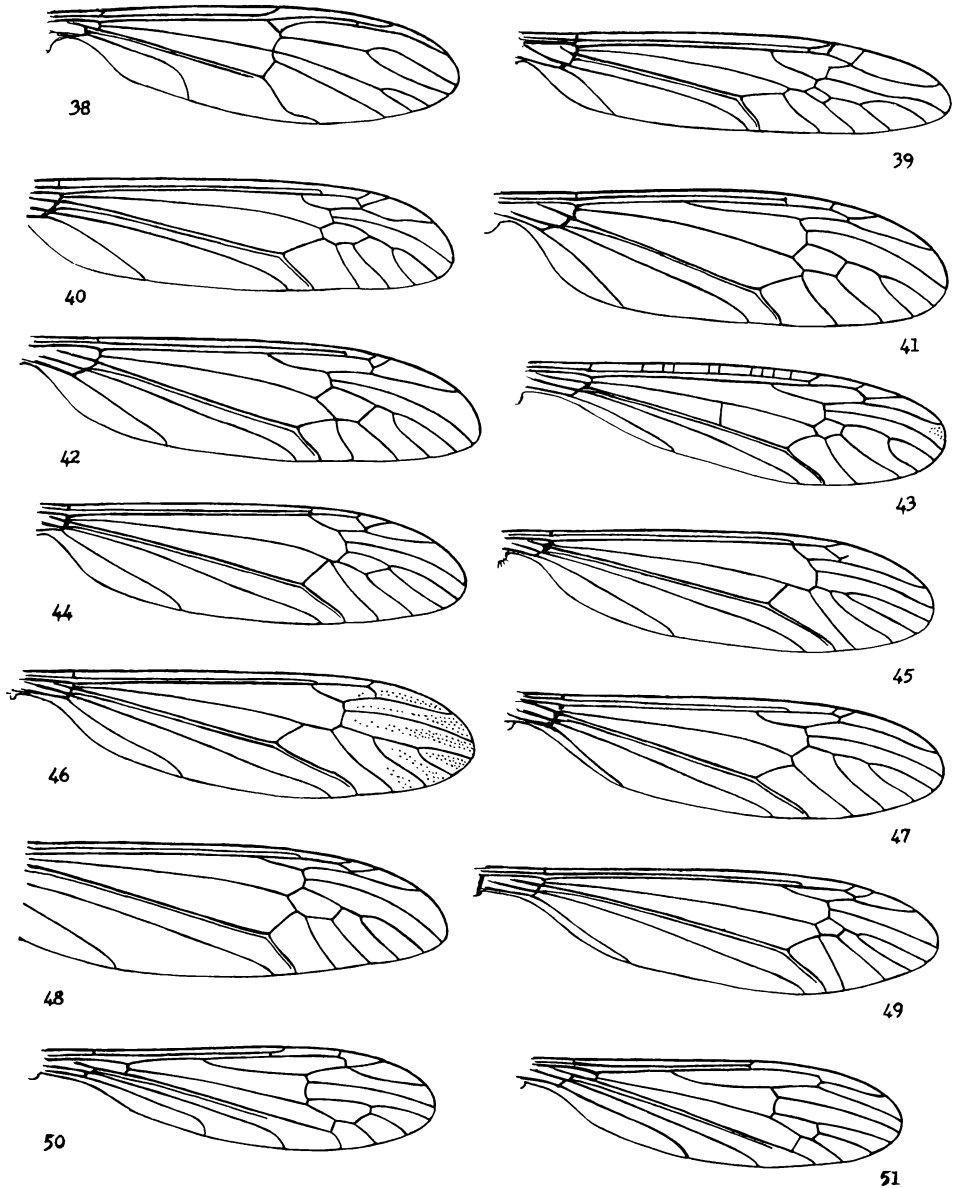
(Symbols: b, basistyle; d, dististyle; p, phallosome; t, tergite)



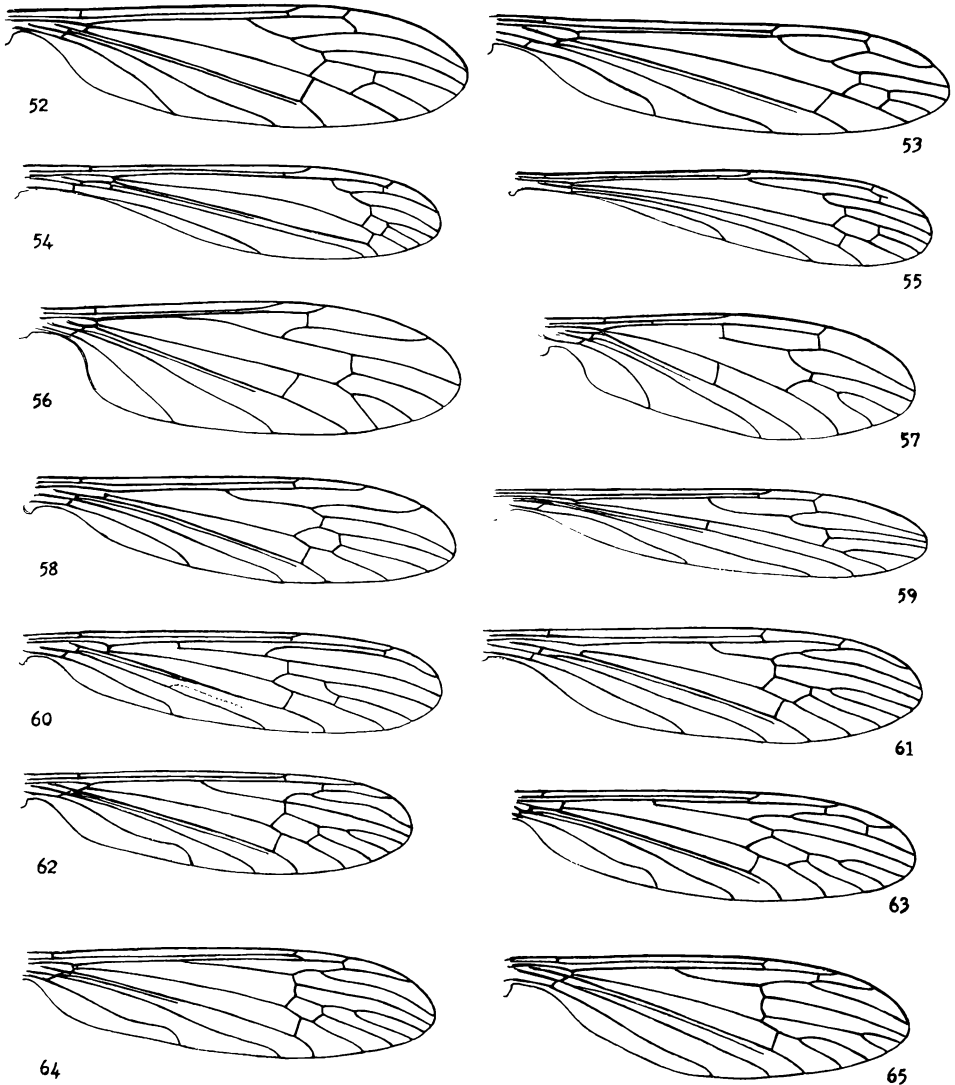
Venational interpretation of typical genera in the Tipulinae; Limoniini, Lechriini, Hexatomini and Eriopterini.

Fig. 33. *Tipula (Acutipula) amymona* Alexander; Tipulinae. – 34. *Limonia hovamendica* Alexander; Limoniini. – 35. *Ceratolimnobia (Xipholimnobia) madagascarienses* Alexander; Lechriini. – 36. *Hexatoma (Eriocera) vulcan* Alexander; Hexatomini. – 37. *Erioptera (Erioptera) galbinocosta* Alexander; Eriopterini.

(Symbols: A, Anals; C, Costa; Cu, Cubitus; h, humeral crossvein; M, Media; m-cu, medial-cubital crossvein; R, Radius; r-m, radial-medial crossvein; Rs, radial sector; Sc, Subcosta)

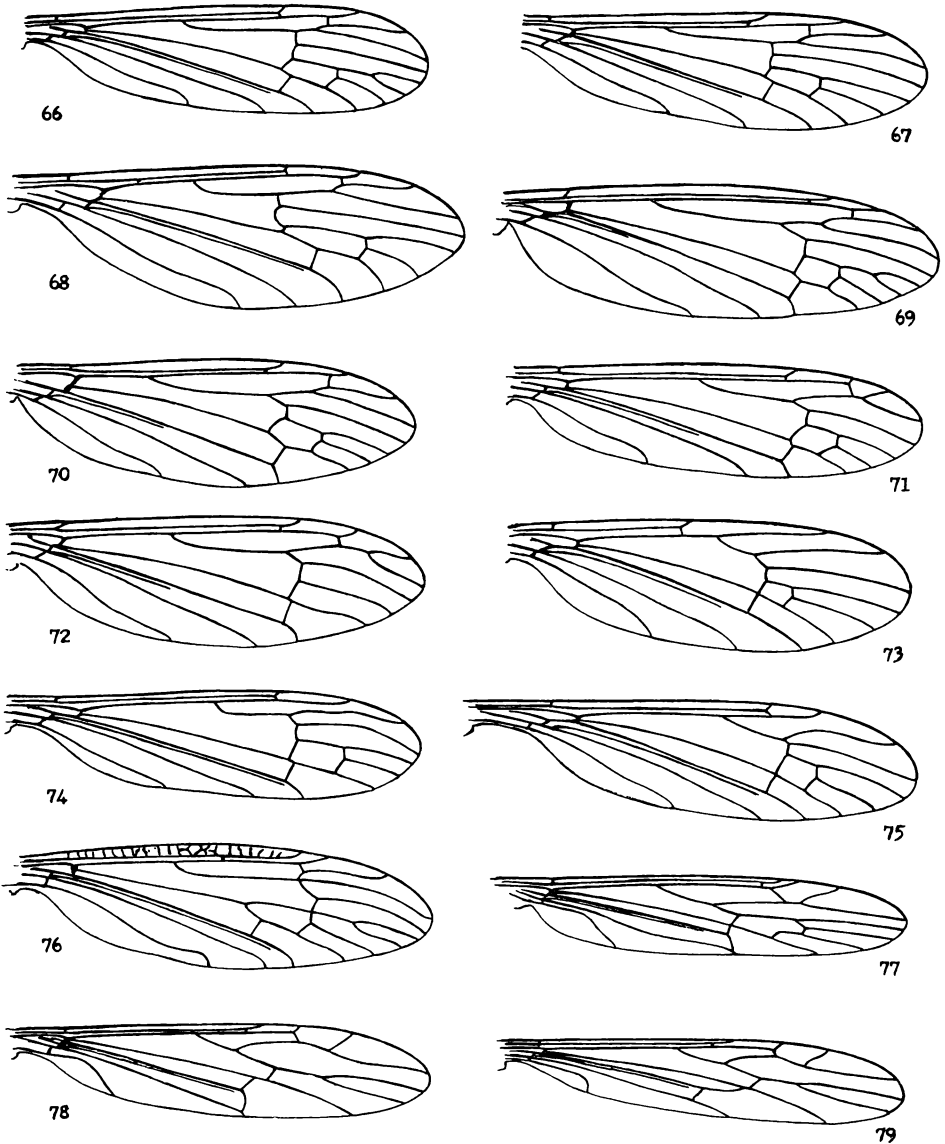


Wing venation: Ptychopteridae (fig. 38); Tipulinae (figs. 39-49); Lechriini (figs. 50-51).
 Fig. 38. *Ptychoptera madagascariensis* Alexander. - 39. *Megistocera filipes filipes* (Fabricius). -
 40. *Ctenacroscelis brunneus* (Bigot). - 41. *Longurio (Longurio) ganocephala* Alexander. - 42. *Hovati-*
pula megalothorax Alexander. - 43. *Keiseromyia polyphragma* gen. et sp. n. - 44. *Nephrotoma*
madagascariensis (Enderlein). - 45. *Dolichopeza (Prodolichopeza) malagasya* Karsch. - 46. *Doli-*
chopeza (Trichodolichopeza) semiophora Alexander. - 47. *Hovapeza tisiphone* (Alexander). -
 48. *Tipula (Acutipula) bartletti* Alexander. - 49. *Tipula (Spinipula) citricornis* Alexander. -
 50. *Ceratolimnobia (Ceratolimnobia) munroi* Alexander. - 51. *Ceratolimnobia (Xipholimnobia)*
madagascariensis Alexander.



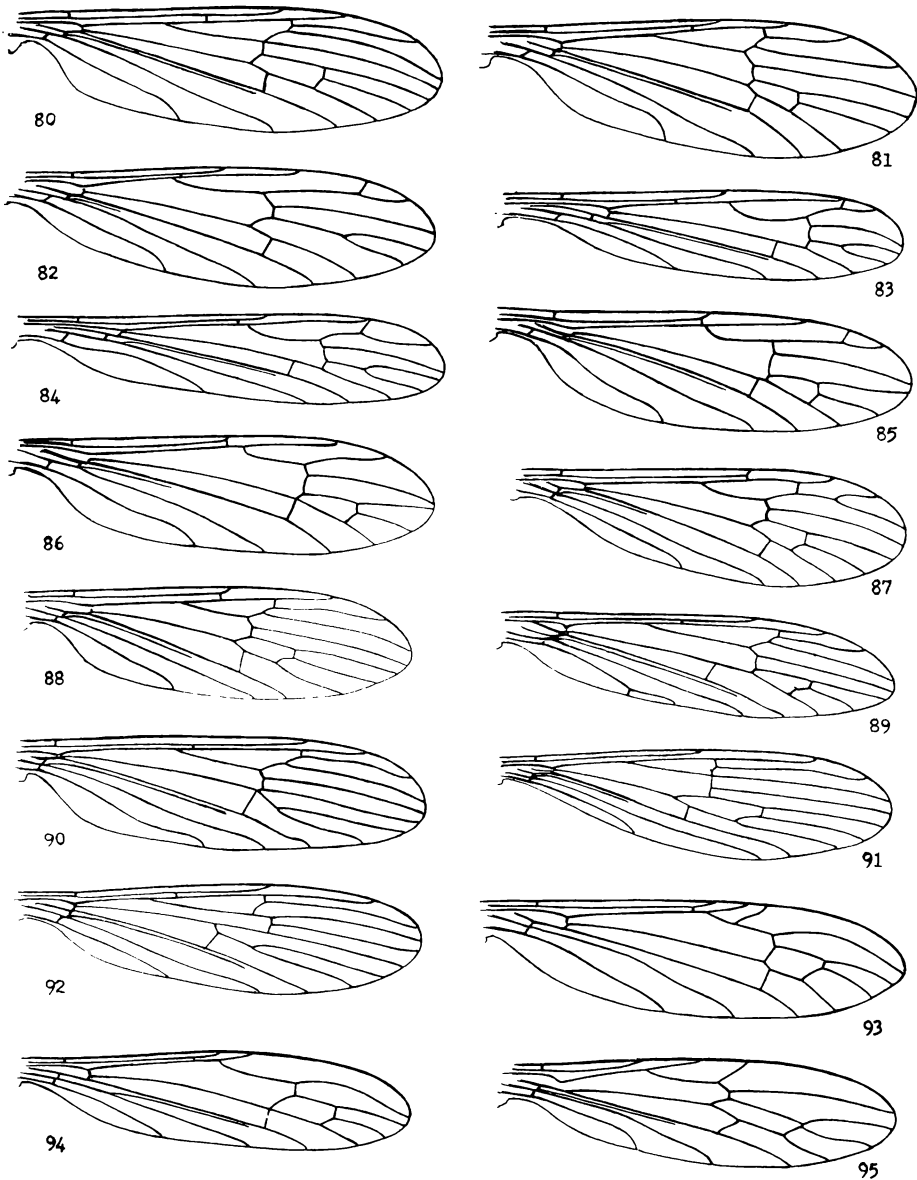
Wing venation: Limoniini (figs. 52-60); Hexatomini (figs. 61-65).

Fig. 52. *Limonia renaudi* Alexander. - 53. *Limonia (Dicranomyia) bidigita* Alexander. - 54. *Limonia (Euglochina) comoroensis* Alexander. - 55. *Limonia (Thrypticomyia) bigeminata* Alexander. - 56. *Antocha (Orimargula) pauliani* Alexander. - 57. *Thaumastoptera stuckenbergi* Alexander. - 58. *Helius (Helius) hova* Alexander. - 59. *Orimarga (Orimarga) plumbeithorax* Alexander. - 60. *Dicranoptycha azrael* Alexander. - 61. *Austrolimnophila (Austrolimnophila) fulvipennis* (Alexander). - 62. *Pseudolimnophila (Pseudolimnophila) xantha* Alexander. - 63. *Pseudolimnophila (Calolimnophila) niveicoxa* Alexander. - 64. *Limnophila (Nesolimnophila) luteifemorata* Alexander, sp. n. - 65. *Limnophila (Hovalimnophila) malitiosa* (Alexander).



Wing venation: Hexatomini (figs. 66-75); Eriopterini (figs. 76-79).

Fig. 66. *Limnophila sikorai* Alexander. - 67. *Limnophila flavissima* Alexander. - 68. *Ctenolimnophila (Campbellomyia) madagascariensis* Alexander. - 69. *Hexatoma (Eriocera) vulcan* Alexander. - 70. *Hexatoma (Eriocera) laetipes* Alexander. - 71. *Hexatoma (Eriocera) pusilloides* Alexander. - 72. *Hexatoma (Parahexatoma) pauliani* Alexander. - 73. *Atarba (Atarbodes) tergata* Alexander. - 74. *Elephantomyia (Elephantomyia) isakana* Alexander. - 75. *Elephantomyia (Elephantomyia) maculistigma* (Enderlein). - 76. *Conosia malagasya* Alexander. - 77. *Trentepohlia (Mongoma) majestica* Alexander. - 78. *Trentepohlia (Trentepohlia) alluaudi* Alexander. - 79. *Trentepohlia (Trentepohlia) gracilis* Enderlein.



Wing venation: Eriopterini (figs. 80-95).

Fig. 80. *Idiognophomyia keiseri* Alexander, sp.n. - 81. *Gnophomyia (Eugnophomyia) preclara* Alexander. - 82. *Hovamyia polyperiscelis* Alexander. - 83. *Gonomyia (Idiocera) stenophallus* Alexander. - 84. *Gonomyia (Idiocera) malagascia* Alexander. - 85. *Gonomyia (Lipophleps) distenta* Alexander. - 86. *Gonomyia (Lipophleps) tristyla* Alexander. - 87. *Cheilotrichia (Cheilotrichia) guttipennis* Alexander. - 88. *Hoverioptera ambricola* (Alexander). - 89. *Erioptera (Podoneura) anthracogramma malagascia* Alexander. - 90. *Erioptera (Erioptera) genuatra* Alexander. - 91. *Tasio-cera (Dasymolophilus) hova* Alexander. - 92. *Molophilus (Molophilus) scotoneurus* Alexander. - 93. *Toxorhina (Ceratocheilus) approximata* Alexander. - 94. *Toxorhina (Toxorhina) serpens* Alexander. - 95. *Styringomyia leucoplagia* Alexander.