

---

---

NEW OR LITTLE-KNOWN TIPULIDAE FROM  
MADAGASCAR (DIPTERA)

BY  
Charles P. Alexander

---

From the Transactions of the American Entomological Society  
Volume 91: 39-83

Issued March 26, 1965

1310

---

---

This is a separatum from the TRANSACTIONS and is not a reprint. It bears the original pagination and plate numbers, and library copies were mailed at Philadelphia on the above date of issue.

## NEW OR LITTLE-KNOWN TIPULIDAE FROM MADAGASCAR (DIPTERA)

BY CHARLES P. ALEXANDER  
*Amherst, Massachusetts*

During the past fifteen years great advances have been made in our knowledge of the insects of Madagascar, including some significant discoveries in the Tipulidae. This progress was made possible in greatest part through the efforts of Dr. Renaud Paulian, for many years the Director of entomological work at the Institut Scientifique de Madagascar, Tananarive, with the cooperation of his staff and native collectors. I was privileged to have been able to publish in the *Mémoires* of the Institute a series of eight papers on this group of Diptera, discussing a total of 200 species, the great majority of which were described as new. These papers are cited at the end of this article.

The specimens collected during this period were taken by Doctor Paulian, his colleagues and native assistants at the Institut, and by Dr. Brian R. Stuckenberg, entomologist of the Natal Museum, Pietermaritzburg, Natal, who participated in two expeditions to various parts of the island sponsored by the Natal Museum, 1955-56, 1957. The latter specimens were made available to me through the kindness of Dr. Stuckenberg, with the arrangement that types of the novelties were to be deposited eventually in the collections of the Institut. During this same general period and slightly earlier, additional series of these flies became available from other entomologists, especially Mr. Charles Lamberton, in the 1940's, Dr. Harry Hoogstraal, 1948, and Mr. Noël L. H. Krauss in 1951-52. A very important collection was made by Dr. and Mrs. Fred Keiser, of the Natural History Museum, Basle, Switzerland, in 1957 and 1958, covering various provinces of the island. This collection was discussed in a paper that is cited in the list of references where keys and figures to all of the genera and subgenera were provided, together with a list of the 238 species known from Madagascar to that date.

I have available a further series of these flies that now are being studied in order to add to our knowledge of this remarkable fauna. In the present paper I am considering a part of these

species, all being additions to the Keiser list. These materials were taken chiefly by Dr. Stuckenberg on his second expedition to Madagascar and by staff members of the Institut. The materials will be returned to Dr. Stuckenberg and to the Institut, with paratypes and named specimens of certain of the species being placed in my personal collection.

#### TIPULINAE

##### *Dolichozeza* (*Trichodolichozeza*) *nimbicosta* n. sp.

Size relatively large (wing of ♀ 11.5 mm.); general coloration of body brownish black; wings weakly infuscated, the prearcular field, with cells *C* and *Sc*, more darkened; outer wing cells with abundant macrotrichia; outer medial forks, including cell *M*<sub>1</sub>, unusually deep.

*Female*. — Length about 12 mm.; wing 11.5 mm.

Frontal prolongation of head black; nasus short and obtuse, with long black setae; palpi black. Antennae with scape brownish black, pedicel yellowish brown, flagellum black; first flagellar segment elongate, about one-fourth longer than the scape or nearly equal to the combined segments two to four; intermediate segments a little shorter than their longest verticils; terminal segment small. Head dark brown, front more silvery; region of vertical tubercle somewhat more blackened, slightly elevated.

Thorax almost uniformly dark brown, more or less pruinose, especially behind; dorsopleural membrane dark brown. Halteres long, brownish black. Legs with coxae and trochanters dark brown; femora dark brown, more intense at tips, tibiae and tarsi somewhat paler. Wings (fig. 1) weakly infuscated, the prearcular field, with cells *C* and *Sc*, more strongly darkened; stigma pale; veins light brown. Longitudinal veins of about the outer two-thirds of wings with slender macrotrichia, including the outer ends of both Anal veins; abundant trichia in all outer cells from *Sc*<sub>2</sub> to *M*<sub>1</sub>. Venation: *Sc*<sub>2</sub> ending just beyond origin of the oblique *Rs*; free tip of *Sc*<sub>2</sub> pale, erect; medial forks relatively deep, cell *M*<sub>1</sub> about one-half longer than its petiole; *m-cu* gently sinuous, placed on *M* some distance before the fork; cell 2nd *A* relatively broad.

Abdomen brownish black. Ovipositor with cerci straight, their tips obtusely rounded.

*Holotype*. — ♀, Andringitra Massif, Anjavidilava, 2020 meters, January 17-21, 1958 (Stuckenberg).

*Dolichozeza* (*Trichodolichozeza*) *nimbicosta* is quite distinct from the only other described member of the subgenus from Madagascar, *D. (T.) semiophora* Alexander, a smaller fly with the wing pattern entirely different. In the coloration of the wings the present fly suggests *Hovapeza costofusca* Alexander, which has the venation quite distinct.

*Tipula (Acutipula) sogana* n. sp.

Size large (wing of ♂ 30 mm.); pronotum and mesonotum chiefly yellow, the praescutum with four pale gray stripes that are inconspicuously bordered by pale brown; postnotum and pleura yellowish white, the latter with a narrow interrupted brown dorsal line; wings almost uniformly fulvous orange, restrictedly patterned with brown over the arculus, anterior cord, posterior end of *m-cu* and outer end of cell *1st M*<sub>2</sub>; male hypopygium with the posterior border of tergite subtruncate.

*Male*. — Length about 30 mm.; wing 30 mm.; antenna about 4 mm.

Frontal prolongation of head cinnamon brown, nasus elongate; palpi with proximal three segments brown, incisures pale, the long terminal segment obscure yellow. Antennae light yellow; flagellar segments subcylindrical, the basal enlargements small, verticils longer than the segments. Head light orange brown, without a developed vertical tubercle.

Pronotum light yellow, lateral ends of scutum infuscated. Mesonotal praescutum appearing almost unicolorous, the ground orange yellow, with four pale gray stripes that are inconspicuously margined with pale brown; scutum with central portion obscure yellow, transversely patterned with narrow pale brown lines, remainder of sclerite pale gray; scutellum and mediotergite very pale yellow or yellowish white, without setae; pleurotergite darker yellow with a conspicuous brown dorsal spot. Pleura yellowish white, more brownish yellow dorsally, the dorsopleural membrane more infuscated forming an inconspicuous stripe that extends more or less interrupted from the cervical region to the pleurotergite. Halteres yellow. Legs with coxae and trochanters pale yellow; femora brownish black, basal half paler, brown; tibiae and tarsi black; claws broken. Wings (fig. 2) strongly and almost uniformly fulvous orange, with narrow brown seams over the arcular region, anterior cord, posterior half of *m-cu* and outer end of cell *1st M*<sub>2</sub>, involving *m* and basal section of *M*<sub>3</sub>; stigma scarcely darker than the ground; prearcular field more infuscated; veins yellow, darker in the infuscated parts. Veins unusually glabrous, including *R*<sub>4+5</sub>. Venation: *R*<sub>5</sub> a little shorter than *R*<sub>2+3</sub>; *m* longer than petiole of cell *M*<sub>1</sub>; cell *1st M*<sub>2</sub> long, subequal to vein *M*<sub>1</sub>.

Abdomen chiefly orange yellow, the tergites narrowly and vaguely more darkened medially and on lateral borders, outer segments slightly more infuscated. Male hypopygium (fig. 5) with the tergite, *t*, only moderately produced, as compared with *lambertoniana*; posterior border almost truncate, with a very shallow median emargination, the lateral lobes very broad; vestiture of tergite abundant but short and inconspicuous, yellow. Outer dististyle, *d*, long-oval, tip obtuse, the length about three times the breadth; inner style with the broad beak obliquely truncated at apex, the lower face with numerous setae, outer apical part glabrous; lower beak a powerful rod, narrowed and blackened at the acute tip.

*Holotype*. — ♂, Antenna, N. RN. III, September 23, 1957 (Soga).

I am pleased to dedicate this species to Mr. P. Soga, who collected the type specimen, as well as many other interesting species of Tipulidae. The fly is most similar to *Tipula (Acutipula) lambertoniana* Alexander, an equally large and conspicuous fly, differing in all regards of coloration of the body and wings and in the hypopygial structure, especially the tergite.

#### LIMONIINAE

#### LIMONINI

#### Genus LIMONIA Meigen

*Amphinome* Meigen. Nouv. Class. Mouch., p. 15 (nom. nud.), 1800.

*Limonia* Meigen, Illiger's Mag. 2: 262, 1803.

*Linnobia* Meigen, Syst. Besch. Zweifl. Ins. 1: 116. 1818.

*Limonia* is the largest genus in the family Tipulidae, including more than 1500 described species that presently are arranged in some 25 subgenera. The structural characters of the adults in this vast array are so diverse that it has proved exceedingly difficult to satisfactorily subdivide the genus and as a result the exact limits of certain of the presently recognized subgenera still are poorly understood. In various papers different students, including Edwards and myself, have considered this problem and it is believed that the arrangement presently accepted is fairly sound. However there still remains great uncertainty as to what elements should properly be placed in the typical subgenus *Limonia*.

In a very recent paper, still in press (Alexander, 1964) I had refrained from assigning many species to a particular subgenus while still others were placed in the typical subgenus *Limonia* while realizing that their genitalic characters differed radically from those of the subgenotype, *tripunctata* Fabricius. The reasons for refraining from further subdivision of the genus into additional subgeneric groups were due chiefly to the fact that while available characters for their separation were strong and apparently satisfactory, in many cases they seemed to be restricted to the male sex. At this time I feel that it will be advisable to define various further such groups as new subgenera rather than to place them in the typical subgenus or to leave them unassigned. Because of this I here am reviewing the genus as it pertains to the Ethiopian region and am proposing four further subgeneric groups that oc-

cur in Africa and in some of the adjacent islands, including Madagascar. A further series of comparable groups that occur in Tropical America will be defined elsewhere.

The more important references that concern the problem of subgenera in *Limonia* are those of Alexander (1929, 1950, 1964) and Edwards (1938).

Subgenus **ATYOPHTHALMUS** Brunetti

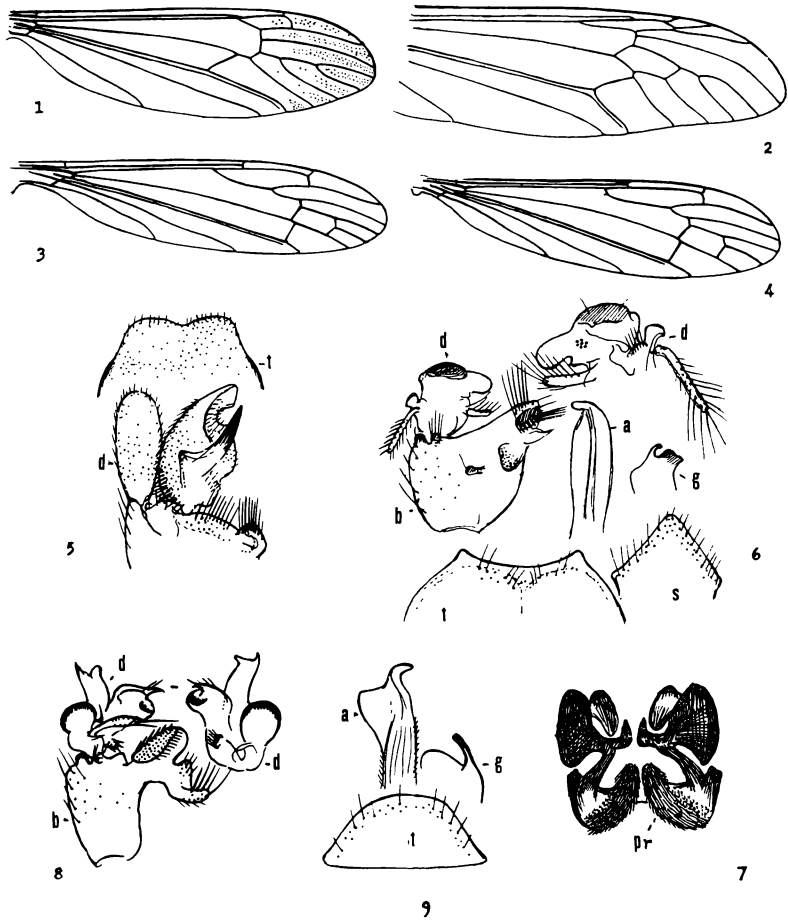
*Atypophthalmus* Brunetti, Rec. Indian Mus. 6: 273, 1911. Fauna of British India. Diptera Nematocera, p. 408, pl. 11, fig. 9 (♂ hypopygium), 1912.

*Atypophthalmus* was proposed by Brunetti as a genus that was most nearly related to *Limonia*, differing in the holoptic condition of the head, the eyes in both sexes being contiguous above. Edwards (1938) has referred the European *Limonia inusta* (Meigen) to this group and it now appears advisable to accept it for a considerable number of species that occur especially in the Ethiopian and Oriental regions.

The completely holoptic condition of the head does not occur in most species where the eyes while large are narrowly separated so as to leave a strip of the posterior vertex exposed. The chief differences from the subgenera most nearly allied, *Limonia* and *Dicranomyia* Stephens, are found in the structure of the male hypopygium (figs. 6-9) where there are conspicuous modifications of both the basistyle and dististyles and, in several of the species, in the internal or central organs, including the proctiger. The dorsal dististyle is more or less modified from the condition normal in the genus but when present is smooth, without the scabrous points found in *Achryolimonia* n. subgen. The wings have vein *Sc* long, with sparse macrotrichia on about the outer half; there are no stigmal trichia, as in *Tricholimonia* n. subgen.

*Type of subgenus.* — *Limonia (Atypophthalmus) umbrata* (de Meijere), described as *holoptica* Brunetti: Oriental and Ethiopian regions; introduced into South America and elsewhere, presumably by commerce.

The following species from Madagascar belong here — *Limonia andringitrae* n. sp., *L. bilobata* Alexander, *L. bobyensis* n. sp., *L. densifimbriata* Alexander, *L. hovamendica* Alexander, *L. makalaka* Alexander, *L. inusitata* Alexander, *L. segnis* Alexander, *L.*



Text-figs. 1-9. Fig. 1. *Dolichopeza (Trichodolichopeza) nimbicosta* n. sp., venation; Fig. 2, *Tipula (Acutipula) sogana* n. sp., venation; Fig. 3, *Limonia (Atypophthalmus) andringitrae* n. sp., venation; Fig. 4, *Limonia (Atypophthalmus) hobyensis* n. sp., venation; Fig. 5, *Tipula (Acutipula) sogana* n. sp., male hypopygium; Fig. 6 and 7, *Limonia (Atypophthalmus) andringitrae* n. sp., male hypopygium; Fig. 8 and 9, *Limonia (Atypophthalmus) hobyensis* n. sp.; male hypopygium; a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; pr, proctiger; s, sternite; t, tergite.

*thaumastopyga* Alexander, *L. umbrata* (de Meijere). Elsewhere in the Ethiopian region, from the Seychelles, *L. mahensis* (Ed-

wards), *L. seychellana* Alexander (*magnicauda* Edwards, pre-occupied), *L. thomasseti* (Edwards); from Mauritius, *L. mauritiana* Alexander, *L. vinsoni* Alexander; from La Reunion, *L. bourboniana* Alexander. From the African mainland, *L. flavopyga* (Alexander), *L. fuscopleura* (Alexander), *L. mendica* Alexander, *L. patrita* Alexander, *L. polypogon* Alexander, and probably *L. barthelemyi* (Alexander) and *L. marleyi* (Alexander). Still other species occur in the Oriental region.

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

Size above medium (wing of ♂ 7 mm.); rostrum light yellow. anterior vertex narrow; general coloration of thorax yellow, praescutum and scutal lobes weakly patterned with darker, pleura striped longitudinally with brown; legs brownish yellow; wings pale yellow, unpatterned except for the subcircular pale brown stigma; *Sc* relatively short, ending about opposite midlength of *Rs*; male hypopygium very complex in structure, especially the basistyle, dististyle and proctiger; ninth tergite with posterior border very gently concave.

*Male*. — Length about 6.5 mm.; wing 7 mm.; antenna about 1.6 mm.

Rostrum light yellow; proximal two segments of palpi light yellow, outer two infuscated, with long conspicuous black setae. Antennae dark brown, the flagellar incisures vaguely yellowed; flagellar segments subequal in length to their verticils; terminal segment about one-half longer than the penultimate. Head gray, posterior vertex with a narrow capillary brown line; anterior vertex narrow, about equal to the diameter of two rows of ommatidia, with long erect black setae; other black setae on orbits, those of the posterior orbits very long.

Pronotum buffy yellow, scutellum with about four long bristles on either side. Mesonotal praescutum yellow, the median region and lateral margins slightly infuscated, the central stripe becoming obsolete behind; posterior sclerites of notum yellowed, the scutellum and scutal lobes weakly darkened; notal setae long but very sparse, lacking on scutellum and postnotum. Pleura yellow, clearer ventrally, with a narrow brown longitudinal dorsal stripe extending from the cervical region to base of abdomen. Halteres with stem yellowed, knob brown. Legs with coxae and trochanters clear yellow, the fore coxae slightly more darkened; femora and tibiae brownish yellow, unpatterned, tarsi a trifle darker; claws long, slender, with a basal concentration of weak spines. Wings (fig. 3) pale yellow, the prearcular and costal fields clearer yellow; stigma subcircular, pale brown; veins light brown. Macrotrichia on longitudinal veins of about the outer half of wing, including the outer end of *2nd A*, lacking on *1st A*. Venation: *Sc*<sub>1</sub> ending nearly opposite midlength of *Rs*, *Sc*<sub>2</sub> near its tip; *m-cu* shortly beyond the fork of *M*.

Abdominal tergites brown, the posterior borders of the segments paler, more brownish yellow; sternites obscure yellow, narrowly darkened later-



ally on more than the basal half; hypopygium large, chiefly yellow. Male hypopygium (figs. 6, 7) very complex in structure. Ninth tergite, *t*, yellowed, transverse, more than twice as broad as long at the midline; posterior border gently concave, produced into small subtriangular glabrous lateral lobes; margins sclerotized, the sinuously truncated cephalic border least so; setae arranged in a transverse band immediately back of the posterior margin, the lateral ones stronger. Ninth sternite, *s*, yellowed, posterior half strongly produced into a triangular lobe, apical setae small. Basistyle, *b*, with the ventromesal lobe very stout, occupying the entire mesal face of the style, near outer end with three modified areas, the most posterior blackened, with dense short appressed setae, second lobe likewise blackened, with dense black setae, third area lying just cephalad of the last, consisting of a brush or pencil of long bristles. It should be noted that in the figure these groups are somewhat altered due to their position on the microscopic slide. Dististyle, *d*, scarcely one-third the basistyle in area, shaped about as figured, including a more apical sclerotized portion that terminates in a flattened glabrous blade, its apex very obtuse; more basally the style bears a long pale lobe directed mesad, provided with very long setae along the posterior margin and a longer posteriorly directed lobe bearing very long strong setae on both faces, the longest setae almost equal to the lobe. Gonapophysis, *g*, appearing as a flattened blade, terminating abruptly in a small blackened hook. Aedeagus, *a*, elongate, the apex a simple lobe, surface with abundant delicate setulae. Additional to the above structures there is a central heavily blackened organ that apparently pertains to the proctiger, *pr*, damaged in the type specimen and only the general appearance figured; particularly noteworthy is the pair of blackened pendant arms that are densely covered with blackened retrorse setae.

*Holotype*. — ♂, Andringitra Massif, foothills, Antanifotsy, along the Jomandao River, 1650-1675 meters, January 10, 1958 (Stuckenberg).

*Limonia (Atypophthalmus) andringitrae* is entirely distinct from the other regional members of the subgenus as previously listed. The hypopygial structure is unusually distinct.

*Limonia (Atypophthalmus) bobyensis* n. sp.

Size above medium (wing of ♂ 7 mm.); mesonotum medium brown, pleura dark brown; halteres dark brown, femora paler; wings weakly infuscated, patterned with darker brown; *Sc*<sub>1</sub> ending shortly beyond one-third the length of *Rs*; male hypopygium complex in structure; tergite semicircular in outline, cephalic border straight; basistyle and dististyle with strongly modified lobes; gonapophysis with mesal-apical lobe long and slender, blackened; aedeagus setuliferous.

*Male*. — Length about 6.5 mm.; wing 7 mm.; antenna about 1.3 mm.

Rostrum brown; palpi brown basally, outer segments brownish black. Antennae brownish black, relatively long; flagellar segments oval, with short glabrous apical necks; verticils a little shorter than the segments; terminal segment elongate, about one-half longer than the penultimate. Head brownish gray; anterior vertex narrow, slightly more than one-half the diameter of the scape.

Pronotum dark brown. Mesonotum medium brown, subnitidous, praescutum with the interspaces obscure yellow, the lateral borders darkened; notal vestiture very small and sparse. Pleura dark brown, the dorsopleural region obscure yellow. Halteres dark brown, base of stem yellowed. Legs with fore coxae dark brown, middle pair paler, posterior coxae yellow; trochanters yellow; femora yellowish brown, tibiae and tarsi darker; claws small, with a basal protuberance that bears four or five spines, one much longer. Wings (fig. 4) with a weak brownish tinge, patterned with brown, including seams at  $Sc_2$ , origin of  $R_s$ , cord, outer end of cell  $1st\ M_2$  and as a seam along vein  $Cu$  in cell  $M$ ; stigma oval, brown; veins brown. Macrotrichia on longitudinal veins of outer half of wing, including two or more at ends of both Anal veins. Venation:  $Sc$  moderately long,  $Sc_1$  ending just beyond one-third the length of  $R_s$ ,  $Sc_2$  near its tip; free tip of  $Sc_2$  and  $R_2$  in transverse alignment;  $R_s$  angulated and weakly spurred near origin;  $m-cu$  shortly beyond fork of  $M$ .

Abdominal tergites dark brown, sternites somewhat paler; hypopygium extensively yellowed. Male hypopygium (figs. 8, 9) very complex, as common in the subgenus. Ninth tergite,  $t$ , very large, semicircular in outline, cephalic border almost straight, posterior margin convex, only slightly thickened, with a narrow row of numerous setae of moderate length just back of border, extending virtually across the whole extent. Basistyle,  $b$ , larger than the dististyle; ventromesal lobe complex, as shown, conspicuously bilobed; apex of style with an outer glabrous blade and an inner lobe tipped with long setae. Dististyle,  $d$ , complex, comprised of four distinct elements; an outer nearly globular blackened blade, its surface with dense spinulose points, becoming smaller and finally obsolete outwardly; an intermediate yellow blade, its tip unequally bidentate, third element a beak-like point; fourth element an elongate clavate structure at base, tipped with very long powerful bristles (this element broken on one side of the type slide). Gonapophysis,  $g$ , extensive, the mesal-apical lobe long and slender, its apex blackened. Aedeagus,  $a$ , elongate, with abundant delicate setulae, apex decurved, before tip with a conspicuous dorsal flange.

*Holotype*. — ♂, Andringitra Massif, Pic Boby, 2500 meters, January 11-14, 1958 (Stuckenberg).

*Limonia (Atypophthalmus) bobyensis* is readily told from the various regional members of the subgenus by the details of structure of the male hypopygium, involving virtually all parts but especially the tergite, basistyle, dististyle, gonapophyses and aede-

agus. Additional to those parts of the hypopygium that were described and figured there are some further structures that appear to pertain to the proctiger, these not sufficiently clear to describe from the unique type slide.

Subgenus **ACHYROLIMONIA** n. subgen.

Small to medium-sized species, commonly with the wings patterned with brown, and in cases with white rings on the legs. Wing cells glabrous in most species, conspicuously hairy in *bequaerti*, *cuthbertsoni*, *holotricha*, *millotiana*, *persuffusa* and *staneri*; no stigmal trichia except in this latter group of species.

The subgenus is based primarily on the structure of the male hypopygium, particularly the dististyles. Antennae with basal flagellar segments subglobular, with short apical pedicels, verticils short; outer segments elongate, with very long verticils. Outer dististyle of the male hypopygium with microscopic scabrous points over the outer face; ventral style with the rostral prolongation long, with either one or two spines, usually from long basal tubercles; no accessory lobe on face of style, as in *Afrolimonia* n. subgen. and *Libnotes* Westwood. Apex of aedeagus simple, the genital openings subterminal. No conspicuous modifications of the proctiger, as in *Atypophthalmus* Brunetti or in several *Rhipidia* Meigen.

*Type of subgenus.* — *Limonia* (*Achyrolimonia*) *trigonia* (Edwards): Oriental region. Members of the group are widespread throughout the Holarctic, Oriental and Ethiopian regions, including Madagascar.

The following species from Madagascar belong here — *Limonia bisalba* Alexander, *L. galactopoda* Alexander. Elsewhere in the Ethiopian region, from the Comoro islands, *L. millotiana* Alexander; from the African mainland, *L. bequaerti* Alexander, *L. cuthbertsoni* Alexander, *L. holotricha* Alexander, *L. leucocnemis* Alexander, *L. persuffusa* Alexander, *L. pothos* Alexander, *L. potnia* Alexander, *L. recedens* (Alexander), *L. recurvans* (Alexander), *L. saucroptera* Alexander, *L. staneri* Alexander, *L. venustipennis* (Alexander). There are various other species in the Oriental region, including besides the subgenotype, *L. trigonooides* Alexander and others. The European *L. decem-maculata* (Loew) likewise belongs here.

Subgenus **AFROLIMONIA** n. subgen.

Very close to *Libnotes* Westwood. Medium-sized to large species, including some of the most conspicuous forms in the African fauna. Wings of several species handsomely variegated with brown and yellow. Venation

generally as in *Libnotes* but with *m-cu* at or close to fork of *M* and with the outer radial veins less decurved at outer ends. Male hypopygium generally as in *Libnotes*: outer dististyle slender, without scabrous points; ventral style large; rostral prolongation elongate, near its base with a tubercle that is tipped with from two to four long rostral spines; in addition, on face of style, usually with a conspicuous lobe that is provided with delicate silken setae and tipped with two or three powerful bristles.

*Type of subgenus.* — *Limonia* (*Afrolimonia*) *rhizosema* Speiser (*rhanthisa* Speiser): Ethiopian region.

The following species from Madagascar belongs here — *Limonia discobolina catella* n. subsp. Elsewhere in the Ethiopian region, *L. discobolina* Edwards, from Rodriguez; *L. comoreana* Alexander, *L. discobolina comorica* n. subsp., from the Comoro islands; *L. sokotrana* (Alexander), from Socotra; from the African mainland, *L. angustilamina* Alexander, *L. basilewskyi* Alexander, *L. buxtoniana* Alexander, *L. ditior ditior* Alexander, *L. ditior subditior* Alexander, *L. igalensis* Alexander, *L. illiterata* Alexander, *L. irrorata* Enderlein, *L. lophema* Alexander, *L. loveridgei* Alexander, *L. lucrativa* Alexander, *L. nyasaensis* (Alexander), *L. oligacantha* Alexander, *L. oligospilota* Alexander, *L. omnifulva* Alexander, *L. poecila* (Alexander), *L. praetor* Alexander, *L. rhanteria* (Alexander), *L. shawi* (Alexander), *L. subapicalis* Alexander (*capensis* Alexander, preoccupied), *L. subapicalis perpallens* Alexander, *L. uniflava* (Riedel), *L. vilhelmi* Alexander.

*Limonia* (*Afrolimonia*) *discobolina* (Edwards)

*Limnobia discobolina* Edwards, Ann. Mag. Nat. Hist. (9) 12: 334-335, 1923.

*Limonia* (*Limonia*) *discobolina* Alexander, Mem. Inst. sci. Madagascar (A) 5: 43, 1951.

*Limonia discobolina* Alexander, Mem. Inst. sci. Madagascar (E) 10: 85, 1958.

The species was described from a single female, taken on Rodriguez island between August and November 1918 by H. P. Thomas and H. J. Snell. Subsequently I had recorded the species from Madagascar, likewise based on the female sex, and from the Comoro islands, taken on Grande Comore by Millot. The male sex of the Madagascar representative now is available and evidently is distinct from the Comoro fly. With this additional material on hand I am considering the Madagascar and Comoro flies

as representing distinct subspecies and believe that when more material of the typical form becomes available and including the male sex, that all three of these flies may well prove to represent distinct species. No representative of this particular group has been recorded from the African mainland. I am referring the species to the subgenus *Afrolimonia* although the hypopygial characters, particularly of the ventral dististyle, deviate slightly from what has been considered to represent the normal condition in the subgenus.

*Limonia (Afrolimonia) discobolina catella* n. subsp.

*Male*. — Length about 9-14 mm.; wing 11-15 mm.

*Female*. — Length about 9.5-13 mm.; wing 11-16 mm.

Proximal four or five antennal segments brownish black, the outer ones light green; flagellar segments outwardly passing into long-oval, with short apical pedicels. Legs yellow; femora with a narrow pale brown subterminal ring, the apex clear yellow. from about one and one-half to nearly twice as extensive as the ring. In typical *discobolina* the femora are ochreous, the outer half darker, the extreme tip and a rather narrow subterminal ring dark brown, the latter clearer ochreous at either end. Wings (fig. 10). Abdominal tergites with lateral brown areas near bases of segments; sternites with comparable darker markings close to the membrane. Male hypopygium (fig. 14) with the tergite, *t*, nearly as broad as long, completely margined; posterior border without a median incision, as in *discobolina comorica*. Basistyle, *b*, with ventromesal lobe subglobular, the longest setae exceeding the lobe. Dorsal dististyle, *d*, slender, curved gently to the acute tip; ventral style with the body narrowed; rostral prolongation slender, subequal in diameter to the dorsal style; rostral spines relatively long, about one-half the prolongation, placed close together near the base of the latter. Gonapophysis, *g*, with mesal-apical lobe short, blackened, conspicuously bidentate.

*Holotype*. — ♂, Andranotobaka, April 1957 (Griveaud). *Allotopotype* ♀. *Paratopotypes* ♂, ♀. *Paratypes* ♂: Ankazomivadi, July 1957 (Robinson); ♀: Manjakatempo, Ankaratra, 2000 meters, May 1951 (Paulian); ♀: Mt. Tsaratanana, 1500 meters, October 1949 (Paulian); ♂: Soaindrana, Andringitra Massif, 2060 meters, January 14-17, 1958 (Stuckenberg); Pic Boby, Andringitra Massif, 2460 meters, January 11-14, 1958 (Stuckenberg).

*Limonia (Afrolimonia) discobolina comorica* n. subsp.

*Male*. — Length about 11 mm.; wing 12 mm.

Femora yellow, with a narrow pale brown subterminal ring, the more extensive apex clear yellow (about as in *catella* but not as in typical *dis-cobolina*). Male hypopygium (fig. 15) with the tergite, *t*, large, the length and breadth subequal; cephalic border narrowed and produced, posterior margin with a narrow incision to form obtuse approximated lobes that bear a concentration of long setae. Basistyle, *b*, with ventromesal lobe elongate, suboval, exceeding in length the longest setae. Ventral dististyle, *d*, smaller than the basistyle; rostral prolongation more flattened, broader than the dorsal style; rostral spines long, at tips produced into hairlike points. Gonapophysis, *g*, with apex of mesal-apical lobe only slightly darkened, the lateral tooth low and obtuse.

*Holotype*. — ♂, Fomboni, Grande Comore, Comoro islands, November 1956 (Jean Millot).

Subgenus **TRICHOLIMONIA** n. subgen.

Large to medium-sized species, in cases with weakly patterned wings. Claws with numerous (approximately six) strong teeth on more than the proximal half, the outermost larger; no epicondyle on last tarsal segment. Wings generally as in *Limonia* s.s., with vein *Sc* long and with *m-cu* at or close to the fork of *M*; stigmal region, in both sexes, with more than 30 strong trichia; vein *Sc* stout, almost as in *Metalimnobia*, with abundant trichia throughout the length, virtually covering the surface in more than a single row. Male hypopygium with both the ventral and dorsal dististyles present; two rostral spines, placed on lower margin of the prolongation (in *renaudi*); dorsal style smooth, without scabrous points. Gonapophysis with mesal-apical lobe long and slender; aedeagus with delicate setulae.

*Type of subgenus*. — *Limonia* (*Tricholimonia*) *congoensis* (Alexander): Ethiopian region. Other species are *Limonia renaudi* Alexander, of Madagascar; *L. compta* (Alexander), *L. edwardsi* (Alexander), *L. grahami* (Alexander), *L. humphreyi* (Alexander), *L. imitatrix* Alexander, *L. schoutedeni* Alexander, and *L. zernyana* Alexander, from the African mainland.

*Tricholimonia* evidently is closest to *Metalimnobia* Matsumura. The most evident single characteristic and one found in both sexes is the conspicuously hairy wing stigma.

***Limonia* (*Dicranomyia*) *scelio* n. sp.**

Belongs to the *tristis* group; general coloration gray, disk of praescutum with confluent darker stripes; fore legs blackened, middle and hind femora more yellowed, with blackened tips; wings faintly tinged with gray, virtually unpatterned, stigmal darkening small; *Sc* relatively short, ending before origin of *Rs*, *m-cu* some distance before fork of *M*; male hypopygium with tergite transverse, posterior border gently convex; basistyle with a single

secondary lobule beyond the ventromesal lobe; ventral dististyle smaller than the basistyle, rostral prolongation blackened, terminating in a point; spines long, divergent, arising from a low common blackened base; gonapophysis with mesal-apical lobe blackened, gently curved to the acute tip.

*Male*. — Length about 5.5-6 mm.; wing 7-8 mm.; antenna about 0.9-1.0 mm.

*Female*. — Length about 6-6.5 mm.; wing 7-7.5 mm.

Rostrum and palpi black. Antennae with scape and pedicel black, flagellum brownish black; basal flagellar segments subglobular, the outer ones passing into short-oval, somewhat shorter than the longest verticils. Head light gray; anterior vertex weakly carinate, wider than the diameter of the scape.

Pronotum dark gray. Mesonotal praescutum gray laterally, disk with three darker brownish gray confluent stripes; posterior sclerites of notum gray, parascutella yellowed. Pleura light gray, dorsopleural region more yellowed. Halteres relatively long, stem yellow, knob infuscated. Legs with coxae brownish yellow, fore pair darker; trochanters obscure yellow; fore legs blackened, middle and hind femora brownish yellow, tips blackened; claws with a major basal spine, with other reduced spinules lying more basally. Wings (fig. 11) faintly tinged with gray, unpatterned or with very restricted brown clouds; stigma very small and pale to virtually lacking; veins light brown. Venation: *Sc* relatively short, both *Sc*<sub>1</sub> and *Sc*<sub>2</sub> before origin of *Rs*; *m-cu* from about one-half to four-fifths its length before fork of *M*.

Abdomen dark brown, hypopygium with the ventral dististyle obscure yellow. Male hypopygium (fig. 16) with the tergite, *t*, transverse, long-oval in outline, margins thickened; median part of posterior border subtruncate to gently concave; tergal setae relatively numerous, long and pale, distributed submarginally over virtually the whole extent of the posterior border. Basistyle, *b*, with ventromesal lobe stout, with long setae on outer half, on the face with a low tubercle that bears about five long setae; more distally, on face of style, with an elongate darkened lobe, tufted with about six or seven long yellow setae that exceed the lobe. Dorsal dististyle a blackened curved rod, narrowed to a long terminal spine; ventral spine, *d*, smaller than the basistyle, rostrum blackened, narrowed to the subacute tip; rostral spines two, relatively long, arising from a low raised common tubercle. Gonapophysis, *g*, with mesal-apical lobe blackened, appearing as a slender gently curved spine, the tip acute.

*Holotype*. — ♂, Andringitra Massif, Pic Boby, 2460 meters, January 11-14, 1958 (Stuckenberg). *Allotopotype* ♀, pinned with type. *Paratopotypes* 1 ♂, 1 ♀, with types; 1 ♂, 2500 meters, January 11-14, 1958 (Stuckenberg).

From other regional species of the *tristis* group with *m-cu* some distance before the fork of *M*, the present fly differs in the hypopygial structure, particularly the tergite and ventral dististyle.

*Limonia (Geranomyia) mashonica brunneicincta* n. subsp.

*Male*. — Length, excluding rostrum, about 5.5 mm.; wing 6 mm.; rostrum about 2.7 mm.

Rostrum relatively long, about one-half the remainder of body, brownish yellow. the tip narrowly blackened. Antennae light brown; flagellar segments oval, verticils short. Head dark brown, heavily gray pruinose.

Prothorax and mesothorax almost uniformly light yellow, unpatterned; praescutal vestiture very sparse to virtually lacking. Halteres short, stem yellow. knob dark brown. Legs with coxae and trochanters pale yellow; femora yellow with a narrow light brown subterminal ring, about one-half as extensive as the pale tip. Wings brownish yellow; stigma oval, pale brown; no darkened seams on any veins, the latter pale brown. Costal fringe of male relatively short, especially when compared with *fimbriacosta* Alexander. Venation:  $Sc_1$  ending about opposite midlength of  $Rs$ ; cell  $1st\ M_2$  long, about twice vein  $M_1$ ;  $m-cu$  at fork of  $M$ , subequal to distal section of  $Cu_1$ .

Abdomen brownish yellow. Male hypopygium generally as in typical *mashonica* Alexander, of the African mainland. Ninth tergite more narrowly and deeply emarginate, the lobes more conspicuous, with numerous longer setae. Dorsal dististyle curved, apex narrowed into a long spine; rostral prolongation of ventral style stout, spines relatively long, from slightly unequal tubercles; inner spine longer, nearly as long as the prolongation beyond the outer spine. Aedeagus slightly narrower, clothed with delicate erect setulae, as also found in the typical subspecies.

*Holotype*. — ♂, Rogez District, 900 meters, October 1946 (Charles Lamberton).

Subgenus **EURHIPIDIA** n. subgen.

Rostrum more or less produced. Antennae with from 11 to 14 segments, the intermediate flagellar segments in male bipectinate (11-segmented in *endecamera*). Legs commonly with tarsi extensively snowy white. Wings (figs. 12, 13) ranging from clear to heavily patterned; vein  $Sc_1$  long, cell  $M_2$  open by atrophy of  $m$ , in cases (*aoroneura*) with the basal section of  $M_3$  likewise lacking. Male hypopygium (figs. 18, 19) with two slender rostral spines from a common enlarged basal tubercle.

*Type of subgenus*. — *Limonia (Eurhipidia) rostrifera* (Edwards, 1916): Oriental region. Other species from the Ethiopian region, including the satellite islands, include *Limonia aoroneura* Alexander, of Mauritius and La Reunion; *L. brevifilosa* n. sp., Madagascar; *L. endecamera* Alexander, Portuguese East Africa; *L. extraria* Alexander, Madagascar; *L. incompleta* (Riedel), Kenya; *L. mediofilosa* n. sp., Madagascar; *L. submori-*



*onella* Alexander, Uganda. The following are from the Oriental and eastern Palaearctic regions: *Limonia coheriana* Alexander, Nepal; *L. formosana* Alexander, Formosa; *L. formosana expansimacula* Alexander, western China; *L. garrula* Alexander, western China; *L. garruloides* Alexander, western China; *L. hariola* Alexander, Assam; *L. impicta* Edwards, Borneo; *L. luteipleuralis* Alexander, Luzon; *L. morionella* (Edwards), Malaya; *L. pictipennis* Edwards, Borneo.

The name *Eurhipidia* is not in conflict with *Eurhipia* Boisduval, 1828. It may be noted that elsewhere I had suggested that the present group was distinct subgenerically from *Rhipidia* and that the conspicuous branches of the antennal flagellum in the male sex had been developed independently in the two groups. The structure of the male hypopygium, such as the possession of two rostral spines from a common basal tubercle, is a character more as found in the subgenera *Dicranomyia* Stephens and *Geranomyia* Curtis. I would suggest that the group might have derived from an ancestral type not unlike *Limonia* (*Dicranomyia*) *brevivena* (Osten Sacken). *Limonia pulcherrima* (Edwards), of Samoa, still known only from the female sex, was placed tentatively in this group by Edwards but because of the closed cell *1st M*<sub>2</sub> of the wings does not appear to belong here.

*Limonia* (*Eurhipidia*) *brevifilosa* n. sp.

General coloration of head and thorax gray, the praescutum with three medium brown stripes; antennae 13 or 14-segmented, flagellar branches short; legs darkened, tibiae and basitarsi brownish yellow to brown, remainder of tarsi darker; wings whitish subhyaline, distal ends of outer radial cells more darkened, stigma dark brown; abdomen dark brown, posterior borders of segments broadly light gray; male hypopygium with the two rostral spines elongate, from a common basal tubercle.

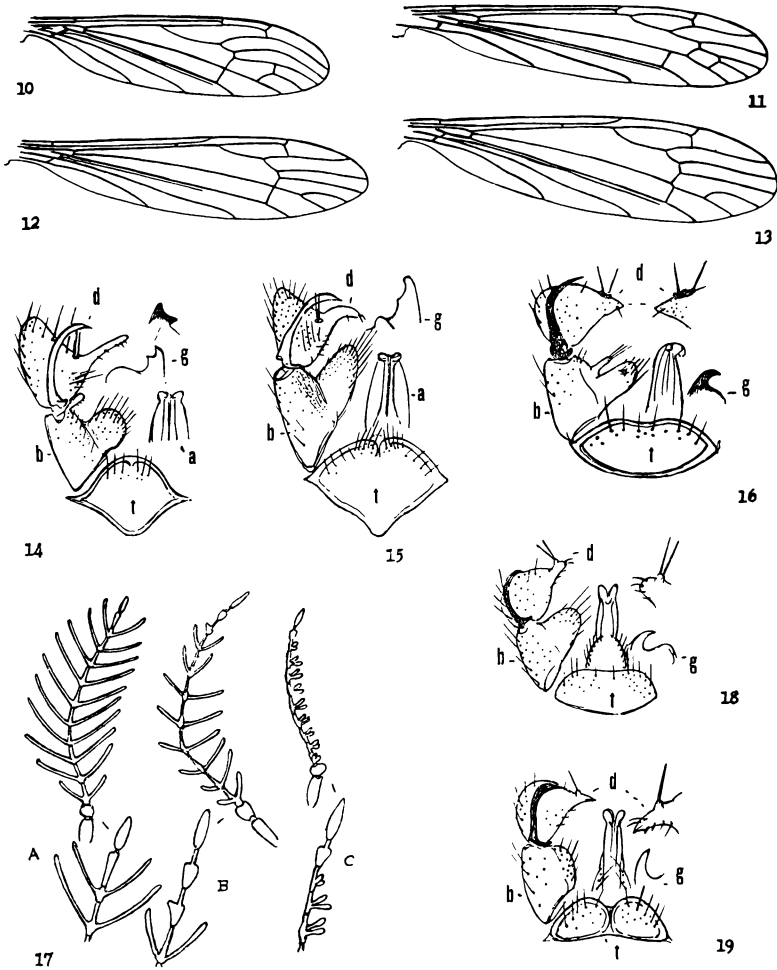
*Male*.—Length about 4-4.5 mm.; wing 5-5.8 mm.; antenna about 1.0-1.2 mm.

*Female*.—Length about 5.2-5.5 mm.; wing 5.8-6 mm.

Rostrum and palpi brownish black, the former long, about one-half the remainder of head. Antennae of male (fig. 17, C) 13 or 14-segmented; scape and pedicel yellowed, flagellum blackened; flagellar segments 1 to 9 or 1 to 10 each with two branches that are much shorter than in *extraria*, the longest subequal to or slightly longer than the segments, the branches

---

*brevifilosa* n. sp., male hypopygium; Fig. 19, *Limonia* (*Eurhipidia*) *mediofilosa* n. sp., male hypopygium; a, aedeagus; b, basistyle; d, dististyle; t, tergite.



Text-figs. 10-19. Fig. 10, *Limonia (Afrolimonia) discobolina catella* n. subsp., venation; Fig. 11, *Limonia (Dicranomyia) scelio* n. sp., venation; Fig. 12, *Limonia (Eurhipidia) breviflora* n. sp., venation; Fig. 13, *Limonia (Eurhipidia) mediofilosa* n. sp., venation; Fig. 14, *Limonia (Afrolimonia) discobolina catella* n. subsp., male hypopygium; Fig. 15, *Limonia (Afrolimonia) discobolina comorica* n. subsp., male hypopygium; Fig. 16, *Limonia (Dicranomyia) scelio* n. sp., male hypopygium; Fig. 17 A, *Limonia (Eurhipidia) extraria* Alexander, antenna of male; Fig. 17 B, *Limonia (Eurhipidia) mediofilosa* n. sp., antenna of male; Fig. 17 C, *Limonia (Eurhipidia) breviflora* n. sp., antenna of male; Fig. 18, *Limonia (Eurhipidia)*

of the first and last segments much shorter; terminal segment longer than the penultimate; antennae of female simple. Head light gray; anterior vertex broad.

Pronotum light gray, cervical region and pretergites light yellow. Mesonotum light gray, the praescutum with three medium brown stripes that are more evident behind, scutal lobes darkened. Pleura gray, striped longitudinally with brown on the ventral anepisternum and ventral sternopleurite, the latter area extensive. Halteres with stem yellow, knob weakly darkened. Legs with fore coxae darkened basally, tips more or less yellowed; trochanters obscure yellow; femora brownish yellow, bases clearer yellow, outer ends darker; tibiae and basitarsi brownish yellow to brown, tips darkened, remainder of tarsi brown. Wings (fig. 12) whitish subhyaline, apices of outer radial cells more darkened; stigma oval, conspicuous, dark brown. Venation:  $Sc_1$  ending opposite or shortly beyond origin of  $Rs$ ,  $Sc_2$  far retracted,  $Sc_1$  alone nearly as long as  $Rs$ ; cell  $M_2$  open by atrophy of  $m$ :  $m-cu$  at fork of  $M$ .

Abdomen dark brown, the posterior borders of segments broadly and conspicuously light gray; male hypopygium darkened, ventral dististyle obscure yellow. Male hypopygium (fig. 18) with the tergite,  $t$ , transverse, slightly narrowed outwardly, posterior border nearly truncate; on either side of posterior half with numerous long slender setae. Basistyle,  $b$ , with ventromesal lobe large, apex obtuse. Dorsal dististyle a gently curved sickle, the tip acute; ventral style,  $d$ , relatively small, its area less than that of the basistyle; rostral prolongation short, tip broadly obtuse; rostral spines long and slender, from a conspicuous common basal tubercle. Gonapophysis,  $g$ , with mesal-apical lobe gently curved to the acute tip.

*Holotype*. — ♂, Andringitra Massif, Soaindrana, 2060 meters, January 14-17, 1958 (Stuckenberg). *Allotopotype* ♀, pinned with type. *Paratopotypes* 4 ♂ ♀, with types. *Paratypes* 2 ♂ ♂, Anjavidilava, 2020 meters, January 17-21, 1958; 1 ♂, 1 ♀, Pic Boby, 2460 meters, January 11-14, 1958; 1 ♀, Col de Mahafompena, Ankaratra, December 11-15, 1957 (Stuckenberg).

*Limonia* (*Eurhipidia*) *brevifilosa* is most readily told from *L. (E.) extraria* Alexander and *L. (E.) mediofilosa* n. sp., by the very short flagellar branches in the male and from the former by the darkened tibiae and tarsi. In *extraria* the longest flagellar branches are approximately three times the segments and the tarsi and posterior tibiae are conspicuously snow-white.

*Limonia* (*Eurhipidia*) *mediofilosa* n. sp.

General coloration gray; antennae of male 13-segmented, black through-

out; flagellar branches of moderate length, the longest about one-third longer than the segment; legs uniformly brown; wings very faintly suffused, base whitened, stigma dark brown, vein  $Sc_1$  very long, nearly equal to  $Rs$ ; male hypopygium with apex of rostral prolongation of the ventral dististyle pointed.

*Male*. — Length about 5 mm.; wing 5.8 mm.; antenna about 1.9 mm.

*Female*. — Length about 5.5 mm.; wing 5.5 mm.

Rostrum and palpi black. Antennae of male (fig. 17, B) 13-segmented, black throughout; eight proximal flagellar segments bipectinate, the branches relatively long, slightly unequal, the longest about one-third longer than the segment: branches of segments seven and eight more nearly equal; ninth segment with a single short tubercle, the apical pedicel abrupt; tenth segment simple, the pedicel abrupt; terminal segment long. Head dark gray.

Mesonotal praescutum discolored but apparently dark gray, patterned with brown; posterior sclerites brown, gray pruinose. Pleura light gray; dorsopleural region medium brown. Halteres with stem whitened, knob dark brown. Legs with coxae pale brown, fore pair slightly darker; trochanters brownish yellow; remainder of legs brown, the outer tarsal segments more blackened; claws nearly simple, with a concentration of setoid spines at base. Wings (fig. 13) very faintly suffused, base whitened, stigma short-oval, conspicuous, dark brown; in female outer radial cells near margin slightly darkened; veins light brown, pale in prearcular field. Venation:  $Sc_1$  ending nearly opposite origin of  $Rs$ ,  $Sc_2$  far retracted,  $Sc_1$  alone nearly as long as  $Rs$ ;  $R_{2-3}$  short, about twice  $R_2$ ; cell  $M_3$  subequal to its petiole; *m-cu* at or just beyond fork of  $M$ . In the holotype on one wing only the outer section of vein  $M_3$  is suspended in the membrane, the base atrophied.

Abdomen dark brown, in the female the posterior borders of the segments obscurely gray; hypopygium dark brown, the ventral dististyle paler. Male hypopygium (fig. 19) with the tergite, *t*, transverse, strongly and completely thickened on margins and on median line; posterior border emarginate, the lobes low, rounded; setae long and delicate, well distributed over the lobes. Basistyle, *b*, with ventromesal lobe low, occupying the entire mesal face. Dorsal dististyle a gently curved sickle, tip suddenly narrowed into a straight spine; ventral style, *d*, subequal in area to the basistyle. rostrum narrowed to the acute tip; two closely approximated rostral spines from a common pale tubercle. Gonapophysis, *g*, with mesal-apical lobe pale, straight, narrowed to the acute tip.

*Holotype*. — ♂, Andringitra Massif, Pic Boby, 2460 meters, January 11-14, 1958 (Stuckenberg). *Allotopotype* ♀: pinned with type.

*Limonia (Eurhipidia) mediofilosa* is readily distinguished from the other known regional species by the medium length of the flagellar branches of the male antennae. *L. (E.) extraria* Alexander, with the longest flagellar branches differs further in the conspicuous snowy white pattern of the legs, including the terminal tarsal segments and much of the posterior tibiae. The an-

tennae of the male sex of the three regional species are shown for comparison (fig. 17), all drawn to scale.

*Dicranoptycha griveaudi* n. sp.

General coloration of the entire body brownish black to black; legs black, femoral bases narrowly yellowed, with a broad yellow subterminal ring that is about one-half more extensive than the darkened apex; wings strongly infuscated, prearcular and costal regions slightly darker; ovipositor with cerci compressed-flattened, narrowed to tip, entirely setiferous.

*Female*. — Length about 13 mm.; wing 12 mm.

Rostrum, palpi and antennae black; flagellar segments cylindrical, shorter than the verticils. Head brownish black.

Thorax of type crushed, apparently almost uniformly polished black or brownish black. Halteres yellowish brown. Legs with coxae and trochanters brownish black; femora brownish black, bases narrowly yellowed, with a broad yellow subterminal ring that is about one-half more extensive than the darkened apex; tibiae and tarsi black; setae of legs long, appressed, scales conspicuous. Wings (fig. 20) strongly infuscated, the prearcular and stigmal regions, with the stigma, slightly darker brown; veins light brown. Venation: *Rs* about one-fifth longer than cell *1st M<sub>2</sub>*; *m-cu* nearly its own length beyond fork of *M*.

Abdomen dull brownish black. Ovipositor with cerci compressed-flattened, long-triangular, narrowed to tips, with abundant long coarse black setae to tip, those of mesal face appearing more yellowed.

*Holotype*. — ♀, Andranotobaka, April 1957 (Griveaud).

This distinct fly is dedicated to the collector, M. P. Griveaud, who has taken many interesting Tipulidae in Madagascar. It is readily told from all other known species with darkened wings by the nature of the leg pattern. In Madagascar several species have the legs patterned with yellow and black but in these the tips of the femora are broadly yellow, not black as in the present fly. Among such species some have the femoral tips and tibial bases yellow, the basitarsi darkened (as in *aurogeniculata* Alexander, *diacaena* Alexander, *squamigera* Alexander); others with the tibiae and basitarsi entirely darkened (as *lataurata* Alexander, *pachystyla* Alexander), while *basitarsata* Alexander has the yellow leg pattern as in the first group but also has the proximal ends of the basitarsi yellow.

*Orimarga (Orimarga) amblystyla* n. sp.

Size relatively large (wing of male 6.5 mm.); general coloration of body dark plumbeous gray; rostrum black; femora obscure yellow, tips narrowly

infuscated; wings brownish yellow. prearcular and costal fields clearer yellow,  $Sc$  relatively short,  $Sc_1$  ending nearly opposite midlength of  $Rs$ , inner end of cell  $M_2$  slightly arcuated; male hypopygium with a bilobed appendage on mesal face of basistyle bearing tufts of long yellow setae; apex of outer dististyle obtuse; phallosome including broad flattened apophyses, each with about three slender subappressed spines on outer lateral margin.

*Male*. — Length about 7 mm.; wing 6.5 mm.

Rostrum and palpi black. Antennae black; flagellar segments oval, verticils short. Head above brownish gray, anterior vertex silvery, relatively narrow.

Thoracic dorsum almost uniformly plumbeous gray, praescutum light gray on sides. Pleura plumbeous gray, the dorsopleural region pale brown, especially surrounding the wing root. Halteres with stem obscure yellow, knob slightly more saturated. Legs with all coxae and trochanters blackened, sparsely pruinose; femora obscure yellow, tips narrowly infuscated; tibiae and tarsi brown, the latter darker outwardly; claws simple. Wings (fig. 21) brownish yellow, the prearcular and costal fields clearer yellow; extreme wing tip vaguely darkened; veins light brown, paler in the yellowed areas. Costal fringe of male relatively long. Venation:  $Sc$  relatively short,  $Sc_1$  ending nearly opposite midlength of  $Rs$ ,  $Sc_2$  near its extreme tip; basal section of  $R_{1+2}$  weakly angulated at near one-third the length; inner end of cell  $M_2$  slightly arcuated, lying proximad of cell  $R$ ;  $M_{3+4}$  and  $M_1$  subequal; cell  $2nd\ A$  long.

Abdomen, including the large hypopygium, dark plumbeous brown. Male hypopygium (fig. 25) with the basistyle,  $b$ , stout, the mesal face at base with a bilobed expansion that is provided with long yellow setae to form two brushes, interbasal plate smaller. Outer dististyle,  $d$ , blackened, dilated on more than the proximal half, the slender outer part nearly straight, apex slightly expanded, obtuse; inner style darkened, setiferous, basal part pale membranous, the setae longer. Phallosome,  $p$ , distinctive, consisting principally of broad flattened apophyses, suboval in outline, the lateral angles with about three slender spines that tend to be appressed.

*Holotype*. — ♂, Perinet, 960 meters, December 1955 (Stuckenberg).

*Orimarga (Orimarga) amblystyla* is readily told from *O. (O.) sarophora* Alexander which likewise has conspicuous groups of setae on mesal face of the basistyle by the obtuse apex of the outer dististyle and the entirely different phallosome. *O. (O.) plumbeithorax* Alexander still is known to me only by the female sex. It differs most evidently in the darkened costal wing border and the uniformly brown femora.

## HEXATOMINI

***Austrolimnophila (Austrolimnophila) fulvipennis* (Alexander)**

*Pseudolimnophila (Pseudolimnophila) fulvipennis* Alexander, Ann. Mag. Nat. Hist. (9) 8: 317-318, 1921.

The species still is known to me only from the unique type female, bearing the label saying only 'Madagascar', collected by Franz Sikora about 1891, presumably in the vicinity of Fort Dauphin. The venation is shown (fig. 22).

***Austrolimnophila (Austrolimnophila) petasma* Alexander**

*Austrolimnophila (Austrolimnophila) petasma* Alexander, Mém. Inst. Sci. Madagascar (E) XII: 229, fig. 37 (♂ hypopygium), 1961.

The male hypopygium as originally described is incomplete and a better figure now is provided (fig. 26). This shows the entire interbase, *i*, which has the tip acute. In the original description this structure was construed as being an apophysis but this now appears to be incorrect. What seem to represent the true gonapophyses are very small blades lying close to the base of the aedeagus, the darker, strongly sclerotized interbases lying more laterally at the proximal ends of the basistyles. The unusually short aedeagus, *a*, has a single very large inner tube with the orifice simple. It is evident in this genus that strong characters for taxonomic use are to be found in the aedeagus which in the species found in the Ethiopian region range from short to unusually long and, in cases, with paired genital openings (as in *natalensis* Alexander).

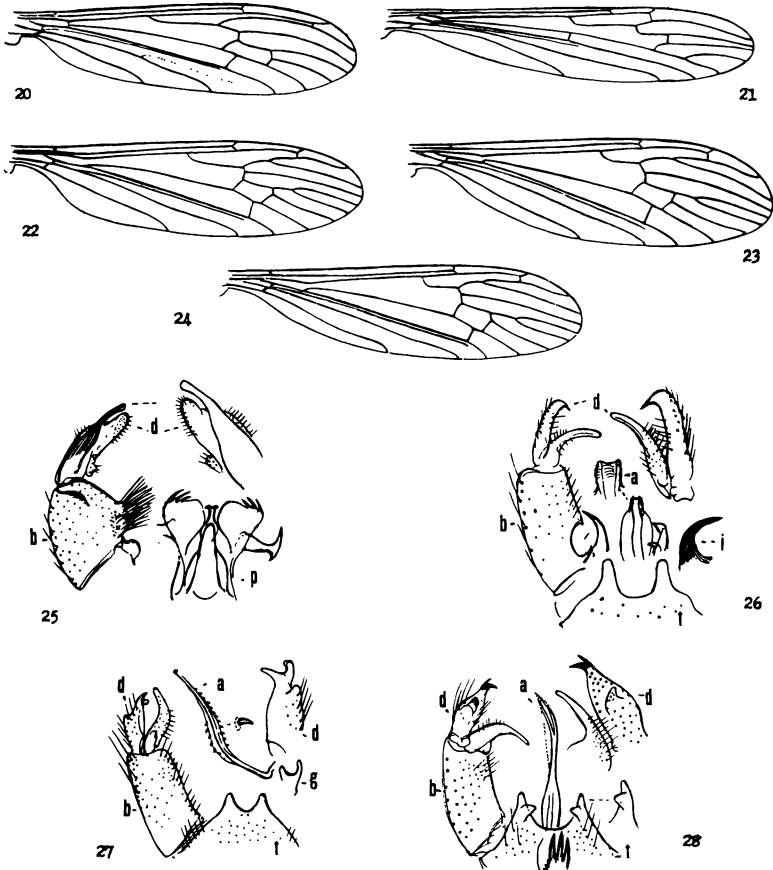
***Austrolimnophila (Austrolimnophila) styx* n. sp.**

Size relatively large (wing of male 9 mm.); general coloration of thorax and abdomen black; wings strongly darkened, prearcular and costal regions more intensely so;  $R_{2+3+4}$  gently arcuated, subequal to  $R_{2+3}$ , cell  $M_1$  nearly four times its petiole; male hypopygium with tergal lobes slender, glabrous, outer dististyle with terminal teeth unequal; aedeagus long and slender, the membranous sheath with numerous cultrate spines.

*Male*. — Length about 9 mm.; wing 9 mm.; antenna about 2 mm.

Rostrum and palpi black. Antennae of moderate length; scape and pedicel intensely black, flagellum light brown; flagellar segments elongate, verticils a little longer. Head light brown pollinose, center of posterior vertex more blackened; anterior vertex not elevated, relatively broad, nearly four times the diameter of the scape.

Thorax black, the surface opaque by a sparse gray pruinosity, central area of praescutum more polished black; sternopleurite more heavily prui-



Text-figs. 20-28. Fig. 20, *Dicranoptycha griveaudi* n. sp., venation; Fig. 21, *Orimarga (Orimarga) amblystyla* n. sp., venation; Fig. 22, *Austrolimnophila (Austrolimnophila) fulvipennis* (Alexander), venation; Fig. 23, *Austrolimnophila (Austrolimnophila) styx* n. sp., venation; Fig. 24, *Austrolimnophila (Austrolimnophila) tergofurcata* n. sp., venation; Fig. 25, *Orimarga (Orimarga) amblystyla* n. sp., male hypopygium; Fig. 26, *Austrolimnophila (Austrolimnophila) petasma* Alexander, male hypopygium; Fig. 27, *Austrolimnophila (Austrolimnophila) styx* n. sp., male hypopygium; Fig. 28, *Austrolimnophila (Austrolimnophila) tergofurcata* n. sp., male hypopygium; a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; i, interbase; t, tergite.

nose; praescutum with sparse long black setae. Halteres brownish black. extreme base of stem obscure yellow. Legs black, coxae sparsely pruinose; vestiture appressed, inconspicuous. not including elongate scales. Wings



(fig. 23) strongly darkened. prearcular and costal regions, with the stigma, still darker; delicate whitish streaks in outer end of cell  $R_1$  and on either side of vein  $M$ , the latter extending distad to beyond the cord, with a further line behind vein  $2nd\ A$ ; veins brown. Most longitudinal veins with abundant macrotrichia, lacking on about the proximal half of  $M$  and  $1st\ A$ . Venation:  $Sc_1$  ending just beyond fork of  $Rs$ ,  $Sc_2$  near its tip;  $R_{2-3-1}$  gently arcuated, subequal to  $R_{2-3}$ ; cell  $M_1$  nearly four times its petiole;  $m-cu$  at near two-thirds the length of  $M_{3+1}$ .

Abdominal tergites, including the hypopygium, black, the basal sternites somewhat more reddened. Male hypopygium (fig. 27) with the tergite,  $t$ , extensive, narrowed outwardly, terminating in two slender glabrous lobes that are separated by a U-shaped emargination; discal setae relatively small and sparse. Outer dististyle,  $d$ , with the terminal teeth unequal, the outer more slender, tip subacute, inner tooth a flattened obtuse blade; outer margin of style beyond midlength with a small blunt tubercle; style conspicuously setiferous; inner style a little longer, slender, especially on outer third, apex obtuse. Phallosome with gonapophyses bilobed; aedeagus,  $a$ , long and slender, enclosed by a membranous sheath that is provided with numerous darkened cultrate spines from pale punctures.

*Holotype*. — ♂, Andringitra Massif, Anjavidilava, 2020 meters, January 17-21, 1958 (Stuckenberg).

In its general coloration, *Austrolimnophila (Austrolimnophila) styx* is most similar to *A. (A.) aspidophora* Alexander which has the venation distinct and the legs with interpolated narrow scales among the setae. In the present fly the elongate aedeagus, bearing erect spinelike points, is distinctive being most similar to the condition found in the otherwise entirely different *A. (A.) percincta* Alexander.

*Austrolimnophila (Austrolimnophila) tergofurcata* n. sp.

Size medium (wing of male 8 mm.); general coloration of thorax uniformly yellow; rostrum and antennal scape yellow; legs yellowish brown, unpatterned; wings fulvous brown, stigma slightly darker; basal abdominal tergites vaguely bicolored, the posterior borders pale, outer segments darker, sternites and the basistyles yellow; male hypopygium with each tergal lobe bifid, outer dististyle blackened and shallowly forked near tip, with a pale obtuse lobe at near midlength; aedeagus very long, divided outwardly, enclosed in pale membrane, at base with a concentration of about three strong spines.

*Male*. — Length about 8.5 mm.; wing 8 mm.; antenna about 1.8 mm.

Rostrum light yellow; palpi brownish black. Antennae with scape light yellow, pedicel light brown, first flagellar segment with basal third light yellow, remainder of organ black; flagellar segments relatively long, only a little shorter than their verticils. Head light buffy gray, the center more reddened, becoming narrowly pale brown on the broad anterior vertex.

Thoracic dorsum deep yellow, pleura paler yellow, unpatterned; praescutal stripes delimited only by rows of long erect setae. Halteres relatively long, stem brownish yellow, knob more infuscated. Legs with coxae and trochanters light yellow; remainder of legs yellowish brown, unpatterned, without modified setae. Wings (fig. 29) fulvous brown, clearer yellow at base and along vein  $Cu_2$ ; stigma very pale brown; veins light brown. Macrotrichia of longitudinal veins on about outer two-thirds of wing, lacking on proximal half of  $M$  and 1st  $A$ . Venation:  $Rs$  angulated at origin;  $R_{2+3+4}$  rather strongly arcuated; cell  $M_1$  nearly three times its petiole;  $m-cu$  far distad, at near three-fourths  $M_{3+4}$ .

Basal abdominal tergites vaguely bicolored, brown. the posterior borders slightly more yellowed; subterminal segments uniformly brown, sternites clear light yellow; hypopygium dark brown, the basistyles conspicuously light yellow. Male hypopygium (fig. 28) with the tergite,  $t$ , large, narrowed outwardly, posterior border with a U-shaped emargination, the lateral lobes slender, before apex with a conspicuous triangular flange to produce a forked appearance. Basistyle,  $b$ , apparently without a developed interbase; mesal face of outer half of style with a concentration of long setae. Outer dististyle,  $d$ , stout, apex narrowed, blackened, bispinous, the axial spine stouter; on face of style at near midlength with a pale obtuse lobe; surface of style with long coarse setae; inner style subequal in length, long and slender, from a dilated base, gently curved to the tip, outer face of dilated portion with long erect pale setae. Aedeagus,  $a$ , very long and slender, without spicules, the outer end of central filament divided into two parts, the whole enclosed in pale membrane. Base of aedeagus produced into a compact group of three major appressed spines, with further smaller spinules, this structure evidently part of the phallosome and not an interbase.

*Holotype*. — ♂, Andringitra Massif, Anavidilava, 2020 meters, January 17-21, 1958 (Stuckenberg).

*Austrolimnophila* (*Austrolimnophila*) *tergofurcata* is readily told by the pale yellow coloration of the thorax and the structure of the male hypopygium, particularly the tergite, outer dististyle and aedeagus. The forked tergal lobes are somewhat suggestive of *A. (A.) acanthophallus* Alexander, which differs in the striped thoracic pleura and in all details of the hypopygium, including the short aedeagus.

#### Genus LIMNOPHILA Macquart

*Limnophila* Macquart, Suit. a Buffon, 1, Hist. Nat. Ins. Dipt., p. 95, 1834.

This genus includes numerous species in Madagascar with many of these unsatisfactorily placed as to subgenus. I am here recording certain of these groups in advance of a more detailed survey of these subgenera as they concern especially the southern

hemisphere where aberrant types are numerous, especially in New Zealand, Australia and southern South America.

*Limnophila* (*Nesolimnophila*) *grandidieri* Alexander

*Limnophila* (*Nesolimnophila*) *grandidieri* Alexander, Bull. Mus. d'Hist. Nat. Paris, 1920: 316, 1920.

The type was from the Foret d' Andrangoloaka, Imerina, taken in 1891 by Alfred Grandidier. The species is relatively common in Madagascar. Venation (fig. 29).

*Limnophila* (*Nesolimnophila*) *malagasya* Alexander

*Limnophila malagasya* Alexander, Ann. Mag. Nat. Hist. (9) 6: 358-360, 1920.

The type, a female, was from Madagascar, without more exact data, taken by the Reverend W. Dean Cowan, preserved in the British Museum (Natural History). Rand, in his studies on the avifauna of Madagascar, believed that Cowan's collections of birds were from the central and eastern parts of the island. As far as is known to me no further specimens have been taken. The fly differs from other regional members of the subgenus *Nesolimnophila* Alexander in the lack of brown dots in the interspaces of the wing cells but this character may prove to be variable.

Subgenus **DASYLIMNOPHILA** n. subgen.

Characters generally as in *Limnophila*. Antennae 16-segmented, all flagellar segments with verticils on both the dorsal and ventral faces, the basal segments not enlarged beneath. Head strongly narrowed behind. Prothorax relatively massive; tuberculate pits lacking; pseudosutural foveae reduced to a linear incision. Legs conspicuously hairy. Wings (fig. 31) with anterior arculus strongly preserved; vein  $R_2$  faint; inner ends of cells  $R_1$ ,  $R_3$  and  $1st M_2$  in transverse alignment; outer wing cells with conspicuous macrotrichia. Ovipositor with both cerci and hypovalvae very long and slender, acute at tips, the hypovalvae concealed in the sheathlike cerci. Male hypopygium (fig. 35) with the tergite and sternite fused into a ring; basistyle distinctive, long and slender, with the small dististyles at apex.

*Type of subgenus.* — *Limnophila* (*Dasylimnophila*) *stucken-bergiana* n. sp. *L. (D.) velitor* Alexander likewise belongs here. Other subgeneric groups in *Limnophila* having strong macrotrichia in the outer wing cells include *Adelphomyia* Bergroth (*Tricholimnophila* Alexander) and *Trichephelia* Alexander.

***Limnophila (Dasylimnophila) stuckenbergiana* n. sp.**

Size relatively large (wing of male about 12 mm.); general coloration intensely black; wings strongly blackened, the costal border more intensely so; male hypopygium with the basistyle greatly developed, approximately four times as long as the small terminal dististyles.

*Male*. — Length about 12 mm.; wing 12 mm.; antenna about 2 mm.

*Female*. — Length about 14 mm.; wing 12 mm.; antenna about 2 mm.

Rostrum and palpi black. Antennae relatively short in both sexes; flagellar segments long-oval, a little shorter than the verticils; terminal segment small, about one-half the penultimate. Head black, gray pruinose; sides of posterior vertex with very long erect black setae; anterior vertex about three times the diameter of the scape.

Thorax intensely black, subnitidous; conspicuous erect black setae on pronotum, praescutum, scutum and scutellum. Halteres medium brown. Legs with coxae and trochanters black; femora brownish black, tibiae and tarsi slightly paler, tips of tibiae narrowly blackened; legs conspicuously hairy. Wings (fig. 31) strongly blackened, prearcular and costal fields, with the stigma, more intensely so; veins light brown. Macrotrichia on all longitudinal veins of outer four-fifths of wing and in cells  $R_2$  to  $M_3$ , more numerous in cells  $R_1$  to  $M_1$ . Venation:  $Sc_1$  ending nearly opposite fork of  $R_s$ ,  $Sc_2$  near its tip;  $R_2$  faint, about one-third  $R_{1+2}$ ;  $R_{2+3+4}$  about one-half the basal section of  $R_s$ ; cell  $M_1$  subequal to its petiole; *m-cu* beyond midlength of  $M_{3-1}$ .

Abdomen dark brown to black, conspicuously hairy. Ovipositor with cerci elongate and very slender, narrowed gradually to the nearly acute tips; hypovalvae almost as long, lying in the concave sheath of the cerci. Male hypopygium (fig. 35) with the tergite *t*, and sternite *s*, fused into a continuous ring. Ninth tergite *t*, with the posterior margin subtruncate or very slightly convex, the cephalic border with a n-shaped emargination; tergal setae long but sparse. Anal tube protruding. Basistyle, *b*, distinctive, large but slender, directed dorsad and finally caudad, at base with a conspicuous enlarged lobe that is provided with very long setae. Dististyles, *d*, unusually small, placed at apex of basistyle, their length about one-fourth that of the latter; outer style flattened, broadest at near midlength, narrowed outwardly into a simple slender curved terminal spine; surface of style with abundant very long setae, the longest exceeding one-third the length of style; inner dististyle nearly as long, unusually slender, narrowed very gradually to the subacute apex that bears a single pale spinoid seta. Phallosome, *p*, small and inconspicuous as compared to the size of the basistyle, including the compressed-flattened beaklike aedeagus and strongly curved gonapophyses.

*Holotype*. — ♂, Andringitra Massif, Anjavidilava, 2020 meters, January 17-21, 1958 (Stuckenberg). *Allotopotype* ♀.

*Limnophila* (*Dasylimnophila*) *velitor* Alexander is smaller (wing of female about 9 mm.), with the legs yellow, the tips of the femora and tibiae narrowly blackened. The male sex of this species remains unknown.

*Limnophila* (*Elporiomyia*) *breviterebra* n. sp.

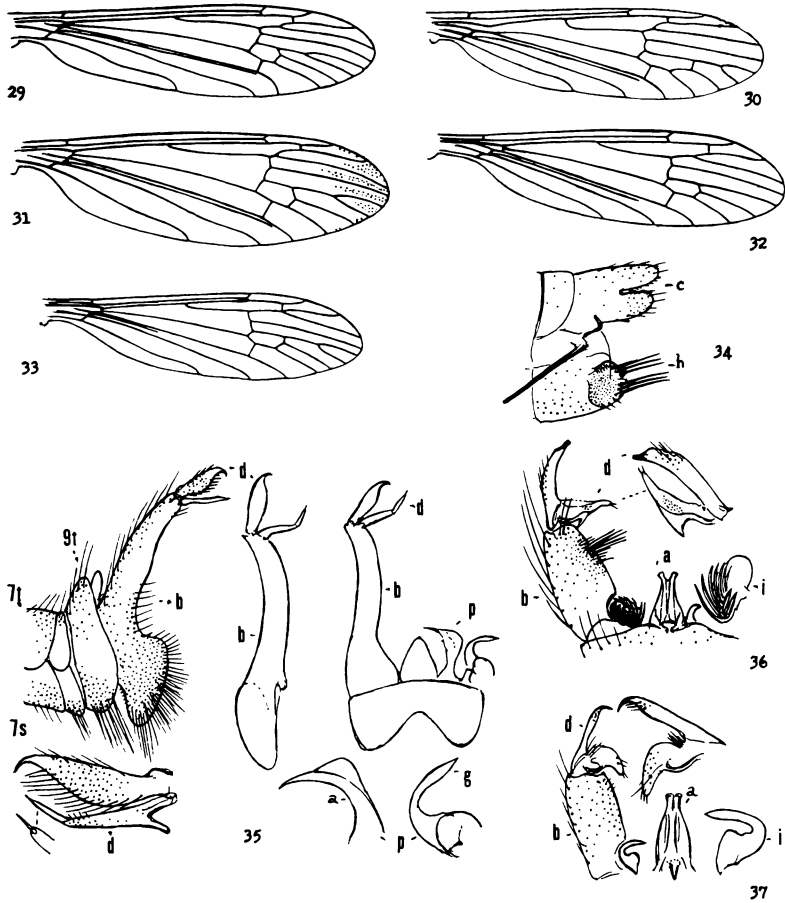
Size small (wing of female 5.5 mm.); general coloration of praescutum gray, with three dark brown stripes; legs yellow; wings whitened, with an abundant brown spotted and dotted pattern; *Sc* relatively short, *Sc*<sub>1</sub> ending before fork of *Rs*; *R*<sub>1-2</sub> long, about four times *R*<sub>2</sub>; cell 1st *M*<sub>2</sub> long, subequal to or exceeding the veins beyond it; anterior arculus apparently lacking; ovipositor with both the cerci and hypovalvae pale and only feebly sclerotized, the former with setulae and setae.

*Female*. — Length about 5 mm.; wing 5.5 mm.

Rostrum and palpi black. Antennae with scape dark, gray pruinose, pedicel dark brown, flagellum obscure yellow, the outer segments darker; first flagellar segment narrowed at base, proximal six segments without verticils on lower face; outer segments more elongate, shorter than the verticils. Head gray, posterior vertex on either side vaguely patterned with brown.

Pronotum yellowish gray, vaguely patterned with darker. Mesonotal praescutum gray with a broad brown central stripe and small elongate-oval lateral darkened areas; posterior sclerites of notum brown, pleurotergite more grayish. Pleura gray, with brown spots, most evident on ventral anepisternum, center of sternopleurite and on pteropleurite. Halteres with stem and base of knob yellow, apex of latter extensively infuscated. Legs with coxae dark brown, the fore pair gray, patterned laterally with brown; trochanters obscure yellow; remainder of legs light yellow, terminal tarsal segment pale brown. Wings (fig. 30) with the ground whitened, including the entire wing; a heavy brown spotted and dotted pattern, the larger spots at arculus, origin of *Rs*, stigma and cord, outer ends of veins *R*<sub>1-2</sub>, *R*<sub>3</sub>, *R*<sub>4</sub>, *Cu*<sub>1</sub> and 2nd *A*, other longitudinal veins and *m* with smaller brown spots; all cells excepting *C*, *Sc* and *R* with circular brown dots, including cell *Cu*<sub>1</sub> (the narrow strip between the cubital branches); veins yellow in the ground, slightly darker in the patterned areas. Macrotrichia of veins relatively sparse, lacking on veins before cord excepting *R* and *C*; beyond cord present on most veins, including *R*<sub>3</sub> and outer half of *R*<sub>4</sub>. Venation: *Sc* relatively short, *Sc*<sub>1</sub> ending before fork of *Rs*, *Sc*<sub>2</sub> near its tip; *R*<sub>2+3-4</sub> and basal section of *R*<sub>5</sub> subequal; *R*<sub>1-2</sub> elongate, nearly four times *R*<sub>2</sub>; *Rs* long, square at origin; cell 1st *M*<sub>2</sub> long, subequal to or exceeding any of the veins beyond it; basal section of *M*<sub>3</sub> variable, from about one and one-half to more than twice *m*; cell *M*<sub>1</sub> subequal to its petiole; *m-cu* nearly its own length beyond fork of *M*; anterior arculus apparently lacking, at least on its cephalic part.

Abdomen dark brown, ovipositor slightly more yellowed. Ovipositor (fig. 34) with the cerci, *c*, semi-oval in outline, tips broadly obtuse, surface



Text-figs. 29-37. Fig. 29, *Limnophila (Nesolimnophila) grandidieri* Alexander, venation; Fig. 30, *Limnophila (Elporiomyia) breviterebra* n. sp., venation; Fig. 31, *Limnophila (Dasylimnophila) stuckenbergiana* n. sp., venation; Fig. 32, *Limnophila flavissima* Alexander, venation; Fig. 33, *Limnophila nixor* n. sp., venation; Fig. 34, *Limnophila (Elporiomyia) breviterebra* n. sp., ovipositor, lateral aspect; Fig. 35, *Limnophila (Dasylimnophila) stuckenbergiana* n. sp., male hypopygium; Fig. 36, *Limnophila flavissima* Alexander, male hypopygium; Fig. 37, *Limnophila nixor* n. sp., male hypopygium; a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; i, interbase; p, phallosome; s, sternite; t, tergite.

entirely covered with abundant setulae and fewer scattered long pale setae; hypovalvae, h, very obtuse, each with about three or four powerful pale bristles or bristlelike extensions; region of hypovalvae with a large dark-

ened area that is densely provided with small groups of microscopic setulae. From the genital chamber extends a long slender blackened rod, its homologies uncertain.

*Holotype*. — ♀, Mon Papango, near Befutaka, District Mi-dongy-Sud, 1200 meters, March 1957 (Andria Robinson).

In the nature of the wing pattern, the present fly is entirely different from the three previously described members of the subgenus *Elporiomyia* Alexander, all from South Africa, these having the wings without markings, quite different from the present fly.

*Limmophila flavissima* Alexander

*Limmophila flavissima* Alexander. Mem. Inst. sci. Madagascar (E) 11: 185-186, fig. 13 (venation), 1959.

*Male*. — Length about 7 mm.; wing 7 mm.; antenna about 1.4 mm.

Rostrum dark brown; palpi black, stout. Antennae short, scape and pedicel black, flagellum yellow; flagellar segments long-subcylindrical, about equal in length to the longest verticils. Head dark brown, orbits narrowly gray; anterior vertex relatively broad, nearly four times the diameter of scape.

Thorax almost uniformly dark yellow, pleura somewhat paler yellow; pretergites pale yellow; dorsum unusually glabrous, with sparse setae on praescutal interspaces and on scutum. Halteres yellow. Legs yellow, vestiture relatively inconspicuous. Wings (fig. 32) clear light yellow, unpatterned, prearcular and costal fields more saturated yellow; veins very pale, difficult to see against the ground; trichia of veins pale brown. Venation:  $Sc_1$  ending about opposite fork of  $Rs$ ,  $Sc_2$  near its tip;  $R_{2+3+4}$  straight, less than one-third  $Rs$ ; cell  $M_1$  lacking; cell  $1st\ M_2$  shorter than vein  $M_1$ ;  $m-cu$  at near two-fifths the length of  $M_{3+4}$ ; vein  $2nd\ A$  long.

Abdomen, including hypopygium, light yellow. Male hypopygium (fig. 36) with the basistyle,  $b$ , longer than the dististyles; outer setae very long, the longest only a little shorter than the style; at apex with a concentration of long delicate setae; mesal face before apex with a dense grouping of setae, about six much longer. Interbase,  $i$ , distinctive, an oval darkened structure, mesal end with many long appressed spines, those nearer the base shorter, stouter and more nearly straight. Outer dististyle,  $d$ , narrowed outwardly, tip blackened, extreme apex more narrowed, truncate; outer surface of style with delicate pale setae; inner style shorter, narrowed gradually to the obtuse tip. Phallosome,  $p$ , including the short broad-based profoundly bifid aedeagus and very small cultrate apophyses.

*Allotype*. — ♂, Andringitra Massif, Anjavidilava, 2020 meters, January 17-21, 1958 (Stuckenberg).

***Limnophila nixor* n. sp.**

General coloration of thorax and abdomen yellow, head and pronotum infuscated; antennae, legs and halteres yellow; wings strongly yellowed, the costal border more saturated yellow; a restricted brown pattern including the cord and other veins;  $R_{2-3+4}$  long,  $R_2$  close to its fork, cell  $M_1$  subequal to its petiole; male hypopygium with the outer dististyle slender, terminating in a curved blackened spine; interbase a strongly recurved pale rod.

*Male*. — Length about 7 mm.; wing 7.5 mm.; antenna about 0.9 mm.

Rostrum and palpi black. Antennae short, yellow, the scape slightly darkened beneath; flagellar segments oval, the outer ones longer, verticils much longer than the segments. Head dark brown; anterior vertex broad.

Pronotum brown above, yellowed laterally; pronotum relatively large. Thoracic dorsum uniformly fulvous yellow, subnitidous, both the tuberculate pits and pseudosutural foveae scarcely evident; pleura clearer yellow. Halteres light yellow. Legs yellow, the terminal tarsal segments a trifle darker; vestiture of legs yellow, long but subappressed. Wings (fig. 33) strongly yellowed, prearcular and costal fields more saturated, this color continued outwardly to the wing tip; a restricted brown pattern that includes seams over cord, outer end of cell *1st M*<sub>2</sub> and the outer medial fork; stigma darker, very small, including  $R_2$  and adjoining veins; veins yellow, pale brown in the patterned areas. Longitudinal veins of about the outer half of wing with inconspicuous yellow trichia, lacking on *Sc* and both *Anal*s. Venation:  $Sc_1$  ending shortly beyond fork of  $R_s$ ,  $Sc_2$  shorter, near its tip;  $R_2$  at or shortly before fork of the long straight  $R_{2-3+4}$ ;  $R_{1-2}$  more than twice  $R_3$ ; cell  $M_1$  subequal to its petiole; *m-cu* at near one-third  $M_{3+4}$ .

Abdomen uniformly yellow, with long erect pale setae. Male hypopygium (fig. 37) with the outer dististyle, *d.* slender, slightly expanded beyond midlength, thence narrowed and curved into a simple blackened spine; inner style broad-based, its outer half narrowed, the lower part pale and membranous. Interbase, *i.*, appearing as a strongly recurved pale rod, as figured. Aedeagus short and stout, at apex bifid, paling into membrane.

*Holotype*. — ♂, Andringitra Massif, Anjavidilava, 2020 meters, January 17-21, 1958 (Stuckenberg).

In its venation *Limnophila nixor* is close to *L. sikorai* Alexander, of southern Madagascar, which differs evidently in the coloration of the body and wings and in the details of venation.

***Limnophila sikorai* Alexander**

*Limnophila sikorai* Alexander, Ann. Mag. Nat. Hist. (9) 8: 318-319. 1921.

Still known to me only from the unique female type, taken at Fort Dauphin in about 1891 by Franz Sikora (1863-1902). The venation is shown (fig. 39). Some of the veins are very faint and indistinct, especially  $R_2$  but apparently its position is as shown.



*Limnophila ranavalona* n. sp.

General coloration of body dark brown; antennal flagellum and legs yellow; wings with costal and posterior borders broadly yellow, the central area extensively darkened, becoming expanded and still darker in cells beyond cord; cell  $M_1$  lacking; male hypopygium with outer dististyle virtually glabrous, slender, terminating in three spinous points, the axial spine largest; interbase bispinous, with an outer subtending pale blade.

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

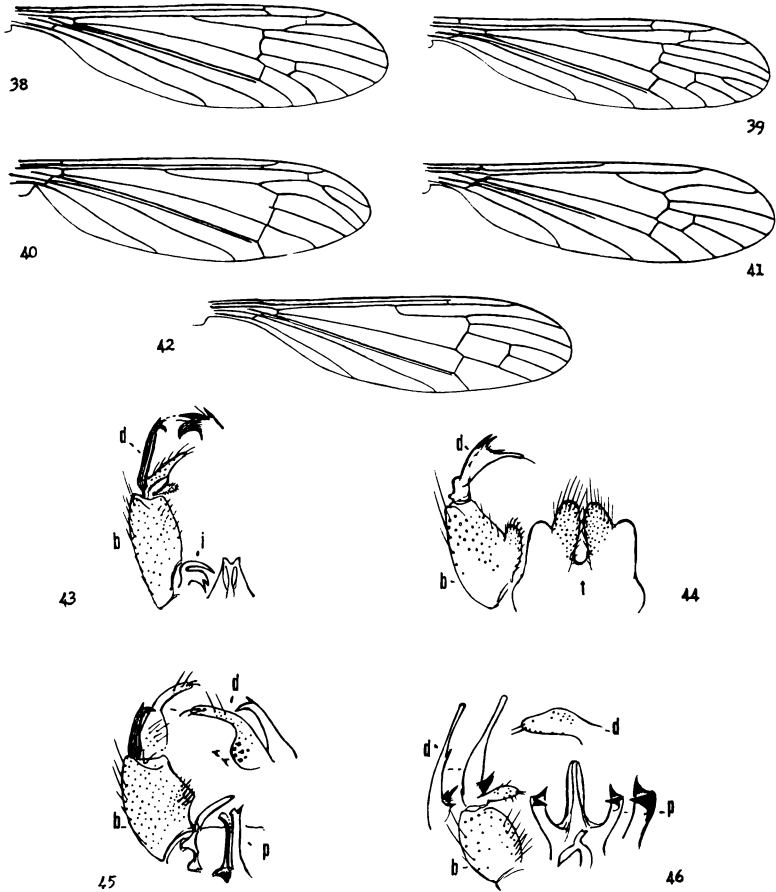
Rostrum and palpi black. Antennae with scape brownish black, pedicel brownish yellow, flagellum clear light yellow; first flagellar segment more dilated than the remainder, segments subcylindrical, those beyond the third with very long verticils that are fully twice the segments. Head brownish gray, with a darker brown central area extending from the anterior vertex to occiput; a small blackened spot behind each antennal fossa; anterior vertex broad, about three times the diameter of scape.

Thorax almost uniformly dark brown, dorsopleural region paler; pronotum massive, with a few long erect setae on posterior part of scutum; mesonotum unusually glabrous, with a few strong setae on scutum and posterior part of praescutum. Halteres light yellow. Legs with coxae dark brown; remainder of legs, including trochanters, pale yellowish white; tibial spurs conspicuous, acutely pointed. Wings (fig. 38) with the ground yellow, the prearcular and costal fields broadly paler yellow, cubital and anal regions slightly more obscured; central half of wing darkened, inconspicuously before cord, much darker beyond, at apex, especially in radial field and over the anterior cord much darker brown; veins light yellow in the ground, brown in the patterned areas, especially the wing apex. Macrotrichia of veins relatively sparse, with series on distal sections of  $R_6$ ,  $M_{1-2}$  and  $M_3$ . Venation:  $Sc$  very pale at outer end,  $Sc_1$  about opposite fork of  $Rs$ ,  $Sc_2$  longer;  $Rs$  elongate;  $R_{1-2}$  ending beyond midlength of  $R_3$ ; vein  $R_2$  very faint; inner ends of cells  $R_1$ ,  $R_3$  and 1st  $M_2$  in transverse alignment,  $m$  more arcuated; cell  $M_1$  lacking;  $m-cu$  about two-thirds its length beyond fork of  $M$ ; anterior arculus preserved.

Abdomen, including hypopygium, dark brown. Male hypopygium (fig. 43) generally as in *filata* and allies. Outer dististyle,  $d$ , slender, glabrous, terminating in a strong curved blade, with two smaller points on outer margin, with two interpolated setae. Interbase,  $i$ , including a bispinous structure with an outer subtending pale blade. Aedeagus very short and inconspicuous.

*Holotype*. — ♂, Mon Papango, near Befutaka, District Midongy-Sud, 1200 meters, March 1957 (Andria Robinson).

The species is named for Ranavalona III, the last native ruler in Madagascar before French occupation. This unusually distinct and conspicuous fly is referred to the *filata* group, from all species of which it is told readily by the striking wing coloration. As has



Text-figs. 38-46. Fig. 38, *Limnophila ranavalona* n. sp., venation; Fig. 39, *Limnophila sikorai* Alexander, venation; Fig. 40, *Hexatoma (Parahexatoma) memnon* n. sp., venation; Fig. 41, *Atarba (Atarbodes) terगतoides* n. sp., venation; Fig. 42, *Elephantomyia (Elephantomyia) multisignata* n. sp., venation; Fig. 43, *Limnophila ranavalona* n. sp., male hypopygium; Fig. 44, *Atarba (Atarbodes) terगतoides* n. sp., male hypopygium; Fig. 45, *Elephantomyia (Elephantomyia) multisignata* n. sp., male hypopygium; Fig. 46, *Gonomyia (Lipophleps) supplicata* n. sp., male hypopygium; b, basistyle; d, dististyle; i, interbase; p, phallosome; t, tergite.

been discussed by the writer in other papers, the strict subgeneric position of this particular group of species remains in question.

*Hexatoma (Parahexatoma) memnon* n. sp.

Size large (wing of female 14.5 mm.); general coloration of body, antennae, halteres and legs brownish black to black; wings weakly infuscated, base yellowed; outer radial veins strongly decurved;  $R_{3+4}$  short, about one-third  $R_2$ .

*Female*. — Length about 16 mm.; wing 14.5 mm.; antenna about 2.7 mm.

Rostrum and palpi black. Antennae of female 11-segmented, black throughout; flagellar segments long-cylindrical, with abundant delicate setae, the segments becoming progressively shorter and more slender outwardly; first flagellar segment nearly three times the second, terminal segment about one-third longer than the penultimate. Head intensely black, genae slightly more pruinose; vertical tubercle deeply bifid, in front produced farther into slightly divergent oval lobes; setae of vertex numerous but very small.

Thorax almost uniformly brownish black, subnitidous; praescutal vestiture very small and sparse. Halteres brownish black. Legs uniformly blackened. Wings (fig. 40) weakly suffused with brown, noticeably darker than in *decurvata*, prearcular field yellowed; veins dark brown, paler at wing base. Longitudinal veins beyond cord with abundant short trichia, lacking on distal section of  $Cu_1$ . Venation generally as in *decurvata*,  $R_{1+2}$  longer, about twice  $R_2$ ;  $R_{3+4}$  short, about one-third  $R_2$ ; in *decurvata* the two veins subequal; all outer radial veins strongly decurved, both  $R_1$  and  $R_2$  ending beyond the wing tip.

Abdomen uniformly brownish black, including the very long slender cerci.

*Holotype*. — ♀, Andringitra Massif, Anjavidilava, 2020 meters, January 17-21, 1958 (Stuckenberg).

*Hexatoma (Parahexatoma) memnon* differs from the other smaller species of the subgenus that have the body and legs blackened in the large size and in the details of venation, particularly the strongly decurved vein  $R_3$ . It readily is told from *decurvata* by the coloration of the legs and wings and by the venation, as the relative proportions of veins  $R_3$  and  $R_{3+4}$ .

*Atarba (Atarbodes) terगतoides* n. sp.

General coloration of thoracic notum yellow, including the praescutum, the posterior sclerites restrictedly patterned with black; femora yellow, tips narrowly blackened; wings yellow, prearcular and costal fields clear light yellow; male hypopygium with tergal lobes conspicuously bilobed, the large inner lobe with very long pale setae, the shorter obtuse lateral lobe densely squamose.

*Male*. — Length about 5 mm.; wing 5.1 mm.

Rostrum fulvous; palpi obscure yellow, with coarse black setae, those of the terminal segment shorter. Antennae relatively short; proximal segments brownish yellow, outer flagellar segments darker with paler incisures,

all with black setae and verticils that exceed the segments in length. Head yellowed above; anterior vertex more infuscated, broad.

Pronotum and mesonotal praescutum yellow; remainder of notum similarly yellow, patterned with darker, including lateral black areas on scutal lobes, parascutella and ventral p̄eurotergite; posterior border of scutellum paler brown, with long coarse yellow setae. Pleura light yellow, dorsal region vaguely infuscated. Halteres yellow. Legs with all coxae and trochanters light yellow; femora yellow, tips narrowly but conspicuously blackened; tibiae and tarsi yellow, the outer three tarsal segments more darkened. Wings (fig. 41) yellow, prearcular and costal fields clear light yellow; no stigmal darkening; veins pale brown. Abundant black trichia on all veins except on about the proximal fifth of wing, including all of 2nd *A*. Venation: *Sc* short, *Sc*<sub>1</sub> ending some distance before origin of *Rs*, *Sc*<sub>2</sub> not evident; branches of *Rs* gently divergent, *m-cu* shortly beyond fork of *M*, cell 1st *M*<sub>2</sub> about as long as vein *M*<sub>1</sub>.

Abdomen with proximal five segments yellowed, tergites slightly infuscated; outer four segments, including all of hypopygium, black. Male hypopygium (fig. 44) with the tergite, *t*, very large and conspicuous, as in *tergata*, but the conformation quite different, each lobe conspicuously bilobed, the larger inner or mesal one with very long pale setae, the small obtuse lateral lobes densely squamose but without setae. Basistyle, *b*, with outer and lateral setae very long; ventromesal lobe at extreme base, provided with strong setae. Dististyle, *d*, single, large, dilated outwardly, produced into a very slender beak, near end with four major black spines, including a more basal group of three and an outer appressed spine, with further microscopic axillary denticles, and one or two large spines on the stem or base of style. Aedeagus short, curved.

*Holotype*. — ♂, Andranotobaka, April 1957 (P. Griveaud).

*Atarba* (*Atarbodes*) *tergatoides* is readily told from the other species known from Madagascar, *A. (A.) hemimelas* Alexander and *A. (A.) tergata* Alexander, by the details of coloration, including the darkened femoral tips. The structure of the male hypopygium is quite different from that of *tergata*, the most similar species.

*Elephantomyia* (*Elephantomyia*) *multisignata* n. sp.

General coloration of thorax dark brown, the praescutum patterned with darker; pleura blackened, striped longitudinally with silvery; rostrum elongate, about three-fourths the wing; halteres yellowed; wings whitened, very heavily patterned with brown, cell 1st *M*<sub>2</sub> large, subequal in length to the longest veins beyond it; male hypopygium with apex of outer dististyle unequally bispinous, inner style longer, its outer half with four elongate setae.

*Male*. — Length, excluding rostrum, about 7 mm.; wing 8 mm.; rostrum about 5.5-6 mm.

*Female*. — Length, excluding rostrum, about 7.5-8 mm.; wing 7.5-8 mm.; rostrum about 5-6 mm.

Rostrum black, elongate, about three-fourths the wing. Antennae black; basal flagellar segment enlarged, oval; succeeding segments short-subcylindrical, outer ones more elongate, with long verticils. Head brown, anterior vertex more silvery, vestiture short; anterior vertex narrow, slightly exceeding the diameter of scape.

Cervical region blackened; pronotum dark, light silvery pruinose. Mesonotum dark brown, yellow pollinose, the praescutum with a broad brownish black central stripe and less evident laterals, centers of scutal lobes similarly darkened. Pleura blackened, conspicuously striped longitudinally with silvery, the dorsal stripe including the pronotum and upper pleurotergite, extending backward to beneath the wing root; ventral stripe broader, extending from behind the fore coxae over the dorsal sternopleurite and metapleura. Halteres yellowed. Legs with coxae brownish black, apices more yellowed; trochanters yellow; fore femora brownish black, basal fourth more yellowed, tibiae and tarsi paler brown; remaining legs brownish yellow, femoral tips narrowly more darkened; all legs with scattered erect black bristles additional to the smaller setae. Wings (fig. 42) heavily patterned with brown, the ground whitened, prearcular field and costal border yellowed; dark areas subequal in extent to the ground, including large marks beyond arculus, origin of *Rs*, cord, outer end of cell *1st M*<sub>2</sub> and wing tip; additional slightly paler brown washes in bases of cells *M* and *Cu* and over posterior margins of Anal cells, involving virtually all of cell *2nd A*; veins brown, yellowed in the brightened areas. Longitudinal veins beyond cord with macrotrichia; basad of cord more sparse, on *Rs* and on outer ends of *M*, *Cu*, and *2nd A*, lacking on *1st A*. Venation: *Rs* long; cell *1st M*<sub>2</sub> large, subequal in length to the longest veins beyond it; *m-cu* about one-half its length beyond fork of *M*; cell *2nd A* narrow.

Abdomen dark brown above, more cinnamon brown on central parts of sternites; subterminal segments darker; male hypopygium with styli more yellowed. Male hypopygium (fig. 45) with posterior border of tergite, *t*, slightly emarginate with similar low lobes to appear sinuous. Basistyle, *b*, with a concentration of stout blackened setae on mesal face near base. Outer dististyle, *d*, slender, glabrous, apex bispinous, axial spine stouter, curved; inner style longer, basal half enlarged, on one face with long setae, on opposite surface with tiny peglike spines; outer half slender, with two long setae at near midlength and two shorter and somewhat stouter more appressed setae just before tip. Phallosome, *p*, complex, as figured, the apophyses appearing as flattened pale blades, incurved toward the midline.

*Holotype*. — ♂, Andringitra Massif, Pic Boby, 2460 meters, January 11-14, 1958 (Stuckenberg). *Allotopotype* ♀, pinned with type; *Paratopotypes* 3 ♂ ♀; *Paratypes* 1 ♂, 2 ♀ ♀, Soain-

drana, Andringitra Massif, 2060 meters, January 14-17, 1958 (Stuckenberg).

*Elephantomyia* (*Elephantomyia*) *multisignata* is readily distinguished from the most similar regional ally, *E. (E.) isakana* Alexander, by the unusually extensive darkened wing markings, in this respect suggesting *E. (E.) pringlei* Alexander, of Natal, which has the details of wing pattern and venation distinct.

#### ERIOPTERINI

##### *Trentepohlia* (*Trentepohlia*) *hexaphalerata* n. sp.

Size large (wing of female 9.5 mm.); general coloration of thoracic dorsum chestnut brown, posterior sclerites and pleura darker brown; legs brown; wings medium brown, with six large cream yellow areas, four lying distad of the cord.

*Female*. — Length about 10 mm.; wing 9.5 mm.

Rostrum and palpi black. Antennae brownish black, scape darker; flagellar segments elongate, exceeding their verticils. Head dark brown, anterior vertex gray pruinose, narrower than the diameter of scape.

Cervical region and pronotal scutum blackened, scutellum chestnut brown. Mesonotum chestnut brown, praescutum with median region and lateral margins darker brown, the ground interspaces broad, scutal lobes darkened; posterior sclerites darker brown, mediotergite paler and slightly pruinose behind; praescutal vestiture short, more evident on anterior half. Pleura dark brown. Halteres with stem yellow, knob weakly infuscated. Legs with fore and middle coxae yellowish brown, posterior coxae and all trochanters clearer yellow; remainder of legs brown, femoral bases narrowly more yellowed; posterior tibia near tip with two strong black setae. Wings (fig. 47) with the ground medium brown, conspicuously variegated by six pale cream yellow areas; before cord on anterior and posterior parts, separated by the ground color in cell M; beyond cord with smaller cream yellow areas in radial field and in cells  $M_2$  and  $M_1$ , separated by the ground in posterior border of cell  $R_5$ ; remaining pale areas smaller, one in center of cell  $R_3$ , the smallest over vein  $M_{1-2}$  in both cells  $R_5$  and  $M_2$ ; veins pale brown, yellow in the creamy areas. About a dozen macrotrichia on distal section of vein  $R_5$ , more crowded outwardly. Venation:  $R_{3-1}$  about two-fifths  $R_{2-3-1}$ ;  $m-cu$  a short distance before fork of  $M$ ; apical fusion of  $Cu_1$  and  $1st A$  about one-half  $m-cu$ .

Abdomen dark brown, including the dorsal genital shield; valves of ovipositor yellow horn color; cerci very slender.

*Holotype*. — ♀, Andringitra Massif, Anjavidilava, 2020 meters, January 17-21, 1958 (Stuckenberg).

*Trentepohlia* (*Trentepohlia*) *hexaphalerata* suggests the smaller *T. (T.) percelestis* Alexander, which differs especially in the quite

different distribution of the wing pattern.

*Gonomyia (Lipophleps) supplicata* n. sp.

General coloration of thoracic dorsum brown, pleura conspicuously striped longitudinally with white; rostrum black; femora obscure yellow, with a scarcely indicated subterminal darkened ring; wings weakly darkened. costal border pale, including areas before and beyond the stigma;  $Sc_1$  ending opposite origin of  $R_s$ , cell  $R_3$  present; male hypopygium with the outer dististyle a simple slender rod, tip obtuse, with an irregular spine at base. inner spine simple, pale; phallosome including subtending blackened apophyses that are bispinous at tips.

*Male*. — Length about 4.5 mm.; wing 3.9 mm.

*Female*. — Length about 5 mm.; wing 4 mm.

Rostrum and palpi black. Antennae of male with scape, pedicel and first flagellar segment yellow, outer flagellar segments brownish black, elongate, with very long verticils as in males of this subgenus. Head obscure yellow in front, brownish gray behind.

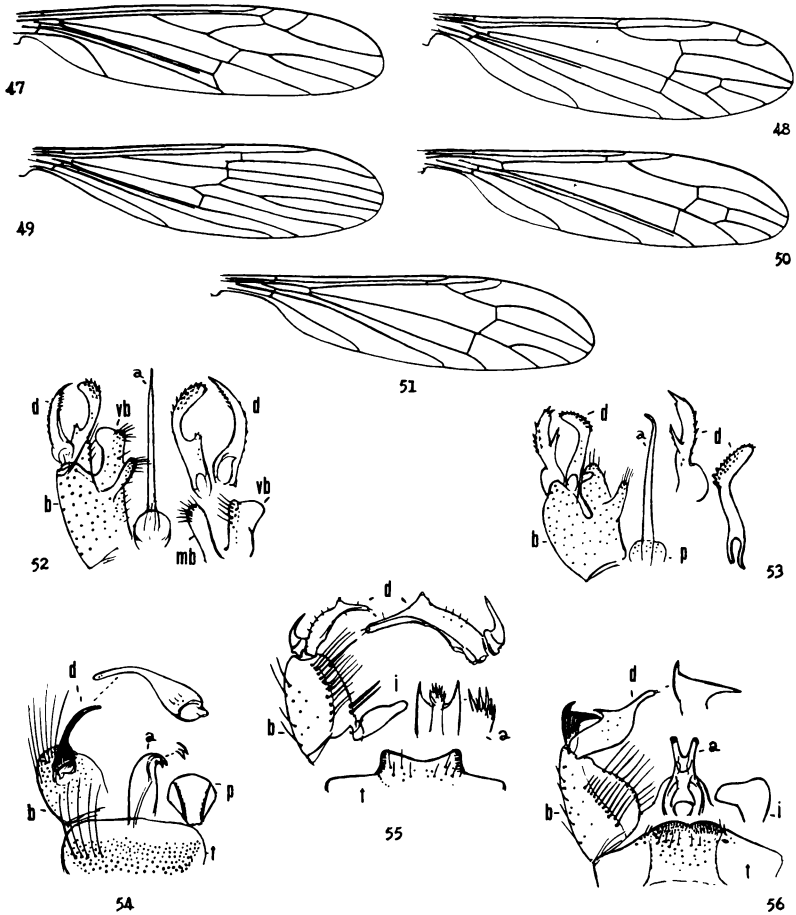
Pronotum light yellow, darker on sides; pretergites pale yellowish white. Mesonotal praescutum almost uniformly brown, surface vaguely pruinose, scutum with lobes similarly darkened, more obscure yellow medially; base of scutellum weakly darkened, apex broadly yellow; postnotum yellow, mediotergite with the central part weakly darkened. Pleura conspicuously patterned, brownish yellow above, dark brown below, enclosing a broad whitened longitudinal stripe that includes the fore coxa. Halteres light yellow. Legs with coxae yellowed; trochanters obscure yellow; femora obscure yellow above with a vague subterminal darkening, tips narrowly clearer yellow; tibiae and tarsi obscure yellow, outer tarsal segments darker. Wings (fig. 48) weakly darkened, including the stigma; prearcular field, costal border and the prestigmal and poststigmal areas whitened; a whitened streak in cell  $Cu$  adjoining vein  $1st A$ ; veins very pale brown, brighter in the whitened areas. Venation:  $Sc_1$  ending opposite origin of  $R_s$ ,  $Sc_2$  near its tip; cell  $R_3$  present, vein  $R_3$  suberect, less than one-half  $R_1$ .

Abdomen dark brown, subgenital plate in female more yellowed. Male hypopygium (fig. 46) with the dististyles,  $d$ , terminal; outer style a long slender straight rod, its tip obtuse, base slightly expanded, produced into an irregular blackened spine with a few darkened setae; one style of type has a small appressed spine at near midlength of inner face; inner style a simple pale long-oval lobe, the usual fasciculate setae apical, scarcely larger than the normal setae. Phallosome,  $p$ , distinctive, including blackened lateral apophyses, their tips bispinous.

*Holotype*. — ♂, Perinet, 960 meters, December 1955 (Stuckenberg).

*Allotopotype*. — ♀, with the type.

Among the ten regional species of the subgenus presently known,



Text-figs. 47-56. Fig. 47, *Trentepohlia (Trentepohlia) hexaphalerata* n. sp., venation; Fig. 48, *Gonomyia (Lipophleps) supplicata* n. sp., venation; Fig. 49, *Tasiocera (Dasymolophilus) aspistes* n. sp., venation; Fig. 50, *Toxorhina (Toxorhina) brevistyla* n. sp., venation; Fig. 51, *Toxorhina (Ceratocheilus) hispinosa* n. sp., venation; Fig. 52, *Molophilus (Molophilus) exeches* n. sp., male hypopygium; Fig. 53, *Molophilus (Molophilus) furciferus* n. sp., male hypopygium; Fig. 54, *Tasiocera (Dasymolophilus) aspistes* n. sp., male hypopygium; Fig. 55, *Toxorhina (Toxorhina) brevistyla* n. sp., male hypopygium; Fig. 56, *Toxorhina (Ceratocheilus) hispinosa* n. sp., male hypopygium; a, aedeagus, b, basistyle; d, dististyle; i, interbase; mb, mesal lobe of basistyle; p, phallosome; t, tergite; vb, ventral lobe of basistyle.



the most similar is *Gonomyia (Lipophleps) distenta* Alexander, which has all details of the male hypopygium distinct.

*Molophilus (Molophilus) exeches* n. sp.

Belongs to the *gracilis* group and subgroup; mesonotum very light brown, pleura darker; rostrum black; knobs of halteres dusky; wings weakly infuscated; abdomen brownish black, hypopygium paler brown, bearing three lobes on basistyle, both dististyles simple, scabrous.

*Male*.—Length about 3.5-3.6 mm.; wing 4-4.2 mm.; antenna about 0.8-0.85 mm.

Rostrum and palpi black. Antennae relatively short; scape yellow, pedicel brownish yellow, flagellar segments light brown, long-oval, much shorter than the verticils. Head light gray, anterior vertex more yellowed.

Cervical region darkened. Pronotum obscure yellow, pretergites clear light yellow. Mesonotum very light brown, pseudosutural foveae reddened; pleura darker brown. Halteres weakly darkened, knobs elongate. Legs with coxae and trochanters light yellow, remainder of legs medium brown, the color produced chiefly by the abundant dark setae. Wings weakly infuscated, prearcular and costal fields a trifle more yellowed, the long costal fringe and vein trichia brown. Venation: *R*<sub>2</sub> lying distad of *r-m*; petiole of cell *M*<sub>3</sub> less than twice *m-cu*; vein 2nd *A* elongate, gently sinuous, ending about opposite *m-cu*.

Abdomen brownish black, the hypopygium paler brown. Male hypopygium (fig. 52) with the dorsal apical lobe of basistyle, *b*, elongate, narrowed to a point, the inner margin and apex with strong setae; ventral lobe longest, broad, at apex on outer face with a broad glabrous flange, tip obtuse, mesal portion of lobe with strong setae; mesal lobe of style clavate, near apex with strong setae. Outer dististyle, *d*, a simple gently curved black rod from a more expanded base, narrowed very gradually to the acute apical spine, outer margin with microscopic appressed points, the inner part of apical third with more acute spinules; inner style subequal in length, basal half pale, expanded on outer margin and extended into a point, the outer half blackened, narrowed at base, outwardly expanded into a weak club, the margin and surface with appressed scabrous points. Phallosomic plate subcircular in outline, glabrous. Aedeagus, *a*, very long and slender.

*Holotype*.—♂, Andringitra Massif, Ambalamarovandana Forest, at the Vakoana River, 1520 meters, January 21-24, 1958 (Stuckenberg). *Paratopotypes* 2 broken ♂♂.

*Molophilus (Molophilus) exeches* is most similar to species such as *M. (M.) invidus* Alexander and *M. (M.) thyellus* Alexander, differing in the wing pattern and venation and, especially, in the hypopygial structure, including the dististyles and lobes of the basistyle.

**Molophilus (*Molophilus*) *furciferus* n. sp.**

Belongs to the *gracilis* group and subgroup; general coloration of thorax dark brownish gray; antennae short; halteres obscure yellow; wings dusky, veins and macrotrichia dark brown; outer dististyle of male hypopygium with a large basal flange, on face of style at near midlength with an elongate arm.

*Male*. — Length about 4.5-5 mm.; wing 4.7-6 mm.; antenna about 0.9-1 mm.

*Female*. — Length about 5.5 mm.; wing 6 mm.

Rostrum and palpi black. Antennae short, brownish black; flagellar segments long-oval, with dense white setulae and verticils that slightly exceed the segments. Head brownish gray.

Thorax almost uniformly dark brownish gray, pretergites narrowly yellowed; pseudosutural foveae blackened. Halteres obscure yellow. Legs with coxae dark brown; trochanters brownish yellow; remainder of legs dark brown, tips of femora and the outer tarsal segments darker. Wings dusky, veins and macrotrichia dark brown. Venation:  $R_2$  opposite or just beyond level of  $r-m$ ; petiole of cell  $M_2$  about twice  $m-cu$ ; vein  $2nd\ A$  long and only gently sinuous, ending opposite or shortly beyond  $m-cu$ .

Abdomen, including hypopygium, dark brown. Male hypopygium (fig. 53) with both dorsal and ventral apical lobes of basistyle,  $b$ , short and blunt, the mesal lobe long, tufted with several strong setae. Outer dististyle,  $d$ , blackened, with a conspicuous yellow basal flange, beyond which it curves gently to the abrupt terminal spine; on face at near midlength with a conspicuous elongate arm that bears two or three minute spinules; dorsal surface of style with a few coarse appressed teeth; inner style nearly as long, blackened, basal two-thirds straight, thence strongly bent into an elongate head that is provided with numerous spinules, those nearer base slightly larger. Phallosomic plate,  $p$ , broad, apex truncated, outer surface with microscopic setulae. Aedeagus elongate.

*Holotype*. — ♂, Andringitra Massif, Pic Boby, 2460 meters, January 11-14, 1958 (Stuckenberg). *Allotopotype* ♀. *Paratypes* 3 ♂ ♂, 2 ♀ ♀: Andringitra Massif, Soaindrana, 2060 meters, January 14-17, 1958 (Stuckenberg).

*Molophilus (*Molophilus*) *furciferus** differs from the relatively few other regional members of the genus in the hypopygial structure, particularly of the outer dististyle.

**Tasiocera (*Dasymolophilus*) *aspistes* n. sp.**

Size relatively large (wing of male to 5 mm.); general coloration brown; body with conspicuous erect setae; claws with a single slender nearly basal spine; wings darkened,  $R_3$  long, cell  $2nd\ A$  relatively broad; male hypopygium with long erect black setae, especially on tergite and basistyle; disti-

style slender, tip obtuse; phallosome a shield-shaped darkened plate, posterior border entire, subtruncate; apex of aedeagus bidentate.

*Male*. — Length about 3.5-3.7 mm.; wing 4.8-5 mm.; antenna about 1-1.1 mm.

Rostrum and palpi brownish black. Antennae short; scape blackened, remaining segments dark brown, the incisures yellowed; flagellar segments subcylindrical, verticils of the more proximal segments very long, nearly three times the segments. Head brown, with long black chiefly porrect setae.

Thoracic notum chiefly brown, more brightened on humeri, at the wing root and on sides of mediotergite; notal vestiture very long and conspicuous, black, erect. Pleura brown. Halteres brown, base of stem light yellow. Legs with coxae and trochanters obscure yellow; remainder of legs brownish black, the dark color chiefly produced by abundant setae and elongate scales; terminal tarsal segment with pencils of long strong setae; claws long, with a slender nearly basal spine. Wings (fig. 49) darkened, the veins and macrotrichia still darker. Venation generally as illustrated but certain of the details may be slightly inaccurate due to the paleness of the veins; *Rs* long, basal section of *M*<sub>1-2</sub> obliterated, *m-cu* about its own length beyond fork of *M*; both Anal veins well developed, cell 2nd *A* relatively broad.

Abdomen, including hypopygium, dark brown, very hairy, the tergite and basistyles especially with long setal pencils. Male hypopygium (fig. 54) with the tergite, *t*, large, with dense erect black setae posteriorly, becoming smaller behind, lacking on the declivitous posterior border. Basistyle, *b*, with similar very long setae. Dististyle, *d*, a simple gently curved rod from a more dilated base, apex obtuse; a few small setae at base and at apex. Phallosomic plate, *p*, a depressed-flattened shield-shaped darkened structure, posterior border entire, subtruncate to feebly convex. Apex of aedeagus, *a*, bidentate.

*Holotype*. — ♂, Andringitra Massif, Ambalamarovandana Forest, at the Vakoana River, 1520 meters, January 21-24, 1958 (Stuckenberg). *Paratopotypes* 2 ♂ ♂.

The most similar regional species is the much smaller *Tasiocera* (*Dasymolophilus*) *gracilior* Alexander, which has the dististyle of the hypopygium similarly very slender but more nearly straight and with the apex microscopically bidentate. *T. (D.) hova* Alexander has the dististyle shorter and stouter and with the posterior border of the phallosomic plate provided with microscopic points.

*Toxorhina* (*Toxorhina*) *brevistyla* n. sp.

General coloration of thorax gray, the praescutum with three broad dark brown stripes; legs black; wings weakly infuscated; male hypopygium

with the median region of tergite produced into a low darkened plate; basistyle with strong setae on mesal face; outer dististyle small, inner style elongate, its outer margin with a strong tubercle; aedeagus at apex with a concentration of several strong spines.

*Male*. — Length, excluding rostrum, about 5.5 mm.; wing 5.3 mm.; rostrum about 5 mm.

Rostrum nearly as long as remainder of body, black. Antennae black throughout. Head with front and orbits light gray, remainder of vertex broadly brown; no corniculus; anterior vertex relatively broad, about four times the diameter of scape.

Pronotum and cervical region black. Mesonotal praescutum with the ground gray, more buffy laterally, disk with three broad dark brown stripes; posterior sclerites of notum dark brown, very sparsely pruinose. Pleura obscure gray, darker dorsally, the ventral sternopleurite less evidently infuscated. Halteres obscure brownish yellow. Legs with coxae brown; trochanters obscure yellow; remainder of legs black. Wings (fig. 50) weakly infuscated; veins darker brown. Strong macrotrichia on all radial veins, outer two sections of vein  $M_{1-2}$  and sparsely on outer section of  $M_3$ . Venation:  $Sc_1$  ending nearly opposite origin of  $Rs$ ,  $Sc_2$  retracted,  $Sc_1$  alone nearly equal to  $r-m$ ;  $m-cu$  just before fork of  $M$ .

Abdomen, including hypopygium, dark brown. Male hypopygium (fig. 55) with the median posterior border of tergite,  $t$ , slightly produced into a low darkened plate, the border very gently emarginate to produce inconspicuous lobes, the surface transversely ridged. Basistyle,  $b$ , with setae of outer face sparse, lacking apically, mesal face with a longitudinal row of very long setae, with three strong more powerful bristles on lower margin. Interbase,  $i$ , broader on more than the proximal half, narrowed to the obtuse tip. Outer dististyle,  $d$ , much smaller than the inner style, broad-based, the outer half narrowed into a spine; inner dististyle gently curved, at near two-thirds the length of outer margin with a conspicuous tubercle or obtuse spine (the tip apparently damaged in type); apex of style extended into a long beak, its tip obtuse; surface with sparse microscopic setulae. Aedeagus,  $a$ , differing markedly from the normal type in the genus, the lateral arms extended into narrow points, the central area with a conspicuous group of several strong reddish spines.

*Holotype*. — ♂, Andringitra Massif, Anjavidilava, 2020 meters, January 17-21, 1958 (Stuckenberg).

*Toxorhina (Toxorhina) brevistyla* is readily distinguished from *T. (T.) serpens* Alexander by the hypopygial structure, including the short slender outer dististyle which is much shorter than the inner style.

*Toxorhina (Ceratocheilus) bispinosa* n. sp.

General coloration of thorax yellow, the praescutum with four conspicu-

ous dark brown stripes, posterior sclerites of notum and the ventral sternopleurite patterned with brown; knobs of halteres dark brown; legs darkened by abundant setae; wings weakly infuscated, anterior branch of  $R_s$  about twice this vein; abdominal tergites brown, with a subterminal darker ring, sternites and hypopygium yellowed; male hypopygium with the outer dististyle bispinous, interbase with apex broadly obtuse.

*Male*. — Length, excluding rostrum, about 6 mm.; wing 5 mm.

Rostrum broken beyond the dark brown base. Antennae with scape and pedicel brownish yellow, flagellum black. Head clear light gray, without a corniculus; posterior vertex with a dark brown longitudinal central area that is narrowed to a point in front, the orbits very broadly of the ground.

Cervical region and pronotum yellow. Mesonotal praescutum yellow with four conspicuous clearly defined dark brown stripes, the intermediate pair confluent in front; scutum yellow, lobes dark brown, scutellum paler brown, the posterior border broadly yellow; mediotergite yellow, the posterior half dark brown, pleurotergite yellow. Pleura yellow, the ventral sternopleurite dark brown. Halteres with stem yellowed, knob dark brown. Legs with coxae and trochanters yellow, the latter darkened apically beneath; remainder of legs dark brown, passing into brownish black outwardly, the color produced by the dense vestiture. Wings (fig. 51) weakly infuscated, unpatterned, extreme base yellowed; veins brown. Longitudinal veins beyond cord with abundant macrotrichia, lacking on  $M_{3+4}$  and  $M_1$ ; basad of cord present on  $C$  and  $R$ . Venation:  $Sc_1$  ending opposite origin of  $R_s$ ,  $Sc_2$  retracted,  $Sc_1$  longer than  $R_s$ ; anterior branch of the latter long and gently sinuous; cell  $M_2$  open by atrophy of  $m$ ;  $m-cu$  close to fork of  $M$ .

Abdominal tergites dark brown, sternites obscure yellow, hypopygium brighter yellow; subterminal segments still darker to produce a ring. Male hypopygium (fig. 56) with the tergite,  $t$ , transverse, extensive, posterior border with a low lobe on either side of midline, these provided with dense microscopic setulae. Proximal end of basistyle,  $b$ , stout, narrowed outwardly, mesal margin with two rows of long setae. Interbase a broadly flattened plate, apex very obtuse. Dististyles,  $d$ , terminal, the outer style smaller, bispinous, the marginal spine smaller; inner style much larger, extended into a long slender beak, outer margin at near midlength with a slightly recurved spine. Arms of aedeagus,  $a$ , of moderate length, about equal to the transverse diameter of the organ at their base.

*Holotype*. — ♂, Perinet, 960 meters, December 1955 (Stuckenberg).

*Toxorhina (Ceratocheilus) bispinosa* is distinguished from *T. (C.) approximata* Alexander by the body coloration, darkened halteres, unpatterned wings, and the details of venation, as the long  $Sc_1$  and the course of the anterior branch of  $R_s$ .

## LITERATURE CITED

- ALEXANDER, C. P. 1929. New or little-known Tipulidae from the Philippines (Diptera). V. Philippine Jour. Sci. 40: 239-273, 1 plate with 18 figs.
- . 1950. Notes on the tropical American species of Tipulidae (Diptera). VI. The tribe Limoniini, genus *Limonia*: subgenera *Limonia*, *Neolimnobia*, *Discobola* and *Rhipidia*. Rev. de Entomologia 21: 161-221, 42 figs.
- . 1951. New or little-known crane-flies from Madagascar (Tipuloidea, Diptera) Part I. Mém. de l' Inst. Scient. Madagascar (A) V: 33-63, 25 figs.; species 1-21.
- . 1953. The same. Part II. Mém. de l' Inst. Scient. Madagascar (E) III: 279-311, 30 figs.; species 22-50.
- . 1955. Tipulidae nouveaux ou peu connus Madagascar III. Mém. de l' Inst. Scient. Madagascar (E) VI: 283-318, 40 figs.; species 51-75.
- . 1955. The same. IV. Mém. de l' Inst. Scient. Madagascar (E) VI: 319-348, 33 figs.; species 76-100.
- . 1958. The same. V. Mém. de l' Inst. Scient. Madagascar (E) IX: 229-256, 22 figs.; species 101-124.
- . 1959. The same. VI. Mém. de l' Inst. Scient. Madagascar XI: 173-199, 24 figs.; species 125-146.
- . 1959. The same. VII. Mém. de l' Inst. Scient. Madagascar XI: 201-246, 45 figs.; species 147-175.
- . 1961. The same. VIII. Mém. de l' Inst. Scient. Madagascar XII: 207-235, 41 figs.; species 176-200.
- . 1964. New or little-known Tipulidae from Eastern Asia, LV. Philippine Jour. Sci. (in press, presumed to appear in 1964).
- . 1963. The crane-flies of Madagascar in the Natural History Museum, Basel, collected by Dr. Fred Keiser. Verhandl. Naturf. Ges. Basel 74(2): 181-229, 95 figs.
- EDWARDS, F. W. 1938. British short-palped crane-flies. Taxonomy of adults. Trans. Soc. British Ent. 5: 1-168, 5 pls. 31 figs.