

**RECORDS AND DESCRIPTIONS OF
DIPTERA FROM MADAGASCAR
PART I. ANISOPODIDÆ, AND MYCETOPHILIDÆ
GENUS ALLACTONEURA DE MEIJERE**

by

B. R. STUCKENBERG

(Natal Museum, Pietermaritzburg, South Africa)

This constitutes the first of a projected series of papers on the *Diptera* of Madagascar, based on collections made by the author and in some cases augmented by material from the collection of Dr. and Mrs. F. Keiser of the Basel Museum and from the Institut Scientifique de Madagascar. Further parts will be published as they are completed. Assistance received from the South African Council for Scientific and Industrial Research and the Institut de Recherche Scientifique de Madagascar during two expeditions made in 1955-1956 and 1957-1958 is gratefully acknowledged.

DIPTERA NEMATOCERA

Anisopodidæ

This family has not hitherto been known from Madagascar. The two genera recorded here have a wide distribution and are typically associated with tropical forest. It is interesting to note that both of them are represented in West Africa, and that the only genus which is at present known from Eastern and Southern Africa, *Anisopus* Meigen, has not yet been found in Madagascar.

Olbiogaster Osten-Sacken, 1886

This interesting genus has virtually a tropicopolitan distribution, being known in the western hemisphere from Brazil, Paraguay, Porto Rico, Peru, Trinidad, Costa Rica and Mexico, and in the eastern hemisphere from Nigeria, the Gold Coast, Cameroons, San Thomé Island, Ivory Coast, Congo, Ceylon, Formosa, Japan and Lord Howe Island. The immature stages of *O. africanus* Edwards (1915) have been described by KEILIN (1928) and those of *O. insularis* Tonnoir (1923) by FULLER (1935). Larvæ and pupæ of both species were obtained from decayed and rotting wood. Fossil wings which EDWARDS (1928 a) has

assigned to *Olbiogaster* are known from the Eocene of Colorado and the Jurassic of England.

***Olbiogaster Pauliani* sp. n.**

This striking and conspicuously marked species belongs to a section of the genus which includes the Ethiopian species, characterized by having the width of cell *M*3 not less than half *M*2, the scutellum dark and the knob of the haltere blackish. In EDWARDS's key (*op. cit.*, 21-22) it runs to couplet 10, agreeing with *flavicoxa* Edwards (from San Thomé) in having all the coxæ yellowish, but disagreeing in that the pronotal lobes are not black.

A species with a bold pattern of dark markings on a mainly ochreous ground. Three mesonotal stripes present, pronotal lobes and all coxæ ochreous. Abdomen with conspicuous transverse bands.
Length, body 8.5 mm., wing 6.25 mm., antenna 7.0 mm.

♂ (Fig. 1). — Frons brownish, darker along the orbits when seen in certain positions, admixed with yellow medially, without discernable vestiture. Face ochreous, with pale, porrect hairs. Palps and other mouthparts with mixed fine, pale hairs and short, dark hairs. Ocellar tubercle black. Vertex and occiput translucent brownish-yellow, the latter with shorter, stout, dark bristles above and longer, softer, shining yellowish hairs below. Basal antennal segment brownish-yellow, second segment a little darker, both with black bristles above; flagellar segments very dark brownish with very short, stiff, black, erect trichia standing in a uniform covering of very fine, yellowish pubescence.

Mesonotum ochreous with three longitudinal, shining, fusco-piceous stripes narrowly fringed with brown; middle stripe extending from anterior edge of mesonotum almost to posterior edge, broadest in front where it is almost as wide as distance between eyes across ocellar tubercle, tapering regularly; each lateral stripe starts at suture and extends backwards converging towards median line a little, the distance between outer margin of stripe and notopleural ridge more or less constant, reaching hind margin of mesonotum; all three stripes are joined posteriorly by a dark, brownish patch which fills the space between the ends of lateral stripes and merges with end of median stripe. Immediately before anterior end of each lateral stripe, adjacent to suture, is a smallish, round, dark brown spot. Mesonotum with short, pale, suberect hairs which are present mainly in the ochreous parts, the dark stripes being almost bare. Scutellum almost entirely fusco-piceous, its lateral arms and narrow posterior and anterior borders yellowish; a few long pale hairs and some shorter, dark hairs

present. Notopleural ridge whitish yellow. Pronotal lobe entirely ochreous, with long, shining, yellowish hairs. Entire mesopleuron and all of pteropleuron except narrow posterior strip, richly blackish-brown, mesopleuron strongly shining. Remainder of pleura ochreous except for median part of upper edge of sternopleuron where there is a small extension of colour of mesopleuron. Postscutellum blackish-brown on swollen apical half, basal half ochreous. Mesopleuron smooth, glabrous except for a small area above where there are some very fine, erect hairs. Sterno and hypo-pleura glabrous. Pteropleuron with minute, pale flecks looking like exceedingly small, thinly-distributed scales. Dark part of scutellum with quite long, erect, brownish-yellow hairs. Stem of haltere ochreous, knob blackish.

All coxæ uniformly ochreous with pale hairs. Trochanters and femora ochreous. Tibiæ paler, slightly greenish yellow. Tibial spurs 1.2.2, testaceous. Tarsi similar to tibiæ but a little darker, becoming dark on the apical tarsomeres. Wing almost hyaline, with a faint smoky tinge which is more pronounced at apex, microtrichia dark. Venation normal, a well-developed fuscous stigma occupying apex of subcostal cell and 1st radial cell from bend in $R2+3$; $R4+5$ gradually arched, ending almost at wing-tip; costa ending just past apex of $R4+5$; $R2+3$ with bend at beginning of stigma; $r-m$ before middle of discal cell, and a little more than its own length from bifurcation of Rs . Veins all dark brown, radial veins a little thicker than others.

Abdomen ochreous basally, becoming testaceous apically, each tergite with a complete, black, posterior marginal band, this band $1/2$ length of 1st tergite, a little more than $1/3$ rd on 3rd and 4th, $1/2$ on 5th, nearly $2/3$ rd on 6th, 7th tergite and sternite entirely blackish. Sternites 1-5 without black markings, sternite 6 with black marginal band occupying $1/3$. Cerci ochreous. Tergites with two types of hairs, (a) longer, pale, shining, reclinate hairs occurring mainly on lateral and anterior median parts, and (b) shorter, blackish, recumbent hairs mainly on the flat upper part of the tergite and not on the curved sides; the dark hairs become longer posteriorly on each tergite. First tergite with a few dark hairs and some very long, pale, erect hairs. Pale hairs decrease towards apex of abdomen, very few present on 5th tergite, none on succeeding tergites. Apical sternites with dark, recumbent hairs. The lateral lobes typical of ♂ sex in this genus are not much in evidence, probably because of the rather twisted position in which the abdomen has dried, but they are apparent on at least segments 3-5.

Holotype ♂, swept from shrubbery on steep slopes in degraded lower montane forest at about 100 m, on slopes overlooking the village of Navana in the head of Antongil Bay, N.-E. Madagascar, 21.III.1958, B.R. Stuckenberg leg. (in coll. I.R.S.M.).

I have great pleasure in naming this species in honour of Dr R. Paulian as a token of appreciation for the generous assistance and co-operation given me during my visits to Madagascar.

Mesochria Enderlein, 1910

Six species of this remarkably rare genus have been described to date, viz. :

M. scottiana Enderlein, 1910, Seychelles (type).

M. cinctipes de Meij., 1913, Java.

M. medicorum Edwards, 1928 *a*, West Africa.

M. buxtoniana Edwards, 1928 *b*, Samoa.

M. intermedia Edwards, 1931, Borneo.

M. congoensis Tollet, 1956, Congo.

The two species described below are similar to *medicorum* and *scottiana* in lacking dark rings on the tibiae. Both of the Malgache species have the last antennal segment white and shining in strong contrast to the remainder of the flagellar segments which are dark, and in this they are distinct from the other described species. These new species can be separated from one another on a number of details of colouration and vestiture, and also size. The principal morphological differences are the arrangement and size of the ocelli, and the condition of vein *M2*. The sex of the two type specimens is not absolutely certain as the genitalia are very small and partly retracted. Very few males of *Mesochria* seem to have been discovered.

***Mesochria sylvatica* sp. n.**

Ocelli arranged in equilateral triangle, not exceptionally prominent. Colouration pale, including vestiture. *M2* persisting as a short vein at wing margin.

Length, body 3.5 mm, wing 4.8 mm.

♀. — Frons small, subtriangular, dark brown with faint, silvery pubescence. Face small, subquadrangular, protruding slightly, coloured like frons. Ocellar tubercle distinct, moderately elevated, blackish; ocelli dark amber, arranged in equilateral triangle, posterior ocelli a little larger than anterior one.

Mouthparts dark brownish, apical palpal segment about 1 1/2 penultimate segment. Occiput blackish-brown, thinly grey-dusted. Basal two antennal segments dark brownish, flagellar segments except the last blackish, apical one shining white, contrasting markedly with the others.

Mesonotum light brownish, moderately shining, with a pair of faintly-indicated dorsocentral stripes which at their anterior ends are extended laterally to include broad areas around humeri, the humeri themselves and an area around post-alar callus of same colour as dorsocentral stripes. Scutellum light brownish tinged with yellow. Notopleural ridge yellowish-brown. Pleura light brownish slightly tinged with yellow, with very thin, silvery-grey dust, almost unicolorous except for a thin, vertical, dark brown line down anterior edge of pteropleuron, and thin, black lines in the sutures demarcating the metapleuron anteriorly. Postscutellum coloured like the pleura, with lateral shining area. Coxæ coloured like the pleura, except anterior coxæ which are a little more yellowish. All legs pale translucent yellowish, a little darker on the tarsomeres except the metatarsus, femora and tibiæ unbanded. Stem of haltere pale yellowish, knob missing.

Abdomen mostly brownish, yellowish on the shoulders and lateral margins of 1st tergite.

Wing membrane slightly pearly grey, cell *Sc* faintly yellowish, veins brown. Apical part of *R2 + 3* running adjacent to apex of *R1*, marginal cell elongate-triangular; *M1 + 2* and its fork much weakened, the lower branch (*M2*) represented by only a short section persisting at edge of wing (as shown in ENDERLEIN's figure of the wing of *scottiana*); *r-m*, *m-cu* and short section of *M* aligned in a transverse cord, *r-m* and apical half of *M* section very weak; *M4 + 5* slightly curved; *Cu1* flexed near middle without appendage vein at flexure. Basal cells confluent, i.e. the base of *M* missing, its course indicated by a trench in the membrane which continues across the cord and runs immediately below *M1 + 2*, ending at margin just below *M2* (which is convex).

Ocellar tubercle with a few dark, porrect hairs. Vertex with erect, forwardly-curving, dark hairs. Mesonotum with vestiture of two types (a) moderately long, reclinate, pale yellowish hairs distributed over the darker parts and not on the pale dorsocentral stripes nor on the pale areas around the humeri; (b) long, slender, suberect, pale brownish bristles which are distributed in a single row on each of the dorsocentral stripes, and in a supra-alar row ascending diagonally backwards from about the middle of the notopleural ridge to dorsocentral row, 5 in supra-alar row, those of dorsocentral row graded with shortest in front. Humeral callus without vestiture. Pronotal lobe with a long, thin, erect, pale bristle at upper end, and long, pale, outwardly-directed hairs elsewhere. A single long, recurved, slender bristle on anterior end of post-alar callus. Anterior part of mesonotum with a sparse group of suberect, somewhat darker hairs in mid-line. Scutellum with a pair of long, suberect, pale, slender, subapical

bristles close together, and lateral and posterior to these, another bristle half as long. Upper posterior corner of mesonotum with two inconspicuous, pale hairs curving upwards. Outer surface of fore-coxæ with quite long, pale hairs, hind coxæ with a few stronger, darker bristles, middle coxæ bare, hind trochanters with some pale hairs, no definite row of differentiated setæ on hind tibiæ.

Abdomen clothed with numerous, recumbent, pale hairs on both tergites and sternites.

Holotype, ♀, Manjakatempo Forest Station, Vieille Forêt, Ankaratra Massif, district Ambatolampy, central Madagascar, January 1956, B. R. Stuckenberg leg. (in coll. I.R.S.M.).

***Mesochria Griveaudi* sp. n.**

Ocelli unusually large and prominent, arranged in a triangle with sides longer than base. General colouration dark brown, vestiture dark, a reddish tinge in upper pleura. *M2* entirely absent.

Length, body 4.2 mm, wing 5.12 mm.

Eyes in contact for almost entire distance between ocellar tubercle and antennæ. Frons confined to a very small, triangular, dark brown space above antennæ. Face very small, blackish. Penultimate palpal segment very short, a little more than 1/2 apical segment. All antennal segments except the last dull blackish, apical segment shining white. Ocellar tubercle very prominent, ocelli large, brown, subequal, the tubercle as a whole appearing to be composed of 3 interlocking hemispheres, in outline triangular with the base shorter than sides. Mesonotum mainly brown (somewhat dirty in type) with reddish-brown areas around humeri and narrow median and dorsocentral stripes faintly indicated. Pleura light-brownish, mesopleuron, notopleural ridge, basal sclerites of wing and metapleuron with a distinct reddish tinge. Coxæ light brownish, fore coxæ slightly yellowish. Legs pale, translucent yellowish. Haltere stem yellowish-brown, knob dark brown. Abdomen dark brown, each of the intermediate tergites with a narrow, pale, apical band, 1st tergite with an irregular lighter patch.

Wing slightly smoky, veins yellowish-brown. Venation as in *sylvatica* except *M2* absent, *R4 + 5* less strongly arched, *M3 + 4* with a slight flexure near base, flexure in *Cul* a little sharper than in *sylvatica*, without vestigial stump. A portion of transverse, basal part of *M1 + 2* missing.

Ocellar tubercle with two long and a number of shorter, dark hairs. Vertex immediately behind ocellar tubercle with a group of dark, forwardly-curving hairs. Mesonotum with two types of vestiture as

in *sylvatica*. Dorsocentral row with 8-9 long, dark brown, recurved bristles in series, the longest behind. Supra-alar row with 4 quite strong, dark bristles.

Anterior end of post-alar callus with a series of 3 suberect, dark bristles of uneven length, posterior one the longest. Scutellum with a subapical pair of long, dark, suberect bristles close together and 2 or 3 much shorter, paler bristles or stiff hairs lateral to these. Some short, dark, posthumeral bristles present. At anterior end of mesonotum, in median line, a close group of recurved, blackish hairs. Elsewhere the mesonotum with short, depressed, dully shining, yellowish hairs, longer towards posterior end. Upper posterior corner of mesopleuron with a series of 3 dark, upwardly curved bristles. Front and middle coxæ with subshining, yellowish and pale brownish bristles and hairs, posterior coxæ with a few much longer, stronger and darker bristles. Hind tibia with a row of differentiated stronger setæ along posterior edge. Hind trochanter with 3 long, dark hairs. Abdomen with abundant, longish, brown, subrecumbent hair which is longest on basal segments.

Holotype, ? ♂, Périnet, east-central montane forest zone of Madagascar, 960 m. In collection of I.R.S.M.

This species is named in honour of M. P. Griveaud, Entomologist of the Institut Scientifique, whose congenial company I enjoyed during several extensive trips in Madagascar.

Mycetophilidæ

Allactoneura de Meijere, 1907

The relationships of this genus seem to be uncertain. EDWARDS (1925) associated it with *Manota* Williston in a separate subfamily, *Manotinæ*. SHAW and SHAW (1951) place *Allactoneura* by itself in a tribe *Allactoneurini* of the subfamily *Sciophilinæ*, on the basis of the structure of the pleural sclerites. BRUES, MELANDER and CARPENTER (1954, p. 340) accord the genus a separate family; in the classifications of earlier authors this would be equivalent to subfamily status. HENNIG (1955) notes the arrangement proposed by SHAW and SHAW, and states that the wing venation of *Allactoneura* does not indicate a close relationship with *Manota*. He suggests that *Pterogymnus* Freeman, formerly placed in *Diadocidiidæ*, might be included.

The recognition of valid species of *Allactoneura* seems also to be a matter of considerable uncertainty. Up to the present the following have been described :

A. obscurata (Walker), 1865, Salwatty Island, New Guinea Group. (EDWARDS, 1913).

- A. cincta* de Meij., 1907, Java.
A. formosana (Enderlein), 1910, Formosa.
A. argentosquamosa (Enderlein), 1910, Seychelles.
A. nigrofemorata de Meij., 1913, Java.

A. cincta, *formosana* and *nigrofemorata* of the Oriental Region are separated principally on the basis of the colouration of the femora. HENNIG (*op. cit.*) has pointed out that there is no clear geographical separation of populations distinguished by this character, and that a form from Java with the basal half of the hind femora yellow has been determined by de MEIJERE (1913) as *formosana* whereas Edwards (1928 c) has identified a similar form from Malaya as *cincta*. HENNIG suggests that there is perhaps only one variable species, to which the name *cincta* should be applied. The position of *obscurata* seems equally dubious; EDWARDS (1913) notes that it has black femora and the costal border instead of the apex of the wing darkened.

Allactoneura has a wide distribution around the Indian Ocean. In addition to the records cited above, the genus has been noted from Queensland and Ceylon by EDWARDS (*op. cit.*) and Flores by HENNIG (*op. cit.*), and Dr P. FREEMAN has informed me (*in litt.*) that there are specimens in the British Museum (N.H.) from Assam and Tanganyika. It is therefore not surprising that *Allactoneura* occurs in Madagascar.

Allactoneura argentosquamosa (Enderlein), 1910.

Scottella argentosquamosa Enderlein, 1910, *Trans. Linn. Soc. Lond.*, 14, p. 63.

[Non] *Allactoneura cincta* de Meijere, 1907. — EDWARDS, 1913, *Ann. Mag. nat. Hist.*, (8) 12, no. 67, p. 55.

Allactoneura argentosquamosa (Enderlein). — EDWARDS, 1928, *F.M.S. Mus. J.*, 14, p. 4. — SHAW and SHAW, 1951, *Smithson. misc. Coll.*, 117, no. 3, p. 15-16, 19-20.

This species was described on material from forests on Silhouette and Mahé Islands in the Seychelles Group. Dr FREEMAN has kindly sent me a pair of specimens from the type material for comparison with a single male specimen which I obtained at Nossi-Bé, and an examination of these has shown that the Malgache specimen is conspecific. There are only very slight differences in colouration, and in the comparative size and arrangement of bristles on the head. Nothing seems to be known of the biology of *Allactoneura* which is unfortunate as information regarding the habitat and food of the

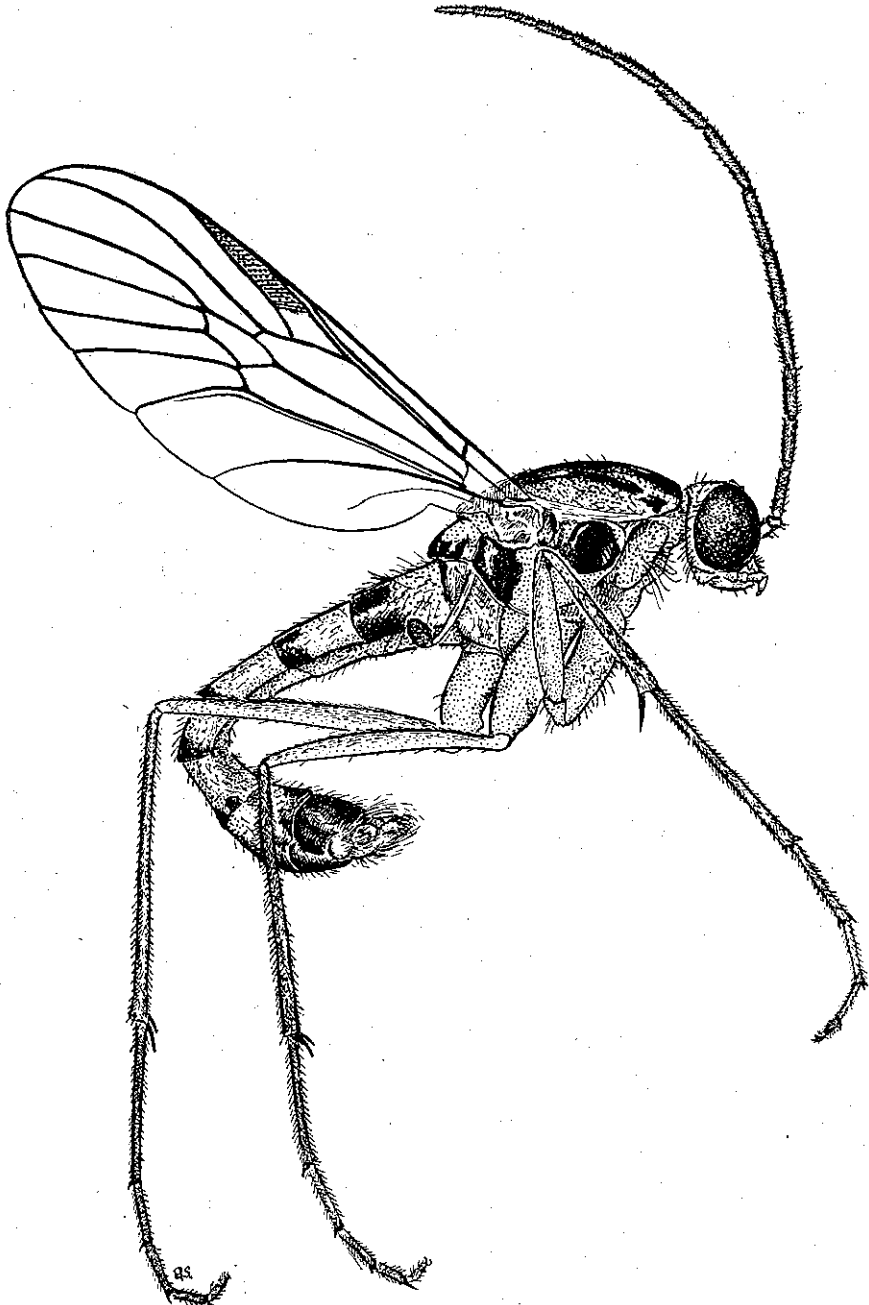


Fig. 1. — *Olbiogaster Pauliani* sp. n. ♂

immature stages might indicate whether transport by human agency is possible.

The specimen measures 4.14 mm, body length, wing 3.5 mm, antenna 1.8 mm.

♂. Lokobe Forest, Nossi-Bé Island, Sambirano district, N. Madagascar, 9-23.XI.1957, B.R. Stuckenberg leg. (in coll. Natal Museum).

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