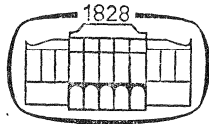


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VERLAG DER UNGARISCHEN AKADEMIE DER WISSENSCHAFTEN
MAISON D'ÉDITIONS DE L'ACADÉMIE DES SCIENCES DE HONGRIE
ИЗДАТЕЛЬСТВО АКАДЕМИИ НАУК ВЕНГРИИ

ON APTEROUS AND REDUCED-WINGED FORMS
OF THE FAMILIES DROSOPHILIDAE, EPHYDRIDAE
AND SPHAEROCERIDAE (DIPTERA)

By

L. PAPP

(Received 30 November, 1978)

Hypselothyrea aptera sp. n. (India), *Tauromima* gen. nov. (type-species: *T. mount-wilhelmi* sp. n., New Guinea), *Scatophila stenoptera* sp. n. (New Guinea), *Reunionia* gen. nov. (type-species: *R. unica* sp. n., Réunion), *Hackmaniella* gen. nov. (type-species: *H. ceylanica* sp. n.), *Apterobiroina* gen. nov. (type-species: *australis* sp. n., Australia, Victoria) are described; *Amalopteryx maritima* END., *Speomyia absoloni* BEZZI, *Paraspeomyia hungarica* DUDA, *Copromyza (Apterina) pedestris* MEIG. and *Anatalanta crozetensis* END. are discussed. *Speomyia* BEZZI and *Paraspeomyia* DUDA are new junior synonyms of *Copromyza* FALL. (*Speomyia* BEZZI retained as a subgen. of *Copromyza*, stat. nov.), *Apterina* MACQ. is a new junior synonym of the subgenus *Copromyza (Fungobia)*.

In the dipterological literature special attention has always been paid to studies on apterous and reduced-winged flies. A critical review was given by HACKMAN (1964) in an excellent and thought-provoking paper. He summarized the types of wing reduction, the di- and polymorphism of the wing and other morphological features in Diptera with reduced wings, and gave a grouping of the environments in which short-winged or apterous forms have been found. He separated 9 groups (high altitude Diptera, Diptera in arctic, subarctic and subantarctic mainland habitats, nival Diptera, Diptera of oceanic islands, Diptera on sea shores, marine Diptera, Diptera in various terricolous and hypogeal habitats, Diptera in nests of Hymenoptera and termites, parasites of warm-blooded animals). In recent years also numerous papers dealt with reduced-winged Diptera (for example RICHARDS 1965, 1973, etc.). In the present material terricolous, cavernicolous, high altitude flies and flies from oceanic islands are discussed. The paper intends to be a mere contribution to our knowledge of the wide varieties of these kinds of dipterous forms (at least the present author is unable to solve any of the general problems of the morphology and evolution of the apterous and reduced-winged flies).

I am greatly indebted to DR. V. AELLEN and DR. C. BESUCHET (Muséum d'Histoire naturelle Genève), to DR. H. SCHUMANN (Museum für Naturkunde, Berlin) and to DR. CARLO LEONARDI (Mus. Civ. Storia Nat., Milano) for making priceless unnamed and type materials available for elaboration and study. It is my pleasant duty to express my thanks to the collectors of the materials below (especially to Prof. DR. J. BALOGH for presenting the Diptera material of his soil zoological expeditions to the Hungarian Natural History Museum). My most sincere thanks are due to JÁNOS PÁL, for his excellent illustrations.

very wide, lateral margins downcurving to ventral side, abdominal sternites very small.

Body-length: holotype male: 1.91 mm, paratypes: 1.8—2.1 mm.

Holotype male: India, Madras, Palni Hills, audessus de Kodaikanal, 2200 m, 12. XI. 1972, leg. MUSSARD, BESUCHET et LÖBL, No. 23 (tamisages dans forêt dégradée avec rhododendrons). — Paratypes: 2 ♂, 4 ♀: data same as for holotype; 1 ♂: ibid., 7 km à l'est de Kodaikanal, 1750 m, 12. XI. 1972, leg. MUSSARD, BESUCHET et LÖBL, No. 24 (tamisages en forêt); 1 ♀: ibid., 10 km à l'ouest de Kodaikanal, 2300—2350 m, 13. XI. 1972, leg. MUSSARD, BESUCHET et LÖBL, No. 25b (tamisages dans forêt dégradée à 2350 m, près de la crête); 1 ♀: India, Kerala, Cardamom Hills, Muttapatti près de Munnar, 1700 m, 24. XI. 1972, leg. MUSSARD, BESUCHET et LÖBL, No. 48 (tamisages en forêt, au pied d'un groupe de fougères arborescentes); 1 ♀: ibid., col à 13 km au nord-est de Munnar, 1900 m, 26. XI. 1972, leg. MUSSARD, BESUCHET et LÖBL, No. 51.

The holotype 2 ♂ and 5 ♀ paratypes are deposited in the collection of Muséum d'Histoire naturelle Genève, 1 ♂, 2 ♀ in the collection of the Hungarian Natural History Museum.

Hypselothyrea aptera sp. n. runs to the couplet 5 of DUDA's key (1928) but its scutellum is short and flat, it has no wings or halteres. It is the first apterous species of this peculiar genus. It seems a common species in the soils of South India.

Ephydriidae

Tauromima gen. n.

Head somewhat wider and much longer than thorax (Fig. 2). Head in profile 1.24 times longer than high. Face strongly protruding. Eyes elongately oval. Ocellar bristles originating from middle of frons, 1 pair each of long bristles *oc*, *vte*, *vti* and 2 long pairs of *ors*. Antennae very small, arista bare, basally thickened, dorsally only with two minute hairs. Mouth margin with

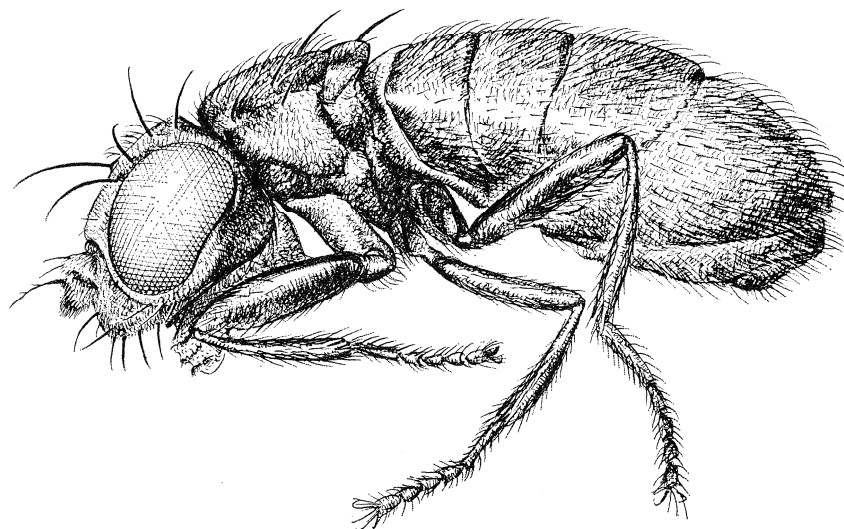


Fig. 2. *Tauromima mountwilhelmi* sp. n., holotype male

Body dark brown with dark grey pollen. Head as long as high (Fig. 3); bristle pairs *vte*, *vti*, *oc*, 2, outcurving *ors* very long, some short hairs on orbitalia. Antennae short. Third joint rounded. Arista swollen at base, very short, with extremely short dorsal hairs (longest one only 0.02 mm). Face strongly protruding, facial protuberance nearly triangular in anterior view, ventral

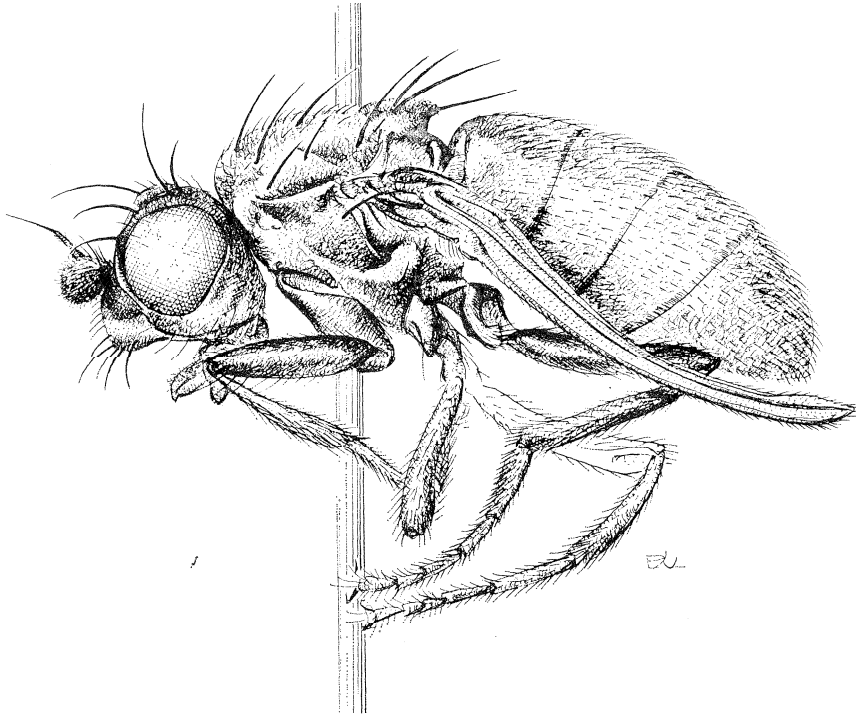


Fig. 3. *Amalopteryx maritima* EATON, 1875, ♂

margin of facial plate with 3 pairs of very long and thick proclinate bristles. Additional two pairs of long and thick, exclinate bristles above mouth margin (at about lower sixth and third of facial plate) and some 20 other hairs on facial protuberance. No strong genal bristle. Also peristomals short and thin. Thoracic chaetotaxy: 2 *np*, 1 *prst*, 1 *sa*, 1 weak *pa*, 1 + 1 *dc*, 1 apical and 2 lateral *sc*, 1 *mp* and 1 *st* pairs of bristles; 2 rows of short *acmi*, some short mesonotal hairs. Legs black, somewhat thickened, without any characteristic bristles. No dorsal preapicals on tibiae. Hind metatarsus thickened. Claws long and strong, pulvilli well-developed. Wings of a stenopterous form (Fig. 3), brown, veins black, r_{2+3} , r_{4+5} and *m* long, ending at wing apex, parallel with costa, close to each other, *cu* somewhat longer than r_1 , also distinct. Length of abdominal tergites 2—5 as 27 : 23 : 23 : 33. Male hypopygium small. Halteres dark brown, much reduced (contrarily to ENDERLEIN's statement, 1909), only 0.29 mm.

facial plate. Antennae short, third joint rounded with about 0.02 mm long hairs. Arista comparatively long with 6—7, 0.02 mm long, short branches. Genae very narrow, less than 0.025 mm wide. Thorax very short and less broad than head. Thoracic chaetotaxy: 1 *np*, 1 *prst*, 0 + 2 *dc*, 1 *sc*, 1 *mp* pairs of bristles. Bristles very long, anterior *dc* perpendicular to plane of mesonotum in profile, slightly incurving. 2 rows of fine *acmi*. Legs shining black, tarsi somewhat lighter, without characteristic bristles, claws normal. Wings of a strongly stenopterous form: 0.40—0.45 mm long, but at their widest point (at base) only 0.05 mm wide (Fig. 4); some short but thick bristles on costa; wing angulately broken at basal 2/5 (Fig. 4). Halteres absent. Abdomen strongly convex as seen from above. Male epandrium small.

Body-length: holotype male: 1.00 mm, paratypes: 0.95—1.05 mm.

Holotype male: New Guinea, Mount Wilhelm, 5. VIII. 1969, slightly below Brass Tarn — Hung. Soil Zool. Exp., New Guinea — leg. DR. J. BALOGH, NG-Mt-B 45. (litter from roots of *Vaccinium*). — Paratypes: New Guinea, Mount Wilhelm, leg. DR. J. BALOGH: 1 ♀: at level of Field Station, cca 3600 m, 4. VIII. 1969, NG-Mt-B. 35 below litter from soil with roots, Berlese sample); 1 ♂: somewhat below Brass Tarn, 5. VIII. 1969, NG-Mt-B. 42 (on a plain terrace, litter, moss at roots of trees and roots of tussock, *Vaccinium* and *Coprosma* with rotten leaves of grass); 1 ♂: below the second peak, cca 4180 m, 13. IX. 1968, NG-M-B. 114 (in warm depression, litter and thick layer of moss below *Coprosma divergens*).

The holotype and the paratypes are deposited in the collection of the Hungarian Natural History Museum.

Scatophila stenoptera sp. n. is the first known stenopterous species of the genus [*Scatophila curtippennis* BECKER, 1905, (Tierra del Fuego) belongs in another genus]. The very small body, length and direction of its thoracic bristles, the peculiar pattern of its face and the absence of basal scutellar bristles separate it easily from the known *Scatophila* species.

Sphaeroceridae

Speomyia absoloni BEZZI, 1914

Holotype male (Fig. 5): "Jazenik, Herzegov, ABSOLON" — "*Speomyia Absoloni* BEZZI, Typ." (BEZZI's handwriting) (holotype in the collection of the Museo Civico di Storia Naturale, Milano).

Body strongly curved, about 3.8 mm when alive. Head rather long (Fig. 5), ocelli small but distinct (cf. RICHARDS 1951, 1965). One pair each of strong *oc*, *vte*, *vti* (partly broken off), posterior *ors* reduced, only 1/3 as long as anterior, slightly proclinate and exclinate *ors*. Complete rows of *if* (postlunular pair enlarged), numerous postocular setae completely disarranged (not in one row). Eyes much reduced, somewhat less than 100 facettes. Antennae widely separated by a wide flat protuberance. First antennal joint with 3 pairs, second joint with a wreath of long, thin bristles, third joint densely pilose, arista very

Drosophilidae

Hypselothyrea aptera sp. n.

Body dark brown with a finely punctured surface (Fig. 1). Head much higher than long in profile. Facial carina edged, from above flat, bristle pairs *ute*, *vti*, *oc* robust, also proclinate anterior *ors* and reclinate posterior *ors* well-developed and thick (~~only a minute hair between them~~). Third antennal joint quite short, arista with two upper and one lower rays behind end fork, rays of end fork and also other rays very long (Fig. 1). Mouth edge only with one strong vibrissa. Palpi with one very long apical and a shorter bristle. Thorax flat dorsally, very wide (wider than head) above mid coxae and strongly attenuating posteriorad, very thin below scutellum. No wings or halteres. Scutellum very short and not upcurving. Thoracic chaetotaxy: 1 *np*, 1 outwards directed anterior and 1 incurving (!) posterior *sa*, 1 *pa*, 1 very long incurving anterior and 1 posterior *dc*, 1 apical *sc* and 1 *st* pairs. Scutellar bristles perpendicular to plane of scutellum. Legs ochreous yellow, fore tibiae dark brown, fore tarsi light yellow. Dorsal preapicals on fore and mid tibiae only. Abdominal tergites 2—5 with two pairs each of long and thick perpendicular bristles. Male epandrium short and comparatively small, cerci quite big. Female ovipositor guides short with sharp apex. Tergites of both sexes

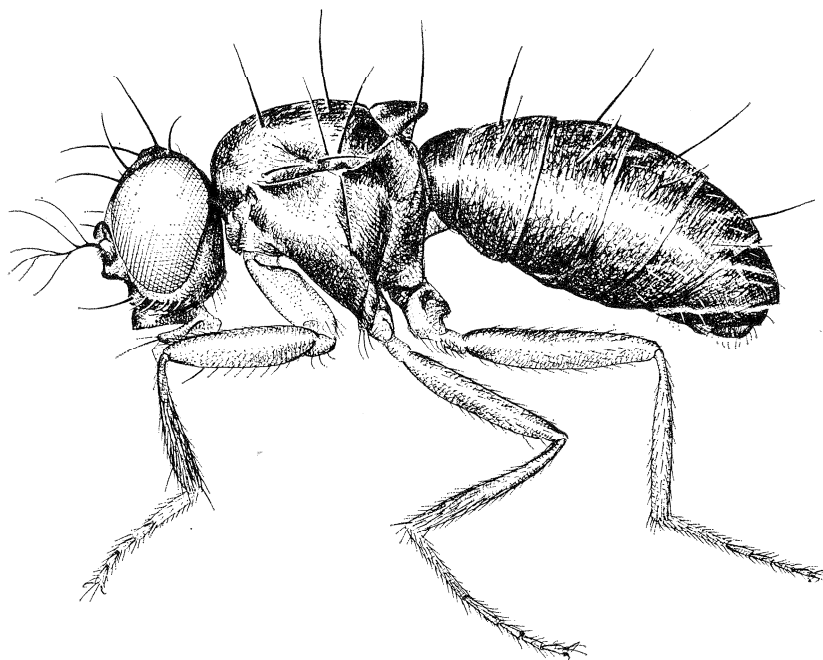


Fig. 1. *Hypselothyrea aptera* sp. n., paratype male

four pairs of robust, ventrally directed bristles. Face with a pair of strong lateral exclinate bristles and with a pair of medial proclinate bristles. Proboscis with numerous faint setae. Mesonotum with 1 short posthumeral, 1 strong *np*, *sa* and *dc* pair each. Only 1 *sc* pair. Scutellum short, shorter than third antennal joint. No wings or halteres. Legs simple without any characteristic bristle. Abdomen large, more than 6/10 of total length, heavily chitinized.

Type-species: *Tauromima mountwilhelmi* sp. n.

Tauromima gen. n. is distinct by its very short thorax (Fig. 2) and long, big head. It is the first known completely apterous ephydrid fly. The structure of the antennae, the position of ocellar bristles, and its very long and heavily chitinized abdomen are very characteristic. The structure and the bristles of its face show clearly that this new genus belongs in the subfamily Ephydrinae, but my knowledge is too limited to give its position among the tribes of the Ephydrinae. It is probably distinct enough to merit a separate tribus.

Tauromima mountwilhelmi sp. n.

Body dark grey, dusted, legs shining black. Ocelli (3) small but distinct. Ocellars only slightly posterior to level of anterior *ors*. Four pairs of short proclinate interocellar and postocellar hairs. Second antennal joint with 1 strong mid dorsal and some marginal bristles. Third antennal joint short with numerous apical hairs (Fig. 2). Genae comparatively very narrow, smallest diameter only 0.03 mm; some comparatively long but thin proclinate genal bristles. Cephalic and thoracic chaetotaxy as above. Scutellar margin with some hairlike bristles. Mesonotum with 2 rows of short but distinct *acmi*, complete rows of incurving *dcmi*, numerous similar microchaetae between *dcmi* rows and *sa* bristles. Legs with moderately long hairs but without characteristic bristles. Coxae short, tarsi with long metatarsi, joints 2—5 short, spherical. Claws normal, curved and not elongate. Pulvilli small. Abdominal tergites covered by dense short hairs, no long marginal fringe present. Sternites minute.

Body-length of holotype male: 1.73 mm.

Holotype male: New Guinea, Mount Wilhelm, cca 3400 m, 6. VIII. 1969, NG-Mt-B. 50 — Hung. Soil Zool. Exp. New Guinea, 1969 — leg. DR. J. BALOGH (3—4 cm thick layer of moist but not wet moss on soil in big undivided patches beside rocky areas, 2 × 50 × 50 cm Berlese samples (in the collection of the HNHM).

Amalopteryx maritima EATON, 1875

Material examined: 1 ♂: Kerguelen Insel, DR. WERTH S., Deutsche Südpol. Exp., 18. 2. 1903. — "*Amalopteryx maritima* EAT. ♂" det. DR. ENDERLEIN (HNHM).

Body-length: 3.24 mm, wing length: 2.56 mm, width of wing at its widest (near base): 0.3 mm.

It was an experience to study this peculiar ephydrid species. It is interesting that while in the Palaearctic Region three subfamilies of the Ephydriidae, namely Psilopinae, Notiphilinae and Parydrinae, have reduced-winged forms [Psilopinae: *Parhydroptera disco-myzina* COLL. (brachypterous); Notiphilinae: *Nostima semialata* COLL. (stenopterous); *Philygria mocsaryi* KERT. (brachypterous); Parydrinae: *Lytogaster minima* L. PAPP (brachypterous)], all of the reduced-winged forms of the southern polar islands belong to the subfamily Ephydrinae.

***Scatophila stenoptera* sp. n.**

Head higher than long; bristles *vt*, *vti*, *oc* and posterior *ors* extremely long (Fig. 4), one minute proclinate anterior upper orbital hair. Ocellar triangle, mesonotum and abdomen shining black, also facial protuberance between antennal bases down to middle of face shining. Mouth edge and one transverse band at lower fourth of face pruinose grey. Mouth edge with 2 pairs of long, proclinate and downcurving bristles. Below grey pruinose crossband one pair of strong, anteriorly and outwards directed bristles, also some other hairs on

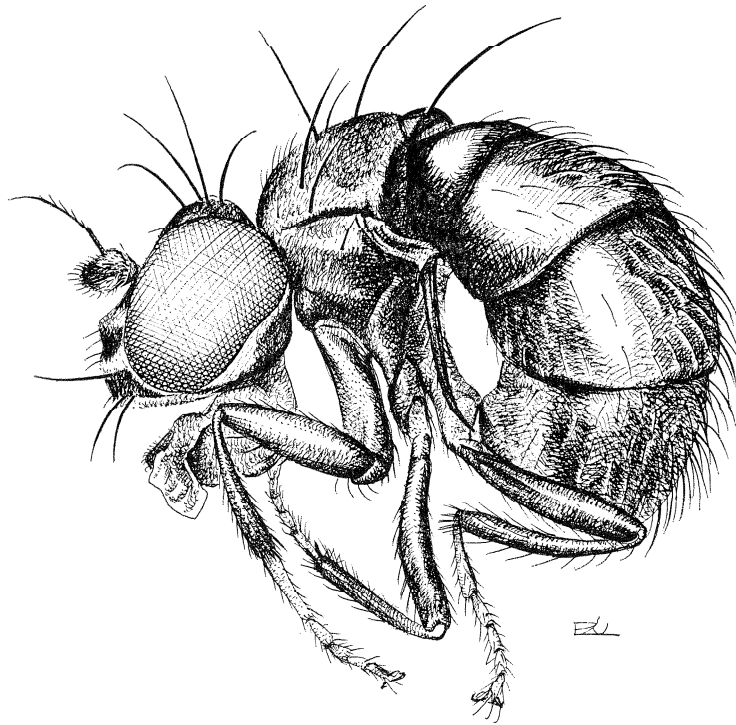


Fig. 4. *Scatophila stenoptera* sp. n., paratype male

long (Fig. 5), 1.54 mm, with scattered, very long hairs. Clypeus very large, strongly protruding. Vibrissae thick and very long, one very long, proclinate and upcurving genal bristle (as in *Crumomyia* species). Other peristomal and genal bristles long but thin, hairlike. Palpi with one long apical and numerous other hairs. Proboscis enormously big, in front a pointed, strongly chitinized

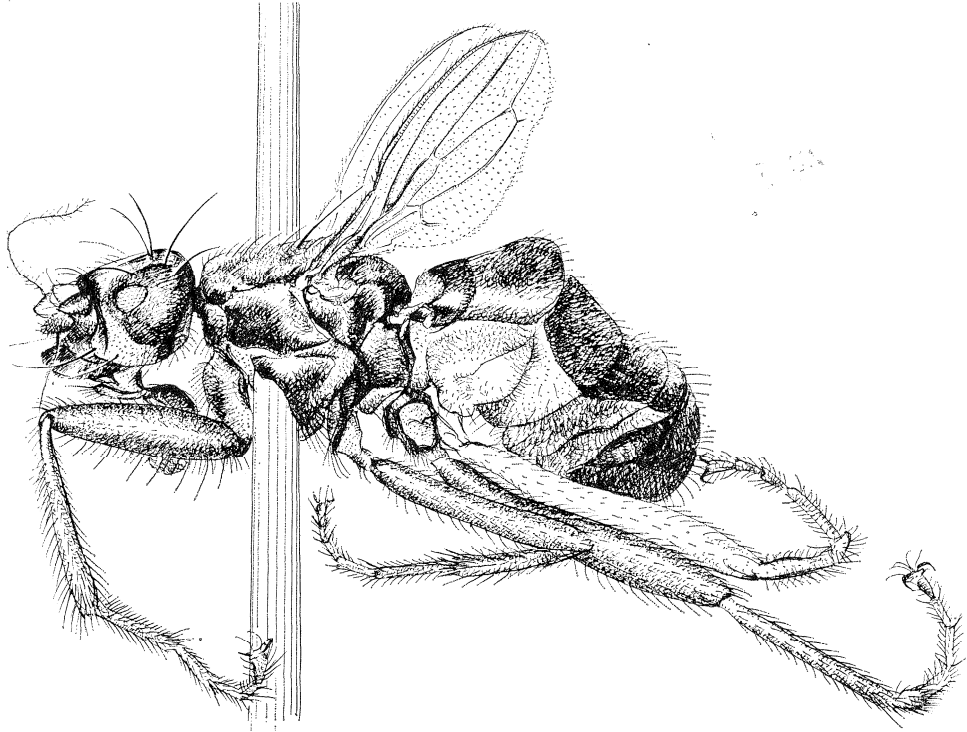


Fig. 5. *Copromyza (Speomyia) absoloni* (BEZZI, 1914), stat. nov., holotype male

structure. Thorax comparatively short and low. Thoracic bristles partly broken on holotype; 1 *h*, 1 *np*, 1 *sa*, 0 + 3 *dc* (posterior one very long, 2 anterior pairs shorter). Two pairs of *sc*, no short bristles between them. No long *st*, some thin and moderately long hairlike *st*. Femora brown with thick grey dust, fore tibia light brown, mid and hind tibiae and tarsi yellow, ochreous yellow. Legs long, coxae and femora thickened, tarsi long and slender; fore metatarsus with an apicoventral incurving hook (similar to that in *Crumomyia* males). Mid tibia with an anterol bristle at lower third, strong anterol, anterodorsal, posterodorsal and posterol preapicals, other anterodorsals at 6/33, 11/33, 20/33 and 17/22 of tibia, ventroapical bristle comparatively short (right fore and mid legs missing on holotype). Very long anteroventral at 7/19 of hind tibia, 0.14 mm long, curved ventroapical spur, 0.34 mm long dorsal preapical. Claws long, strongly curved (in more than half of a circle), apical fourth nearly straight.

times longer than genae at their narrowest. Facial plate slightly bulging, antennae widely separated. Clypeus rather big, palpi with one long apical hair-like bristle (Fig. 7). Arista 0.62 mm long. Vertex and frons meeting at sharp angle. Legs dark but third to fifth joints of fore tarsi whitish yellow (right fore leg missing on paratype male). Mid tibia with an anteroventral at upper third and

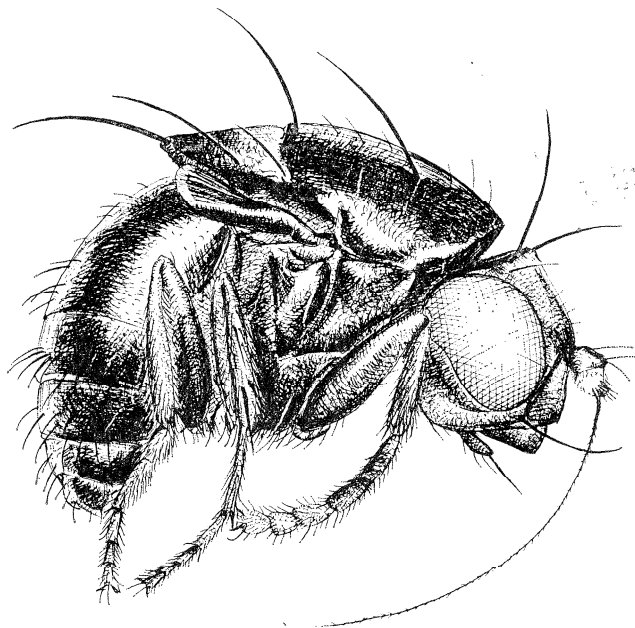


Fig. 7. *Reunionia unica* sp. n., holotype male

paired *ad* and *pd* at lower fourth. Short apicoventral. Mid tarsi slender (Fig. 7). Length of scutellum: 0.23 mm, width: 0.45 mm. Wing-length of holotype male: 0.32 mm, width: 0.08 mm. Abdominal tergites and sternites very wide, meeting laterally. Male with 5 visible tergites. Tergite 2 slightly longer than tergites 3—4—5 combined. Hypopygium small, male surstylus bilobate.

Body-length of holotype male (from antennal bases to caudal end of abdomen): 1.02 mm, paratype male: 1.11 mm.

Holotype male: La Réunion, Basse-Valée, Forêt endémique, 700 m, 13. I. 1975., P. SCHAUENBERG. Paratype male: data as for the holotype.

The holotype is deposited in the collection of the Muséum d'Histoire naturelle, Genève, the paratype male in the Hungarian Natural History Museum.

Hackmaniella gen. n.

Body and major part of legs black. No wings or halteres. Head moderately big, interfrontal stripes considerably separated (distance between them $\frac{2}{3}$ as long as width of frons at that point, or nearly so). *If* stripes and a median

dorsal at 44/54, short anteral at lower third. Claws short and thin. Abdominal sternites of only 3/4 abdominal width. Female postabdomen concave, female cerci very short.

Body-length: holotype male: 1.94 mm, paratypes: 1.45—2.00 mm.

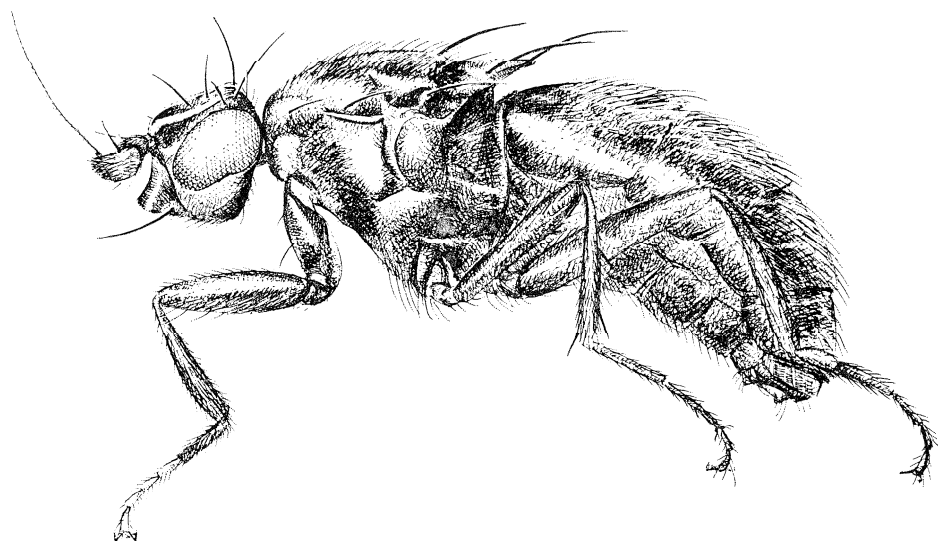


Fig. 8. *Hackmaniella ceylanica* sp. n., paratype female

Holotype male: Ceylan, Central: Horton Plains, 2100 m, 15. II. 1970, leg. MUSSARD, BESUCHET et LÖBL, No. 68 (tamisages en forêt). — Paratypes: 3 ♀: data as for holotype; 2 ♀: Ceylan, Central: Pidurutalagala, env. 2500 m, 29. I. 1970, leg. MUSSARD, BESUCHET et LÖBL, No. 31 (tamisages à la limite supérieure de la forêt, juste au-dessous du sommet); 1 ♂, 1 ♀: Ceylan, Central: Hakgala, 1700—1800 m, 28. I. 1970, leg. MUSSARD, BESUCHET et LÖBL, No. 30a (tamisages dans un ravin boisé, versant nord-est de la montagne). The holotype is preserved in alcohol and deposited in the collection of the Muséum d'Histoire Naturelle, Genève. Two females of the paratypes are glued or pinned, the other paratypes are preserved in alcohol. Two female paratypes are deposited in the collection of the Hungarian Natural History Museum, the other paratypes in Geneva.

Apterobiroina gen. n.

No wings, halteres reduced. Head wide with small but well-discernible ocelli, ocellar bristles long, *vi* long and thick, *vii* minute though distinct, 2 outcurving *ors*, four *if* pairs. Genae wide, vibrissae strong (Fig. 9). Thorax very wide above mid coxae, essentially attenuating posteriorly (thorax below scutellum only half as wide as above mid coxae). Prosteronum very wide, quadrangular. Thoracic chaetotaxy: 1 *h*, 2 *np*, 1 *prst*, 1 *sa*, 1 small *pa*, 1 *dc*, 2 *sc* (lateral *sc* somewhat longer than apical), 1 thin *st*. Mesonotum with dense, moderately strong microchaetae. Scutellum very short, quadrangular, three

Holotype male: Australie Vict., Mt. Buller, Mirimbah, 10. VIII. 1972, P. ZWICK. — Paratypes: 3 ♂: data as for holotype; 2 ♂, 1 ♀: Australie Vict., env. Warburton nr. Donna Buang, Cement cr., 4. VII. 1972, P. ZWICK. The holotype and all paratypes are glued on small tipped labels.

The holotype is deposited in the collection of the Muséum d'Histoire naturelle, Genève, two male paratypes are in the collection of the Hungarian Natural History Museum, the other paratypes are in Geneva.

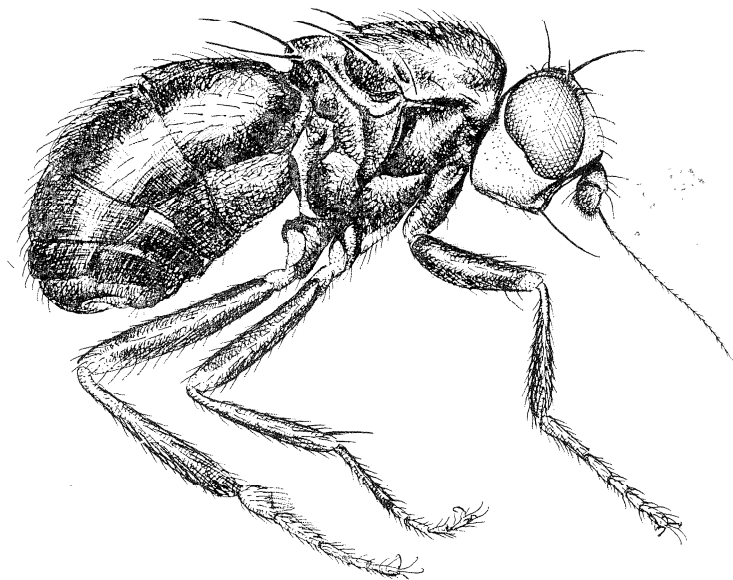


Fig. 9. *Apterobiroina australis* sp. n., paratype male

Anatalanta crozetensis ENDERLEIN, 1909

Material examined: 1 ♂: Ile aux Cochons, Archipel Crozet, J. H. VOISIN coll. — Col des Geants, 7. 3. 1974. (HNHM).

Body-length: 5.64 mm.

Second antennal joint 1.43 times longer than rounded third joint (Fig. 10), arista short with very short pubescence. Smallest genal width: longitudinal axis of eyes = 13/21. Only one row of postocular bristles, three disarranged rows of genal bristles, one upcurving short genal bristle. *If* in two rows, *oc*, *vte*, *vti*, 1 posterior *ors* and a row of short *ors*. Thorax very small, 1 short, posteriorly placed *h*, 1 long pair each of *np*, *sa*, *pa* and *dc*. 1 *st*. Scutellum very short, 2.4 times wider than long, basal scutellar pair 1.06 mm long, apical scutellar only 0.44 mm. Wing rudiment minute with some short bristles. Legs thickened, mid trochanter with a very long bristle, mid femur anterally with one very long and thick preapical bristle (2 in type-series, cf. ENDERLEIN, 1909) and two short but rather thick bristles more proximally. Mid tibia with

Wings short and narrowed (of a typical brachypterous form). Wings 2.1 mm long, slightly wrinkled, about 0.45 mm wide (Fig. 5). Wings with complete venation, veins brown, thick. $t_a - t_p = 0.62$ mm, $m_v = 0.43$ mm, discal cell with a short lower appendage, t_a at 3/10 of discal cell. Costal fringe very long and thin. Halteres rudimentary, almost without knob, 0.33 mm long. Abdomen comparatively big, tergites moderately chitinized with rather dense but thin and short to moderately long bristles. Genital arch big, its bristles as on tergites. Male surstyli wide. Inner genitalia not studied.

The study of the holotype of *Speomyia absoloni* BEZZI showed that this species had its ancestor surely in a *Copromyza* (sg. *Crumomyia*) species. There is no important characteristic which separates it from *Copromyza*. The reduction of the eyes of *Copromyza* (*Crumomyia*) *promethei* NARTSHUK, 1970, is the very same as in *S. absoloni* and *P. hungarica* (see also below). The wing reduction alone is not enough to maintain it as a genus. Thus it can be regarded only as *Speomyia* BEZZI, 1914, subgenus of *Copromyza* FALLÉN, 1810, *stat. nov.*, therefore the generic name *Speomyia* is synonymous with *Copromyza* FALL.

Paraspeomyia hungarica DUDA, 1938

Material studied: holotype female (Fig. 6): "Wohl eine neue Art. Sie stammt aus einer Höhle vom Comitat Bihar. Präzisen Fundort kann ich jetzt nicht angeben, da der Sammler in russischer Gefangenschaft ist." (K. KERTÉSZ's handwriting). DUDA published it as a specimen deposited in the Hungarian Natural History Museum (from the last sending of unnamed fly material by KERTÉSZ to O. DUDA). As it was not found here, it was thought to be lost. In 1976, during my study trip to Berlin, I found this unique specimen in DUDA's collection and through the courtesy of DR. H. SCHUMANN our institute received it back, and since then it is in fact deposited in the HHNM.

Body-length: 3.53 mm, wing length: 1.88 mm, width about 0.5 mm.

Head comparatively big, eyes much reduced; *vte*, *vti* strong, only one upper orbital (broken on left side). Ocelli very small but distinct, ocellars broken on holotype (but their bases reveal that they must have been robust). Numerous *if*, two rows widely separated. Antenna and arista as in *absoloni* BEZZI. Thoracic chaetotaxy: 1 *h*, 1 long anterior and 1 short slightly incurving posterior *np*, 1 *sa*, 1 strong *dc* far before scutellum and two pairs of short anterior *dc*. Scutellars broken (there were two pairs), no small hairs between bases of scutellars. No *st* bristle but some *st* hairs on hind upper edge. Wings brownish, much reduced but venation complete. Veins thick, light brown (left wing missing). Reduction of wing about same as in *absoloni*, body length/wing length of *hungarica*: 3.53 : 1.88 = 1.87 (that of *absoloni*: 3.8 : 2.1 = 1.81). $t_a - t_p = 0.49$ mm, m_v about 0.37 mm. Lower vein appendage of discal cell longer than that of *C. (S.) absoloni* (BEZZI). Legs long, femora thickened. Femora yellowish brown, all tibiae and tarsi yellow. Mid tibia with a strong anteral (*av*) at lower third, anterodorsals at 21/77, 38/77, 50/77, 58/77, 72/77 of

tibia (partly broken off on holotype). Long dorsal preapical, moderately long ventroapical on mid tibia. Hind tibia with a long anteroventral at lower $2/5$, dorsal preapical 0.34 mm. Ventroapical spur curved, 0.20 mm long, left hind femur missing, left hind tibia glued to base of coxa (Fig. 6). Claws long and strong, pulvilli very small. Abdomen long (Fig. 6), tergites not wider than

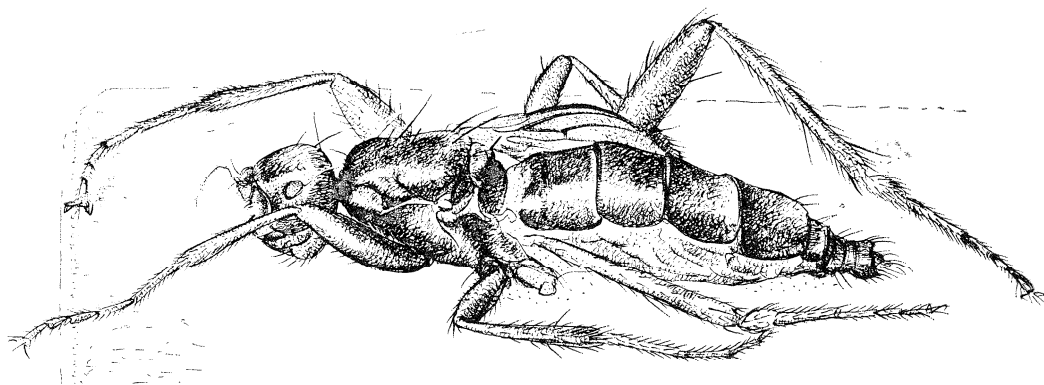


Fig. 6. *Copromyza (Speomyia) hungarica* (DUDA, 1938), stat. nov., holotype female

abdomen, moderately chitinized. Tergites 1–5 long, other tergites short and weak. Female cerci each with 2 long and several short hairs.

The species *hungarica* DUDA, 1938, also derived from a *Copromyza* (sg. *Crumomyia*) species. It is related to *absoloni* but still quite distinct and it also is merely a species of the subgenus *Speomyia* BEZZI. Accordingly *Paraspeomyia* DUDA, 1938, is a new synonym of *Speomyia* BEZZI, 1914, at the subgeneric level.

The caves of the Carpathian Basin as biotopes are surely younger than 500,000 years (L. KORDOS, in litt.), but this geologically short time was enough to produce modified forms in the genus *Copromyza* during their development as cavernicolous species. This fact should be kept in view when ranking brachypterous and apterous forms in a family where wing reduction appears along almost every line of descent.

Apterina MACQUART, 1835

Type-species: *pedestris* (MEIGEN, 1830) (monotypy). Material studied: over 50 specimens from the Carpathian Basin in the Hungarian Natural History Museum. Two males with body-length: 3.41 mm and 3.63 mm, wing-length: 2.95 mm and 3.00 mm, respectively (see also PAPP, 1976). Postocular hairs in numerous unarranged rows, one strong upcurving genal bristle, bristle

rs *vte*, *vti*, *oc*, 2 *ors* long but no *occe* and *occi* bristles; hind tibia without teroventral bristle, with long dorsal preapical hair, all tibiae covered with fine hairs; fore and hind metatarsi of males with a ventroapical hook. This combination of characters fits only the species of *Fungobia* LIOY, 1864. The species *pedestris* MEIG. is usually micropterous, but as GUIBÉ (1939) and during his studies on this species, one can find in cultures fully macropterous forms on the responsibility of a recessive gene. This is the first finding of a macropterous form in the field, and it is regarded as an important evidence in adjudging the systematic position of *pedestris*. Accordingly, *Apterina* ACQUART, 1835 (subgenus), is synonymous with *Fungobia* LIOY, 1864, and the proposed combination for the species is *Copromyza* (*Fungobia*) *pedestris* MEIGEN, 1830), **stat. nov.**

Reunionia gen. n.

Very small, shining black flies. Wings much reduced in a characteristic micropterous form, shorter than to reach hind margin of scutellum (Fig. 7). Halteres absent. Body curved, mesonotum and scutellum flat and wide. Head slightly higher than long, no ocelli. Ocellar bristles normal, *vti* very long, *vte* short but distinct. No orbital bristles, only 1—2 minute hairs instead. First antennal joint very small, second joint with a dorsal bristle and some marginal bristles, third joint reniform, arista dorsal, third joint with long pubescence. Labrissae moderately long, no genal bristles, peristomals hairlike, very short and thin. Thoracic chaetotaxy: 2 short *np*, 2 very long and thick *dc*, 1 long and thick *sa*, 1 small *pa*, 2 moderately long *sc* pairs of bristles (some broken from the type-specimens). Scutellum quite long (almost as long as head) and very wide. Legs short and normal. Wing rudiments black, closed flabelliform. Abdomen convex in profile and also from above. Second tergite somewhat longer than tergites 3—4—5 combined. Male epandrium very short.

Type-species: *Reunionia unica* sp. n.

In RICHARDS' key of the brachypterous and apterous Sphaeroceridae (1965), this new genus keys out to the couplet 30 (*Ocellipsis* RICHARDS, Mt. Elgon and adjacent Escarpment); however, contrarily to *Ocellipsis*, it has a big, fully semicircular scutellum, no ocelli, halteres absent, abdomen wide and not stalked, abdomen without long bristles. It has two pairs of *dc* (contrarily to *Ocellipsis*, where there is only one) and two pairs of scutellar bristles (in *Ocellipsis* there are only rarely two pairs).

Reunionia unica sp. n.

Body shining black, finely punctured, only thoracic pleurae slightly pruinose, anterior margin of frons and antennae and facial plate dark reddish yellow. Frons and ocellar triangle trapezoid, eyes big, longitudinal axis four

ripe of frons silvery pollinose, frons still black. Ocellar triangle small. Ocelli small but distinct. Bristle pairs *oc*, *vte*, *vti* and 1 posterior *ors* long and thick. Only two long and thick *if* bristles and one third anterior, short *if*. A small rotuberance between antennae. Mouth edge produced, vibrissae very long, anal bristle comparatively short and thin, peristomals hairlike. Palpi very thin. Third antennal joint with long hairs, arista long. Thoracic chaetotaxy: *h*, 1 long anterior *np*, 1 short posterior *np*, 1 long *sa*, 1 *pa*, 1 prescutellar *dc*, equally long *sc*, 1 *st* bristle pairs. Scutellum big, semicircular (width twice as long as length). Scutellar bristles marginal. Prosternum sublinear. Legs normal, coxae short, mid tibia with some *ad* and *pd* but only one paired bristle at lower 6/7. Ventroapical bristle of mid tibia strong, no median ventral bristle. Abdomen convex in profile and also from above. Male with 5, female with 6, visible tergites. Sternites not very broad, lateral margins not reaching lateral margins of tergites (except for postabdomen). Male epandrium globular. Female cerci very short, with very short fine hairs.

Type-species: *Hackmaniella ceylanica* sp. n.

Hackmaniella gen. nov runs to the couplet 25 in RICHARDS' key (1965) for the apterous and brachypterous genera of Sphaeroceridae (basal *sc* bristles marginal, all four *sc* bristles long), although the basal bristles on mid tibia (*ad* and *pd*) are not paired. Furthermore, it has only one *ors* (3 in *Mesaptilotus* RICH., 2 in *Aubertinia* RICH.); as regards its prosternum, it is closer to *Aubertinia* but it is a completely black form, while *Aubertinia* is mainly yellow. It has three light stripes on frons as in some species of *Mesaptilotus*, but these two genera are rather dissimilar as regards morphology (although it would have been very pleasant to find a linkage between the sphaerocerid fauna of the African high mountains and that of the high mountains of Ceylon).

I dedicate the new genus to Prof. DR. WALTER HACKMAN, excellent specialist, with several standard works concerning the zoogeography, taxonomy and systematics of Sphaeroceridae and other fly groups, who helped and facilitated my work in many ways.

***Hackmaniella ceylanica* sp. n.**

Head $1\frac{1}{3}$ times higher than long, mouth edge much produced (Fig. 8). Genae rather wide, longitudinal axis of eyes only 2.5 times longer than smallest genal width, genae essentially widening posteriorad. Thorax covered by dense short microchaetae (about 8 disarranged rows between lines *dc*). Cephalic and thoracic chaetotaxy as above. Scutellar length/width = 0.51, fully semicircular, apical *sc* 0.36 mm long, basal *sc* 0.37 mm long, that is, subequal. Legs black, fore tarsal joints 2—5 whitish. Mid metatarsus rather long (0.33 mm). Mid tibia with long and thick apicoventral, no mid ventral bristle, long dorsal at 22/54, anterodorsal at 43/54, a short posterodorsal at 18/39 and strong postero-

times broader than long. Legs short and moderately thickened. Mid tibia with paired *ad* and *pd* bristles at $1/3$ and $19/23$ of tibia and 1 ventroapical; no mid ventral or other bristles. Hind tibia without dorsal preapical bristle. Abdomen with very heavy chitinization, tergites and sternites meeting laterally. Males and females with 5 visible tergites. All tergites covered by dense, thin and moderately long microchaetae.

Type-species: *Apterobiroina australis* sp. n.

Apterobiroina gen. n. runs to the couplet 23 (22) in RICHARDS' key to the Australian Region (*Howickia* RICHARDS, New Zealand), but contrarily to *Howickia* it has two pairs of *ors*, small but distinct ocelli, and no silvery lines on head. In RICHARDS' key to the apterous and brachypterous sphaerocerids it also keys out to *Howickia* RICHARDS. It seems probable that the new genus is a derivative of the hypothetic common ancestor of *Biroina* RICHARDS and *Apterobiroina* gen. n.; the species is distinct enough to be separated at the generic level (prosternum wide, quadrangular, contrarily to the linear or only posteriorly widening prosternum of the reduced-winged species of *Biroina*; also, its halteres are reduced and its body is shining black).

Apterobiroina australis sp. n.

Body shining black, genae and facial plate and lower $1/3$ — $2/5$ of frons yellow, reddish yellow; tarsi, bases and apices of tibiae reddish yellow. Genae wide, smallest diameter exactly half of longitudinal axis of eyes. Facial plate shining, protuberance between bases of antennae small but distinct, facial plate concave (more strongly below antennae) (Fig. 9). First antennal joint with a very long, thin, proclinate bristle, second joint with one strong dorsal bristle and with half of a wreath of long marginal bristles. Third joint somewhat pointed, cristately pilose, arista very long, subapical (more than 0.5 mm). Genal bristle very weak. 2 *ors* in posterior half of frons, anterior one only $2/3$ length of posterior *ors*. Head of holotype at widest: 0.62 mm, thorax at widest: 0.71 mm, at narrowest: 0.35 mm, abdomen at widest: 0.80 mm. Knob of halteres black, base brown. Thorax above hind coxae strongly excavated. Coxae short and thick, femora thickened, mid tibia with paired robust *ad* and *pd* bristles at $1/3$ and $17/21$ of tibia, some further 7—8 pairs of short bristles, no mid ventral, 1 ventroapical. Mid metatarsus 1.8 times longer than second joint. Humeral, postalar and sternopleural bristles shorter, other characteristic bristles of thorax long and thick. Male epandrium short, without long or thick bristles, male 6th sternite with 12 black teeth. Female abdomen also with 5 visible tergites, female cerci very short, female postabdomen completely retracted into 5th segment.

Body-length: holotype male: 1.51 mm, paratypes: 1.45—1.54 mm.

an anteral at upper third and 1 strong anterodorsal at lower 1/8. Hind tibia without characteristic bristles. Hind tarsal joints 3—5 long and flattened. Claws long and curved, pulvilli well-developed. Abdomen very thin at base, 0.82 mm, at widest 2.06 mm. Length of abdominal tergites 2—5: 49 : 33 : 23 : 9. Long marginal bristles only on 4th and 5th tergites.

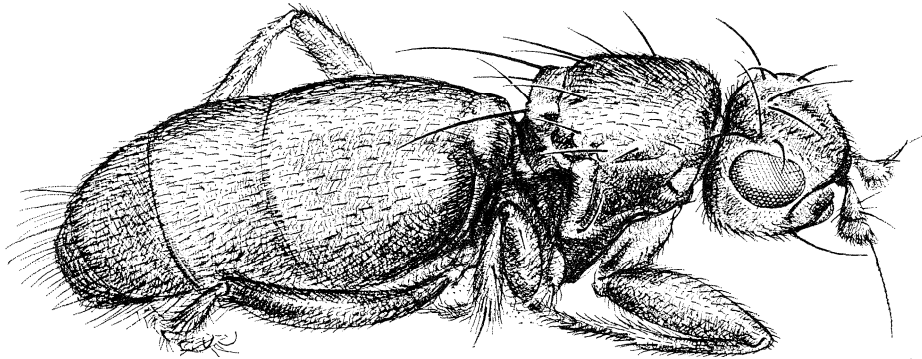


Fig. 10. *Anatalanta crozetensis* ENDERLEIN, 1909, ♂

HACKMAN (1969) discussed the systematic problems of *Anatalanta* EATON, 1875, and concluded that this is a very old branch of the Sphaeroceridae, possibly related to *Ceroptera*. I believe it to be a distinctly separate line in the phylogeny of the family Sphaeroceridae, though the relation of the trends in their phylogeny need more study. It seems rather probable that some of the features of *Anatalanta* may be plesiomorphous (bristles *if*, very long second antennal joint, numerous genal rows) and unique in Sphaeroceridae, but which can be found in other Acalyptrate fly families. On the other hand, most of its features must be apomorphous.

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Thoracic bristles as follows: humeral, two notopleurals, posthumeral, supra-alar, and anterior postalar about equal in size; posterior dorsocentral larger; prescutellars and anterior dorsocentrals somewhat smaller. Prealar and intra-postalar much weaker. Mesonotum densely setulose, that is, with about 12-14 irregular rows between dorsocentral series with two strong upper sternopleural bristles and a smaller one at posteroventral corner, between all these with about 10 setulae.

Coxae, femora, and tibiae reddish brown. Mid tibia, only, with preapical dorsal bristle, and this apparently rather weak. Setulae on ventral surface of hind metatarsus short as in *exiguus*.

Wing about 2.0 mm long. Second costal section about twice as long as the third section. Last section of vein m_1 is well over twice as long as posterior crossvein.

Abdomen shiny. Sixth tergum very short, that is, much less than one-half as long as fifth tergum.

REMARKS. Hendel (1933) described this species from a single male, captured in a sandy meadow at Semmering, Lower Austria, in June, and indicated the type was in his collection. Dr. A. Kaltenbach, curator of Diptera, Natural History Museum, Vienna, kindly searched for this specimen and informed me as follows: "Unfortunately I could not find the type of *Cacoxenus inquilinus* Hendel in our collection. If the species was not transferred to a related family after 1933, it must be regarded as lost like other types of Hendel." I have been unable to find any synonymic notes concerning *inquilinus*, and assume the type is in fact, lost.

From the description it appears to be most similar to *P. argyreator* (Frey) but is easily distinguished from that species by the characters given in the key to species.

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