New genera and species of Arctiinae from the Afrotropical fauna (Lepidoptera: Arctiidae)

Vladimir V. Dubatolov

Dr. Vladimir V. Dubatolov, Siberian Zoological Museum, Institute of Animal Systematics and Ecology, SB RAS, Frunze street 11, Novosibirsk 91, RUS-630091, Russia; vvdubat@online.nsk.su

Abstract: Based mainly on male genitalia characters and body structure, ten new genera and a subgenus are established in African Arctiinae. ***Afrowatsonius* gen. n.,** with the type species *Aloa marginatus* Walker, 1855, includes also *A. burgeoni* (Talbot, 1928) **comb. n.,** *A. fuscomarginalis* (Wichgraf, 1921) **comb. n.,** and *A. sudanicus* (Rothschild, 1933) **comb. n.** ***Popoudina* gen. n.,** with the type species *Estigmene pamphilia* Kiriakoff, 1958, includes *P. linea* (Walker, 1855) **comb. n.,** *P. lemniscata* (Distant, 1898) **comb. n.,** *P. leighi* (Rothschild, 1910) **comb. n.,** and, probably, some other species presently included in *Estigmene*. Within the genus *Popoudina*, the subgenus ***Pseudopopoudina* subgen. n.** is established for *Estigmene brosi* de Toulgoët, 1986 only. ***Afrospilarctia* gen. n.,** with the type species *Euchaetes lucida* Druce, 1898, includes also *A. dissimilis* (Distant, 1897) **comb. n.** ***Logunovium* gen. n.,** with the type species *Spilosoma scortillum* Wallengren, 1875, includes also *L. nigricostum* (Holland, 1933) **comb. n.** ***Afraloa* gen. n.** is established for *Aloa bifurca* Walker, 1855. ***Detoulgoetia* gen. n.,** with the type species *Spilosoma aspersa* Mabille, 1878, includes also *D. comorensis* (Rothschild, 1933) **comb. n.,** and *D. pseudosparsata* (Rothschild, 1933) **comb. n.** ***Madagascarctia* gen. n.,** with the type species *Diacrisia sparsipuncta* Hampson, 1901, includes *M. madagascariensis* (Butler, 1882) **comb. n.,** *M. cellularis* (de Toulgoët, 1954) **comb. n.,** and *M. femina* (Rothschild, 1933) **comb. n.** ***Radiarctia* gen. n.,** with the type species *Diacrisia jacksoni* Rothschild, 1910, includes *R. lutescens* (Walker, 1855) **comb. n.,** *R. rhodesiana* (Hampson, 1900) **comb. n.,** *R. melanochoria* (Hering, 1932) **comb. n.,** and probably many other species of the *Spilosoma* group with yellowish forewings and a radial brown pattern interneurally. ***Pericaliella* gen. n.** is established for *Diacrisia melanodisca* Hampson, 1907. ***Afrojavanica* gen. n.,** with the type species *Pericallia geometrica kostlani* Gaede, 1923 from Ethiopia, includes also *A. melaena* (Hampson, 1901) **comb. n.,** and *A. melaenoides* (Rothschild, 1935) **comb. n.** from Java. A new species, *Epilacydes* ***pseudoscita* sp. n.,** is described from the Ivory Coast, the male holotype is deposited in the Zoological Institute (St.-Petersburg, Russia). Based on the male genitalia, *Estigmene scita* (Walker, [1865]) and *Estigmene bayoni* Berio, 1935 are transferred to *Epilacydes* Butler, 1875 (**comb. n.**), whereas *Antheua scita* Walker, [1865] is removed from *Spilosoma* Curtis, 1825 and transferred to *Binna* Walker, [1865] **comb. n.**

Key words: Tiger moths, new genus, new subgenus, new species, new combination, Afrotropics.

Neue Gattungen und eine neue Art der Arctiinae aus der afrotropischen Fauna (Lepidoptera: Arctiidae)

Zusammenfassung: Hauptsächlich auf der Basis von männlichen Genitalarmaturen und Körpermorphologie werden zehn neue Gattungen und eine Untergattung innerhalb der afrikanischen Arctiinae aufgestellt. ***Afrowatsonius* gen. n.,** mit der Typusart *Aloa marginatus* Walker, 1855, beinhaltet zusätzlich noch *A. burgeoni* (Talbot, 1928) **comb. n.,** *A. fuscomarginalis* (Wichgraf, 1921) **comb. n.,** und *A. sudanicus* (Rothschild, 1933) **comb. n.** ***Popoudina* gen. n.,** mit der Typusart *Estigmene pamphilia* Kiriakoff, 1958, umfaßt auch *P. linea* (Walker, 1855) **comb. n.,** *P. lemniscata* (Distant, 1898) **comb. n.,** *P. leighi* (Rothschild, 1910) **comb. n.** und höchstwahrscheinlich einige weitere Arten, die zur Zeit noch in der Gattung *Estigmene* stehen. Innerhalb der Gattung *Popoudina* wird weiter das Subgenus ***Pseudopopoudina* subgen. n.** aufgestellt für die einzige Art *Estigmene brosi* de Toulgoët, 1986. ***Afrospilarctia* gen. n.,** mit der Typusart *Euchaetes lucida* Druce, 1898, beimnhaltet auch *A. dissimilis* (Distant, 1897) **comb. n.** ***Logunovium* gen. n.,** mit der Typusart *Spilosoma scortillum* Wallengren, 1875, umfaßt auch *L. nigricostum* (Holland, 1933) **comb. n.** ***Afraloa* gen. n.** wird beschrieben für *Aloa bifurca* Walker, 1855. ***Detoulgoetia* gen. n.,** mit der Typusart *Spilosoma aspersa* Mabille, 1878, umfaßt auch *D. comorensis* (Rothschild, 1933) **comb. n.** und *D. pseudosparsata* (Rothschild, 1933) **comb. n.** ***Madagascarctia* gen. n.,** mit der Typusart *Diacrisia sparsipuncta* Hampson, 1901, beinhaltet auch *M. madagascariensis* (Butler, 1882) **comb. n.,** *M. cellularis* (de Toulgoët, 1954) **comb. n.** und *M. femina* (Rothschild, 1933) **comb. n.** ***Radiarctia* gen. n.,** mit der Typusart *Diacrisia jacksoni* Rothschild, 1910, umfaßt *R. lutescens* (Walker, 1855) **comb. n.,** *R. rhodesiana* (Hampson, 1900) **comb. n.,** *R. melanochoria* (Hering, 1932) **comb. n.** und wahrscheinlich viele weitere Arten aus der Sammelgruppe *Spilosoma* mit gelblichen Vorderflügeln und einem radialen braunen Muster zwischen den Adern. ***Pericaliella* gen. n.** wird beschrieben für *Diacrisia melanodisca* Hampson, 1907. ***Afrojavanica* gen. n.,** mit der Typusart *Pericallia geometrica kostlani* Gaede, 1923 von Äthiopien umfaßt auch *A. melaena* (Hampson, 1901) **comb. n.** und *A. melaenoides* (Rothschild, 1935) **comb. n.** von Java. Eine neue Art, *Epilacydes* ***pseudoscita* sp. n.,** wird von der Elfenbeinküste beschrieben, der männliche Holotypus befindet sich in der Sammlung des Zoologischen Instituts in St. Petersburg, Rußland. Gemäß ihrer männlichen Genitalarmaturen werden *Estigmene scita* (Walker, [1865]) und *Estigmene bayoni* Berio, 1935 zur Gattung *Epilacydes* Butler, 1875 transferiert (**comb. n.**), und *Antheua scita* Walker, [1865] wird aus *Spilosoma* Curtis, 1825 zu *Binna* Walker, [1865] gestellt (**comb. n.**).

Introduction

Although the Afrotropical tiger moth fauna (Lepidoptera, Arctiinae) was catalogued by Goodger & Watson (1995) about ten years ago, since that time no progress has been accomplished with regard to the supraspecific taxonomy or a classification system of the Arctiinae of this region. Nevertheless, the aforementioned catalogue is complete and contains all currently known specific names, with all type species and their genitalia being figured. Some of the catalogued genera were accompanied with notes such as: "probably none of Afrotropical species currently placed in *Estigmene* is closely related to *acrea*, the type species of *Estigmene,*" or: "of the many Afrotropical species currently placed in *Spilosoma*, possibly only *yemenensis* is correctly placed." Fur-

thermore, for most of such large and complex genera the authors provided species groupings, of which many seemed to deserve a generic status, but no new generic names were established. While studying the genera of Eurasian Arctiinae, I had to investigate some species known from the Afrotropical Region. Among them there were several species which did not belong to the genera to which they were originally assigned. Descriptions of new genera for such species are given below. Besides newly collected material, I have used the collections of the Siberian Zoological Museum of the Institute on Animal Systematics and Ecology, Novosibirsk, Russia (SZMN), the Zoological Institute, St.-Petersburg, Russia (ZIN), and the Manchester Museum of the University of Manchester, UK (MMUM).

In accordance with Kristensen (2003: 103), the term aedeagus (= aedoeagus) is replaced by the more general term phallus.

Descriptions

Afrowatsonius gen. n.

Type species: *Aloa marginalis* Walker, 1855 (Fig. 1). – Gender: masculine.

Etymology: The generic name consists of two parts: "Afro", referring to Africa, and the second half derived from the name of the late Dr. Allan Watson (England), the specialist in Arctiinae systematics.

Description. ♂ antennae bipectinate, with very long branches. Eyes large, hemispherical, naked. Palpi short, porrect. Proboscis short, but reaching the tips of coxal apices. Foretibiae simple, narrow; middle and hind tibiae with an apical pair of spurs. The vein R_2 of forewings is stalked with R_{3+5} (venation type C, Sotavalta 1964). Forewings white, with brown spots, grouped into 5 transversal bands, and a medial longitudinal stripe. Hindwings with a few submarginal and a single discal spots. Tympanum with a small, oval flattened inflation.

♂ genitalia (Fig. 26). Uncus like a moderately narrow triangle. Valves elongate, with three small apical processes, and a wrinkled crest arising from the basal membranous hole and running along the costa towards the apex. Juxta moderately long. Phallus strongly curved near apex, with an apical field of spinules. Vesica global, with numerous small broad spinules.

Note on systematics. The new genus strongly differs from *Creatonotos* Hübner, [1819], of which I have studied the type-species *C. gangis* (Linnaeus, 1763), as well as *C. transiens* (Walker, 1855), and *C. leucanioides* Holland, 1893 (Figs. 27–29). They have the very narrow valves with a process on their inner side and the juxta with a very long apical process. These characters are strictly autapomorphic for the genus and do not occur in *Afrowatsonius*. *Creataloum arabicum* (Hampson *in* Walsingham & Hampson 1896), formerly assigned to *Creatonotos,* has two pairs of spurs on the hind tibiae, the global tympanum and quite a different structure of the valve (Fig. 30) (Dubatolov 2004a). Among the Afrotropical genera and species, only *Menegites nivea* Kiriakoff, 1954 displays a somewhat similar ♂ genital structure (Figs. 58–59), i.e. the elongate valves with bifurcated apex. Nevertheless, the uncus of this species is noticeably narrowed towards its base (an apomorphic character), the valve lacks any armature on its inner side, the phallus is straight, and the vesica bears a few fields of long spine-like cornuti. Goodger & Watson (1995) stated that three more species possess a wing pattern somewhat similar to that of *A. marginalis,* namely: *C. burgeoni* (Talbot, 1928) from Zaire, *C. fuscomarginalis* Wichgraf, 1921 and *C. sudanicus* Rothschild, 1933 from Sudan. All of them are here combined with the newly established genus *Afrowatsonius.* Because only the type species was studied, it is difficult to select autapomorphic characters for the genus; probably these are three small apical processes on the valve and a wrinkled crest arising from the basal membranous hole and running along the costa towards the apex.

Composition. *Afrowatsonius marginalis* Walker, 1855 **comb. n.** (Fig. 1), *Afrowatsonius burgeoni* (Talbot, 1928) **comb. n.,** *Afrowatsonius fuscomarginalis* (Wichgraf, 1921) **comb. n.,** *Afrowatsonius sudanicus* (Rothschild, 1933) **comb. n.**

Material studied. *Afrowatsonius marginalis* (Walker, 1855): **Guinea:** 9 ♂♂, Conakry, Camayen, xii. 1926–2. vi. 1927, Il. Ivanov leg. (ZIN, SZMN). • **Cote d'Ivoire:** 1 ♂, Bingerville 13. iv. 1914, G. Melou leg. (ZIN).

Popoudina gen. n.

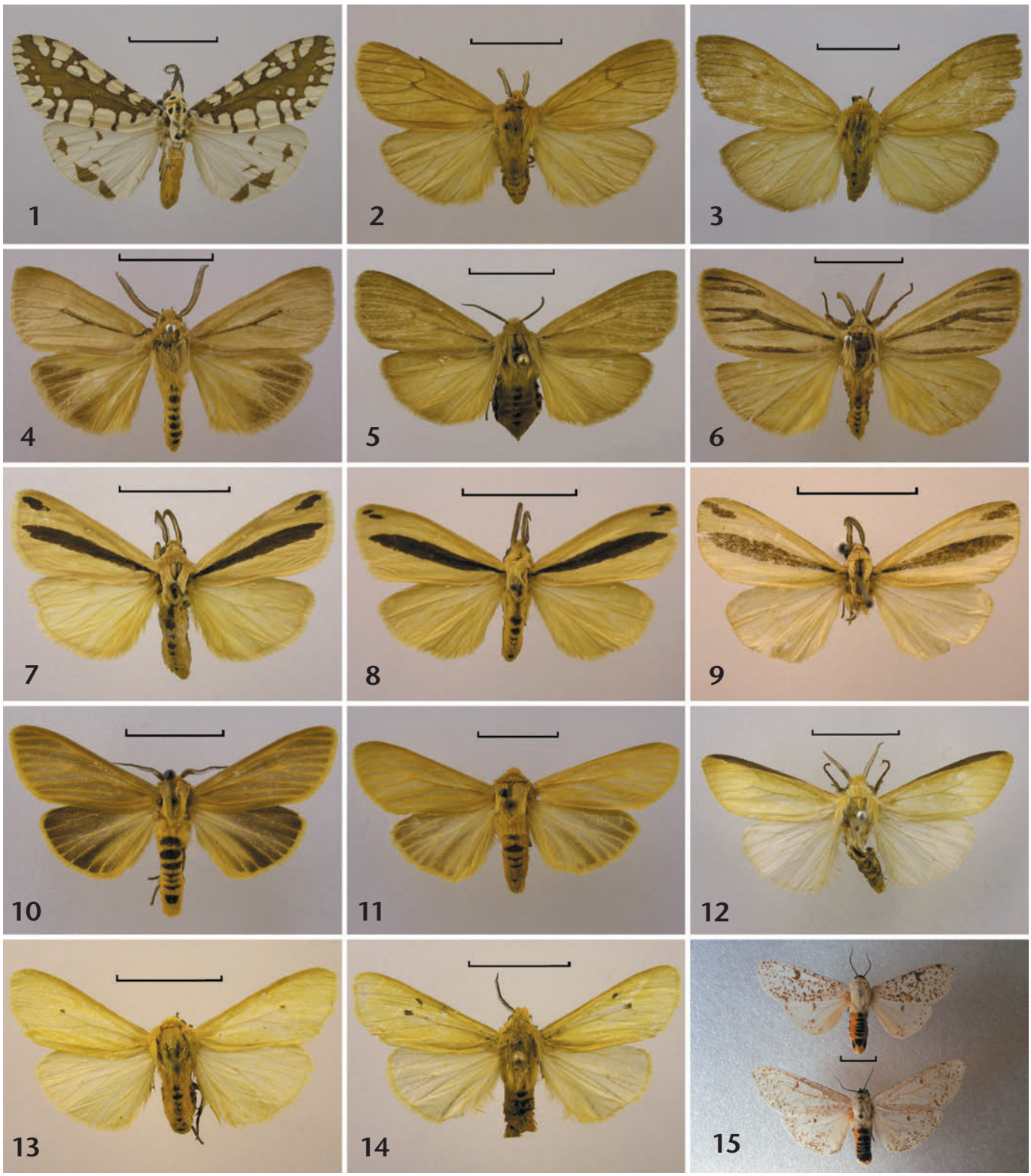
Type species: *Estigmene pamphilia* Kiriakoff, 1958 (Figs. 2–3). – Gender: feminine.

Etymology: The genus is named after Mrs. A. Popoudina (Novosibirsk, Russia) whose insect collections from Rwanda were used in the present study.

Description. ♂ antennae bipectinate with very long branches. Eyes large, hemispherical, naked. Palpi short, stout, porrect. Foretibia medium-long, with two naked, apical claws. Middle tibia with a pair of spurs, hind tibia with two pairs. The vein R_2 on forewings is stalked with R_{3+5} (venation type C of Sotavalta 1964). Forewing broad, yellow, with brownish veins and a small discal spot. Hindwings also yellowish. Tympanum with a small flattened inflation.

♂ genitalia (Figs. 33–35). Uncus broad, heavily sclerotized and bifid, with two or three branches on each side. Vinculum broad semicircular, saccus as a sharp triangle. Valves simple, digitate, slightly inward, with a costal-basal part separated from the main part of valve and fused with vinculum. Phallus short, straight, with globular vesica with only a single sclerotized plate.

Notes on systematics. Among the Afrotropical "*Estigmene*" species with previously described ♂ genitalia, several species belong to the new genus, among them are *Spilosoma linea* Walker, 1855 (Figs. 4–5, 33) and *S. lemniscata* Distant, 1898 (Figs. 6, 35), both from South Africa. By the ♂ genitalia, they differ strongly from



Figs. 1–15: Arctiidae specimens. **Fig. 1:** *Afrowatsonius marginalis,* ♂, Guinea. **Figs. 2–3:** *Popoudina pamphilia,* Rwanda, ♂ (2) and ♀ (3). **Figs. 4–5:** *Popoudina linea,* South Africa, ♂ (4) and ♀ (5). **Fig. 6:** *Popoudina lemniscata*, ♂, South Africa. **Fig. 7:** *Epilacydes scita*, ♂, Guinea. **Figs. 8–9:** *Epilacydes pseudoscita* sp. nov., Ivory Coast, holotype (8) and paratype (9). **Figs. 10–11:** *Binna scita*, ♂♂, South Africa, Zululand (10) and Natal (11). **Fig. 12:** *Logunovium scortillum*, ♂, South Africa. **Fig. 13:** *Afrospilarctia lucida*, ♂, Rwanda. **Fig. 14:** *Afrospilarctia dissimilis*, ♂, South Africa. **Fig. 15:** *Detoulgoetia aspersa*, ♂, Madagascar, ♂ (above), ♀ (below). — Specimens not to the same scale.

true members of the American genus *Estigmene* Hübner, [1820] (Figs. 31–32) and are very similar to *Popoudina pamphilia.* Goodger & Watson (1990) stated that *E. dorsalis* (Walker, 1855) from South Africa and *E. griseipennis* (Bartel, 1903) from Angola also belong to the "*E. linea*" group together with *P. pamphilia*, so they are here also transferred to *Popoudina* gen. n. Most probably, some other Afrotropical "*Estigmene*" species may also belong to this genus. Due to the identical tegumen and uncus structures and the elongate finger-like valves (Fig. 78), *Amsacta aliena* Kiriakoff, 1954 is transferred to the new genus as well. So, the most noticeable autapomorphic character for the genus is the uncus structure, which is broad, heavily sclerotized and bifid, with two

or three branches on each side. Among other apomorphic characters which do not occur in *Estigmene,* there are simple valves without processes and a wide ring of tegumen and vinculum.

Composition. *Popoudina pamphilia* (Kiriakoff, 1958) **comb. n.** (Figs. 2–3), *Popoudina linea* (Walker, 1855) **comb. n.** (Figs. 4–5), *Popoudina lemniscata* (Distant, 1898) **comb. n.** (Fig. 6), *Popoudina aliena* (Kiriakoff, 1954) **comb. n.,** *Popoudina brosi* (de Toulgoët, 1986) **comb. n.** [see below!], *Popoudina dorsalis* (Walker, 1855) **comb. n.,** *Popoudina griseipennis* (Bartel, 1903) **comb. n.**

Among these species, *P. brosi* (Fig. 75) from Tanzania possesses a moderately broad uncus terminated in 3 processes (Fig. 79). Based on the structure of the vinculum, the saccus, the valves, and the phallus, it is very similar to *Popoudina* gen. n. Thus, I have transferred it to *Popoudina,* but have decided to establish a new, at present monotypic, subgenus for it:

***Pseudopopoudina* subgen. n.**

Type species: *Estigmene brosi* de Toulgoët, 1986 (Fig. 75). – Gender: feminine.

Etymology: The generic name consists of two parts: "pseudo", meaning "false" or "spurious", and the genus name *Popoudina* (see above).

Description. Body and wing characters as in *Popoudina*. The general appearance of the ♂ genitalia is very similar to *Popoudina,* but the uncus differs significantly, being not bifid but terminated by three processes (Fig. 79). This might be a more plesiomorphic condition for the bifurcated uncus structure of the true *Popoudina,* but apomorphic to other Arctiinae genera with a simple uncus. – Only one species: *Popoudina (Pseudopopoudina) brosi* (de Toulgoët, 1986) **comb. n.**

Material studied: *Popoudina pamphilia* (Kiriakoff, 1958) **comb. n.: Rwanda:** 26 ♂♂, 3 ♀♀, Butare, II. 1976–VI. 1978, A. Popoudina leg. (SZMN); 2 ♂♂, Kigali, IV. 1977, A. Popoudina leg. (SZMN). – *P. linea* (Walker, 1855) **comb. n.: South Africa,** Natal: 1 ♂, Pinetown, coll. G. H. Burn (MMUM); KwaZulu-Natal: 2 ♂♂, 3 ♀♀, Cumberland National Reserve, 2. XII. 2004, P. Ustjuzhanin leg. (SZMN); 1 ♂, Pietermaritzburg, Ferncliff National Reserve, 5. XII. 2004, P. Ustjuzhanin leg. (SZMN). – *P. lemniscata* (Distant, 1898) **comb. n.: South Africa,** Natal: 1 ♂, Weenen, coll. G. H. Burn (MMMU).

Notes on *Epilacydes* Butler, 1875

Among the species assigned to *Estigmene* by Watson & Goodger (1995), *E. scita* (Walker, [1865]) (described as *Aloa scita* Walker, [1865]) (Fig. 7) from West Africa and *E. bayoni* Berio, 1935 (Fig. 84) are transferred to *Epilacydes* Butler, 1875 based on their ♂ genitalia structure (Figs. 36, 85). Similar to the type species *E. simulans* Butler, 1875 (Figs. 69–70), of which the ♂ genitalia were figured by Goodger & Watson (1995), *E. scita* and *E. bayoni* have the long hook-like uncus bearing dorsal teeth and two dorsal triangular projections at its base; the valves of the mentioned species are digitate, with an auriculate costal lobe at valvel base. *Estigmene unilinea* Rothschild, 1910 from West Africa may also belong to *Epilacydes*.

In the ZIN collection, I found 2 ♂♂ from the Ivory Coast that are similar to *E. scita* in their wing pattern, but different in the ♂ genitalia structure. These ♂♂ are treated as a new species:

***Epilacydes pseudoscita* sp. n. (Figs. 8–9)**

Holotype ♂: Afrique occ. fr., Cote d'Ivoire, Bingerville, 13. IV. 1914, G. Melou leg. (ZIN).

Paratype: 1 ♂, same data.

Etymology. The species name consists of two parts: "pseudo", meaning "false" or "spurious", and the species name *scita* (see above).

Description. Forewing length 27–29 mm. Wings yellow, forewing with a broad brown longitudinal stripe running from its base up to the external margin between the veins M_2 and M_3, but not touching the margin. Forewing with two small, apical brown streaks, separate from each other in the holotype but fused into an offset position in the paratype. ♂ antennae bipectinate, with long branches. Body yellow, dorsal surface of abdomen with transversal brown spots on each segment.

♂ genitalia (Fig. 37) of the same type as in *E. scita:* the uncus with subapical angular broadening dorsally, covered with strong spines; lateral broadened projections on the dorsal surface of tegumen which are rounded on top. The costal-basal part of valves with curved process.

Notes on systematics. The new species is very similar to *E. scita* (Fig. 7) and *E. bayoni* (Fig. 84), both latter species have the apical stripe broad, whereas in the new species, it consists of two small separate stripes, sometimes fused into an offset position. The apex of the uncus in *E. bayoni* is nearly straight (Fig. 85), in *E. scita* (Fig. 36) is hook-like, in both species without a dorsal subapical broadening, and covered with sparse small spines; in *E. scita* the lateral dorsal broadened projections on the dorsal surface of tegumen are more or less triangular. There is one more species having the same wing pattern, viz. *E. unilinea* (Rothschild, 1910), figured by Hampson (1920: fig. 62, fig. 16), but it has no dark subapical spots and the basal half of the longitudinal stripe is very narrow and broad distally, whereas in *E. scita, E. bayoni,* and *E. pseudoscita* sp. n. it is gradually widened.

The next five new genera were originally recognized by Goodger & Watson (1995) as species groups in the genus *Spilosoma* Curtis, 1825. Surprisingly, these authors did not establish new taxonomic names for these groups, though stated that their species had not been correctly placed and should be raised to generic status. It should be noted that many other species of this genus which were not grouped by Goodger & Watson (1995), are still incorrectly placed.

In addition to the species for which new genera are descri-

bed below, *Spilosoma scita* (Walker, [1865]) (described as *Antheua scita* Walker, [1865]) (Figs. 10–11) has ♂ genitalia (Figs. 40–41) very similar to those of *Binna pencillata* Walker, [1865] (Figs. 71–72) in having the very long finger-like valves sparsely covered with rough hairs, the narrow uncus and the elongate juxta with one or two lateral apical processes. Thus, it is better placed in this genus: *Binna scita* (Walker, [1865]) **comb. n.**

Logunovium gen. n.

Type species: *Spilosoma scortillum* Wallengren, 1875 (Fig. 12). — Gender: neutral.

Etymology: The genus is named in honour of Dr. D. V. Logunov.

Description. ♂ antennae bipectinate. Eyes large, hemispherical, naked. Palpi short, porrect, not longer than hair-like setae on the frons. Proboscis much longer than palpi, nearly equal to the head diameter. Foretibiae simple, without apical spine. Middle tibia with a pair of narrow spurs equal in length to the tibia' diameter, hind tibia with two pairs of such spurs. The vein R_2 on forewing is stalked with R_{3+5} (venation type C by Sotavalta 1964). Forewings yellowish, with dark costal margin; hindwings light. Tympanum with a small oval flattened inflation.

♂ genitalia (Figs. 44, 60–62). Uncus broadly triangular. Valves elongate, straight or slightly curved. Juxta as long as wide, with quadrangular apical half bearing teeth on each side. Phallus straight, vesica rounded, without cornuti or covered with small spiniculi.

Notes on systematics. Besides the type species from South Africa, the new genus also includes *Aloa nigricosta* Holland, 1893 from West Africa; its genitalia (Figs. 60–62) figured by Goodger & Watson (1995) have the same type of valves, the juxta with small spines on each side in the apical half, and the same wing pattern with light forewings and dark costa. The two latter characters being autapomorphic for the genus and do not occur in the *Spilosoma-Spilarctia* genus group. The ♂ genitalia are very unusual compared to any true *Spilosoma* species, with the simple valves lacking secondary processes and the juxta possessing spines on each side.

Composition. The genus consists of species of the *Spilosoma* species group with "white hindwings and yellowish white forewings with a dark brown costal streak": *Logunovium scortillum* (Wallengren, 1875) **comb. n.,** *Logunovium nigricostum* (Holland, 1893) **comb. n.**

Material studied. *Logunovium scortillum* (Wallengren, 1875): **South Africa,** Natal: 1 ♂, Weenen, coll. G. H. Burn (MMUM).

Afrospilarctia gen. n.

Type species *Euchaetes lucida* Druce, 1898 (Fig. 13). — Gender: feminine.

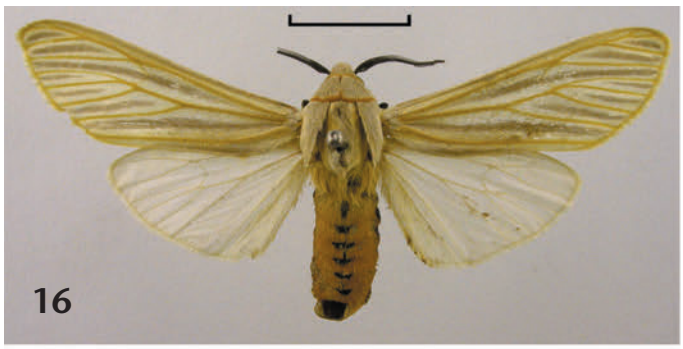
Etymology: The generic name consists of two parts: "Afro", referring to Africa, and the genus name *Spilarctia*.

Description. ♂ antennae bipectinate, not longer than $^1/_3$ of the forewing length. Eyes large, hemispherical, naked. Palpi very short, porrect, not longer than dense hair-like setae on the frons. Proboscis slightly longer than head width. Foretibiae narrow, with long narrow apical spine. Middle tibia with a pair of narrow spurs slightly longer than the tibia diameter, hind tibia with two pairs of such spurs. The vein R_2 on forewing stalked with R_{3+5} (venation type C of Sotavalta 1964). Forewings yellow, with black discal dots. Tympanum with a small oval flattened inflation.

♂ genitalia (Figs. 42–43). Uncus broadly triangle-shaped, noticeably convex dorsally. Valves narrow and elongate, with two apical processes. Juxta as long as wide. Phallus straight, with curved apical hook. Vesica broad, without lobes, covered with several groups of strong spine-like cornuti. Saccus rounded apically.

Notes on systematics. Although the species of this new genus were referred to *Spilosoma* by Goodger & Watson (1995) as the species group with "yellow forewings with one or more discocellular spots and white hindwings" of this genus, this definition seems to be misleading, because no other *Spilosoma* species has such an apomorphic character of a presence of an apical spine on the foretibiae. Moreover, the ♂ genitalia of the *Spilosoma-Spilarctia* group (Figs. 38–39) are quite different from those of *Afrospilarctia*. A similar type of ♂ genitalia was described in the southwest Asian monotypic genus *Creataloum* Dubatolov, 2004, with the type species *C. arabicum* (Hampson *in* Walsingham & Hampson 1896), but the latter lacks apical spines on the foretibiae, lacks cornuti on the vesica (Fig. 30), and its tympanum is considerably enlarged. Of the Afrotropical genera, *Acantharctia* Aurivillius, 1900 (Figs. 56–57) is most similar to the new genus in having apical spines on foretibiae (while in *Afrospilarctia* the foretibiae are narrow) and the valve structure is of the same type. The ♂ genitalia of *Menegites* Kiriakoff, 1954 (Figs. 58–59) also resemble those of the new genus in its similar valves structure, but its foretibiae lack apical spines. These three genera are clearly related because they share a number of evidently synapomorphic characters, like narrow and slightly curved valve with a bifurcated apex, and several groups of spine-like cornuti on the vesica. Among them, the new genus and *Afrospilarctia* are more closely related as having the apical spine on the foretibia. It looks likely that, apart from *Acantharctia*, the *Afrospilarctia* species have a very characteristic autapomorphic wing pattern, with yellow forewings with one or more discocellular spots and white hindwings. Other characters which can separate the new genus, are evidently plesiomorphic: absence of apical processes on the juxta and narrow foretibia. Apart from the type species, the new genus also includes *Spilosoma dissimilis* Distant, 1897 (Figs. 14, 43) from South Africa, and likely other species of this species group as delineated by Goodger & Watson (1995).

Composition. *Afrospilarctia lucida* (Druce, 1898) **comb. n.** (Fig. 13), *Afrospilarctia dissimilis* (Distant, 1897) **comb. n.** (Fig. 14).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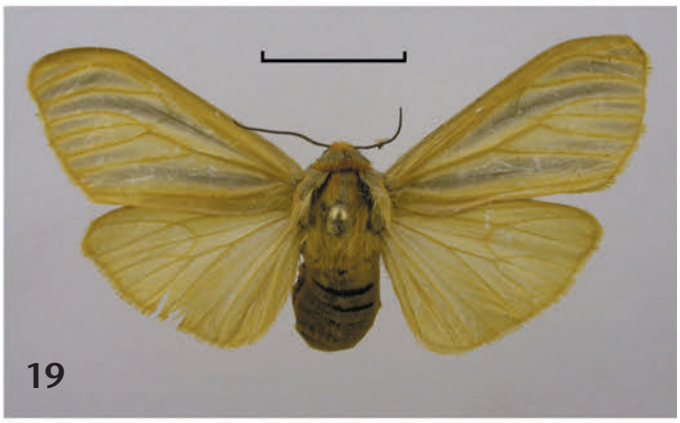
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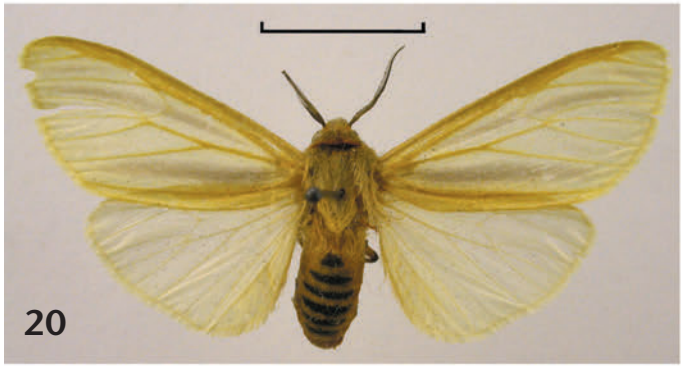
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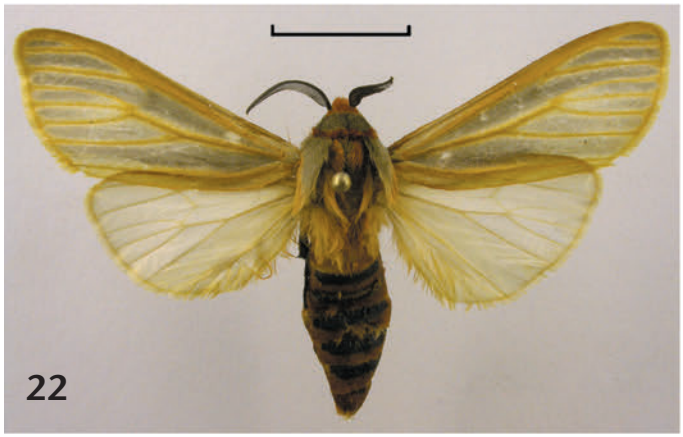
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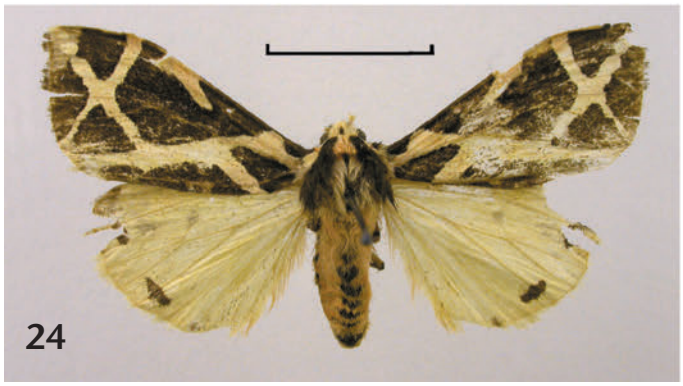
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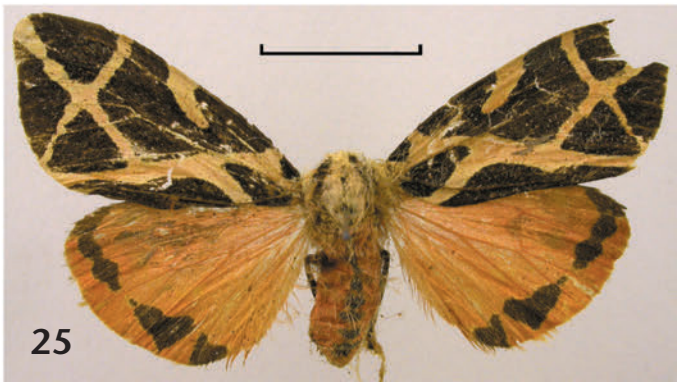
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Material studied. *Afrospilarctia lucida* (Druce, 1898): **Rwanda:** 8 ♂♂, Butare, xii. 1976–vi. 1978, A. Popoudina leg. (SZMN). — *A. dissimilis* (Distant, 1897): **South Africa,** KwaZulu-Natal: 1 ♂, 20 km W Greytown, Mhlopeni National Reserve, 16. xii. 2004, P. Ustjuzhanin leg. (SZMN).

Afraloa gen. n.

Type species: *Aloa bifurca* Walker, 1855 (see: Gaede 1926: fig. 12f *bifurca*). — Gender: feminine.

Etymology: The generic name consists of two parts: "Afr", referring to Africa, and the genus name *Aloa*.

Description. According to Goodger & Watson (1995), wings white or pale yellow, with two brown transverse fasciae on forewings, with strongly angled antemedial fascia.

♂ **genitalia** (Figs. 63–64) are characteristic. Uncus narrow, laterally flattened. Valves asymmetrical, the left one quadrangular with long and narrow apical processes, the ventral edge of left quadrangular is extended in strong broad processes, ventral edges of both valves covered with dense rough hairs. Phallus straight, apically with a band of sclerotized spines; vesica consists of few lobes, covered with small spines.

Notes on systematics. Based on the ♂ genitalia structure (Figs. 63–64), *Afraloa* is related to the Oriental *Aloa* Walker, 1855 (Fig. 45) and to the Indian *Micraloa* Dubatolov, 2004 (Fig. 46). All these genera evidently show strictly synapomorphic valves structures, they are nearly quadrangular, with a ventral edge covered with dense rough hairs. *Micraloa lineola* (Fabricius, 1793) has also the quadrangular valves with long apical processes and the narrow uncus (synapomorphic characters shared with *Afraloa*), but its valves are symmetrical, the uncus is not flattened laterally, without an apical split, the phallus lacks apical teeth, and the vesica is rounded (not lobate). So, apomorphic characters of the new genus are: assymetrical valves, the uncus flattened laterally, and a reverse character — absence of the apical split of the uncus. Goodger & Watson (1995) included three more species in this *Spilosoma* group with "yellowish white or pale yellow wings, with pattern of brown transverse fasciae in forewing in which the most distinctive feature is the strongly angled antemedial fascia": *Alpenus aurantiaca* Holland, 1893, *Teracotona batesi* Rothschild, 1910, and *Spilarctia rava* Druce, 1898, all from West Africa; unfortunately, their genitalia are not known, and their generic placement must await further study; likely they will also belong to *Afraloa*.

Composition. *Afraloa bifurca* (Walker, 1855) **comb. n.**

Detoulgoetia gen. n.

Type species: *Spilosoma aspersa* Mabille, 1878 (Fig. 15). — Gender: feminine.

Etymology: The genus is named in honour of Dr. Hervé de Toulgoët (France, Paris), the specialist in Arctiidae systematics.

Description. According to Goodger & Watson (1995), wings white or yellowish white, speckled with brown dots without order, and with dark discal spots.

♂ **genitalia** (Figs. 65–66) are characteristic. Uncus narrowly triangular, flattened on its top. Valves broad and broaden toward apex, their ventral edges bear a crest of broad spines. Phallus slightly curved, with lobate vesica, covered with small spiniculi.

Notes on systematics. The type species is known to me only from the description and figures given by Goodger & Watson (1995). Although its wing pattern resembles that of other *Spilosoma* species, it is not arranged into a characteristic order, as shown in true *Spilosoma* species. Moreover, the ♂ genitalia have broad valves bearing teeth on their ventral edge (an apomorphic character if comparing with all other Arctiinae genera) and are very distinctive compared either to *Spilosoma-Spilarctia* species (Figs. 37–38), or to other Spilosomini genera. Goodger & Watson (1995) included two additional species in this *Spilosoma* group with "white or yellowish white wings speckled with brown and massive valves in the male genitalia," namely, *S. comorensis* Rothschild, 1933 and *S. pseudosparsata* Rothschild, 1933, both from the Comores. Thus, the genus is restricted to Madagascar and the Comores.

Composition. *Detoulgoetia aspersa* (Mabille, 1878) **comb. n.,** *Detoulgoetia comorensis* (Rothschild, 1933) **comb. n.,** and *Detoulgoetia pseudosparsata* (Rothschild, 1933) **comb. n.**

Madagascarctia gen. n.

Type species: *Diacrisia sparsipuncta* Hampson, 1901 (= *Madagascarctia madagascariensis sparsipuncta*) (see Gaede 1926: fig. 12h *sparsipuncta*). — Gender: feminine.

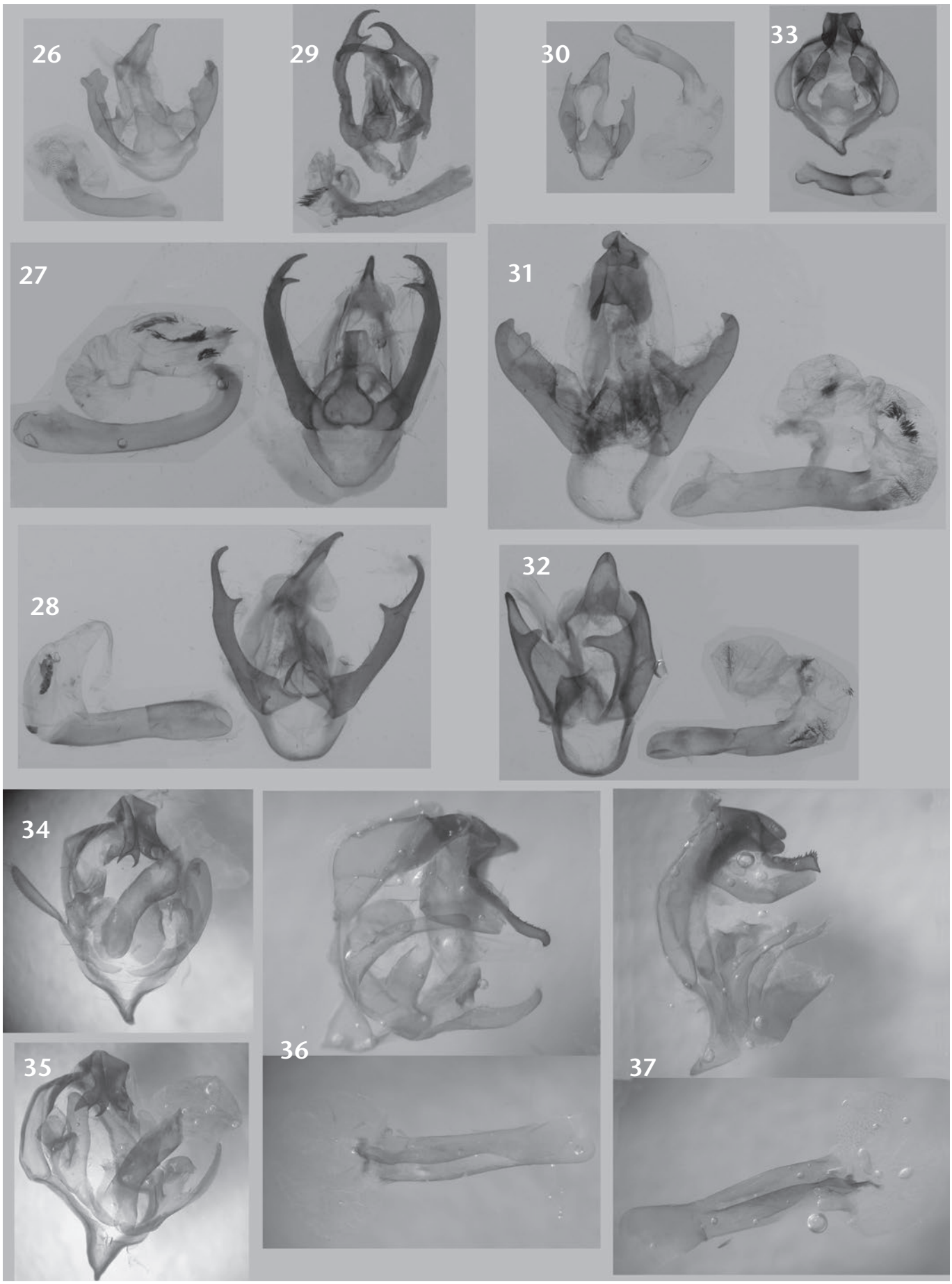
Etymology: The generic name combined of two parts: Madagascar, from where its species are known, and the genus name *Arctia*.

Description. According to Goodger & Watson (1995), wings whitish speckled with brown.

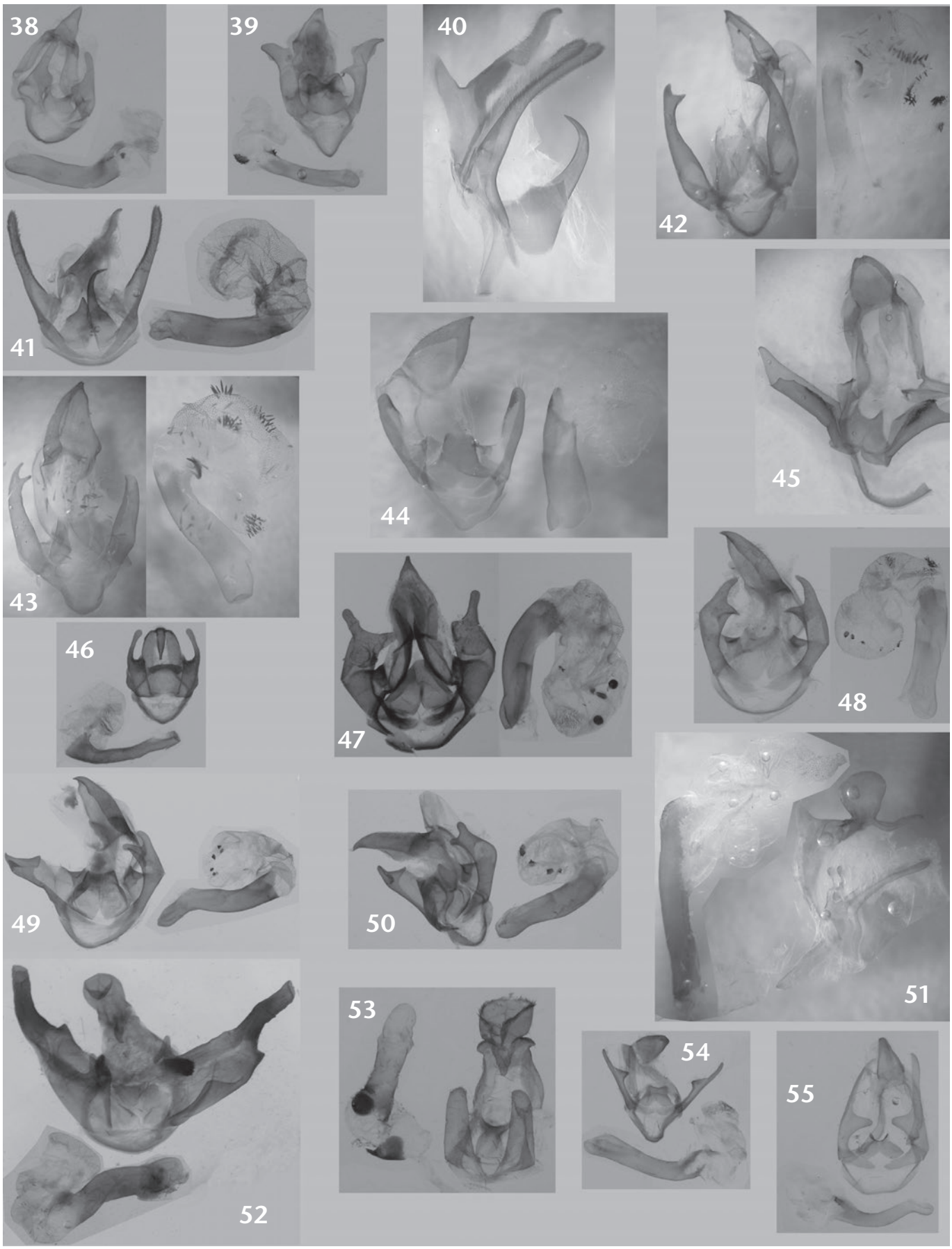
♂ **genitalia** (Figs. 67–68) are also mostly characteristic for the genus: uncus of the type species is large, angulate laterally, flattened on the top, valves short, broad, rounded, with long digitate processes on their ventral side, inwardly-directed.

Notes on systematics. The type species is known to me only by the description and figures given by Goodger & Watson (1995). And, as in the previous genus, its wings also resemble those of *Spilosoma* species, but the ♂ genitalia differ significantly both from all *Spilosoma* species, and from other Spilosomini genera. So, the most clear apomorphic character which could separate

Figs. 16–25: Arctiidae specimens. **Figs. 16–17:** *Radiarctia jacksoni*: ♂, Ethiopia (16) and ♀, Kenya (17). **Figs. 18–19:** *Radiarctia lutescens screabilis*, ♂ (18) and ♀ (19), South Africa. **Figs. 20–21:** *Radiarctia melanochoria*, ♂ (20) and ♀ (21), Rwanda. **Fig. 22:** *Radiarctia rhodesiana*, ♂, South Africa. **Fig. 23:** *Pericaliella melanodisca*, ♂, Rwanda. **Figs. 24–25:** *Seydelia ellioti*, ♂ (24) and ♀ (25), Rwanda. — Specimens not to the same scale.



Figs. 26–37: Arctiidae ♂ genitalia, from the material studied. **Fig. 26:** *Afrowatsonius marginalis,* Guinea. **Fig. 27:** *Creatonotos gangis,* India, Sikkim. **Fig. 28:** *Creatonotos transiens,* Malay Peninsula. **Fig. 29:** *Creatonotos leucanioides,* Guinea. **Fig. 30:** *Creataloum arabicum,* Iran, Baloutchistan. **Fig. 31:** *Estigmene acrea,* USA, Wisconsin. **Fig. 32:** *Estigmene albida,* Mexico. **Fig. 33:** *Popoudina pamphilia*. Rwanda. **Fig. 34:** *Popoudina linea*, South Africa. **Fig. 35:** *Popoudina lemniscata*, South Africa. **Fig. 36:** *Epilacydes scita*, Guinea. **Fig. 37:** *Epilacydes pseudoscita* sp. n., Ivory Coast. — Genitalia not to the same scale.



Figs. 38–45: Arctiidae ♂ genitalia, from the material studied. **Fig. 38:** *Spilosoma lubricipedum*, England. **Fig. 39:** *Spilarctia lutea*, England. **Figs. 40–41:** *Binna scita*, South Africa, caudal view (40) and lateral view (41). **Fig. 42:** *Afrospilarctia lucida*, Rwanda. **Fig. 43:** *Afrospilarctia dissimilis*, South Africa. **Fig. 44:** *Logunovium scortillum*, South Africa. **Fig. 45:** *Aloa lactinea*, China, Hubei. **Fig. 46:** *Micraloa lineola*, North India. **Fig. 47:** *Radiarctia jacksoni*, Ethiopia. **Fig. 48:** *Radiarctia lutescens screabilis*, South Africa. **Fig. 49:** *Radiarctia rhodesiana*, South Africa. **Fig. 50:** *Radiarctia melanochoria*, Rwanda. **Fig. 51:** *Pericaliella melanodisca*, Rwanda. **Fig. 52:** *Pericallia matronula*, Russia, Novosibirsk. **Fig. 53:** *Seydelia ellioti*, Rwanda. **Fig. 54:** *Epatolmis caesarea*, Russia, Chita Province, Dahurian Nature Reserve. **Fig. 55:** *Nebrarctia semiramis*, Iran.— Genitalia not to the same scale

Madagascarctia from other Arctiinae genera, is the presence of a long narrow processus on the ventral side of the valve. Besides *S. madagascariensis* (Butler, 1882), Goodger & Watson (1995) included two more species into this *Spilosoma* group with "whitish wings speckled with brown" and uncus "particularly large, and angulate laterally, and the valve short and broad with a single, inwardly-directed, digitate process": *Diacrisia cellularis* de Toulgoët, 1954 and *Spilosoma femina* Rothschild, 1933, both from Madagascar; thus, the genus is endemic to this island.

Composition. *Madagascarctia madagascariensis* (Butler, 1882) **comb. n.,** *Madagascarctia cellularis* (de Toulgoët, 1954) **comb. n.,** and *Madagascarctia femina* (Rothschild, 1933) **comb. n.**

Radiarctia gen. n.

Type species: *Diacrisia jacksoni* Rothschild, 1910 (Figs. 16–17). – Gender: feminine.

Etymology: The generic name consists of two parts: "radi-", referring to the radiate pattern of forewings, and the genus name *Arctia*.

Description. Antennae bipectinate. Eyes large, oval, strongly convex, naked. Palpi porrect, slightly longer than hair-like setae on the frons. Proboscis longer than the width of head. Foretibiae simple, narrow. Middle tibiae with an apical pair of spurs, hind one with two pairs of spurs, which are equal in length to the tibial diameter. Forewing: vein R_2 stalked with R_{3+5} (venation type C of Sotavalta 1964). Forewings gray, with yellow veins and darker interspaces. Hindwings more or less translucent. Tympanum with a small flattened inflation.

♂ genitalia (Figs. 47–50). Uncus triangular, more or less elongate. Valves short, bifurcated at tops. Juxta as long as wide. Saccus rounded. Phallus straight. Vesica oval, directed parallel to phallus, with several highly sclerotized spine-like cornuti each of which emanates from a large round, flat sclerotized base.

Notes on systematics. This new genus probably includes almost all species of the *Spilosoma* group described by Goodger & Watson (1995) as having "yellowish forewings with a radial pattern of brown interneurally," namely, *S. lutescens* (Walker, 1855) (Fig. 19) from South Africa, *S. rhodesiana* (Hampson, 1900) (Fig. 20) from South and East Africa, *S. semihyalina* (Bartel, 1903) from Central Africa, *S. lentifasciata* (Hampson, 1916) from Zimbabwe and Zambia, *S. griveaudi* de Toulgoët, 1956, *S. vieui* de Toulgoët, 1956 and *S. luteoradians* de Toulgoët, 1954, three species from Madagascar, *S. angolensis* Bartel, 1903 from Angola, *S. jacksoni* (Rothschild, 1910) (Figs. 17–18) from East Africa, and *S. melanochorium* Hering, 1932 (Fig. 21) from East Zaire. Unfortunately, the ♂ genitalia are only known for 4 of these species, which are therefore transferred to the new genus here: viz. *R. jacksoni* (Fig. 47), *R. lutescens* (Fig. 48), *R. rhodesiana* (Fig. 49) and *R. melanochoria* (Fig. 50). They noticeably differ from any species of the *Spilosoma-Spilarctia* group (Figs. 38–39) in having each highly sclerotized spine-like cornutus emanating from a large round, flat sclerotized base (not simply spine-like as in many *Spilosoma* and *Spilarctia* species), and in lacking the apical sclerotization of the phallus, which is very characteristic for all species of this group. So, the autapomorphic characters of the new genus are: a push-pin-like shape of cornuti and yellowish forewings with a radial pattern of brown interneurally. According to its original description, *Spilosoma sublutescens* Kiriakoff, 1958 (Fig. 80–81) from Uganda and Tanzania has quite different ♂ genitalia, with the spinulose branches on the vinculum or the costal part of the valve base and with strong spines on the phallus. Unfortunately, the vesica structure was not studied, so I leave this species provisionally in *Spilosoma*, to which it actually does not belong.

Composition. *Radiarctia jacksoni* (Rothschild, 1910) (Fig. 16–17) **comb. n.,** *Radiarctia lutescens* (Walker, 1855) (Fig. 18–19) **comb. n.,** *Radiarctia rhodesiana* (Hampson, 1900) (Fig. 22) **comb. n.,** and *Radiarctia melanochoria* (Hering, 1932) (Fig. 20–21) **comb. n.**

Material studied. *Radiarctia jacksoni* (Rothschild, 1910): **Ethiopia:** 1 ♂, Lisa-baba, 1896, collector's name illegible (ZIN); 1 ♂, Deru, 24./12. iii. 1898, Dmitriev leg. (ZIN). • **Kenya:** 1 ♀, Kibwesi, 14. vi 1929, ex coll. Feather (MMUM). – *Radiarctia lutescens screabilis* (Wallengren, 1875): **South Africa,** Natal: 1 ♂, Karkloof, 22. i. 1919, anonymous leg. (MMUM); KwaZulu-Natal: 1 ♂, 1 ♀, Cumberland National Reserve, 2. xii. 2004, P. Ustjuzhanin leg. (SZMN); 2 ♂♂, North Drakensberg, Giant's Castle National Reserve, 8. xii. 2004, P. Ustjuzhanin leg. (SZMN). – *Radiarctia rhodesiana* (Hampson, 1900): **South Africa,** KwaZulu-Natal: 5 ♂♂, North Drakensberg, Giant's Castle National Reserve, 8. xii. 2004, P. Ustjuzhanin leg. (SZMN); 3 ♂♂, North Drakensberg, Royal Natal National Reserve, 11.–12. xii. 2004, P. Ustjuzhanin leg. (SZMN). – *Radiarctia melanochoria* (Hering, 1932): **Rwanda:** 3 ♂♂, 1 ♀, Butare, 8. iii. 1976–i. 1978, A. Popoudina leg. (SZMN).

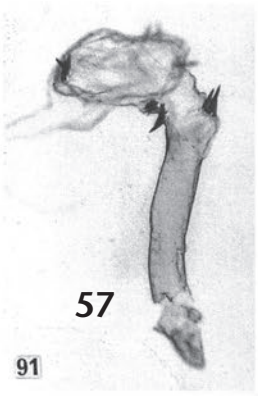
Pericaliella gen. n.

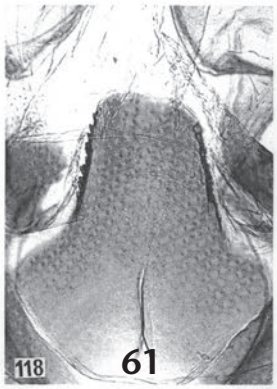
Type species: *Diacrisia melanodisca* Hampson, 1907 (Fig. 23). – Gender: feminine.

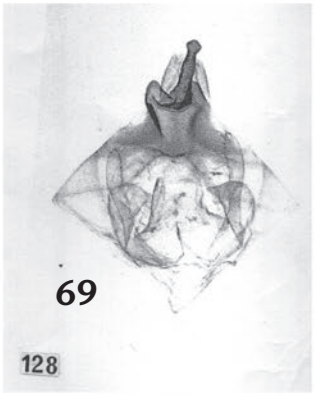
Etymology: The genus name means "a small *Pericallia*".

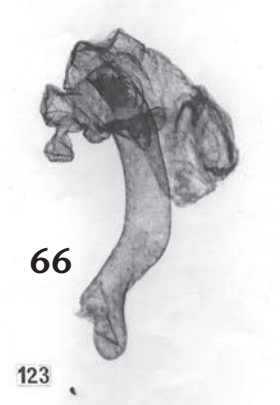
Description. ♂ antennae bipectinate. Eyes large, oval, strongly convex. Palpi porrect, short, slightly longer than weak hair-like setae on the frons. Proboscis barely visible, probably reduced. Unfortunately, the ♂ studied by me lacks any legs. The forewing vein R_2 stalked with R_{3+5} (venation type C of Sotavalta 1964). Forewing more

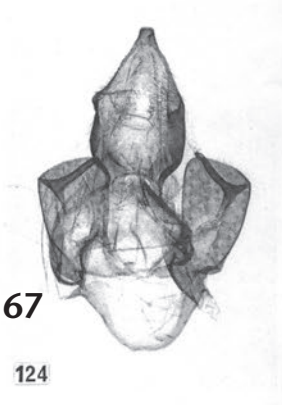
Figs. 56–74: Arctiidae ♂ genitalia, from Goodger & Watson (1995, reproduced by permission of Apollo Books). **Figs. 56–57:** *Acantharctia nivea*, from figs. 90–91 of Goodger & Watson. **Figs. 58–59:** *Menegites nivea*, from figs. 111–112. **Figs. 60–62:** *Spilosoma nigricosta*, from figs. 117–119. **Figs. 63–64:** *Spilosoma bifurca*, from figs. 120–121. **Figs. 65–66:** *Spilosoma aspersa*, figs. 122–123. **Figs. 67–68:** *Spilosoma madagascariensis sparsipuncta,* from figs. 124–125. **Figs. 69–70:** *Epilacydes simulans*, from figs. 128–129. **Figs. 71–72:** *Binna pencillata*, from figs. 132–133. **Figs. 73–74:** *Seydelia turlini celsicola*, from figs. 148–149. – Genitalia not to the same scale.

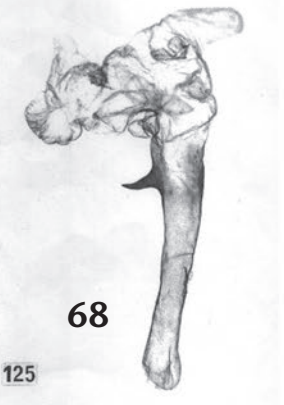


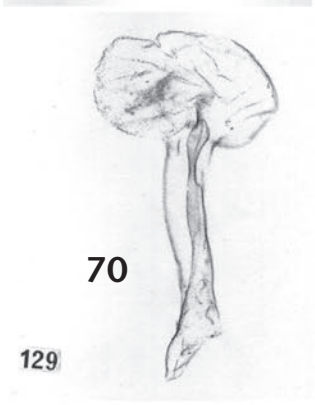


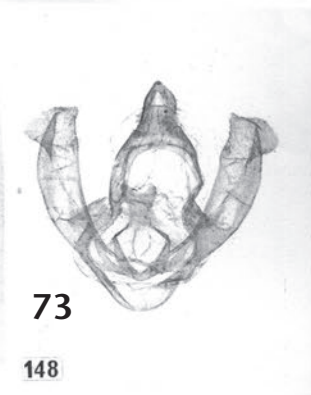


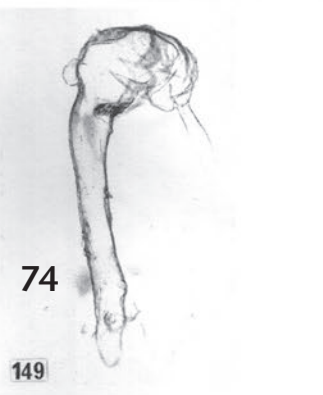




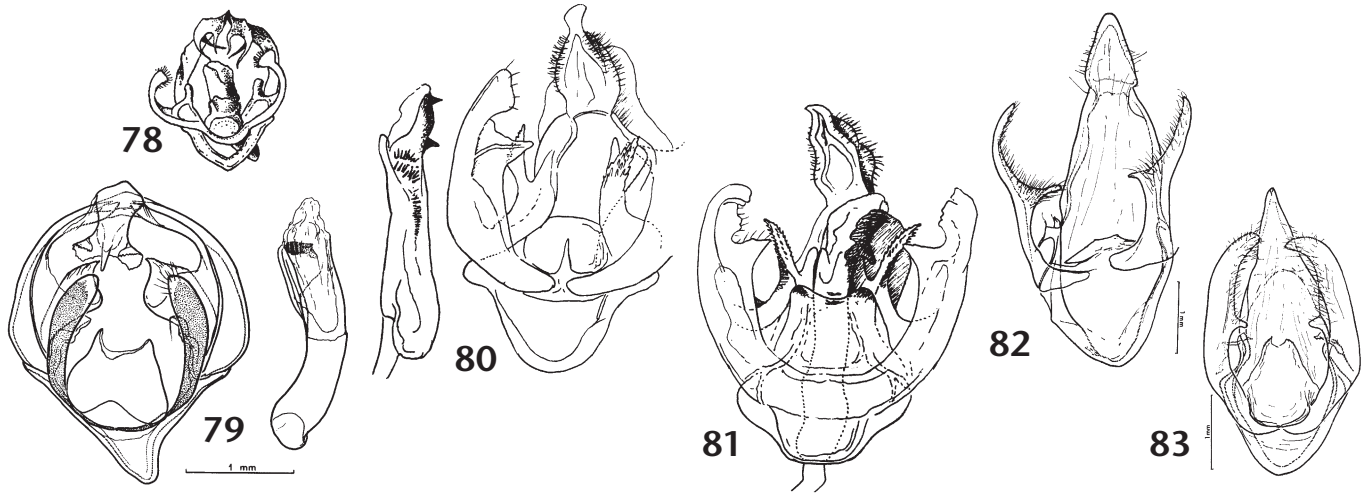








Figs. 75–77: Reproductions from DE TOULGOËT (1980, 1986). **Fig. 75:** *Popoudina brosi,* ♂, from DE TOULGOËT (1986). **Figs. 76–77:** Specimens of *Afrojavanica kostlani* (76) and *A. melaena* (77), from DE TOULGOËT (1980). — Not to the same scale.



Figs. 78–83: Reproductions from different authors: **Fig. 78:** *Popoudina aliena,* ♂ genitalia, from KIRIAKOFF (1954). **Fig. 79:** *Popoudina brosi,* ♂ genitalia, from DE TOULGOËT (1986). **Figs. 80–81:** *Spilosoma sublutescens,* ♂ genitalia, from KIRIAKOFF (1958). *S. s. fletcheri* (80) and *S. s. sublutescens* (81). **Figs. 82–83:** *Afrojavanica kostlani* (81) and *A. melaena* (82), from DE TOULGOËT (1980), ♂ genitalia. — Genitalia not to the same scale.

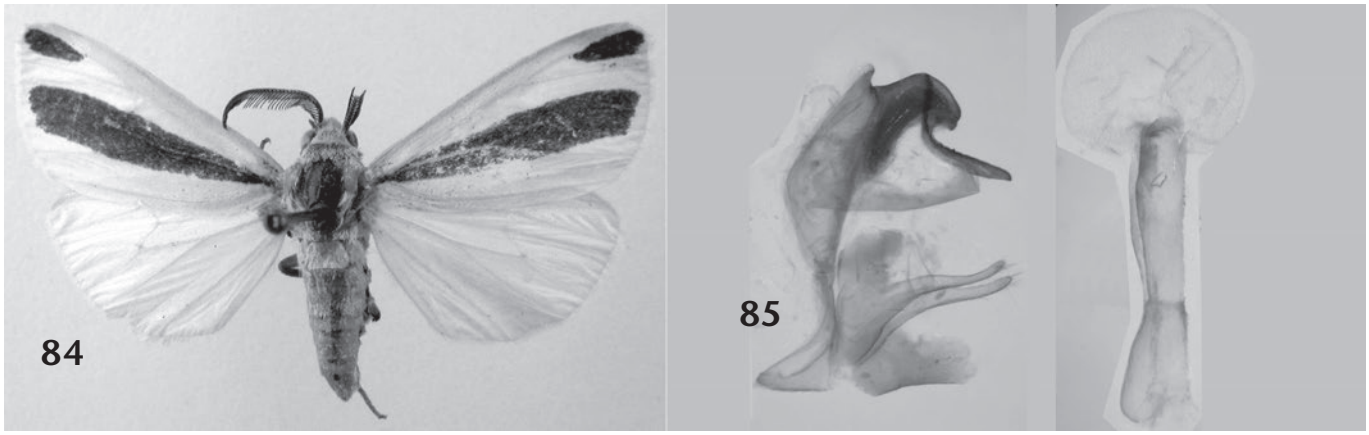


Fig. 84–85: *Epilacydes bayoni,* ♂ "cotype" (= probable paratype), Uganda, Bussu Busoga, adult (84) and its genitalia (85). — Not to the same scale.

or less broad, yellowish-brown, with a large dark brown discal spot and dark dots. Hindwings yellowish, with small dark discal and few submarginal spots. Tympanum with a small flattened inflation.

♂ genitalia (Fig. 51). Uncus long and narrow, slightly curved, with large bulbous dorsal projection. Valves long and narrow, wand-like. Juxta broad. Saccus triangular. Phallus straight, with small spines on apex, vesica elongate, with very small spiniculi.

Note on systematics. The uncus structure with a large bulbous dorsal projection is very unusual for any of the Spilosomini genera, being very similar to that of *Pericallia matronula* (LINNAEUS, 1758) (Fig. 52). A presence of this curious structure looks to be the main apomorphic character of the genus. Moreover, such narrow wand-like valves do not occur in any of the known Afrotropical Arctiinae genera.

Composition. *Pericaliella melanodisca* (HAMPSON, 1907) **comb. n.** (Fig. 23).

Material studied. *Pericaliella melanodisca* (HAMPSON, 1907): **Rwanda:** 1 ♂, Butare, begin 1978, A. POPOUDINA leg. (SZMN).

The next pair of curiously similar but geographically isolated species (*kostlani* Gaede, 1923 from Ethiopia and *melaena* Hampson, 1901 from Java, Indonesia) were assigned to the genus *Seydelia* Kiriakoff, 1952 by de Toulgoët (1980). Unfortunately, while transferring this pair of species, de Toulgoët (1980) did not compare them to the type species of *Seydelia*. After the revision of the type species of all Arctiinae genera by Watson et al. (1980) and the examination of the ♂ genitalia of all Afrotropical species by Goodger & Watson (1995), it has become clear that the aforementioned pair of species does not belong to *Seydelia*. A new genus is here established for them.

Afrojavanica gen. n.

Type species: *Pericallia geometrica kostlani* Gaede, 1923 (Fig. 76). — Gender: feminine.

Etymology: The genus name consists of two geographic names, Africa and Java, where its two species occur.

Description. Based on the figures and descriptions by de Toulgoët (1980), the species of this group have dark forewings with a light longitudinal stripe between veins Cu_{1+2} and A (Fig. 76–77). There is an additional narrow light postdiscal band, smoothly curved distally from the discal vein, and a very small light subapical spot on the costa. Hindwings light, whitish or yellowish, with a dark discal spot and a row of submarginal spots. Antennae ciliate to bipectinate.

♂ genitalia (Figs. 82–83). Uncus narrowly trianglular, valves elongate, apically tapering and slightly curved inwardly, and with a single secondary process in the middle of its ventral surface, which is directed inwards. Juxta narrowly transverse in *A. kostlani,* or as long as wide in *A. melaena*.

Notes on systematics. Both species of the genus differ strongly from those of *Seydelia* (Figs. 24–25, 53, 73–74). Two *Seydelia* species with described genitalia, i.e. the type species *S. turlini celsicola* de Toulgoët, 1976 (Figs. 73–74) and *S. ellioti* (Butler, 1896) (Fig. 53), have the very specialized tegumen broadened dorsally, with a large dorsal flange, the valves simple, elongate and rounded apically, without any processes on their ventral surface, but sometimes with a subapical crest. The presence of this specialization of the tegumen structure, is a strict autapomorphic character of the genus *Seydelia*, and does not occur in *A. kostlani* and its relatives. Among the known Afrotropical genera, non has the ♂ genitalia of the same type, being similar to those of the new genus, with the elongate tapering valves bearing small processes in the middle of their ventral surface. Among the Eurasian genera, only *Epatolmis* Butler, 1877 (Fig. 54) and *Nebrarctia* Watson, 1980 (Watson et al. 1980) (Fig. 55) possess the elongate valves with short single secondary processes in the middle part on ventral edge, but their wing pattern are quite different. Furthermore, in these genera, the secondary processes are broadly triangular, not as narrow as in *Afrojavanica* species, and the valve is straight apically, not curved inwardly. So, autapomorphic characters of *Afrojavanica* species are: a narrow secondary processus on the inner side of the valve which is curved inward, and a very characteristic forewing pattern. Apart from these two species discussed by de Toulgoët (1980), one more species is to be transferred to the new genus, viz. *Spilosoma melaenoides* Rothschild, 1935 from East Java, which is similar to *A. melaena* but differs in its smaller size (wing expanse 45 mm), the shorter pectination of its antennae, the yellowish base of its tegulae and its white hindwings. *A. melaena* is larger (wing expanse 52 mm), its antennae has the very long pectination, its thorax is uniformly dark, and its hindwings have a yellowish ground.

Composition. *Afrojavanica kostlani* (Gaede, 1923) **comb. n.**, *Afrojavanica melaena* (Hampson, 1901) **comb. n.**, *Afrojavanica melaenoides* (Rothschild, 1935) **comb. n.**

Acknowledgements

The author is thankful to Dr. D. V. Logunov for allowing the study of vast materials of the collection of the Manchester Museum (University of Manchester, UK), for the help in obtaining relevant literature, and for commenting on the earlier draft. I also wish to thank Dr. A. Matov for his help in searching for unstudied material of Afrotropical tiger-moths in the Zoological Institute (St.-Petersburg, Russia), Dr. Roberto Poggi (Genova, Italy) for a loan of the *Epilacydes bayoni* paratype specimen from the collection of the Museo Civico di Storia Naturale Giacomo Doria, Mr. Yasunori Kishida (Tokyo, Japan) for sending the colour figure of *Detoulgoetia aspersa* from his collection, Mrs. A. Popoudina (Novosibirsk, Russia) for collecting insects in Rwanda for the collection of the Biological Institute (now: Institute of Animal Systematics and Ecology, Novosibirsk, Russia), and Dr. P. Ya. Ustjuzhanin (Novosibirsk, Russia) for making his Arctiinae collections from South Africa available for this study, and to Prof. P. Opler (Colorado State University, Colorado, USA) for correcting the language of the manuscript.

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Received: 4. IV. 2005, 2. I. 2006, 5. IV. 2006

 ISSN 0723-9912