

# Notes on the Cosmopterigidae (Lepidoptera) of Afghanistan and Jammu & Kashmir, India with descriptions of two new species

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Key words: Lepidoptera; Cosmopterigidae; *Labdia*; *Vulcaniella*; Afghanistan; India.

Information on the Cosmopterigidae of Afghanistan and Jammu & Kashmir, India is presented. Two species: *Labdia caroli* spec. nov. and *Vulcaniella kabulensis* spec. nov. are described, and *Eteobalea sumptuosella* (Lederer, 1855), *Hodgesiella quagella* (Christoph, 1887) and a *Vulcaniella* species are described or mentioned. Diagnoses, descriptions, watercolours of the adults, line drawings of male and female genitalia, and type information are provided for each new species and also for the male of *Hodgesiella quagella* and the female of the *Vulcaniella* species.

## Introduction

The fauna of the Cosmopterigidae of Central Asia is rather well known thanks to publications of, especially, Sinev (Sinev, 1984, 1989, 1999), but also from Kasy (1969) and Falkovitch (1986). The more southern regions in Asia are much less explored. Amsel (1968) and Kasy (1968) have described Cosmopterigidae from Pakistan, and Kasy (1969, 1974, 1975) also described Cosmopterigidae from Afghanistan and Iran. So far only four species of Cosmopterigidae (Chrysopeliinae) are known from Afghanistan: *Ascalenia acaciella* Chrétien, 1915, *A. kabulella* Kasy, 1969, *A. unifasciella* Kasy, 1969 and *A. viviparella* Kasy, 1969 (Kasy, 1969; Riedl, 1994, 1996). References to Cosmopterigidae from the region of Kashmir, India, could not be traced in the literature.

The material mentioned in this paper is the result of collecting trips by the late Dr F. Kasy (NMW) and Mr E. Vartian and also by Mr E. and Mrs M. Arenberger. These collecting efforts resulted in three species of Cosmopterigidae recorded as new for Afghanistan and two species for Kashmir, India. The two species from Kashmir are new and described here as *Labdia caroli* spec. nov. and *Vulcaniella kabulensis* spec. nov. The three species from Afghanistan are *Eteobalea sumptuosella* (Lederer, 1855), a common species, occurring from southern Europe eastwards to Central Asia; *Hodgesiella quagella* (Christoph, 1887), a very rare species from Central Asia, both collected in Afghanistan for the first time, and a female of a *Vulcaniella* species that shows similarities with *Vulcaniella peristrepeta* (Meyrick, 1917) and *V. vartiana* (Amsel, 1968).

## Methods

The male genitalia of Cosmopterigidae are often rather complex and the valvae cannot easily be spread in the ventral position. For this reason they are depicted here both in lateral as well as in ventral views.

The watercolours were made at 20 times the original size and are here reproduced at 70%.

### Abbreviations

BMNH	British Museum (Natural History) [= Natural History Museum], London, United Kingdom.
NMW	Naturhistorisches Museum, Wien, Austria.
RMNH	National Museum of Natural History Naturalis, Leiden, The Netherlands.
ZIN	Zoological Institute, Academy of Sciences, St. Petersburg, Russia.

### Systematic part

#### *Eteobalea sumptuosella* (Lederer, 1855)

Material.— 1 ♂, Afghanistan, Paghman, 80 km NW of Kabul, 2100 m, 20-30.vii.1962, E. & A. Vartian, leg.; gen. slide JCK 5149. 1 ♀, same label data (NMW). 1 ♂, Afghanistan, Paghman, 80 km NW of Kabul, 2100 m, 1-9.viii.1962, E. & A. Vartian, leg. (RMNH).

Diagnosis.— See Koster & Sinev (2003).

Life history.— Unknown except for the flight period: early June to end of August (Koster & Sinev, 2003).

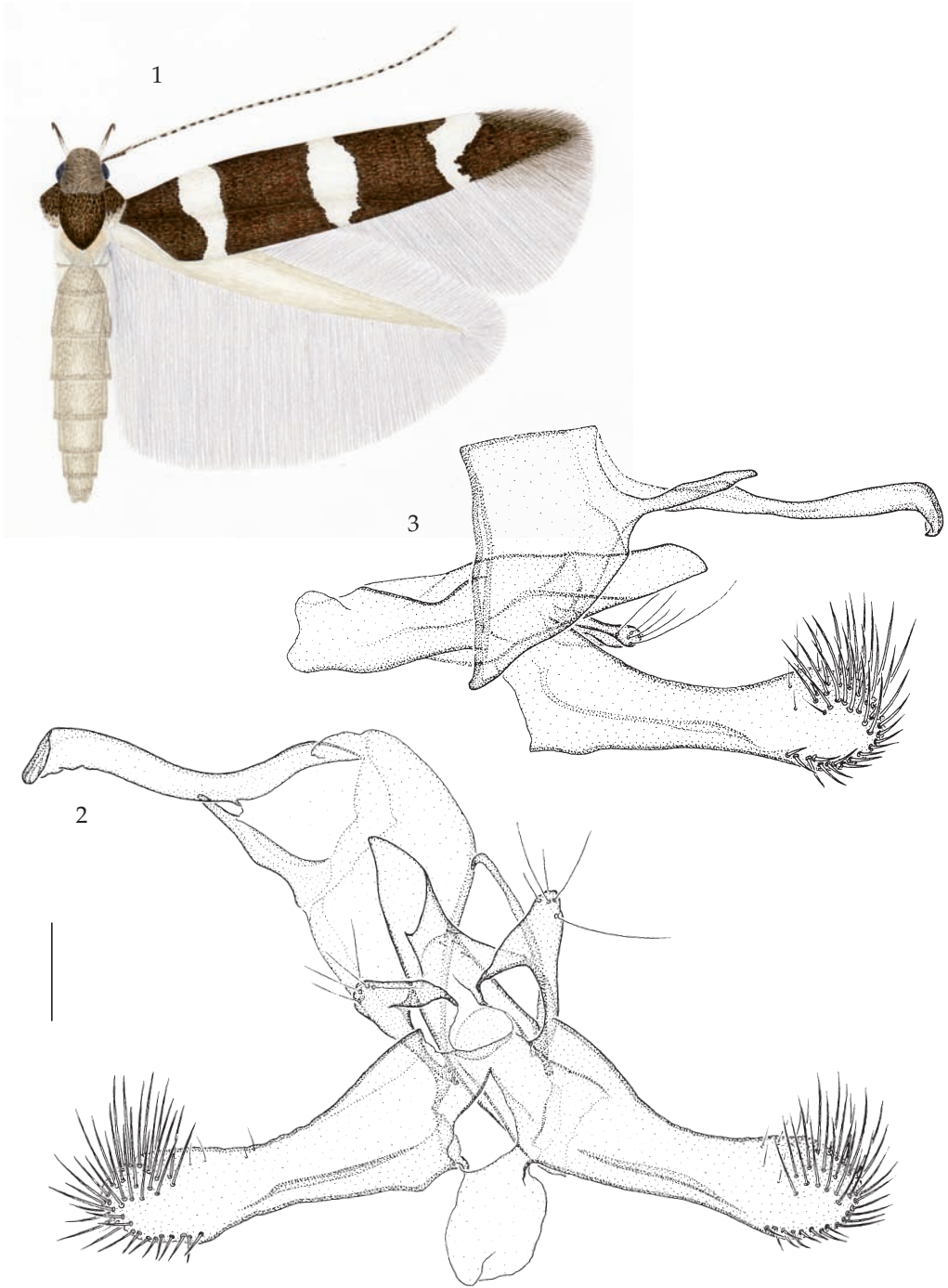
Distribution.— Mediterranean region from Spain to Turkey, Morocco and Tunisia, Ukraine, southern Russia, the Caucasus, Middle East, eastwards to Kazakhstan, Turkmenistan, and here recorded as new for Afghanistan (Riedl, 1994; Koster & Sinev, 2003).

#### *Hodgesiella quagella* (Christoph, 1887) (figs 1-3)

Material.— 1 ♂, [Afghanistan], Salangpass, Northern summit, Holdschuh.

Diagnosis.— Externally similar to *Hodgesiella rebeli* (Krone, 1905), distributed in South-Eastern Europe, but *H. quagella* can be distinguished by the lack of yellow edging of the white fasciae, by the presence of the white dorsal edging at base of the forewing and by the completely annulated antenna. In *H. rebeli* the distal fifth of the antenna is white.

Description.— Male (fig. 1). Forewing length 4.6 mm. Head: frons shining white, vertex shining bronze brown with reddish and greenish reflections, neck tufts and collar shining dark brown; labial palpus white, first segment very short, on outside dark brown, second segment three-fourths of length of the third, basal one-third lateral on outside dark brown and with greyish brown apical ring, third segment shining dark brown with ventral longitudinal white line and dorsal white streak at base; scape shining dark brown with white anterior line, ventrally whitish, antenna shining dark brown, annulated white. Thorax and tegulae shining dark brown, tegulae pale brown or whitish edged posteriorly. Legs: shining dark brown, tibia foreleg with two white longitudinal lines, tarsal segment one with white basal spot and white apical ring, segment two



Figs 1-3. 1, *Hodgesiella quagella* (Christoph, 1887). 2, *Hodgesiella quagella* (Christoph, 1887), male genitalia. 3, *Hodgesiella quagella* (Christoph, 1887), male genitalia, laterally, scale 0.1 mm.

with white apical ring, segment five entirely white, tibia midleg with white basal, medial and apical rings, tarsal segments as foreleg, but segment four also white, hindlegs missing, spurs white. Forewing shining dark brown, dorsum at base white edged, with three shining white fasciae, basal fascia at one-fifth, slightly bent inwardly, narrowed towards dorsum, medial fascia at one-half, perpendicular on costa, narrowed at dorsum, apical fascia at three-fourths, outwardly bent and strongly narrowed in dorsal half, indistinct dark brown ciliary line; cilia greyish brown. Hindwing shining light ochreous-grey, cilia greyish brown. Underside: forewing shining greyish brown, three fasciae indistinct and white costal spot distinct at three-fourths, hindwing shining greyish white, costa greyish brown. Abdomen shining ochreous-grey, ventrally shining white, anal tuft dorsally ochreous grey, ventrally white.

Male genitalia.— (figs 1-2). Uncus with two brachia of different length; right brachium very slightly widening distally, bent upward in middle, apically bent as broad hook; left brachium straight, narrowing distally. Valvae slender, lobate distally. Anellus lobes almost similar; left one slightly shorter, triangular, apex rounded. Aedeagus with straight tubular part, apex sharply pointed.

Female genitalia.— Not available.

Life history.— The larva lives on *Convolvulus fruticosus* Pall. (Convolvulaceae) Adults were collected and reared in May (Falkovitch, 1986).

Distribution.— Turkmenistan, Uzbekistan, Afghanistan (new record).

Remarks.— The species was only known from the two specimens of the type series from Krasnowodsk, Turkmenistan (BMNH) and from a series of eight specimens, formerly described as *Hodgesiella fruticosae* Falkovitch, 1986, from the Kuldzhuktau Mountains, SW of Kyzylkum, Uzbekistan (ZIN) (Sinev, 1999). The original description is in German and gives a small picture in black and white of the adult. The description of *H. fruticosae* is in Russian, but line drawings of the right wings, male and female genitalia are provided.

***Labdia caroli* spec. nov.**  
(figs 4-7)

Material.— Holotype ♂: [India], Kaschmir, 15-21.vii.[19]82, 20 km N Srinagar, Nationalpark Dachigam, M. u. E. Arenberger; genitalia slide JCK 5968 (NMW).— Paratypes: 2 ♂: [India], Kaschmir, 11-20.vii.1982, 10 km N Srinagar, M. u. E. Arenberger; genitalia slides JCK 4842, 4845 (NMW, RMNH). 1 ♀: [India], same data; genitalia slide JCK 4841 (RMNH). 1 ♀: same data as holotype.

Diagnosis.— Externally similar to *Labdia niphosticta* (Meyrick, 1936), distributed in China and Japan, but *L. caroli* can be distinguished by the white fascia on the forewing at three-fourths and by the white distal third of the antenna. In *L. niphosticta* this fascia is interrupted and the apical third of the antenna is annulated.

Description.— Male (fig. 4). Forewing length 3.9-4 mm. Head: frons shining ochreous-grey, narrowly lined white, vertex and neck tufts dark greyish brown with greenish and reddish gloss, collar shining dark brown; labial palpus, first segment very short, greyish brown, second segment four-fifths of length of third, white, dorsally more greyish, laterally lined dark brown, third segment white, laterally lined dark brown; scape dorsally dark brown with white anterior line and small white apical



Figs 4-7. 4, *Labdia caroli* spec. nov. 5, *Labdia caroli* spec. nov., male genitalia, ventrally. 6, *Labdia caroli* spec. nov., male genitalia, laterally. 7, *Labdia caroli* spec. nov., female genitalia. Scales 0.1 mm.

spot, ventrally greyish brown with white apical spot, antenna dark brown to one-third with white line in conjunction with white scape line, middle section greyish brown, annulated white, apical third white, sometimes vaguely annulated. Thorax and tegulae shining dark brown with reddish gloss, thorax sometimes with some greyish white scales posteriorly, tegulae posteriorly edged white. Legs: shining greyish brown; femora of mid and hindleg ochreous; foreleg with white dorsal line on tibia and tarsal segments one to three, segment four with white apical ring, segment five entirely ochreous-white; tibia midleg with white medial and apical rings, tarsal segments one, two, and four with white apical rings, segment five entirely white; tibia hindleg as on midleg, tarsal segment one with white basal and apical rings, segments two and three with white apical rings and four and five entirely white, spurs ochreous-white. Forewing shining dark brown, with broad, white, outwardly oblique fascia at one-sixth, two white costal spots, first at one-half, second at three-fourths and often larger than first, a small white subdorsal spot, just beyond first costal, a dorsal spot at tornus, opposite second costal spot, very close or often reaching it, forming an irregular fascia, a small white spot in apical cilia, cilia dark brown around apex with distinct ciliary line at apex, brownish grey towards dorsum. Hindwing shining pale grey, more brownish grey towards apex, cilia brownish grey. Underside: forewing shining brownish grey, second costal and apical spots indistinct; hindwing shining pale brownish grey. Abdomen shining brownish grey, ventrally shining greyish ochreous, segments broadly banded whitish posteriorly, anal tuft white.

Female.— Forewing length 3.8-3.9 mm. Anal tuft yellowish white, further as male.

Male genitalia (figs 5, 6).— Tegumen rather narrow at base, widening distally. Uncus wide with large and broad posterior excavation dorsally, right brachium very broad at base, strongly narrowing to mid-length and then gradually narrowing to pointed apex, with apical section bent as shallow hook; left brachium split into two short parallel arms wide apart from each other, dorsal arm gradually tapering to blunt apex, ventral arm slightly longer and broader than dorsal arm, with straight dorsal margin and bent ventral margin, apex pointed. Vinculum a narrow band. Valva long, densely setose, basal one-third very narrow, widening to spatulate cucullus with slightly concave dorsal margin. Aedeagus very long, cylindrical, with well-developed caecum penis, strongly bent upward at base, apical one-fourth gradually narrowing to sharp apex, bent ventrally. Left anellus lobe very long and sparsely setose in distal two-thirds, narrowing from base to slightly upwardly bent arm, with more or less triangular profile, subapically with short, triangular, pointed projection; right anellus lobe short and triangular. Tergite VIII strongly sclerotized and basally fused with tegumen, posteriorly on right side with long and slightly bent projection reaching middle of right branchium of uncus. Sternite VIII with two elongate lobes reaching two-thirds of length of valva.

Female genitalia (fig. 7).— Papillae anales fused in elongate cone. Apophyses anteriores about two-thirds length of apophyses posteriores. Abdominal segment VIII broad. Posterior edge of sternite VII straight. Ostium wide, circular, sterigma large, triangular, situated with anterior half into triangular pouch on inner side of 7th sternite, distinctly protruding ventrally between segments VII and VIII, its lateral walls lengthened posteriorly. Ductus bursae narrow, wrinkled and about half length of corpus bursae. Corpus bursae elongate, narrowing towards ductus bursae, ductus seminalis in

posterior part adjacent to connection of ductus bursae, signa absent.

Remarks.— The male genitalia, especially the posterior projection on tergite VIII, show similarities with those of genus *Ressia* Sinev, 1988. This projection is probably acting as an additional uncus. The very large, strongly sclerotized lobes with caudal projections on sternite VIII, which cover the entire valvae, characteristic of the genus *Ressia* and *Iressa* Clarke, 1971 (Sinev, 1988; Clarke, 1971), are absent in *Labdia*. In *Labdia caroli* the lobes are not sclerotized, simply elongate, and do not fully cover the valva. The presence of androconial scales on the metathorax also distinguishes this species from *Ressia*.

Life history.— Unknown.

Distribution.— Only known from the type-locality: Dachigam National Park, Jammu and Kashmir, India.

Etymology.— This species is dedicated to Carolus Linnaeus, the famous Swedish scientist who introduced binomial nomenclature 250 years ago.

*Vulcaniella kabulensis* spec. nov.

(figs 8-10)

Material.— Holotype ♂: 29.v.1965, Afgh[anistan], 10 km NW v[on] Kabul, 1900 m., Kasy & Vartian; genitalia slide JCK 6909 (NMW).— Paratypes 5 ♂: 1 ♂, same data as holotype; genitalia slide JCK 4844 (RMNH). 2 ♂, same data, 25.vi. and 26.vii.1965, Kasy & Vartian (NMW). 1 ♂, Afghanistan, 40 km SW of Kabul, 2300 m., 29.vi.1965, Kasy & Vartian (NMW). 1 ♂, same data, 22.vii.1965 (RMNH).

Diagnosis.— The species resembles *Vulcaniella pontica* Koster & Sinev, 2003, but can easily be distinguished by the dark brown head and neck tufts, which are white in *V. pontica*.

Description.— Male (fig. 8). Forewing length 3.8-4.3 mm. Head: frons shining white, vertex and necktufts shining dark bronze-brown with very narrow white edging above eyes; collar shining dark brown; labial palpus, first segment very short, greyish brown, inner side with white spot, second segment four-fifths of length of third, white with greyish brown spot at base laterally and irregular subapical greyish brown ring, third segment white, laterally lined greyish brown; scape dorsally shining dark brown with white anterior line and white apical spot at posterior side, ventrally whitish; antenna shining dark brown, with very short white line at base, followed by white annulated section to two-thirds, followed by five dark brown sections of three segments each separated by one white segment, apical three or four segments white. Thorax and tegulae shining dark brown with reddish golden shine, posteriorly broadly edged shining white. Legs: shining dark brown, femora of fore- and midleg greyish brown, femur of hindleg ochreous-white, tibia of foreleg with short basal white line, and small white medial and apical spots, tibia of mid and hindleg with white basal, medial, and apical rings, tarsal segments one with white basal and apical rings, tarsal segment two of midleg with white apical ring, tarsal segments two to five of hindleg with white apical rings, spurs ochreous-white. Forewing shining dark brown with reddish golden shine, with small white spot at base on costa, at one-sixth to halfway beyond fold, an outwardly oblique, tubercular silver metallic fascia, white at costa, six silver metallic tubercular spots, two costal spots, first before middle connected to a white spot on

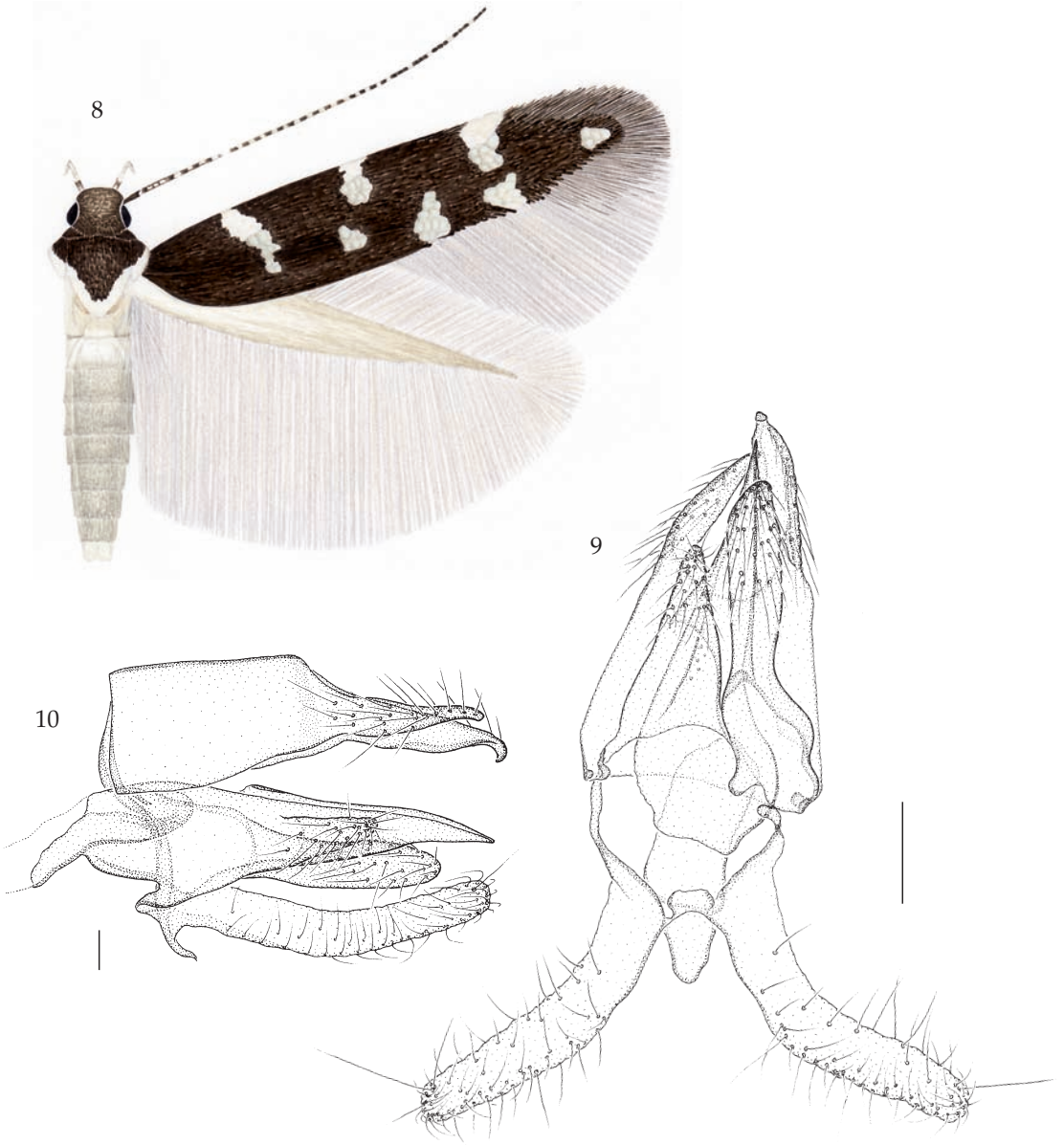


Fig. 8-10. 8, *Vulcaniella kabulensis* spec. nov. 9, *Vulcaniella kabulensis* spec. nov., male genitalia, ventrally. 10, *Vulcaniella kabulensis* spec. nov., male genitalia, laterally. Scales 0.1 mm.

costa, second at three-fourths with white streak from costa into cilia, three dorsal spots, first in fold beyond one-third, second on dorsum between the two costal spots, third on tornus, slightly beyond third costal spot, one apical spot, ciliary line rather distinct around apex; cilia greyish brown. Hindwing shining greyish white in basal third, darker greyish brown towards apex; cilia greyish brown. Underside: forewing shining greyish-



brown, basal fascia, first costal spot, and apical spot indistinct, second costal spot distinctly visible, cilia dark brownish grey around apex; hindwing shining greyish brown in costal third and apex, remaining parts lighter. Abdomen dorsally shining grey with ochreous tinge, first segment with white anterior band, last two segments narrowly banded lighter posteriorly, ventrally shining ochreous-grey with goldish shine, segments with broad and shining, greyish white bands posteriorly, anal tuft white.

Female.— Unknown.

Male genitalia (figs 9, 10). Right brachium of uncus broad, tapering distally and hooked; left brachium gradually tapering distally, apex pointed. Valva long, rather broad and parallel-sided. Right anellus lobe distinctly shorter than distal part of aedeagus, broad at base, slightly narrowing distally, apex rounded; left anellus lobe large and triangular, apex rounded. Aedeagus large and bulbous, distally tapering to sharp pointed apex.

Life history.— Unknown.

Distribution.— Only known from the type locality, near Kabul, Afghanistan.

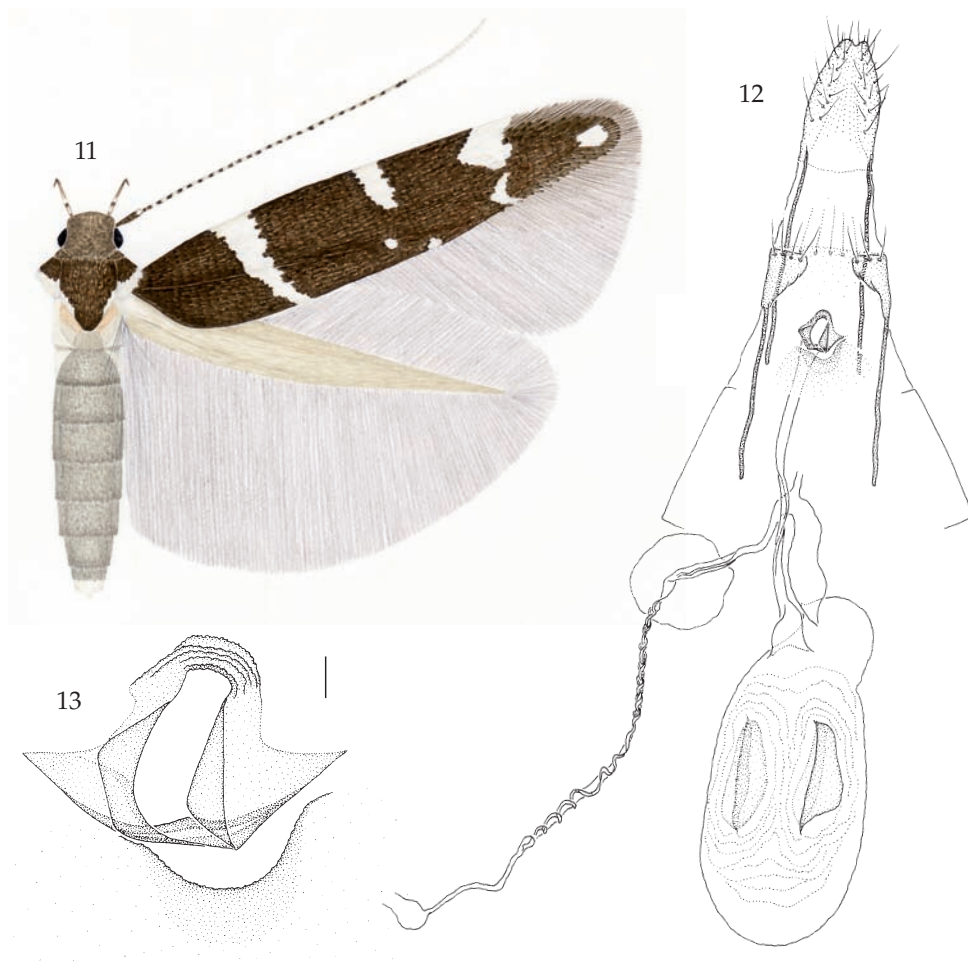
Etymology.— The species is named after the city of Kabul in Afghanistan, which is located near the type locality.

*Vulcaniella* sp.  
(figs 11-13)

Material.— 1 ♀: [India], Kaschmir, 10 km N of Srinagar, 11-20.vii.1982, M. und E. Arenberger (NMW).

Diagnosis.— The species externally resembles *Vulcaniella peristreptra* (Meyrick, 1917) and *V. vartianae* (Amsel, 1968) (see Remarks).

Description.— Female (fig. 11). Forewing length 3.6 mm. Head: frons bronze-grey, greyish white towards proboscis, vertex and necktufts bronze-brown; collar shining dark brown with reddish golden reflection; labial palpus, first segment very short, greyish brown, second segment four-fifths of length of third, white, with greyish brown spot laterally on outer side at base and greyish brown subapical ring, third segment white, lined dark brown laterally on outer side, spotted brown laterally on inner side; scape dorsally shining dark brown with white anterior line and white apical spot, ventrally ochreous white; antenna shining dark brown, basal three-fourths annulated white, followed by two white, two dark brown, and 16 apical white segments. Thorax and tegulae shining dark brown with reddish golden reflection, thorax laterally with some white scales, tegulae broadly edged white posteriorly. Legs: femora of fore- and midlegs ochreous brown, tibiae and tarsal segments shining dark brown, tibia of foreleg with white medial spot, tibia of midleg with white basal, medial and apical bands, tarsal segments of foreleg first segment with white basal and apical rings and fifth segment entirely white, tarsal segments of midleg as on foreleg, but segment two with white apical spot, hindlegs missing, spurs ochreous-white. Forewing shining dark brown with reddish golden reflection, costa at one-sixth with irregular, white, outwardly oblique fascia narrowing towards dorsum, two costal spots, first before middle, almost to middle of wing, narrow, second at three-fourths, as long as second, but more triangular, a small white subdorsal spot at tip of first costal, a large, sickle-shaped white spot on tornus, at tip of second costal and almost reaching it, in middle between these two dorsal spots



Figs 11-13. 11, *Vulcaniella* sp. 12, *Vulcaniella* sp., female genitalia. Scale 0.1 mm. 13, *Vulcaniella* sp., sterigma.

with few white scales on dorsum, one white apical spot, dark brown ciliary line distinct at apex; cilia greyish brown. Hindwing shining light grey, more brownish towards apex; cilia greyish brown. Underside: forewing shining brownish grey, second costal spot and apical spot visible; hindwing shining brownish grey. Abdomen dorsally and ventrally shining dark grey, segments with narrow paler bands posteriorly, ventrally shining grey with pale golden gloss, anal tuft yellowish white.

Male.— Unknown.

Female genitalia (fig. 12, 13). Apophyses anteriores about two-thirds of length of apophyses posteriores. Sterigma a complete sclerotized circle around ostium bursae, both lateral sides with triangular projection. Posterior sclerotization of sternite VII U-shaped. Ductus bursae narrow and slightly shorter than length of corpus bursae. Corpus bursae elongate, weakly wrinkled and with two large signa.

Remarks.— Although the species resembles *V. vartiana* in external features, it is not conspecific with it. The antenna of *V. vartiana* is annulated white till apex and thorax has no white scales laterally (Amsel, 1968). Kasy (1969) gives a good picture of the female genitalia of this species and it shows differences in the sterigma and the signa with *Vulcaniella* sp.

It is possible that *Vulcaniella* sp. is conspecific with *Vulcaniella peristreptra*. According to the original description of Meyrick (1917) of a single male specimen from Peshawar, Pakistan, the thorax lacks the white lateral scaling and the extreme base of the forewing is white. In *Vulcaniella* sp. the tegulae are broadly edged white and this gives the impression that the extreme base is white scaled. Unfortunately, Meyrick (1917) did not give a description of the antenna, for the white apical section of the antenna in *Vulcaniella* sp. is not common in this genus and none of the other known species have such a large white apical section.

Life history.— Biology unknown.

Distribution.— Only known from the type locality: Jammu and Kashmir, India.

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