

ADDITIONAL NOTES WITH THE DESCRIPTION OF A NEW SPECIES AND REDESCRIPTION OF TWO MISIDENTIFIED SPECIES (LEPIDOPTERA, NOCTUIDAE)*

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Designation of the lectotype of *Eugnorisma chaldaica* BOISDUVAL, 1840, with the discussion of the synonymy of *E. chaldaica* with *E. caerulea* WAGNER, 1931. Description of two new species, *E. ignoratum* sp. n. (*chaldaica* auct., nec BOISDUVAL) and *E. cuneiferum* sp. n. (Turkmenistan). With 29 original figures.

Key words: *Eugnorisma*, revision, check list

INTRODUCTION

The vast material belonging to *Eugnorisma* from various parts of the Palearctic Region had been treated in the first two parts of the series. Surprisingly, the new collectings in Turkmenistan (1991-1992) have resulted in numerous new insights on the *Eugnorisma* taxa of the Kopet-Dagh Mts and the adjacent desert area and also in the discovery of a new species belonging to the *tamerlana-puengeleri* species-group. Further new, important results were achieved by the detailed survey of the Noctuinae collection of CORTI preserved in the Natural History Museum, Basel.

The most exciting finding was the identification of the type specimen of "*Orthosia*" *chaldaica* BOISDUVAL, 1840. It is labelled with a large, white label in the style being typical for the Guenée collection and bears also the label 'Ex Museo Dris BOISDUVAL'. The specimen was collected by KINDERMANN in Sarepta, which agrees with the type locality in the original description, therefore this specimen can be considered as lectotype of the species. It is, however, conspecific with the type of *Agrotis* (*Rhyacia*) *caerulea* WAGNER, consequently some changes should be made in the taxonomy and nomenclature of the species group.

* Revision of the genus *Eugnorisma* BOURSIN, 1940, III

IDENTITY OF EUGNORISMA CHALDAICA (BOISDUVAL, 1840)

Designation of the lectotype of *Orthosia chaldaica*

In the large Noctuidae special collection of A. CORTI, preserved in the Natural History Museum, Basel, there are three male specimens of *E. chaldaica* from Sarepta, Southern Russia. One of these specimens bears the original small label "Ex Musaeo D'ris Boisduval", a collection number label "19", and a large, white label containing the following remarks: "34. Agr. Chaldaica spec. 534, Sarepta, I. Kindermann, ♂, coll. Gerhardt". This specimen was already labelled by CORTI as "Type Chaldaica B." (Figs 1-2). As the number of the specimens representing the type series is unknown, the mentioned and figured specimen from the BOISDUVAL collection should be considered as syntype. Thus, the lectotype designation is necessary. It was realized already by CORTI but he never published this designation, therefore this specimen is designated here as the lectotype of the nominal taxon "*Orthosia chaldaica*" BOISDUVAL.

The second male from the same locality has the collection label of A. GUENÉE and a hand-written remark that this specimen was figured by J. CULOT (Pl. 7, Fig. 2). A rather superficial view of this figure can convince us that also this specimen must belong to the species mentioned generally as *Eugnorisma caerulea* WAGNER. The third specimen from this locality agrees well with the former ones (see Figs 1-4).

This judgement based on the external features was completely confirmed by the dissection of all the three specimens (slides 6315, 6316, 6461. VARGA), therefore the types of the two species mentioned formerly as *chaldaica* and *caerulea* represent the same species. TREITSCHKE, who obviously knew the true *chaldaica* of BOISDUVAL, identified a pair of specimens of this species in his collection (now in HHNM Budapest) as *chaldaica*.

It is a historically important fact, that three contemporaneous great lepidopterists, namely BOISDUVAL, TREITSCHKE and GUENÉE, have regarded the same species as *chaldaica*. A supplementary evidence on the identity of the "true" *chaldaica* of BOISDUVAL is furnished by CULOT. It is worthy to cite the decisive terms from his differential diagnosis (against "*Agrotis*" *glareosa* ESPER): "La difference se trouve surtout dans le teinte rougeâtre que l'on voit à la ligne subterminale et aux taches orbiculaires et reniformes de *Chaldaica*; cette couleur rougeâtre, bien constante chez le type, permettra donc de separer facilement cette espèce de *Glareosa* dont les ailes superieures sont d'un gris presque uniforme. Ajoutours que si l'on rencontre des exemplaires de *Glareosa* plus ou moins rougeâtres, ceux-ci le sont d'un façon assez uniforme, et non par parties tranchées, comme c'est le cas chez *Chaldaica*."

On the other hand, there are numerous specimens of the second species known as "*chaldaica*" preserved in large old collections (e.g. London, Vienna, Budapest, etc.) also from this area ("Rossia merid."). Possibly the sympatric distribution of the two externally similar species was one of the reasons of the confusion of *chaldaica* with *caerulea*. It is quite evident that even the great lepidopterists of the last century could not separate the two taxa. The fact that *chaldaica* (sensu auctorum) has no junior synonyms (*chaldacica* FREYER, 1840 is only a misspelling by FREYER of the BOISDUVAL name) can serve as an argument for this opinion. The next, taxonomically available name in this group was "*chaldai-ca* var. *spodia*" PÜNGELER, 1901, which represents also a distinct species occurring partly sympatrically with the two species under discussion.

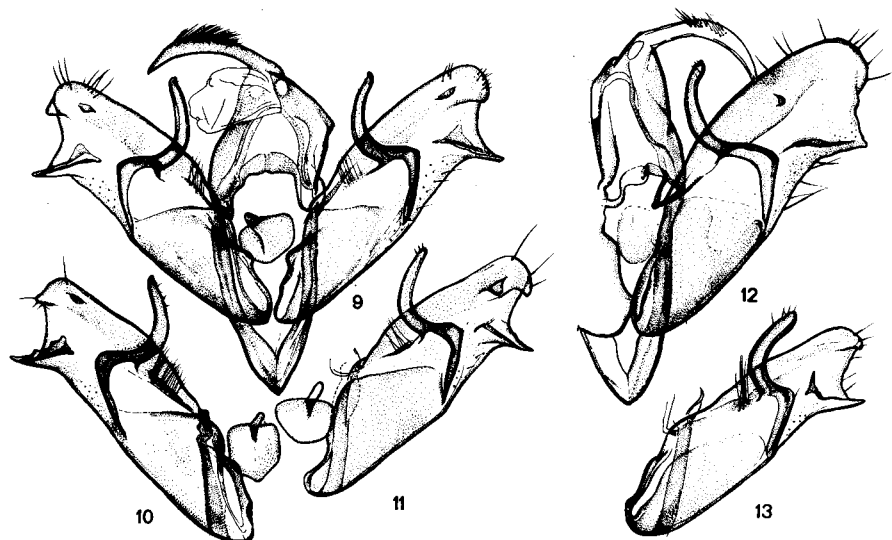
As the subsequent authors of the first half of the twentieth century have also not separated the published infraspecific taxa on species level, BOURSIN (1954) was the first who stated their specific distinctness. He has recognized, described and figured correctly the specific features of the different entities, but, unfortunately, he did not check the types of these taxa. As a consequence of the neglectation of the study of the types, he made mistakes in the interpretations of *chaldai-ca* BOISDUVAL and *spodia* PÜNGELER (the latter problem was discussed in VARGA & RONKAY, 1987, but the former remained as undiscovered also by us).

The designation of the lectotype gives the basis for solving this – probably last – confusion within this species group. As a result of this designation, *caerulea* WAGNER will be considered as junior subjective synonym of *chaldaica* and the species, mentioned regularly as "*chaldaica*", is to be described as new for science. A further advantage of this process is the fall of *buraki* KOCAK, 1983 into synonymy, too, avoiding the a longer controversy for the use of *caerulea* or *buraki* (cf. VARGA & RONKAY, 1987, VARGA *et al.*, 1989, POOLE, 1989, HACKER, 1990, FIBIGER, 1990, FIBIGER & HACKER, 1990). The designation of the lectotype of *chaldaica* cuts the "Gordian knot" and demonstrates that taxonomic studies must precede the nomenclatorial procedures in solving such questions, and often the types have to be checked. One can multiply the number of newly denominated species by some purely technical ("Strandian") tools, but it may be often misleading owing to an insufficient knowledge of the animals themselves.

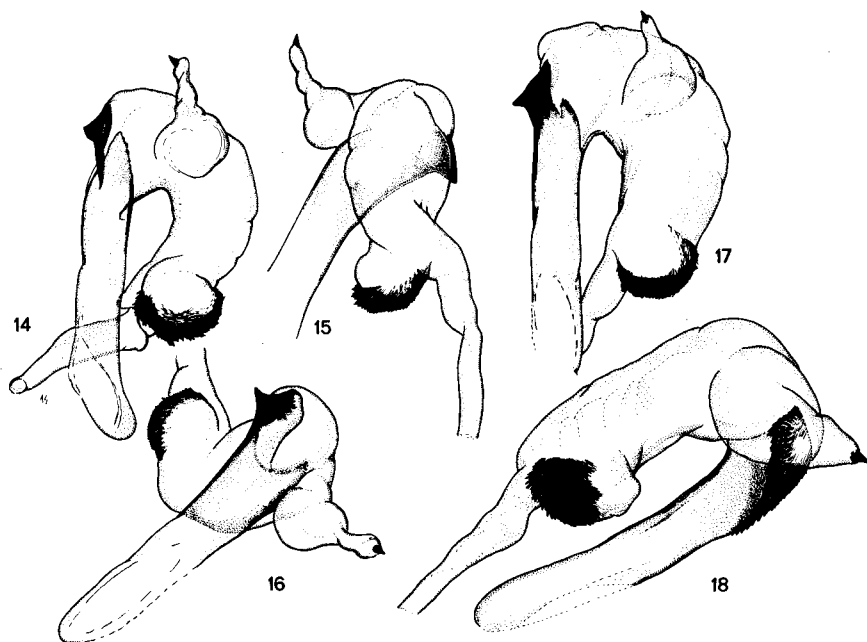
Redescription of *Eugnorisma chaldaica* (BOISDUVAL, 1840) (Figs 1-4, 9-11, 14-16)

Orthosia chaldaica BOISDUVAL, 1840, Genera and Index Methodicus, p. 140. Type locality: Rossia merid.

Lectotype: male, "Chaldaica"; "34. Agr. Chaldaica, spec. 534. Sarepta 1 Kindermann, 2. coll. Gerhardt"; "19"; "EX MUSAEIO Dris Boisduval"; "Type chaldaica B."; "Lectotypus Eugnor-



Figs 9-13. Genital capsula and valvae of *Eugnorisma chaldaica* BOISDUVAL, *E. spodia* PÜNGELER and *E. ignoratum* sp. n. (males) 9 = *E. chaldaica*, lectotype; 10 = *E. chaldaica*, Rossia merid.; 11 = *E. chaldaica*, Sarepta. 12 = *E. ignoratum* sp. n., paratype, Issyk-Kul; 13 = *E. spodia*, Turkmenistan, Firyuza.



Figs 14-18. Aedeagi with everted vesica of *Eugnorisma chaldaica* BOISDUVAL, *E. spodia* PÜNGELER and *E. ignoratum* sp. n. 14 = *E. chaldaica*, lectotype; 15 = *E. chaldaica*, Rossia merid.; 16 = *E. chaldaica*, Sarepta. 17 = *E. spodia*, Turkmenistan; 18 = *E. ignoratum*, paratype, Issyk-Kul

isma chaldaicum (Boisduval, 1840)". Slide No. 6315 VARGA. The lectotype is deposited in the CORTI collection, Natural History Museum, Basel.

Additional material examined: lectotype and paralectotype of *E. caerulea* WAGNER (cf. VARGA & RONKAY, 1987), large series of both sexes from Turkey, Armenia, Azerbaijan and southern Russia. The material studied by us is exhaustively enumerated in parts I-II. of our revision.

External morphology: the external and genitalic features of the species are satisfactorily described and illustrated by VARGA & RONKAY (1987) under the name "*E. caerulea* WAGNER"; the genitalia of the lectotype and of two further specimens are given in Figs 9-11 and 14-16.

The studies of large material of the species from various parts of Asia Minor, Transcaucasia and South Russia shows that there is a continuous range of variation in the main external features, e.g. the ground colour, the filling of the stigmata, the intensity of the reddish suffusion at subterminal line, etc. Thus, it can be stated, besides the perfect specific identity of *chaldaica* and *caerulea*, that the western populations of *chaldaica* cannot represent separate geographic races.

The specific differences of the "true" and the "former" *Eugnorisma chaldaica* are given in connection with the description of the latter, formerly undescribed species, *E. ignoratum* sp. n.

A HITHERTO MISIDENTIFIED EUGNORISMA SPECIES

Eugnorisma ignoratum sp. n.

(Figs 5, 12, 18, 27)

Holotype: female, "Russia merid."; "Coll. E. Frivaldszky", slide No. 6429. VARGA (coll. HNHM Budapest).

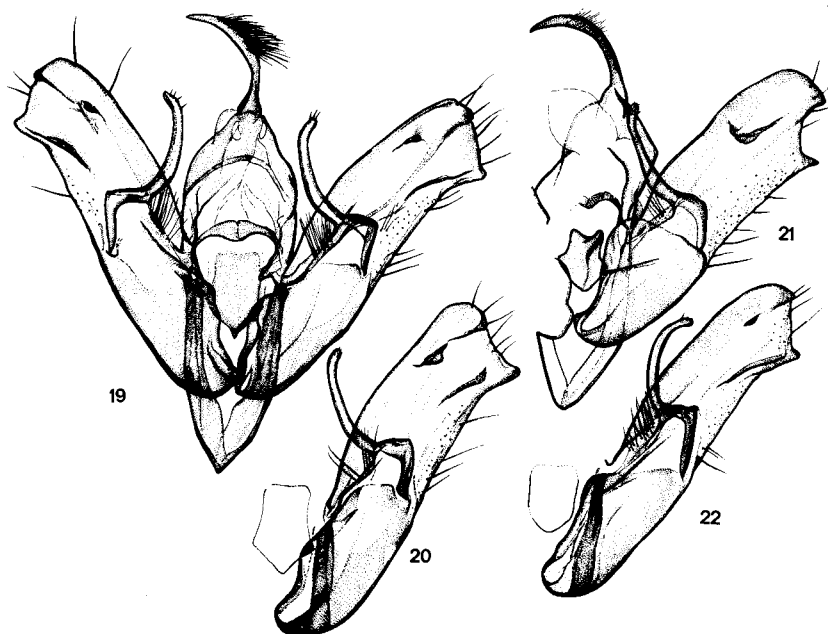
Paratypes: the specimens listed in the paragraph "Examined material" of "*Eugnorisma chaldaica* BOISDUVAL" in the first part of the revision of the genus (1987) are considered as paratypes of the species.

As the description of *E. ignoratum* was already given in details in VARGA & RONKAY (1987) under *E. chaldaica*, we repeat only some important statements, completed with the differential diagnosis against *E. chaldaica*.

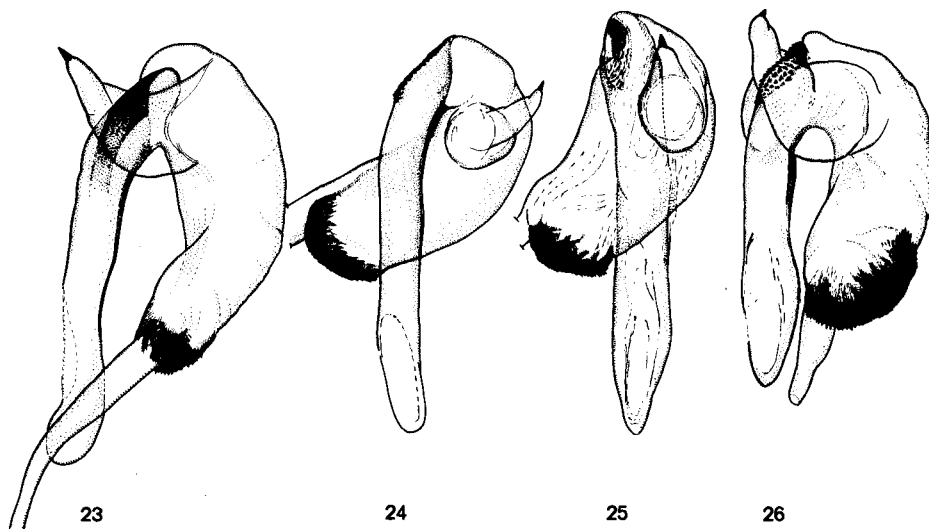
The rosy-grey or pinkish-grey ground colour of the body and the forewings, typical for this species, originates of a fine mixture of grey, reddish and dark brown scales combined by a silky shining. The combination of the (bluish)grey and reddish colours results often in a fine violaceous hue in the basal and medial parts of the forewing. The orbicular spot is more flattened and oblique, the basal intracellular spot is more triangular. The ground colour of the hindwing is not pure white but has a rosy-ochreous sheen and a poor reddish-brownish irroration along the veins and the outer margin. The most characteristic features of the male genitalia are the huge, dentated plate of the carina and the large, ample basal diverticulum of the vesica (Figs 12 and 18); those of the female genitalia are the broad ostium bursae and the twice folded proximal part of ductus bursae (Fig. 27).

E. ignoratum is an easily recognizable species, being clearly distinguishable from *E. tamerlana* and *E. cuneiferum* (described in Chapter IV) by the very different intracellular maculation and the coloration of the hindwing. *E. puengeleri* has more elongated forewing with almost missing reddish suffusion, the hindwing is always of a greyish marginal part, the veins are often covered with darker scales.

E. spodia has no reddish or purplish colour on the forewing and the bronze-golden iridescence of the intracellular black(ish) spots is intensive.



Figs 19-22. Genital capsule and valvae of *Eugnorisma cuneiferum* sp. n., *E. tamerlana* HAMPSON and *E. puengeleri* VARGA & RONKAY (males) 19 = *E. cuneiferum* sp. n., paratype, Turkmenistan, Ipay-Kala; 20 = *E. cuneiferum* sp. n., Turkmenistan, Karayalchi; 21 = *E. tamerlana*, Syr-Darja; 22 = *E. puengeleri*, Alexander Mts.



Figs 23-26. Aedeagi with everted vesica of *Eugnorisma cuneiferum* sp. n., *E. tamerlana* HAMPSON and *E. puengeleri* VARGA & RONKAY. 23 = *E. cuneiferum* sp. n., Turkmenistan, Karayalchi; 24 = *E. cuneiferum* sp. n., Turkmenistan, Ipay-Kala. 25 = *E. puengeleri*, Alexander Mts, 26 = *E. tamerlana*, Syr-Darja

E. ignoratum shows the greatest similarity with *E. chaldaica*, the latter species, however, never has the general reddish-pinkish shade of the forewing: these colours are limited to the filling of the stigmata and the shadow defining the subterminal line, as it was correctly pointed out by CULOT.

The genitalia of the species group are illustrated on Figs 9-29.

As STAUDINGER and BANG-HAAS misidentified *E. ignoratum* in their collections, they issued a large number of specimens – collected mostly in the Tien Shan region (e.g. Issyk-Kul, Semiretshye) by some professional collectors (TAN-CRÉ, RÜCKBEIL, etc.) – under the name “*chaldaica* B.”. Thus, most large, old collections contain specimens of *E. ignoratum*, identified as *E. chaldaica*. As *E. ignoratum* occurs sympatrically with *E. chaldaica* in some of the well-known “classical” localities (e.g. Sarepta, “Rossia merid.”, Margelan, “Altai region”), the confusion easily became total.

KOZHANCHIKOV (1937: 240, Fig. 89) had correctly figured the male genitalia of *E. chaldaica* and this fact remained unknown for most European authors. But he considered *E. caerulea* (as “*coerulea*”) only as a “geographically limited form” (p. 241) of *E. chaldaica*; in addition, *E. spodia* was not separated by him as a distinct species. Hence, he could not contribute to the solution of the problems discussed above.

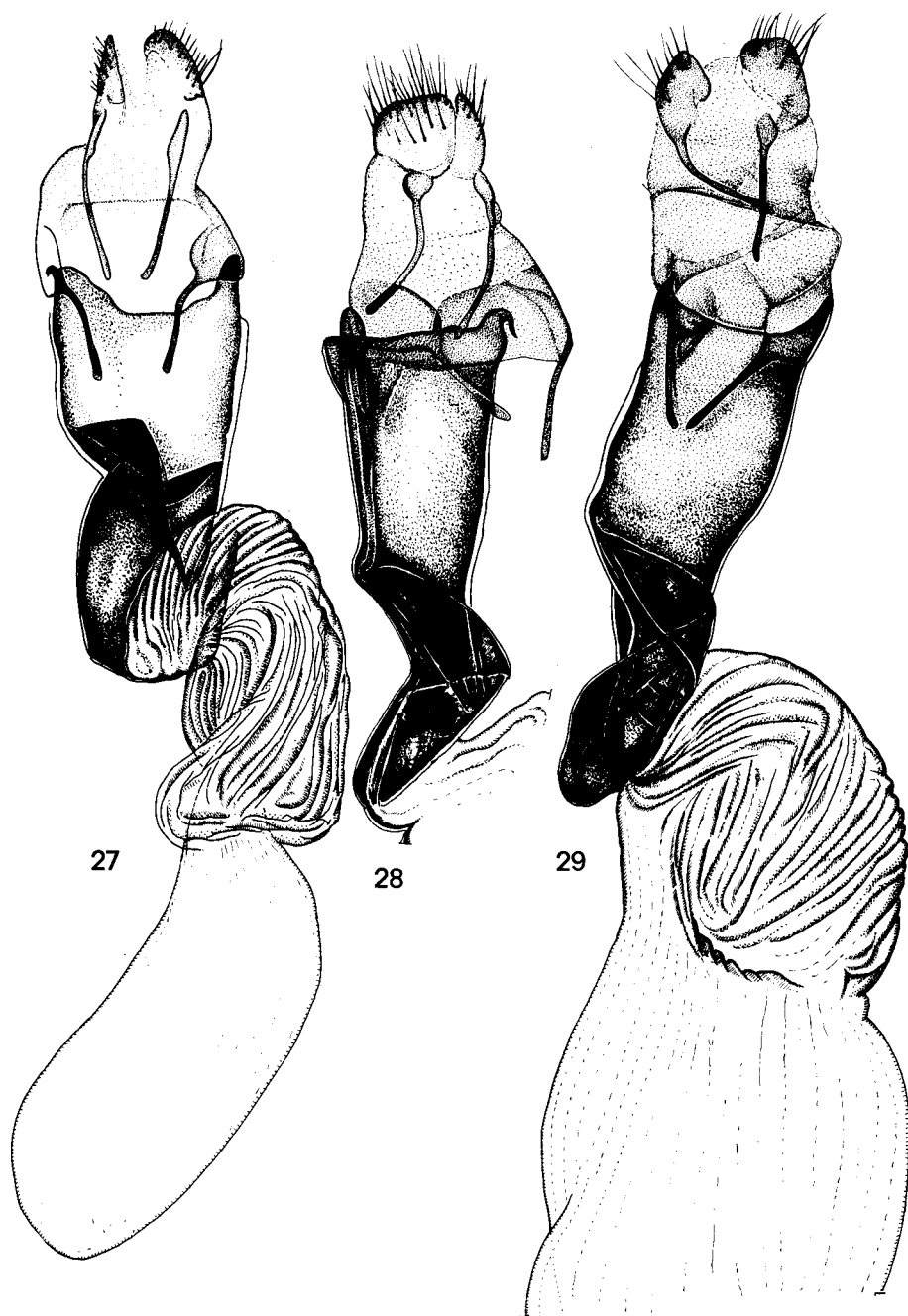
The confusion of the taxa was conserved by the voluminous paper of BOURSIN (1954). He had identified the true *E. spodia* from Ashkhabad as “*coerulea* Wagn.” (sic!, slide No. 404 BOURSIN), studied a specimen of *E. puengeleri* from Russian Turkestan as “*spodia* Püngeler” (although the type locality of *E. spodia* is Ashkhabad!) and dissected a male of *E. ignoratum* from “Asia m.” (?) from the collection of the MNHN Paris (slide MP 42 BOURSIN) as “*E. chaldaica*”. These confounding moments was to be clarified by a partial revision of the photographic documentation of genital slides of CHARLES BOURSIN, preserved in the LN, Karlsruhe.

A NEW SPECIES FROM TURKMENISTAN, RELATED TO *E. TAMERLANA* AND *E. PUENGELERI*

***Eugnorisma cuneiferum* sp. n.** (Figs 6, 19-20, 23-24, 28-29)

Holotype: female, “USSR, Turkmenia, Kopet-Dagh Mts., 1600 m, 25 km E of Nochur, Karayalchi valley, 57°09'E, 38°21'N, 05.10.1991, No. L36, leg.: A. Podlussány, L. Ronkay and Z. Varga” (coll. HNBM Budapest).

Paratypes: some 120 specimens of both sexes from the same and the following other localities from the Kopet-Dagh Mts, Turkmenistan: Firyuza, 58°05'E, 37°59'N, 600 m, 25-30.09.1991, leg. A. PODLUSSÁNY, L. RONKAY & Z. VARGA; 5 km S of Chuli, 700-800 m, 58°01'E, 37°56'N, 30.09.1991, leg. A. PODLUSSÁNY, L. RONKAY & Z. VARGA; Dushak, 2200-2400 m,



Figs 27-29. Female genitalia of *Eugnorisma ignoratum* sp. n. and *E. cuneiferum* sp. n. 27 = *E. ignoratum* sp. n., holotype, Russia merid. 28-29 = *E. cuneiferum* sp. n., paratypes, Turkmenistan, Karayalchi.

57°54'E, 37°57'N, 01-02.10.1991, leg. A. PODLUSSÁNY, L. RONKAY & Z. VARGA; same locality, 7-8.VIII.1992, leg. M. HREBLAY, GY. LÁSZLÓ; Kurkulab, 6 km W Germob, 1000 m, 03.10.1991, leg. A. PODLUSSÁNY, L. RONKAY & Z. VARGA; 20 km E of Nochur, Karayalchi valley, 800 m, 57°12'E, 38°23'N, 04.10.1991, leg. A. PODLUSSÁNY, L. RONKAY & Z. VARGA; 6 km S of Ipay-Kala, 1600 m, 57°07'E, 38°17'N, 16-23.VIII.1992, leg. M. HREBLAY, GY. LÁSZLÓ and G. RONKAY. (coll. the collectors, HNHM Budapest, BMNH London; GY. FÁBIÁN (Budapest), P. GYULAI (Miskolc), B. HERCZIG (Tata), M. FIBIGER (Sørø), H. HACKER (Staffelstein), G. BEHOUNEK (Deisenhofen), E. VARTIAN (Vienna).

Slides 4059, 4064 RONKAY, 6320, 6458 VARGA (males), 4428 RONKAY, 6396, 6431 VARGA (females).

Description: wingspan 33-42 mm, length of forewing 16-21 mm. Head and thorax light ash-grey with dark grey-brownish hair-scales, palpi laterally blackish-brown. Forewing almost unicolorous, light, shining grey, suffused with brownish and ochreous-grey; medial part sometimes with stronger dark irroration. Ante- and postmedial lines double, pale or obsolescent, dark grey-brown. Medial line reduced, subterminal an interrupted, diffuse, slightly waved brownish shadow. Orbicular stigma flattened and oblique, encircled with whitish, its greyish filling sometimes with a fine reddish shade. Reniform paler, its outline incomplete, filled with ground colour; claviform absent or a small patch of brownish scales. Intracellular spots black with some bronze iridescence, basal one typically cuneate, medial one triangular, sometimes with lighter scales on upper part. Terminal line ochreous-whitish, cilia grey. Hindwing shining whitish suffused with ochreous-grey, inner margin with scarce brownish hairs and scales. Veins and marginal area finely covered with brownish-grey, terminal line a row of brownish arches; cilia light grey-brownish. Underside whitish, veins covered with brownish, inner parts of forewing and costal area of hindwing suffused with grey; cellular lunule slightly visible.

Male genitalia (Figs 19-20 and 23-24): uncus slender and moderately long, tegumen high, futura inferior a moderately elongate, rounded plate with a weakly expressed medial crest, vinculum strong, elongate. Valvae large, elongate, medially slightly dilated. Harpe very long, sword-like; elongate, moderately curved, basal part relatively short and strong. Aedoeagus very long and slender, moderately curved. Carina with a very finely dentate plate. Vesica large and ample, everted ventrally, reflexed to dorsal side, diverticulum large, slightly curved and elongate, with a fine comutus.

Female genitalia (Figs 28-29): gonapophyses short and weakly sclerotized, ostium bursae well sclerotized, broad and quadrangular, ductus bursae broad and flattened, proximally constricted and characteristically folded. Apex bursae extremely large, ample, moderately curved and rugulose, corpus bursae huge.

The genitalia of both sexes display the general features of the species group *tamerlana* – *puengeleri* – *cuneiferum*. The figures are grouped in order to compare the most important specific differences. In the male genitalia the basic configuration is nearly the same as by *E. puengeleri*, but valvae are broader and medially slightly dilated, the harpe has a more even, moderate curving and the diverticulum of the vesica is larger and characteristically arcuate with another orientation than in *E. puengeleri*. The very finely dentate plate of carina is unique in this species group. The differences, compared with *E. tamerlana* are evident in the shape of valvae and aedoeagus, in the size and form of vesica and its diverticulum.

The differences are equally expressed in the female genitalia, too. The folding of the ductus bursae is essentially similar to that of *E. puengeleri*, but the whole organ is broader and larger. Very conspicuous are the huge apex bursae

and corpus, which is significantly correlated with the large, curved diverticulum and vesica.

Distribution: the species seems to be endemic to the northern chains of the Kopet-Dagh Mts, Turkmenistan.

* * *

Abbreviations used in this article are: BMHN London – The Natural History Museum, London; HNHN Budapest – Hungarian Natural History Museum, Budapest; LN Karlsruhe – Landes-sammlungen für Naturkunde, Karlsruhe; MNHN Paris – Museum National d'Histoire Naturelle, Paris; NHM Basel – Naturhistorisches Museum, Basel.

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APPENDIX: REVISED CHECKLIST OF THE EUGNORISMA SPECIES

Eugnorisma BOURSIN, 1946

Subg. *Eugnorisma* BOURSIN, 1946

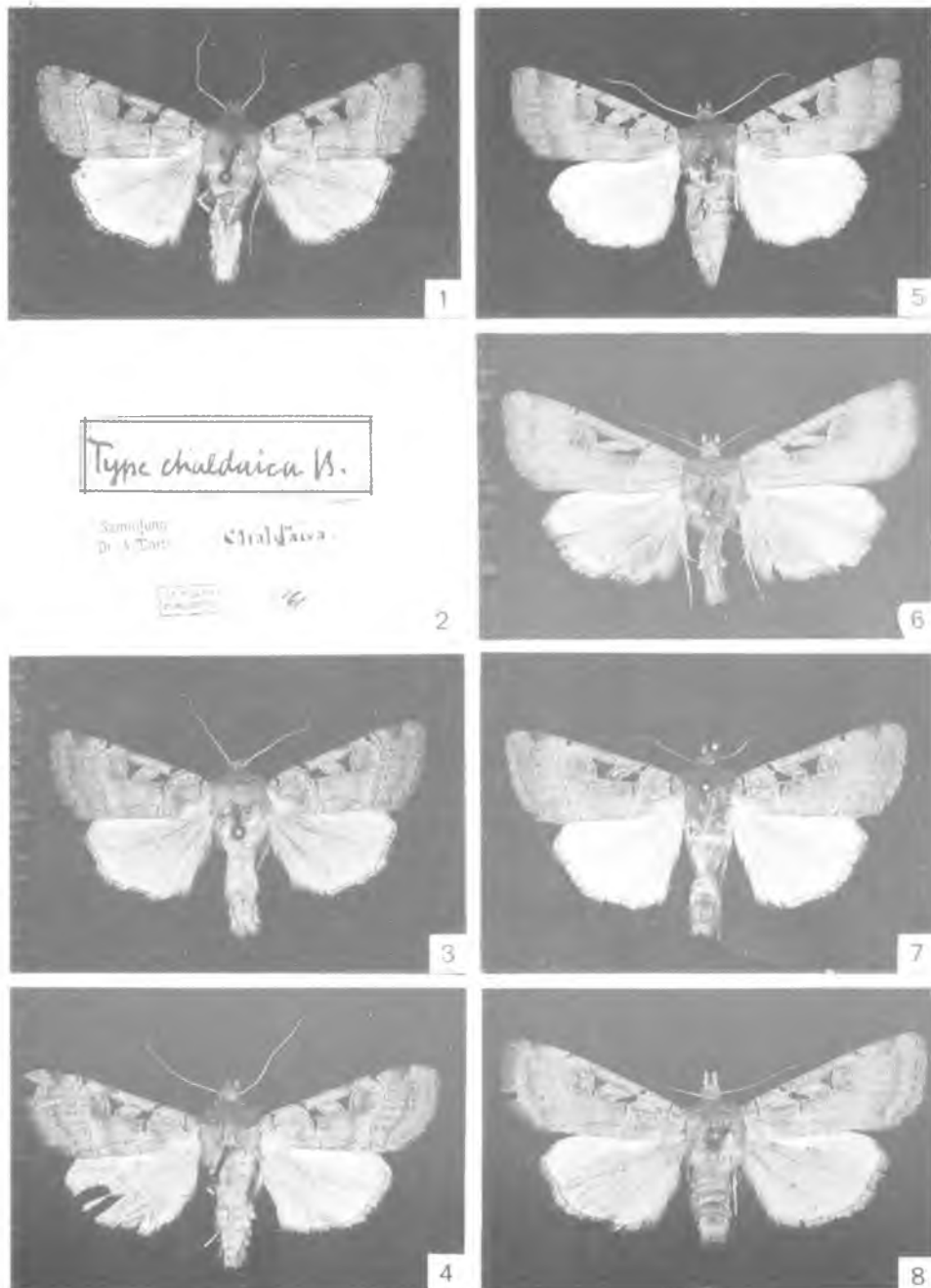
- Eugnorisma tamerlana* (HAMPSON, 1903) (*Lycophotia*)
- E. puengeleri* VARGA & RONKAY, 1987
- E. ignoratum* VARGA & RONKAY, 1992 (nom. nov. pro
E. chaldaica auct. nec BOISDUVAL)
- E. chaldaica* (BOISDUVAL, 1840) (*Orthosia*, stat. rev.,
= *E. caerulea* WAGNER syn. nov.; *E. buraki* KOCAK, 1983)
- E. eminens* (LEDERER, 1855) (*Graphiphora*)
- E. atrabaelbops* VARGA, 1975
- E. enargiaris* (DRAUDT, 1936) (*Xestia*)
- E. coryphaea* (PÜNGELER, 1900) (*Agrotis*)
- E. trigonica* (ALPHÉRAKY, 1872) (*Agrotis*)
- E. gaurax* (PÜNGELER, 1900) (*Agrotis*)
- E. deleasma* BOURSIN, 1967
- E. variago* (STAUDINGER, 1882) (*Hiptelia*)
- E. insignata* (LEDERER, 1853) (*Graphiphora*, type species)
- E. conformis* (SWINHOE, 1885) (*Agrotis*)
- E. asad* BOURSIN, 1963

- E. semiramis* (BOURSIN, 1940) (*Rhyacia*)
E. eucratides (BOURSIN, 1957) (*Eugraphe*)
E. goniophora VARGA, RONKAY & HACKER, 1990
E. glareomima VARGA & RONKAY, 1991
E. fuscisignata (HAMPSON, 1903) (*Richia*)
E. xestioides (HAMPSON, 1903) (*Richia*)
 Subg. *Metagnorisma* VARGA & RONKAY, 1987
E. (M.) pontica (STAUDINGER, 1891) (*Agrotis*)
E. (M.) heuristica VARGA & RONKAY, 1987
E. (M.) rafidain (BOURSIN, 1940) (*Rhyacia*)
E. (M.) depuncta (LINNAEUS, 1761) (*Phalaena Noctua*)
E. (M.) arenoflavida (SCHAWERDA, 1934) (*Agrotis*)

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Figs 1-8. 1. *Eugnorisma chaldaica* BOISDUVAL. Lectotype male, Sarepta. 2. The labels of the lectotype. 3. *E. chaldaica* BOISDUVAL, male. Rossia merid., coll. TREITSCHKE (coll. HHNM Budapest). 4. *E. chaldaica* BOISDUVAL, male. Sarepta, coll. GUENÉE (NHM Basel). 5. *E. ignoratum* sp. n. (*chaldaica* auct.). Holotype female, Rossia merid. 6. *E. cuneiferum* sp. n. Holotype female, Turkmenistan, Karayalchi. 7. *E. puengeleri* VARGA & RONKAY, male. Alexander Mts (coll. NHM Basel). 8. *E. spodia* Püngeler, male. Turkmenistan, Firyuza (coll. VARGA)