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The butterfly taxa described by János Frivaldszky and their type material (Lepidoptera: Papilionoidea)

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Abstract – Four species-group names (Papilionoidea) proposed by János Frivaldszky in 1886 for butterflies are reviewed studying original descriptions, documentations and type specimens. The name *antimus* (Nymphalidae: Satyrinae: Yphtimini: *Mycalesis*) is considered to be a *nomen oblitum*. The type is lost. The name *kreitneri* (Pieridae: Pierinae: Pierini: *Aporia*) is represented by one male syntype, which is selected and designated as lectotype for fixing the identity of the name. It is suggested that *kreitneri* represents a hitherto unrecognised Sino-Himalayan species. The name *loczyi* (Nymphalidae: Satyrinae: Yphtimini: *Loxerebia*) is represented by four male syntypes. One of the syntype specimens is selected and designated as lectotype for fixing the identity of the name. The name *szechenyii* (Papilionidae: Parnassinae: Parnassini: *Parnassius*) is represented by one male syntype, which is selected and designated as lectotype for fixing the identity of the name. The taxon *Parnassius szechenyii* is polytypic and possesses numerous subspecies, and by the lectotype designation the identity of the nominate race is objectively fixed. Certain aspects regarding the history of the Lepidoptera Collections deposited Department of Zoology, Hungarian Natural History Museum are discussed. With 10 figures.

Key words – Széchenyi, Frivaldszky, China, Papilionidae, lectotype.

INTRODUCTION

The first general head of the zoological collections was János Frivaldszky in the National Museum of Hungary (= Magyar Nemzeti Múzeum). János Frivaldszky, who used his Christian name also as *Johannes* (in German) or *Joannes* (in Latin), was born in Frivald, county Trencsén, Hungary (now Rajec, Slovakia) on 17th of June, 1822 and died in Budapest, on 29th of March, 1895. In spite of his university studies in

engineering he was trained and eventually turned to be a zootaxonomist when he served as an adjunct and helper beside his elder relative IMRE FRIVALDSZKY (1799–1870). The two FRIVALDSZKYS travelled and collected together. They pioneered in the research of cavernicolous fauna in the Bihar Mountains of western Transylvania, they jointly visited the legendary region of Mehádia and Herkulesfürdő (now Mehadia and Băile Herculane, Roumania) several times in the south-western Carpathians, and organized expeditions in the Balkans, western Anatolia and in the Mediterranean islands. JÁNOS FRIVALDSZKY became focused on Coleoptera, for what he got the full support from IMRE, whose position in the museum was taken over by him (BÁLINT & FRIVALDSZKY 2009). The first publication of JÁNOS FRIVALDSZKY was a joint one with IMRE describing three cave beetles new to science (FRIVALDSZKY & FRIVALDSZKY 1857). Beside voluminous coleopteran taxonomic work, important local faunistic monographs have been also composed and published by the younger FRIVALDSZKY (1873*a*, *b* and 1876).

Count BÉLA SZÉCHENYI (1837–1918) organized and sponsored a scientific expedition into Central Asia in the period of 1877–1880. The results were bounded in three volumes (SZÉCHENYI 1890–1897). The zoological material collected during the expedition was donated to the Magyar Nemzeti Múzeum, and the specimens representing many insect orders were identified by JÁNOS FRIVALDSZKY (1886, 1889, 1892, 1893). In the material there were Lepidoptera specimens from the territory of Sikkim, Bhutan and Tibet, from China and Japan. The coleopterist FRIVALDSZKY described four butterfly taxa as new to science plus diagnosed the male of a species known only on the basis of the holotype female (Fig. 1) (FRIVALDSZKY 1886). Finally the list of all the species captured on the SZÉCHENYI expedition and the descriptions of the butterflies discovered have been published together (FRIVALDSZKY 1893).

The aim of the present paper is to review the names proposed for butterflies by JÁNOS FRIVALDSZKY in his paper published in 1886. I document the type material if original specimens could be located in the Lepidoptera collection of the Hungarian Natural History Museum (counting more than twelve thousand drawers housing about 1.7 million pinned specimens; see BÁLINT 2008). I review the names and designate lecotypes to fix objectively their identity.

The paper is dedicated to the senior JÁNOS FRIVALDSZKY (1936 –), my fellow in history of Hungarian natural science, for his zealous and ardent commitment to reveal the importance of his family for Hungarian science. He monographed the three eminent natural historian and scientist FRIVALDSZKYS, who were given by his family to Hungary, namely JÁNOS FRIDVALDSZKY (CSETRI & FRIVALDSZKY 2003), IMRE FRIVALDSZKY (BÁLINT & FRIVALDSZKY 2009) and JÁNOS FRIVALDSZKY (FRIVALDSZKY 2008).

MATERIALS AND METHODS

Names of species-group taxa proposed by FRIVALDSZKY (1886) are discussed in alphabetical order. After the citation of the original binominal combination of the scientific name, further citations are given only from classical sources, which monograph the world butterfly fauna. These are the series of *Die gross Schmetterlinge der Erde* of ADALBERT SEITZ (1909) and Holarctic parts of *The Butterflies of the World* series of BERNARD D'ABRERA (1990–1993). The SEITZ series was the first compilation of all the taxonomic descriptions providing a global view of butterfly diversity. The series of D'ABRERA is practically an illustrated catalogue of the main butterfly collection of the Natural History Museum in London, built by many authorities, who used the SEITZ series as a corner stone (BÁLINT 2005). Therefore it mirrors the SEITZ series but also how different scientists worked on certain groups after SEITZ, including the author of the series of the *Butterflies of the World*. Subsequent citations are taken from more recent and special taxonomic publications, which deal with the monophyly of the taxon involved.

The present classification of the taxon, which bears the name proposed by J. FRIVALDSZKY is given to tribal level.

The type status of the material and the type locality of each nominal taxon are reviewed. If syntypic specimen(s) could be located, lectotype is selected. This is necessary for objectively fixing the identity of the name. The type specimens are kept in the Lepidoptera collection of the Department of Zoology, Hungarian Natural History Museum (HNHM). Under the entry "type material" the located specimen is listed, its physical condition is briefly described, label data are given; handscript is indicated by *italic*, the printed letters are given in normal typeface. The specimen and the labels are illustrated (Figs 3–10). Under remarks certain historical aspects are discussed.

BUTTERFLY NAMES PROPOSED BY JÁNOS FRIVALDSZKY

"*Mycalesis Perseus* Fabr. *var. Antimus*" (Nymphalidae: Satyrinae: Ypthimini) (Fig. 1)

Mycalesis Perseus Fabr. *var. Antimus* – FRIVALDSZKY 1886: 40, pl. IV, fig. 5, syntype male: "In India orientali inter Darjeeling et Sikkim".

Mycalesis Perseus Fabr. *var. Antimus* Friv. – FRIVALDSZKY 1893: 689.

Type material – None.

History – The taxon was described as a variety of *Mycalesis perseus* (FABRICIUS, 1775) on the basis of an unstated number of syntype specimen(s) of unstated sexe(s) taken on the road between Darjeeling and the Sikkim border. Subsequently the collecting date was indicated as "1878. 13 Februarii". Male specimen was figured in dorsal and ventral view (Fig. 1).

In the general Lepidoptera collection there is no specimen, which can be considered as type. Without type material the taxonomic status of *antimus* cannot be positively identified as the genus *Mycalesis* HÜBNER, 1818 (type species: *Papilio francisca* STOLL, 1780) is complex with remarkable geographical and seasonal variability resulting taxonomic diversity for which myriads of names have been proposed. From the original figure it is obvious that *antimus* does not represent *Mycalesis perseus* (D'ABRERA 1985: 458) because it is larger, and the forewing dorsal surface is maculated apically and tornally. The taxon most probably represents *Mycalesis francisca* (STOLL, 1780) (D'ABRERA 1985: 452), which possess the previously mentioned characteristics. The name *antimus* was not taken into account by SEITZ nor in D'ABRERA, nor in any compilation available on the internet (*e.g.* http://www.nic.funet.fi/pub/sci/bio/life/warp/lepidoptera-index-a-n.html). It seems that it was never in use.

Because of the circumstances outlined above I consider the nominal taxon *antimus* FRIVALDSZKY, 1886 as a *nomen oblitum* in the sense of the ICZN (1999: 111).

Remarks – No *Mycalesis* specimen with "China, Széchenyi" label could be located. Most probably it was taken out from the general collection by ZSIGMOND VELEZ, and when VELEZ material was incorporated to the main collection, the specimen was considered not worth to keep because of its (presumable) bad condition (see Discussion).

The male specimen described and illustrated by FRIVALDSZKY under the name "Callerebia polyphemus" (Fig. 2) was found. It bears the characteristic label with the printed script "China, Széchenyi" used for labelling Lepidoptera material originating from the SZÉCHENYI expedition. The specimen is in very poor condition like the *loczyi* syntypes, testifying

that the material collected in China was badly maintained. This observation supports the supposition that *antimus* type material was also in bad condition, and most probably it was discarded.

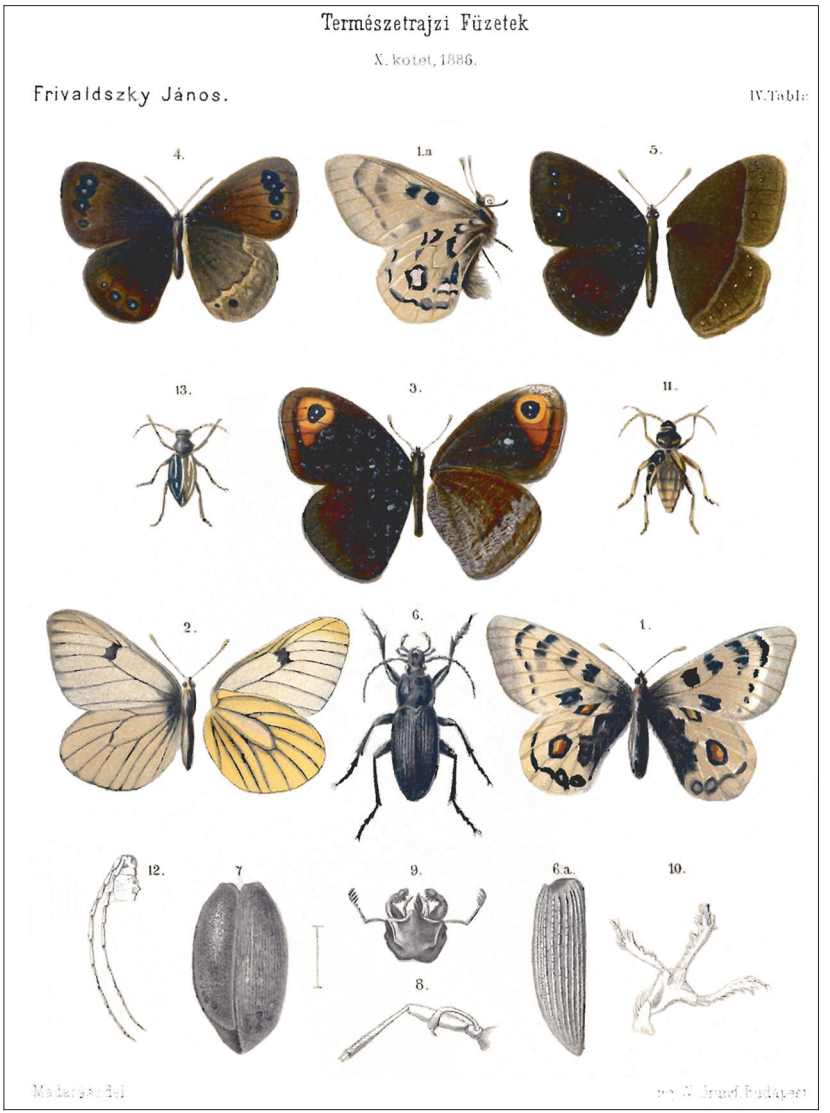


Fig. 1. The original plate and figures of J. FRIVALDSZKY (1886), depicting *Aporia kreitneri* (2) *Callerebia loczyi* (4) *Callerebia polyphemus* (3) *Mycalesis antimus* (5) and *Parnassius szechenyii* (1)

"*Pieris Martineti* Oberth. *var. Kreitneri*" (Pieridae: Pierinae: Pierini) (Figs 1, 3–5)

Pieris Martineti Oberth. *var. Kreitneri* – FRIVALDSZKY 1886: 40, pl. IV, fig. 2. (syntype male): (In Tibet ad lacum Kuku-noor).

Pieris Martineti Oberth. var. Kreitneri Friv. – FRIVALDSZKY 1893: 688.

Aporia hippa Brem. *Kreitneri* Friv. – RÖBER in SEITZ 1909: 40, pl. 17, row c, fig. "kreitneri" (male dorsum) and "kretineri U" (male underside).

Aporia martineti (Oberthür, 1884) ssp. *kreitneri* (FRIVALDSZKY, 1886) – BRUNA *et al.* 2004: 28.

Type material – Syntype male, set dorsally, without antennae (Fig. 4) with the following labels: (1) „Coll Velez. Asia // Himalaya N. Tibet // Kün-Lün, Karakorum // *China, Kukunoor //1936 VI 1455*", on verso "*Aporia hippia // kreitneri Friv. // 10/15.-*" [ZSIGMOND VELEZ's handscript]; (2) "localitas // ac datum // dubiosa", (3) "vide No. // 863-029. 1955" (Fig. 5).

History – The taxon was described on the basis of an unstated number of syntype specimen(s) of unstated sexe(s) taken at the lake "Kuku-noor" (now: Quinghai Lake, Quinghai, China). The original description mentions the dorsal hindwing androconial spot hence it is supposed that the taxon was based exclusively on male specimens. The single type specimen located was curated as "kreitneri" under the commercial printed label of the STAUDINGER-BANG-HAAS firm (Fig. 3). The original labels of the specimen became replaced by recent ones (see below). This specimen matches perfectly the figure of the FRIVALDSZKY plate (Figs 1, 3–4), (just there are no antennae) and shows the conspicuous hindwing dorsal androconial patch pointed out in the original description. There is no other specimen with such remarkable androconia in the general collection. These circumstances fully support the empirical evidence, that the specimen is a syntype of *kreitneri*. For an objective reference of the status of *kreitneri* this specimen is designated as lectotype of and label accordingly.

The taxon was reviewed by RÖBER, who considered *kreitneri* as subspecies of *Aporia hippia* (BREMER, 1861) (type locality: Amur region), a widely distributed eastern Palaearctic species most similar to *Aporia crataegi* (LINNAEUS, 1758). Subsequently *kreitneri* was considered again as *Aporia martineti* subspecies (BRUNA *et al.* 2004). However, none of these mentioned species possess the remarkable dorsal hindwing androconia, but the taxon *thibetana* GRUM-GRSHIMAILO, 1893 (type locality: "Amdo"), which is very similar in phenotypic appearance to *kreitneri*, has this trait. I am of the opinion that these two taxa represent a hitherto unrecognized species, and if so, the senior name *kreitneri* must be applied. A taxonomic revision of the involved taxa is necessary to falsify or support this hypothesis.

Remarks – The specimen was stolen; the original labels were taken away and replaced by new ones, which are considered unreliable (see Discussion).

"Callerebia Lóczyi" (Nymphalidae: Satyryinae: Ypthimini) (Figs 1, 6–8)

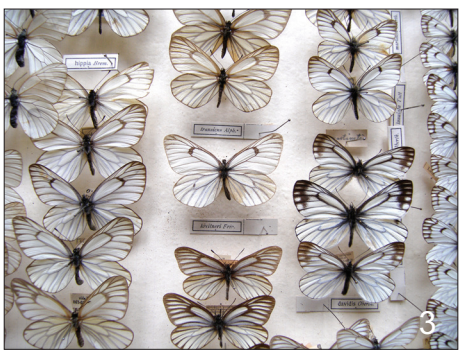
Callerebia Lóczyi n. sp. – FRIVALDSZKY 1886: 40, pl. IV, fig. 3, syntype male: "In China septentrionali ad Su-tschou".

Callerebia Loczyi Friv. – FRIVALDSZKY 1893: 688.

Loxerebia loczyi FRIVALDSKY, 1885 – D'ABRERA 1992: 196, fig. "L. loczyi" ("holotype"): „Northern China (Suchow)".

Loxerebia loczyi (FRIVALDSZKY, 1886) – BRUNA *et al.* 2000: 18.

Type material – Syntype no. 1, male (Fig. 6), set dorsally, left antenna, abdomen missing, only one leg present, wings worn, hindwing margins broken, labelled as (1) "*Callerebia // Lóczyi*" [JÁNOS FRIVALDSZKY's handwriting]; (2) "China // Széchenyi"; (3), "TYPUS"; "Hung. Nat. Hist. Mus. // coll. // LEPIDOPTERA // ~~PARA~~TYPUS", on verso: "*SYNTYPE // B. Zs. // 1998. XI. 24.*" (ZSOLT BÁLINT's handwriting) (Fig. 7).



Figs 2–5. 2 = The first known male specimen of *Calleberia polyphemus* OBERTHÜR, 1884, described by JÁNOS FRIVALDSZKY; 3 = The syntype specimen of *Aporia martineti* var. *kreitneri* FRIVALDSZKY, 1886 as it was curated in the general Lepidoptera collection; 4 = The lectotype of *Aporia martineti* var. *kreitneri* FRIVALDSZKY, 1886, dorsal view; 5 = The labels of the *Aporia martineti* var. *kreitneri* FRIVALDSZKY, 1886 lectotype

Syntype no. 2, set dorsally, antennae missing, two legs present, wings worn, left hindwing apex broken, labelled as (1) "China // Széchenyi"; (2), "TYPUS"; "Hung. Nat. Hist. Mus. // coll. // LEPIDOPTERA // ~~PARA~~TYPUS", on verso: "*SYNTYPE // B. Zs. // 1998. XI. 24.*" (ZSOLT BÁLINT's handwriting).

Syntype no. 3, set dorsally, antennae, abdomen missing, three legs present, wings worn, labelled as (1) "China // Széchenyi"; (2), "TYPUS"; "Hung. Nat. Hist. Mus. // coll. // LEPIDOPTERA // ~~PARA~~TYPUS", on verso: "*SYNTYPE // B. Zs. // 1998. XI. 24.*" (ZSOLT BÁLINT's handwriting).

Syntype no. 4, set dorsally, two legs present, wings worn, hindwings broken, labelled as (1) "Coll Velez. Asia // *China // 1930 VI* ♂ *// 2607* ♀", on verso "*Callerebia // nirmala Mr. // 15.*-" [ZSIGMOND VELEZ's handwriting]; (2) "localitas // ac datum // dubiosa", (3) „vide No. // 863-029. 1955"; (3), "TYPUS"; "Hung. Nat. Hist. Mus. // coll. // LEPIDOPTERA // ~~PARA~~TYPUS", on verso: "*SYNTYPE // B. Zs. // 1998. XI. 24.*" (ZSOLT BÁLINT's handwriting).

History – The taxon was described on the basis of an unstated number of syntype specimen(s) of unstated sexes taken in "Su-tschou", western China, Su-tschou (now: Wuhsien, Province Jiangsu). The specimen depicted in figure accompanied the original description seems to be a female because of the rounder forewing shape, large ocelli and lighter colouration of both wing surfaces, plus lack of androconial patch (Fig. 1). In the HNHM general Lepidoptera collection three male *loczyi* specimens could be located with the printed "China, Széchenyi"s and labelled as types, plus another male specimen with unreliable labels (see Discussion). These specimens are considered as syntypes, and designated and labelled the syntype specimen no. 1. as lectotype (see below) for fixing the identity of the taxon. The remaining three syntypic specimens become automatically paralectotype (ICZN 1999: 75, Art. 72.1.3.).

In the SEITZ series the name is not mentioned. D'ABRERA (1992) could not locate any specimen in the collection of the Natural History Museum, therefore he reproduced the figure given in FRIVALDSZKY's paper as "holotype". BRUNA and his colleagues reviewed *loczyi* on the basis of specimens "preserved in the Koenig Museum of Bonn" with the remark that "the picture in Frivaldszky's original description is very poor and misleading". This statement contradicts the fact that the diagnosis they present matches perfectly with the original description and with type material of *Callerebia loczyi*. The lecotype now settles this uncertainty.

Remarks – The origin of the "TYPE" label is identical with the one used by BRISBANE CHARLES SOMMERVILLE WARREN (1887–1979). He consulted the *Erebia* material of the HNHM for his monograph (WARREN 1936; see most recently TENNENT 2008). I do not know whether the specimens were labelled by WARREN himself or the staff of the museum used his labels subsequently. The syntype no. 4 (now paralectotype no. 3), lost its original labels via VELEZ's activity (see Discussion). The type status of this specimen is based not on the labels, but on the facts that (1) there is no

other *loczyi* material incorporated in the general collection, (2) the physical status of the specimen and (3) the pin used is identical with the other *loczyi* syntype specimens (Fig. 8).

Figs 6–10. 6 = The lectotype of *Callerebia loczyi* FRIVALDSZKY, 1886, dorsal view; 7 = The labels of the *Callerebia loczyi* FRIVALDSZKY, 1886 lectotype; 8 = The type material of *Callerebia loczyi* FRIVALDSZKY, 1886, the lectotype is in the upper left corner, while the VELEZ specimen (paralectotype no 3.) is in the lower right corner; 9 = The lectotype of *Parnassius szechenyii* FRIVALDSZKY, 1886, dorsal view; 10 = The labels of the *Parnassius szechenyii* FRIVALDSZKY, 1886 lectotype

"Parnassius Széchenyii" (Papilionidae: Parnassiinae: Parnassiini) (Figs 1, 9–10)

Parnassius Széchenyii n. sp. – FRIVALDSZKY 1886: 39, pl. IV, fig. 1 (male dorsum), 1a (male ventrum); syntype male(s): "In Tibet ad lacum Kuku-noor".

Parnassius Széchenyii Friv. – FRIVALDSZKY 1893: 687.

Parnassius szechenyi Friv. – STICHEL in SEITZ 1909: 31, pl. 15, row e, fig. "szechenyi".

Parnassius szechenyii Frivaldsky, 1886 – D'ABRERA 1990: 23, "Tibet, Western China", figs "P. szechenyii".

Parnassius (*Koramius*) *szechenyii* ssp. *szechenyii* FRIVALDSZKY, 1886 – WEISS 1992: 50, figs 1–2.

Type material – Syntype male, set dorsally, right antenna missing (Fig. 9), labelled as (1) "*51*" (green quadrant label); (2) "*2.*" (yellowed oblong label); (3) "*Type.*" (János Frivaldszky's handwriting); (4) "Monotypus *1886. // Kuku-nor, Amdo // Koramius // Széchényii // J. Frivalszky*" on verso: "*Természet. // Füzetek // V.10. p. 39. // 1886*" [handwriting of an unknown person] (Fig. 10).

History – This taxon was described on the basis of an unstated number of male syntype specimen(s) taken at the lake Kuku-noor (now: Quignhai Lake, Quinghai, China). Although there is no indication in the original description it can be excluded with certainty that there was no female syntype specimen. The sphragis of *Parnassius szechenyii* is conspicuous, and the female abdomen covered by different type of hairs (see D'ABRERA, *l.c.*). These cannot be overlooked. A single male specimen was located in the general collection. The specimen located perfectly matches "Fig. 1." of the original plate which depicts a full set butterfly individual in dorsal view (Fig. 1). This specimen is considered as syntypic, and designated as lecotype for objectively fixing the identity of the nominate subspecies of *Parnassius szechenyii*. The species is geographically variable, and the taxonomic status of certain subspecies is questionable. At present *P. szechenyii* is considered to be a widely distributed polytypic species represented by 17 (!) subspecies (WEISS 1992).

Remarks – The label no. 4 of the lectotype is a standard type label used in the HNHM after the 2nd World War and generally filled by hand. Similar labels with identical handwriting can be found in *Parnassius* specimens originating from the famous Apollo Butterfly collection of ABA KERTÉSZ (1857–1924) (ANONYMUS 1924). According to SZENT-IVÁNY (1938: 69), the collection was not yet amalgamated before the 2nd World War with the general collection. Accordingly that part of the general collection which contains *Parnassius* specimens including the KERTÉSZ material was built after 1945, and all the types were labelled by the same person, who was able to find only a single *P. szechenyii* type specimen and labelled accordingly as "monotypus". The identity of the person was not found out. This worker,

she or he, was most probably belonging to the technical staff of the Lepidoptera collection, and misspelled the name of FRIVALDSZKY as "Frivalszky" (Fig. 10), suggesting unfamiliarity about the name, which is noble to all Hungarian entomologists.

DISCUSSION AND CLOSING REMARKS

The located type specimen of *Aporia kreitneri* and one of the syntype specimens of *Callerebia loczyi* were stolen. The original labels were taken away and replaced by new ones by ZSIGMOND VELEZ (1885–1954). After his retirement as a state officer in 1949, VELEZ started to work in the HNHM with exotic Lepidoptera (SZABÓKY 2007: 59). There are official letters, reports and work-plans of VELEZ in files of the Lepidoptera collection. Accordingly he was employed by the museum and belonged to the staff. He was a bachelor and when he died his collection was bequeathed to the museum. Then, and only then, it was discovered that voluminous Lepidoptera material has been taken away from the museum's collection by VELEZ. The HNHM run an inspection in 1955, and the file of the protocol was numbered as "863-029. 1955" – this number appears on the labels of all specimens originating from the VELEZ collection. It was revealed that almost all the specimens stolen were relabelled with his labels printed previously, filled them by hypothetical data, and the original labels were discarded. According to old files the National Museum of Hungary before the First World War was in tight connection with authorities like FRUHSTORFER, OBERTHÜR and STAUDINGER buying, exchanging or receiving syntypic or paratypic material from them. VELEZ kleptomaniac activity was the most destroying one, as although many specimens originally belonging to the museum returned, their type status cannot be verified anymore, just in very rare and almost unique cases as that of *A. kreitneri* lectotype. The data of VELEZ specimens are considered unreliable in general by the staff.

In the early times of zoology, during the 18th and 19th centuries, specimens served as material for first diagnoses of taxa were not labelled as such; they were not considered to be especially important. If the physical condition of such specimens was not satisfactorily they could be easily replaced with "better specimens" by the owner or the curator of the collection.

Then these specimens were kept in accession parts of the collection, or became exchanged or simply put aside and discarded. This happened with many Lepidoptera type specimens that could be originally found in the IMRE FRIVALDSZKY collection (BÁLINT, *in prep*.).

Although at the very end of the 19th century the type concept was not yet crystallized as in our days (ICZN 1999), the importance of specimens on which descriptions were based became evident. In the case of JÁNOS FRIVALDSZKY's types it is obvious that the author labelled himself specimens as type or put the label containing the name he originally proposed. This is testified by the *Callerebia loczyi* and *Parnassius szechenyii* specimens, which have special labels written by FRIVALDSZKY. The original labels of *Aporia kreitneri* were removed without any doubt by VELEZ and became lost.

The disappearance of the *Mycalesis antimus* type most probably can be explained by the unlucky circumstances, whose source was VELEZ and the probability that the material itself was in bad condition as the male *Callerebia polyphemus*, hence it was not worth to keep. The fatal loss of type specimens not only causes problems difficult to solve for the subsequent generations of taxonomists, moreover it simply annihilate the effort, the expertise and work of the person, who worked with the material. Therefore it is the most important activity of a curator in a public scientific collection to detect, label and catalogue primary type specimens, as a honour of the former curators, as a deed for taxonomy and science in general revealing the importance of the institute or the museum.

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