

Parnassius phoebus (FABRICIUS, 1793), a misidentified species (Lepidoptera: Papilionidae)

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Abstract: *Papilio phoebus* was briefly described in 1793 by Johan Christian FABRICIUS after a watercolour painted by William JONES representing a butterfly of the DRURY collection coming from Siberia. JONES' painting of *P. phoebus* is published here for the first time. The specimen figured as *P. phoebus* is in reality what is known today as *Parnassius ariadne* (LEDERER, 1853). It was caught in West Altai in 1771, during the Peter Simon PALLAS expedition to Siberia. The Alpine "*Parnassius phoebus*" of all authors since 1793 is a misidentification, and is replaced herein by the oldest available name applicable to this taxon, namely *Parnassius corybas* FISCHER VON WALDHEIM, 1823, reinstated status. Consequences on the *Parnassius* nomenclature are discussed.

Parnassius phoebus (FABRICIUS, 1793), eine fehlidentifizierte Art (Lepidoptera: Papilionidae)

Zusammenfassung: *Papilio phoebus* wurde 1793 von Johan Christian FABRICIUS nach einem Aquarell von William JONES kurz beschrieben, das einen Schmetterling der Sammlung DRURY aus Sibirien darstellt. Das Originalaquarell von JONES wird hier zum erstenmal abgedruckt und veröffentlicht. Der echte *P. phoebus* von FABRICIUS (1793) ist das, was bisher als *Parnassius ariadne* (LEDERER, 1853) bezeichnet wurde. Der echte *P. phoebus* wurde 1771 im Verlauf einer Expedition von Peter Simon PALLAS in Sibirien im Westen des Altai gefangen. Die von praktisch allen Autoren seit 1793 als „*Parnassius phoebus*“ fehlidentifizierte alpine Art wird hier durch den ältesten für diesen Taxon verwendbaren Namen beschrieben, das heißt *Parnassius corybas* FISCHER VON WALDHEIM, 1823, revidierter Status. Die Folgen für die Nomenklatur der Gattung *Parnassius* werden diskutiert.

Parnassius phoebus (FABRICIUS, 1793), une espèce mal identifiée (Lepidoptera: Papilionidae)

Résumé: *Papilio phoebus* a été brièvement décrit en 1793 par Johan Christian FABRICIUS d'après une aquarelle de William JONES représentant un papillon de la collection DRURY venant de Sibérie. L'aquarelle originale peinte par JONES est publiée ici pour la première fois. Le spécimen désigné sous le nom de *P. phoebus* est en réalité un *Parnassius ariadne* (LEDERER, 1853). Il a été capturé dans l'ouest de l'Altai en 1771, au cours de l'expédition de Peter Simon PALLAS en Sibérie. L'espèce alpine "*Parnassius phoebus*" citée par l'ensemble des auteurs depuis 1793 a été mal identifiée, et elle est décrite ici par le nom le plus ancien applicable à ce taxon, c'est à dire *Parnassius corybas* FISCHER VON WALDHEIM, 1823, reinstated status. Les conséquences sur la nomenclature des *Parnassius* sont discutées.

Introduction

During the summer 2008, we went to Sweden to look for butterflies, in particular Parnassians in which we are mostly interested. We did not meet any *Parnassius mnemosyne* (LINNAEUS, 1758) but we saw a few beautiful *Parnassius apollo* (LINNAEUS, 1758) in Gotland Island,

probably not far from the place where LINNAEUS caught his specimens during his 1741 journey (LINNAEUS 1745, 2007). Never ending bad weather forced us into museums, especially in Uppsala where we visited LINNAEUS' house and garden, and into book shops and libraries where we found interesting new information. LINNAEUS was born in 1707, and the tercentenary of his birth focused attention on his outstandingly prolific career as a traveller and a scientist, as well as on the work of his students, "apostols" and followers. Many of their original publications have been digitally scanned and thus made accessible, and new editions, translations and critical analyses have appeared or will appear. All this brought us back to the early days of the "Parnassians", when *Parnassius apollo* (LINNAEUS, 1758), *P. mnemosyne* (LINNAEUS, 1758) and *P. phoebus* (FABRICIUS, 1793) were first named and described.

The identities of *Parnassius apollo* and *P. mnemosyne*, named and described by LINNAEUS (1758) with references to published illustrations, are well established. HONEY & SCOBLE (2001) have recently designated lectotypes selected from LINNÉAN material. On the contrary, there is still a problem with *P. phoebus*. FABRICIUS (1793), one of LINNAEUS' students, named and described what he regarded as a new species from images painted by William JONES of a specimen in DRURY's collection caught in Siberia. These images belong to what later authors informally referred to as the "JONES Icones", which are now held at the Hope Library of the Oxford University Museum (OUM) of Natural History, Oxford, England. Unfortunately, these "Icones" were never published, although being accessible to interested entomologists most of the time. As for the specimen upon which the paintings were made by JONES, up to now nobody knows what happened to it.

In an attempt to clear up this problem, we decided first to have a look at the figures in the "JONES Icones" in Oxford to check the original FABRICIUS description, then to search for further unpublished information, more specifically in the "Manuscript Collection of A. F. HEMMING (1893–1964): Alphabetic index of the species, the types of which are figured in JONES Icones", kept in the Entomology Library of The Natural History Museum of London, England.

Nomenclatural and systematic considerations

[‡ always denotes an unavailable name as defined by the Code (ICZN 1999).]

FABRICIUS' original description

The full original description of *P. phoebus* published by FABRICIUS (1793: 181) runs as follows:

(n° 561. *Phoebus*):

P[apilio] P[arnassius] alis rotundatis intergerrimis concoloribus albis. nigro maculatis: posticis maculis tribus rubris.

Papilio Phoebus. JON. fig. pict. 2. tab. 2. fig. 2.

Habitat in Sibiria. Mus. Dom. DRURY.

Medius inter *P. Apollo* & *Mnemosyne*. Apolline minor & alae posticae maculis tribus quadratis inter nervos rubris; nigro cinctis absque ulla pupilla.

The diagnosis (first line) is, as usual, very terse and only mentions the presence of three red spots on the hind wings. The second paragraph means that the butterfly named "*Papilio Phoebus*" is represented in volume 2 of what was later known as the "JONES Icones", in figure 2 of plate 2. The third paragraph indicates that the butterfly painted by JONES was caught in Siberia and belonged to DRURY's collection. In the more extensive description which follows, FABRICIUS gives a few additional details on this new species. He emphasizes that it is "intermediate" between *P. apollo* and *P. mnemosyne* and "smaller than *apollo*", and specifies that the red spots between the veins on the hind wings are square, circled with black and without a pupil.

Johan Christian FABRICIUS (1745–1808), one of LINNAEUS' brightest students and followers, greatly contributed to the systematics of insects by describing more than 10 000 species. He paid several visits to England between 1767 and 1791 to examine all the insect collections available to him, in search of new species to describe (FABRICIUS 1792, HOPE 1845–1847). It is well documented that he met both Dru DRURY and William JONES and that they even became friends. Dru DRURY (1725–1803) was said to own the most beautiful insect collection of that time. From his family silversmith business, he was wealthy enough, not only to buy specimens and even entire existing collections, but also to pay people to collect insects for him in all parts of the world having some connection with England, giving them equipment and advices (SALMON 2000, SMITH 1842). FABRICIUS was of course very interested in visiting his famous cabinet and seeing his new acquisitions. William JONES (1745–1818), a prosperous wine merchant of Chelsea, London, also possessed a considerable fortune which enabled him to devote the best part of his life to his favourite pursuits, natural history and painting. He made watercolour drawings of nearly a thousand of butterflies, on plates which were originally bound into seven volumes (WESTWOOD 1872). This enormous work is said to have occupied thirty years. FABRICIUS consulted them and described over two hundreds new species of butterflies from these drawings alone. In a letter to J. E. SMITH dated August 1787, JONES indeed mentions that FABRICIUS is examining his paintings for the purpose of making descriptions: "... he is going through my drawings to correct, amend, and add to a Mantissa that he has now in hand; yet I have more than he will be able to accomplish

in the time he has limited to stay ..." (POULTON 1934).

It can then be argued that in 1787, FABRICIUS examined the paintings of a still unnamed new species from DRURY's collection in the "JONES Icones", and that he published the description of this species under the name of *Papilio phoebus* in 1793.

The "JONES Icones"

The first step of our track of the *Parnassius phoebus* history was to see JONES' paintings in the "JONES Icones" at the Hope Library of the Oxford University Museum of Natural History. It was easy to obtain an appointment and to have access to the six volumes (six instead of seven after rebinding) of beautiful and well preserved watercolours. To choose the plates we were interested in, the Librarian gave us a set of slides. We found the Parnassians in Volume II ("*Heliconii et Danaii*" is printed on the spine), part I, the title page of which is: "*Papiliones/Heliconii/delineati et picti/Gulielmo JONES/ 1784*". *Parnassius apollo*, *P. phoebus* and *P. mnemosyne* are figured on plates II and III; these two plates are reproduced herein in Figs. 1a and 1b for the first time.

For each species, JONES used to represent the full upper side and half underside of one (or more) specimen(s). The name is written above the centre of the drawings, with the reference to a description to the left of the name, and the owner of the specimen(s) to the right. Underneath the drawings, one can read the Latin diagnosis referred to above the paintings, and sometimes the habitat of the species. For *P. phoebus*, plate II, figure [2] at the bottom (see Fig. 1a), one can read: "*Phaebus*" (*sic*) for the name, "DRURY" for the owner of the specimen, and "FABRICIUS" for the person who described it, plus the reference "ES 561" which is indeed the reference to the original 1793 publication (this last information was thus added well after the paintings were made). Below the drawings the original diagnosis is reproduced faithfully, but for "rufis" (reddish) instead of "rubris" (red), and the area where the specimen was caught, "Siberia", is also indicated. There is thus a perfect agreement between what is written on the figure and what FABRICIUS wrote in his 1793 publication.

When looking carefully at the drawings, one notices that the aspect of the red spots on the hind wing upper side is well accounted for in the comment added by FABRICIUS at the end of his description. From the examination of the represented abdomens, one might infer that the specimen on the left (upper side) is a female (virgin since there is no visible sphragis), while that on the right (underside) is a male. But in a catalogue prepared by DRURY in 1788 (SMITH 1842) in an attempt to sell his collection, it can be seen that he had scarcely more than one specimen per species (2462 Lepidoptera specimens from 2148 different species). It is thus unlikely that JONES had a pair to represent.

More important is what follows: there are other details of

the images which show at once that the specimen painted by JONES is not what is universally called today *Parnassius phoebus*. The veins of the hind wing underside are dark and the hind wing ante-marginal band is made of arches with external parts merging with the veins. Moreover, there are no red spots at the anal angle of the hind wing underside. The butterfly collected in Siberia and belonging to the DRURY's collection, painted by JONES in the "Icones", is without any doubt the taxon so far known as *Parnassius ariadne* (LEDERER, 1853).

One can wonder how this misidentification of a widely known taxon remained undiscovered up to now, for more than two centuries. How many times was *Parnassius phoebus* (FABRICIUS, 1793) wrongly quoted since 1793? How can it be that no entomologist cared to compare specimens called *P. phoebus* with the paintings after which FABRICIUS described the species? Of course the "JONES Icones" were never published. But in JONES' times they were widely known and their quality and accuracy highly acknowledged. DONOVAN (1768–1837) copied many of JONES' paintings and published some of them in several of his very popular works (WESTWOOD 1872), but he was mostly interested in "exotic" butterflies. After JONES' death in 1818, his collection, notes and paintings were inherited by his cousin, John DREWITT, then by DREWITT's son, R. DAWTREY DREWITT, in 1842, and grandson, Francis DAWTREY DREWITT, in 1891 (these names, with the heritage dates, are written on three ex-libris which can still be seen on the "JONES Icones"), and the paintings were perhaps difficult to consult while in the DREWITT family.

However F. DAWTREY DREWITT, who graduated with a natural science degree in 1871 at Christ's Church College, Oxford, met there J. O. WESTWOOD, one of the founders of the Entomological Society of London and then Hope Professor of Zoology at the Oxford University (WATERHOUSE 1938). Through WESTWOOD, British entomologists were then allowed to examine the "JONES Icones". In the preface to the "Catalogue of Diurnal Lepidoptera described by FABRICIUS in the collection of the British Museum" published by BUTLER (1870), J. E. GRAY indeed writes: "For several years it was not known what had become of these drawings; but fortunately Prof. WESTWOOD discovered that they were in the possession of Francis DAWTREY DREWITT, Esq., of Christ's Church College, Oxford, who kindly allowed notes and sketches to be made from them for the use of this Catalogue, thus enabling the Museum specimens to be named from a comparison of the original drawings." *Parnassius phoebus* does appear in this Catalogue, with FABRICIUS description, between *P. mnemosyne* and *P. apollo*. However, the quoted so-called "*P. phoebus*" specimens of the British Museum, which were obtained in the 1840s from J. J. BECKER, a Wiesbaden butterfly merchant, together with many other European butterflies including *P. mnemosyne* and *P. apollo* specimens, are said to have come from Germany. It is surprising that the misidentification was not discovered then by a simple

comparison between the specimens and the drawings. At that time everybody was aware of the presence in Europe of three species of *Parnassians*, and maybe nobody cared to check and compare, in spite of the difference in habitats, Europe and Siberia.

Besides, in 1871–1872 DREWITT even planned for a while, in collaboration with WESTWOOD, to write a paper for the Linnean Society, entitled: "Illustrations of Exotic Butterflies described by FABRICIUS from the Drawings of JONES", with lithographic reproductions of some of the plates: "those species of butterflies of which drawings have never yet been published, secondly of those which have been untruthfully copied, and thirdly of such species as have given rise to uncertainty of identification". But he renounced this plan through lack of time (WATERHOUSE 1938). He eventually donated all the JONES documents in his possession in the 1925–1931 period to the Oxford University Museum, where they are still held.

Another attempt to publish the "JONES Icones" was undertaken just after the second world war by A. F. HEMMING, whose main contribution as an entomologist was to the nomenclature of insects: in the 1930s, he had assumed the secretaryship of the International Commission on Zoological Nomenclature (ICZN) and he launched the Bulletin of Zoological Nomenclature. The "Manuscript Collection of A. F. HEMMING (1893–1964)" can be consulted at the Entomology Library of The Natural History Museum, London, now at Wandsworth. Among these documents, we found an "Alphabetic index of the species, the types of which are figured in JONES Icones", as well as several letters to fellow entomologists, dated 1945, showing that HEMMING was looking for means to publish the "JONES Icones". This project was unfortunately abandoned, perhaps because 1945 was not the proper time to raise money for such matters. It is however puzzling to note that, in a letter to N. D. RILEY dated 9. XI. 1945, HEMMING explains, with an example, how he will proceed for the index: taking two species, treating a species X presenting problems and "*P. phoebus*, a species of the identity of which has never been any doubt". (Note: he wrote the same in 1934: 198.) On another page he recalls the *P. phoebus* description of FABRICIUS and comments it at length, but he makes no reference to a misuse of the name *P. phoebus*, which he should have noticed when looking at the drawings.

From a simple examination of the drawings in the "JONES Icones" after which FABRICIUS described *Parnassius phoebus* in 1793, we found that this species has been misidentified, since the butterfly coming from Siberia painted by JONES is without any doubt a *Parnassius ariadne*. Although the "JONES Icones" were never published, we have shown that there have been, since JONES' times, many opportunities to discover, and emend, this misidentification, which has been perpetuated up to now and causes serious nomenclature problems.

Locality problems

It is now important to find out who caught the specimen in DRURY's collection figured by JONES, when and where. The only information we have from both JONES' plate and FABRICIUS' description is that it came from Siberia. In the same folder of the "Manuscript Collection of A. F. HEMMING (1893–1964)" containing HEMMING's correspondence, we found letters to S. CORBET asking him to find people in contact with DRURY who could have known collectors of insects in Siberia around 1773: CORBET suggested "to look in SHERBORN". SHERBORN, who had been active in the creation of the "Journal of the Society for the Bibliography of Natural History", published a note about recent acquisitions of the Natural History Museum connected with DRURY: namely a printed "Catalogue of the sale of his collection and a folio letter book (407 pp.)" in which "DRURY has copied in his own hand his letters to correspondents between 1761 and 1783" (SHERBORN 1937). These documents are also kept in Wandsworth; unfortunately the answers to these letters are not included. DRURY's letters were of special interest for us, more specifically those addressed to PALLAS.

Peter Simon PALLAS (1741–1811) was a medical doctor and surgeon with a strong interest in natural history. Born in Berlin, he obtained his doctorate in Leiden, travelled in the Netherlands, then to London, and settled at The Hague. His early works gave him such a notoriety that he became a member of the London Royal Society when he was only 23. Did he meet DRURY in London? In any case they became correspondents. In a letter of 30. III. 1765, DRURY reminds him of his interest in natural history objects and in correspondents. In a letter of 26. III. 1766, he asks him for *P. apollo* specimens from Sweden, through Uppsala students (may be the *P. apollo* belonging to DRURY's collection figured in the upper part of plate II of the "JONES Icones" – see Fig. 1a –, coming from Sweden as indicated in the index, was PALLAS' answer to this request?). In 1767, the course of PALLAS' life radically changed. He received an invitation from CATHERINE II. of Russia offering him the professorship of Natural History in the Imperial Academy of Sciences at St. Petersburg. He and his newly married wife arrived in St. Petersburg in August 1767. DRURY was aware of this event since, in a letter of 12. XI. 1767, he reminds him of his interest for Russian butterflies: "even LINNAEUS has no Russian materials ... although Russia is a frozen region of the North, yet the insects found there differ greatly from England."

Soon after his arrival, PALLAS was named a member of the commission of an important and extended scientific expedition, consisting of seven astronomers and mathematicians (the initial aim of the expedition was to observe the transit of Venus over the Sun disk in June 1769), five naturalists and a great number of assistants. PALLAS was responsible for the preparation of the general instructions for the naturalists and, on his request, he was entrusted to explore the regions to the East of the

Volga and towards the extreme parts of Siberia. During this expedition (1768–1774), he sent regular reports to St. Petersburg. He worked on them during the winters and published them, in 5 volumes written in gothic German, as "Reise durch verschiedene Provinzen des Russischen Reichs" (PALLAS 1771–1776). This account allows us to follow PALLAS, day after day, and to know in great detail what he did, felt and observed all along his expedition.

PALLAS set off from St. Petersburg in June 1768 and, having passed through Moscow and crossed the plains of European Russia, wintered at Simbirsk (Ulyanovsk) on the Volga river. He then moved forward to Orenburg through the Kalmuck steppes, and he descended the Jaïk or Ural river to the Caspian sea, where he stopped at Gurief. Returning through the province of Orenburg, he spent the second winter at Ufa. In 1770 he continued his journey towards the Ural mountains, especially rich for his studies. In the fall he was at Chelyabinsk, then at Tobolsk, the capital of Siberia, where he wintered. In the spring, learning that hostile tribes were causing troubles in the Kirgiz steppes, he decided to go to Omsk, where he arrived in May 1771. He was unwell, suffering from dysentery and eye inflammation. In spite of these health problems he continued eastward along the Irtysh river. He wanted to visit the Altai mines, then reach Ust Kamenogorsk and the Ablait Kalmuck temple and fortress, and push on to the Buchtarma river. But when approaching Semipalatinsk, feeling exhausted, he decided to settle for a few weeks in a recently established village, Krasnojarsk, up the Uba river. On 6. VII. 1771, he sent Nikita SOKOLOV, a young but well appreciated assistant, accompanied by a sketcher, with the order to follow the initial plan and to rejoin him at Schlangenberg (Zmeinogorsk). SOKOLOV spent some time in the temple area while it was studied and sketched in detail, which allowed him to visit the surroundings. He then followed the Ulba river and went north, crossing the Kuznetski line which marked the limits of the Russian penetration into Siberia at that time. As for PALLAS, after two weeks he went north, first along the Uba river then straight along the Alei river to Schlangenberg. As planned, SOKOLOV met him on 27. VII. at Verk Aleskoï and reported his observations to him. The expedition then followed the Kuznetski line to the Tigerzakaïa fortress. The weather was very bad and PALLAS still ill. He again sent SOKOLOV to explore the mountains around, "as high as he could". With great difficulties, SOKOLOV reached the source of the Tigerak river, meeting and describing a lot of animals on his way. The expedition went north again and spent the winter 1771–1772 in Krasnojarsk. During next spring, they continued the journey to Lake Baikal, Kyakhta on the Mongolian border. The region between the Onon and Ingoda rivers was the furthest point eastward that PALLAS reached. He returned to Krasnojarsk for the winter. Early in 1773 he began to hurry his return home. The expedition eventually reached St. Petersburg in July 1774, PALLAS saying: "... with a very exhausted body and already at 33 years grey hair, yet fresher than I was

earlier in Siberia.” For most of the next 20 years, PALLAS remained in St. Petersburg where he prepared many of his great publications. We know that FABRICIUS met him, among other personalities, when he visited St. Petersburg in 1786 (HOPE 1845–1847). He also renewed contact with his former correspondents.

Between 1767 and 1775, DRURY had become nervous about PALLAS because, as expressed in his letter dated 14. VI. 1775, he knew that he had returned from his expedition but he was not receiving any material collected in Siberia. But PALLAS must eventually have answered his expectations since, in a letter dated 25. IX. 1776, DRURY replied: “Your letter of 3. V. informed me of your design to send me Siberian insects and some birds. I hope you have put them on board.” In 1776 and 1777, DRURY, who was going through a strong financial pinch, started to establish catalogues of his collections in the perspective of selling them. He must have received PALLAS parcels since, on 10. VII. 1777, he wrote him a friendly letter (not found in the Letter Book) (GILBERT, pers. comm.), inquiring if the Empress of Russia would be interested in buying his Natural History collections. In DRURY catalogues, a number of *Papilio* specimens indeed bear: “Siberia, Dr. PALLAS, 1775”, and among these a “*Papilio Heliconius* 1, 244, Russia, Dr. PALLAS, 1775”.

PALLAS’ account of his journey is full of information on the countries he visited and the different peoples he met, on geography, mineral resources, industries etc., and provides a major contribution to the knowledge of the fauna and flora. PALLAS was very much interested in Coleoptera but, unfortunately, very little in Lepidoptera. In the appendix of volume I (1771), he describes 8 new species: *Papilio tarpeia*, *phryne*, *laodioce* (p. 470), *Papilio sappho*, *palaemon*, *morpheus*, *orion* (p. 471), *Papilio argiades* (p. 472). In volume III (PALLAS 1776), he indicates that on 9. VI. 1771 (21. VI. in the new calendar), at Tchernoserskoï near the Tchernoi lake, that is south-east of Omsk on the Irtysh river: “Hier zeigte sich zum erstmal *Papilio Apollo* ...”, likely *Parnassius apollo meinhardi* SHELJUZHKO, 1924(: 57). This is apparently the first place where he found a species of *Parnassius*, already familiar with him. Curiously enough, in the following we did not find any mention of butterflies looking alike, even when he was exploring the very rich Altai mountains.

The distribution areas of the different *Parnassius* species in the Altai are now well known from the maps presented by LUKHTANOV & LUKHTANOV (1994). *Parnassius apollo* reaches Ust-Kamenogorsk, at the confluence of the Irtysh and the Ulba rivers, the other species are found a little further east: first *Parnassius ariadne*, then *Parnassius stubbendorffii* MÉNÉTRIÉS, 1849 and *Parnassius phoebus*, which occurs some 30–40 km to the east of the confluence of these rivers. It was perhaps too late in season for SOKOLOV to catch *P. apollo* or *P. stubbendorffii*, but not *P. ariadne* and perhaps *P. phoebus*. Little details are unfortunately given in the “Reise ...” on the SOKOLOV journey from Ust-Kamenogorsk to Verk Aleskoï in July

1771. However, from a comparison of his itinerary with the distribution maps it appears that SOKOLOV did have a chance to meet *P. ariadne* on his way, to the east of Ust-Kamenogorsk (*P. phoebus* being still a little further east). *P. ariadne*, as well as *P. phoebus*, could also have been found in the Tigerak region, which SOKOLOV visited a little later, but he then suffered very bad weather. Therefore, if we retain our assumption that the specimen of *P. ariadne* in DRURY’s collection, figured by JONES in the “Icones”, was sent by PALLAS to DRURY, we conclude that it was certainly caught by SOKOLOV near Ust-Kamenogorsk, just to the east of the city, between 15. and 25. VII. 1771. This is the very region suggested by NEKRUTENKO & KERZHNER (1986) for the *P. phoebus* specimen in DRURY’s collection.

In their historical review which can be found in TUZOV et al. (1997), KOROLEV & MURZIN express an opinion equivalent to ours about PALLAS contribution: “In addition, it seems quite plausible that the descriptions of *Papilio* [*Colias*] *aurora* ESPER, 1781 and *Papilio* [*Parnassius*] *phoebus* FABRICIUS, 1793, both ‘from the south of Siberia’, were based on material taken by P. S. PALLAS and/or E. LAXMANN.” Erich LAXMANN (1737–1796) was a Swedish scientist who was also invited to St. Petersburg and lived an experience similar to that of PALLAS; he organized an expedition to the Altai, exchanged letters with LINNAEUS and sent him samples of Siberian plants and insects, so that there are butterflies from Siberia in LINNAEUS (1767). We did not find any trace of correspondence between DRURY and LAXMANN in the Letter Book.

What did happen to the specimen painted by JONES? DRURY died in 1803 and his collection came to auction in 1805. Many of his insect specimens were purchased by his friends William KIRBY and Edward DONOVAN (SALMON 2000). KIRBY presented the whole of his insect collections, including all his many type specimens, to the recently founded Entomological Society of London in 1835. As for DONOVAN, who owned one of the most extensive natural history collections of the time, housed in his private museum, he sold the museum and its contents at auction in 1818. Some of his type specimens survived, and are now in the Natural History Museum in London or in the Hope Collections in Oxford (SALMON 2000, CHALMERS-HUNT 1976). The specimen of DRURY’s collection painted by JONES might thus still lay in one of these places. However, it was not mentioned in the EISNER’s re-arrangement of the BMNH *Parnassius* collection (ACKERY 1973), and it was not either found by J. HOGAN (pers. comm.) in the Hope Collections in Oxford. On the other hand, in DRURY’s manuscripts in Oxford, there is an auction sale catalogue with, for each lot, the buyer’s name and the price paid. On Thursday, 23. V. 1805, Lot 33: “*Papilio Apollo* and 14 Papiliones, 15 [butterflies]”, [bought by] MILNE, 1 [pound] 1 [shilling]. Was the “*Papilio phoebus*” specimen painted by JONES among these “14 papiliones”, or hidden in another lot, especially Lot 34: “Papiliones of the Heliconii Family, 19 [butterflies]”, [bought by] LATHAM, 1 [pound] 1 [shilling]? What happened to MILNE’s and LATHAM’s collections?

After FABRICIUS

The species called *Parnassius phoebus* is well known, but we have shown that it does not correspond to what FABRICIUS (1793) described. In fact no author ever used *Parnassius phoebus* (FABRICIUS, 1793) properly since 1793. Let us review the subsequent relevant publications.

DE PRUNNER, L.

(1798: 69, n° 135).

“E[quites]? H[eliconius] Pap[ilio] Phoebus

Antennis albe, nigre catenatis; alis oblongis integerrime flave-albis: primoribus intus extusque ocellis coccineis nigro circulo circumdatis, ac prope corpus quatuor, duobus similibus solitariis longitudine alarum; posterioribus intus extusque nigris transversis maculis, extus vermiculato ocello prope marginem exteriorem.

In fine Varaitanae vallis non tam rarus: invenitur in monte Verz mense Junii.”

Papilio phoebus DE PRUNNER, 1798 is a junior primary homonym of *Papilio phoebus* FABRICIUS, 1793.

DE PRUNNER's purpose was to describe a Lepidoptera fauna of Piemont, and he gives a list of the publications which helped him in his identifications: only FABRICIUS, (1775) appears there. He found a third European Parnassian, “not rare in the Varaita valley” (presently known as *Parnassius phoebus serenus* FRUHSTORFER, 1921). In Europe there are only 3 *Parnassius* species. DE PRUNNER gave the first detailed description of the “Small Apollo”, but unfortunately he called it *Papilio phoebus*.

ESPER, E. J. C.

([1804]: 114–115, pl. 115, fig. 5; for the date, see HEPPNER 1981).

“P[apilio] Helicon[ius] Delius

Alis oblongis integerrimis, albis, superioribus limbo nigricante, maculis octo nigris, subtus quatuor, posticis rubro farctis; inferioribus subtus ocellis quatuor, basique rubris.”

Papilio delius ESPER, [1804] was found in the Alps near Geneva and sent (and collected?) by WALLNER. ESPER clearly stated that *Papilio delius* is a species different from *P. apollo* and *P. mnemosyne*.

The syntypes of *Papilio delius* ESPER, [1804] are not in the Zoologische Staatssammlung Munich (ZSM) (GRIESHUBER, pers. comm.). According to GRIESHUBER (2006): “Indications are that ESPER only used material from his own collection for the descriptions and illustrations in the first part of his book (‘Die Tagschmetterlinge ...’: pp. 1–388, pls. 1–50, 1776–1779); this is now in ZSM on loan from the Heimatmuseum Erlangen. It is presumed that part of the ESPER collection is lost, but various so-called lost butterflies have been found in the GERNING collection in [Hessisches Landesmuseum Wiesbaden,] Naturwissenschaftliche Sammlung (MWNS), especially those taxa described in the supplementary parts of ESPER's book (1780–1804). Syntypic material of taxa described before 1779 should be in ZSM, whereas the type material of taxa described later could be in either ZSM or MWNS.”

Papilio delius ESPER, [1804] is a junior primary homonym

of *Papilio delius* DRURY, 1782, and is therefore unavailable. Nevertheless, during the 19th century and even later, ESPER's name *delius* was used to represent “*phoebus*” in Europe, while *phoebus* FABRICIUS, 1793 was used for Asiatic forms.

In 1906 STICHEL recognized that *Papilio delius* ESPER, [1804] is a junior homonym of *Papilio delius* DRURY, 1782 and followed BUTLER (1870) in naming *phoebus* a “*delius*” from Switzerland and Tyrol (sic). He then introduced: “*Parnassius phoebus sacerdos* STICH. (nov. nom. pro *delius* ESP.) in bekanntem Habitus. Schweiz, Tirol” (STICHEL 1906). However a year later, he still used *delius* in his revision of the *Parnassius* in the 9. x. 1907 instalment, published in SEITZ (1911).

BOLLOW (1929), in his revision of the *Parnassius*, also retains *P. delius* ESP. Nowadays, the Code is usually followed and *P. delius* has disappeared. But for example in 1970, KURENTZOV still uses “*Parnassius delius* ESPER” in “The Butterflies of the Far East USSR”. HEMMING (1934) proposed that *Papilio delius* ESPER [1805] (sic) should be renamed: *Parnassius phoebus palamedes* HEMMING, 1934. This was an unnecessary replacement name, as the oldest available name for *delius* ESPER (and *phoebus* DE PRUNNER) is *sacerdos* STICHEL, 1906.

LATREILLE, P. A.

(1804, 1819 [with GODART, J. B.]

As a taxonomist, LATREILLE defined what is a species and developed the notion of “types”. He introduced the genus *Parnassius* (LATREILLE 1804). GODART (1819) published the first review of this genus where he mentioned the 3 species he knew of: *Parnassius apollo*, *Parnassius phoebus* and *Parnassius mnemosyne*. For *phoebus* he wrote the following diagnosis in French:

“Ailes un peu oblongues, bien entières, blanchâtres: les inférieures ayant deux yeux, et en dessous à la base des taches rouges; les supérieures avec des taches noires, dont l'extérieure, près de la côte, ayant le milieu rouge” (in the review proper, the same description follows in Latin).

After quoting the literature, from FABRICIUS to HÜBNER, and describing *phoebus* in comparison with *apollo*, he adds the following comment:

“Le phoebus de Sibérie, décrit par FABRICIUS & figuré par JON, paraît n'être qu'une variété de celui-ci. Ses secondes ailes ont, en place des deux taches oculaires, trois taches carrées rouges & bordées de noir.”

It seems obvious that GODART did not see the “JONES Icones” and that he only relied upon the FABRICIUS' description, which is very brief. He did not understand that in fact he was dealing with 4 different *Parnassius* species.

MÉNÉTRIÉS, SIEMASCHKO, HEMMING, NEKRUTENKO & KERZHNER

KOROLEV & MURZIN (1997) wrote: “The first attempt in Russia at publishing color plates displaying Russian butterflies was connected with E. P. MÉNÉTRIÉS and J. I. SIEMASCHKO, ... who had arrived at the idea of issuing a popular, illustrated ... Russian fauna ... in 12 parts. Publication of the first six parts started in 1849 ... One of the parts was dedicated to butterflies, issued in 1850 (see NEKRUTENKO & KERZHNER 1986). Four colored plates showed the most beautiful butterflies of the country. The text was edited by MÉNÉTRIÉS; on plate 4, he presented pictures of some butterflies he described later.” The descriptions appeared in the “Catalogue de la collection entomologique de l’Académie Impériale des Sciences de St. Petersburg”. In the first part (MÉNÉTRIÉS 1855: 6–7) he listed 13 *Parnassius* taxa, and in a supplement (MÉNÉTRIÉS 1857: 71–75) he described the taxa first published in SIEMASCHKO (1850, IV, plate 4): *Parnassius phoebus* var. *intermedia* MÉNÉTRIÉS (fig. 1), *P. phoebus* var. *sedakovii* MÉNÉTRIÉS (fig. 2), *P. nordmanni* MÉNÉTRIÉS (fig. 4), *P. eversmanni* MÉNÉTRIÉS (fig. 5) and *P. vosnessenskii* MÉNÉTRIÉS (fig. 6).

In 1934, HEMMING wrote about these butterflies: “... given in all catalogues as having been named by MÉNÉTRIÉS on a plate (pl. 4) supposed to have been published in the fourth volume of SIEMASCHKO’s Russk. Fauna ... After careful consideration, I have come to the conclusion that this plate was never published.” And he made recommendations to refer these butterflies to the Catalogue with mention of: “SIEMASCHKO, pl. 4, fig. x ined.”

NEKRUTENKO & KERZHNER (1986), in a very well documented paper, refuted all of HEMMING’s arguments (in particular they reproduced SIEMASCHKO’s plate 4 from booklet 17). They clarified the type specimens and localities as well as the synonymy of FABRICIUS’ and MÉNÉTRIÉS’ names of Palearctic *Parnassius phoebus*, and designated lectotypes and paralectotypes in the Zoological Museum of the Russian Academy of Sciences in St. Petersburg.

Parnassius phoebus [var.] *intermedius* [MÉNÉTRIÉS] in SIEMASCHKO, 1850

[MÉNÉTRIÉS] in SIEMASCHKO (1850: IV, fasc. 17, pl. 4, fig. 1); and see MÉNÉTRIÉS (1855: 7, 72, 73).

MÉNÉTRIÉS (1855) writes about *intermedius*: “Nous avons reçu des exemplaires de l’Altai par M. KINDERMANN, de l’Oural par l’expédition de la société géographique [M. HOFFMANN], de la Californie et du Kamtchatka par M. WOSNESENSKY.” Later MÉNÉTRIÉS (1859: 12, 13) divided the *intermedius* specimens into f. \neq *altaicus*, f. \neq *uralensis* and f. \neq *kamtchaticus*, respectively; these infrasubspecific forms are no available names (ICZN 1999, Art. 45.5: “A fourth name published as an addition to a trinomen automatically denotes an infrasubspecific entity”). Since KINDERMANN collected in Altai in 1852 and 1853, his

specimens cannot be included in the *P. phoebus* var. *intermedius* type-series.

The ♀ “lectotype” (there are no types for infrasubspecific names) from Kamtchatka looks very much alike fig. 1 in SIEMASCHKO’s plate 4.

Parnassius phoebus corybas FISCHER v. WALDH., 1824

Parnassius corybas FISCHER VON WALDHEIM [also called FISCHER-WALDHEIM or FISCHER DE WALDHEIM; abbreviated “F.-W.”] (1824) was described from Kamtchatka, and therefore:

Parnassius phoebus corybas F.-W., 1824
= *P. ph.* var. *intermedius* [MÉNÉTRIÉS] in SIEMASCHKO, 1850.
= *P. ph.* var. *intermedius* f. \neq *kamtchaticus* MÉNÉTRIÉS, 1859.

Parnassius phoebus uralensis BRYK, 1935

P. phoebus var. *intermedius* f. \neq *uralensis* MÉNÉTRIÉS (1859: 13) is infrasubspecific and not available. BRYK (1935: 223) was probably the earliest author who used this name on subspecific level, and according to ICZN (1999: Art. 45.5.1.) this authorship is to be adopted to the name. *Parnassius phoebus uralensis* comes from the North Ural Mountains.

Parnassius phoebus phoebus (FABRICIUS, 1793)

After retracing the story of *Parnassius phoebus phoebus* (FABRICIUS, 1793) (*sensu* BRYK 1935), NEKRUTENKO & KERZHNER (1986) conclude that *P. phoebus* var. *intermedius* f. \neq *altaicus* MÉNÉTRIÉS, 1859 and *P. ph. phoebus* (F., 1793) are synonyms.

Parnassius phoebus [var.] *sedakovii* [MÉNÉTRIÉS] in SIEMASCHKO, 1850

Parnassius phoebus var. *sedakovii* [MÉNÉTRIÉS] in SIEMASCHKO (1850: IV, fasc. 17, pl. 4, fig. 2) and MÉNÉTRIÉS (1855: 7, 71, 72 and Catal. Tab. 1, fig. 1). “Sent from Irkutsk by the late V. I. SEDAKOFF.”

In their investigation, NEKRUTENKO & KERZHNER (1986) probably came close to discover the misidentification of *Parnassius phoebus* (FABRICIUS, 1793) The 6 volumes of the “Jones Icones” were indeed photographed in 1977 when prepared for conservation, and a set of color slides was made available for sale in the Entomology Library of the Natural History Museum (NHM), London. In 1983, a slide (слайд in Russian) of plate II of Vol. II of the “Icones” was sent to the above authors by D. S. FLETCHER (NHM). But no one recognized *Parnassius ariadne* on this slide. A.-B. A. KREUZBERG said that the specimen on the drawing was like a specimen from S.-W. Altai, but *phoebus* or *ariadne*? We obtained the same slide from Oxford; it is as easy to identify a *P. ariadne* on the slide as directly on the “Icones” plate.

So-called “*Parnassius phoebus*” became well known after HIGGINS & RILEY (1970) published the “Collins Field Guide to the butterflies of Britain and Europe”, “the first pocket-sized and affordable book that described and illustrated all the species and main races of the European butterflies, and introduced thousands of naturalists



Fig. 1: William JONES' watercolours from the "JONES Icones" (1783–1785), vol. II. — Left side, Fig. 1a: plate II, fig. [1] (upper part): *Apollo*, and fig. [2] (lower part): *Phæbus*. Right side: Fig. 1b: plate III, fig. [1] (upper part): *Mnemosyne* [and fig. [2] (lower part): *Crataegi*]. — Digital photographs taken by Stella BRECKNELL (OUMNH) from JONES' unpublished original paintings (original size: 155 mm × 195 mm). Reproduced by permission of Professor David RODGERS, Curator of the Hope Entomological Collections, Oxford University Museum of Natural History (OUMNH).

to the still teeming butterflies of the European mainland" (SALMON 2000). This guide has been revised and reprinted many times, and translated into several languages. Curiously enough, the authors used nearly the

same words as DE PRUNNER for the description of their so-called *Parnassius phoebus*. By ignoring the problem, they greatly contributed to perpetuate the misuse of the name *Papilio phoebus* FABRICIUS, 1793.



Conclusions

General notes

Papilio phoebus FABRICIUS, 1793 was named and described after an unpublished painting of JONES representing a specimen of the DRURY's collection caught in Siberia. FABRICIUS (1793) gave the name *phoebus* from the figured

specimen alone; by the time being, nobody knows what happened to the specimen itself. Although we did not reach any definite proof, we argue that DRURY received the butterfly from PALLAS, and PALLAS himself got it from his travelling companion Nikita SOKOLOV who collected it between 15. and 25. VII. 1771, somewhere (10–30 km) to the east of Ust-Kamenogorsk.

By examining the original unpublished JONES painting (in the so-called “JONES Icones”), we established that the specimen named *Papilio phoebus* by FABRICIUS in 1793 after that painting is in reality what is presently known as *Parnassius ariadne* (KINDERMANN ms.; LEDERER 1853: 354; type locality: West-Altai, confluence of the Irtysh river and the Buchtama river), first described by LEDERER in 1853 as *Doritis ariadne*. It was formerly known as *Doritis clarius* EVERS-MANN, 1843.

In his 1852 Catalogue of the BMNH collection, G. R. GRAY mentioned one (or more) *Doritis clarius* EVERS-MANN, 1843 from Altai Mountains, from the BECKER'S collection. There is also a ♂ *clarius* in the GERNING collection in Wiesbaden, without any data. However there was a problem with the name *clarius*. HERRICH-SCHÄFER (1843: 146) gave the name *Doritis clarius* to 2 taxa: figs. 257, 258 represent *Parnassius nordmanni* [MÉNÉTRIÉS] in SIEMASCHKO, 1850, while figs. 628, 631 represent *Doritis clarius* EVERS-MANN, 1843. To avoid possible confusion, LEDERER introduced *ariadne*, with the following comment: “*Clarius* Ev. (der echte, nun von HERR.-SCHÄFFER, tab. 130 [fig. 629] abgebildete; von KINDERMANN als *Ariadne* n. sp. verschickt. *Clarius* H.-SCH. Fig. 257 ist eine andere, in dem ‘Bulletin de Moscou’ 1851, Tab. XIII., als *Nordmanni* MÉN. abgebildete Art).” Despite this precaution, the taxon was until recently (BRYK 1935: 151) known by the invalid name “*clarius*”. On the other hand, HÜBNER (1805: 60, nota 6) had earlier named *clarius* a large *apollo* from Siberia. Two original specimens of “Le grand Apollo de Russie (1800) ENGR[AMELLE]” can be seen in the GERNING collection, with the label: “ERNST & ENGR.: T II p. 289. Pl. 75 Suppl. 21. Fg. 99 a bis 99 b bis”. Therefore, after 1805 the name “*clarius*” was already preoccupied.

The true *Parnassius phoebus*

Parnassius ariadne (LEDERER, 1853) is a junior subjective synonym of *Parnassius phoebus* (FABRICIUS, 1793), n. syn.

This course of action means changing the taxonomic identity of two well-known and widely used names completely. *Doritis ariadne* LEDERER, 1853 is a junior subjective synonym of *Papilio phoebus* FABRICIUS, 1793. In application of the priority rule, the relevant taxon should be known as *Parnassius phoebus* (FABRICIUS, 1793) and the name “*ariadne*” should disappear in synonymy. *Parnassius phoebus* (FABRICIUS, 1793) flies in a very restricted distribution area in South Western Altai, Saur and Tarbagatai where Russia, China, Mongolia and Kazakhstan meet.

Besides the nominotypical subspecies, 3 subspecies can be differentiated. This gives for the true *phoebus*:

Parnassius phoebus (FABRICIUS, 1793) stat. n.

With the following subspecies:

- Parnassius phoebus phoebus* (FABRICIUS, 1793) stat. n., TL: 10–30 km east of Ust-Kamenogorsk, [Kazakhstan].
- = *Doritis ariadne* LEDERER, 1853 [see above].

= syn. *Parnassius phoebus dentata* (AUSTAUT, 1889), comb. n., TL: Altai.

Parnassius phoebus clarus BRYK & EISNER, 1932 comb. n., TL: Saur.

Parnassius phoebus jiadengyuensis HUANG & MURAYAMA, 1992 comb. n., TL: Jiadengyu, Altai Mts, Xinjiang, China.

Parnassius phoebus erlik YAKOVLEV, 2009 comb. n., TL: Chikhacheva Mts, Altai, Russia.

In addition to these subspecies, there are several forms, infrasubspecific and thus not available, in BRYK (1935: 153, 154): †*primopicta* BRYK & PEEBLES, 1931, †*eminetissima* HAUDE, 1913, †*novarae* BRYK, 1890, †*primo et tertio picta* [sic] BRYK & EISNER, 1932, †*secundorubroanalis* BRYK & EISNER, 1932.

Correct names for the other *Parnassius* “*phoebus*”

The “*Parnassius phoebus* (FABRICIUS, 1793)” of all authors since 1793 is thus a misidentification. This name must be replaced by the oldest available name applicable to this taxon, namely *Parnassius corybas* FISCHER VON WALDHEIM, 1823, reinstated status. The only other old substitute name for European “*phoebus*”, *delius*, is indeed not available, as discussed above (*Papilio delius* ESPER, [1804]).

Up to the end of the 19th century, European “*phoebus*” was represented by the invalid name “*delius* ESPER” and the nominate species *P. phoebus* was restricted to Asia and North America. Then there was a scientific consensus on the name “*phoebus*” (sensu BRYK 1935). But in the last 20 years or so, the taxonomic concept of “*phoebus*” (sensu BRYK 1935), now *corybas*, has been changing, and the scientific trend is nowadays to study the possible allopatric species beyond the many geographical subspecies. Most of these new contributions are presented in the recent publications of SHEPARD & MANLEY (1998), MICHEL et al. (2008) and HÄUSER (2005, plus references therein).

SHEPARD & MANLEY (1998) investigated SEM pictures of the micropyle structure and general egg structure of most components of the “*phoebus*”, now *corybas*, populations of North America and of a few other *Parnassius* taxa. They observed two main micropyle structures: a “primitive” structure for *Parnassius smintheus* DOUBLEDAY, 1847, *P. apollo* and *P. phoebus sacerdos*, and a “cuboidal” structure for *Parnassius behrii* EDWARDS, 1870 and *P. phoebus*, now *corybas*, with however different arrangements of the cuboidal divisions. Therefore, the three North American *Parnassius* taxa *smintheus*, *behrii* and *corybas* are accepted as separate species. Although the European *P. sacerdos* presents a micropyle structure similar to that of *P. smintheus*, examination of additional characters: details of wing markings and body vestiture, confirms the separation of the four species. As early as in 1991, NARDELLI had published evidence, from rearing experiments, that *P. smintheus sternitzkyi* McDUNNOUGH, 1936 was not conspecific with *Parnassius sacerdos* STICHEL, 1906, the valid name for the European species. *P. “phoebus”, now corybas*, occurs over a vast region: in the

Palaearctic area, one disjunct population in the northern Urals, then from the Altai Mountains to the far eastern Siberia, and in the Holarctic area, locally in Alaska and Yukon. *Parnassius corybas* FISCHER VON WALDHEIM, 1823 is the valid name for this whole range (at this stage it would be helpful to examine the egg micropyle structure of at least the typical *corybas* population from Kamchatka).

MICHEL et al. (2008) generated a molecular phylogeny of *Parnassiinae* butterflies. In their publication, besides the very “technical” parts of their work, there are paragraphs generally accessible: “In the case of *Parnassius*, we ... confronted inferred mitochondrial clades and estimated dates of divergence with ... available information regarding species, using the latest version (2005) of HÄUSER’s checklist ... The main lesson of this exercise is that despite the extraordinary attractiveness of *Parnassius* both to amateurs and professionals, much remains to be learnt about the biological systematics of its member species.” Many of their results are very pertinent to this paper: for example the discussion on the status of *Parnassius ruckbeili* DECKERT, 1909, recognized as a species in HÄUSER (2005). Besides, they introduce, in the former “*phoebus*” complex, *Parnassius bremeri* BREMER, 1864, “which replaces ‘*P. phoebus*’ in far eastern Russia, Manchuria and Korea. The wing pattern and antennae of typical *bremeri* are quite different from those of typical ‘*phoebus*’, and it has long been regarded as a different species. However there exist populations – e.g. *amgunensis* SHELJUZHKO, 1928, from the lower Amur basin – with characters intermediate between those of ‘*phoebus*’ and *bremeri*, and their existence raises the question of the actual identity of the latter taxon.”

With the removal of the former taxon “*phoebus*”, we introduce new species which used to be considered as subspecies. But we agree with the comment of MICHEL et al. (2008) in their discussion about *golovinus* HOLLAND, 1930 and *smintheus*: “We believe that unless localities in which the two taxa coexist happened to be found in Yukon, it is only by examining the viability and fertility of hybrids between the *golovinus* and *smintheus* lineages that it might be possible to decide whether they should be regarded as constituting distinct species.” An ambitious program: in the Alps, the distribution areas of *Parnassius apollo* and *P. sacerdos* often overlap and hybrids are not scarce in some localities where the two species meet; these hybrids are fertile.

We sum up the above discussion with a list of the proposed changes.

The Asian populations

Parnassius corybas FISCHER VON WALDHEIM, 1824

Reinstated status.

Parnassius corybas FISCHER VON WALDHEIM (1824: 241, pl. 6, figs. 1, 2).

Originally described as a good species.

With 4 subspecies:

Parnassius corybas corybas FISCHER v. WALDH., 1824

T.l.: Kamchatka.

= *Parnassius phoebus* var. *intermedius* [MÉNÉTRIÉS], in SIEMASCHKO (1850: pl. 4, fig. 1), t.l.: Kamchatka.

= *Parnassius phoebus* var. *intermedius* f. †*kamtchaticus* MÉNÉTRIÉS in SCHRENK (1859: 13), t.l.: Kamchatka.

The status, types and typical localities of these two junior synonyms of *P. corybas* were clarified by NEKRUTENKO & KERZHNER (1986: 774, 775).

Parnassius corybas altaicus SHEPARD & MANLEY, 1998, comb. n.

T.l.: Altai.

Originally described as *Parnassius phoebus* var. *intermedius* f. †*altaicus* MÉNÉTRIÉS, 1859 (infrasubspecific; not available). SHEPARD & MANLEY (1998: 720) were probably the earliest authors who used this name on subspecific level, and according to ICZN (1999: Art. 45.5.1.) this authorship is to be adopted to the name.

Applying a similar procedure to all the other infrasubspecific taxa would be very useful, but is definitely out of the scope of this paper.

This name replaces *Parnassius phoebus phoebus* (FABRICIUS, 1793) *sensu auctorum*.

It was necessary to give a name to the former “*P. phoebus phoebus* FABRICIUS, 1793” Altai subspecies, the status of which was not clear. It was first collected by KINDERMANN in 1852 and 1853, east of Ust-Kamenogorsk. KINDERMANN gave specimens to LEDERER and MÉNÉTRIÉS. LEDERER (1855) named them *Doritis delius* var. *smintheus* DOUBLEDAY, which is invalid since *delius* ESPER is homonym of *delius* DRURY. MÉNÉTRIÉS (1859) gave the name *P. phoebus* var. *intermedius* forma †*altaicus*, invalid. NEKRUTENKO & KERZHNER (1986) concluded that the last name and *P. phoebus phoebus* FABRICIUS, 1793 were synonyms. SHEPARD & MANLEY (1998) listed 6 synonyms including *P. phoebus altaicus* MÉNÉTRIÉS, 1859: this is the earliest [found] publication of this name as a valid subspecies. We thus retain *Parnassius corybas altaicus* SHEPARD & MANLEY, 1998. **comb. n.**

NEKRUTENKO & KERZHNER (1986: 775) designated as lectotype for f. †*altaicus* MÉNÉTRIÉS, 1859 a specimen from Altai in the Zoological Institute of the U.S.S.R., Academy of Sciences, Leningrad (ZIL); however, there is no “type” for infrasubspecific taxa. We have not assessed whether this specimen can also be the type for the valid taxon *altaicus* SHEPARD & MANLEY, 1998.

Parnassius corybas bremeri BREMER, 1864, stat. n.

Parnassius corybas bremeri BREMER [FELDER ms.] (1864; 6, t. 1, f. 3).

T.l.: Oldoi river, Amur.

P. bremeri was originally described as a good species.

Parnassius corybas ruckbeili DECKERT, 1909, stat. n.

Parnassius delius ruckbeili DECKERT (1909: 108).

T.l.: Barkul Mts, eastern Xinjiang, China.

The American populations

Parnassius smintheus DOUBLEDAY, [1847], reinstated status

Parnassius smintheus DOUBLEDAY [in DOUBLEDAY & WESTWOOD] ([1847]: 27, pl. 1, fig. 4). — T.L. “Rocky mt. States”, presumably Canada, Alberta, vic. Banff.

Was originally described as a good species.

Parnassius behrii EDWARDS, 1870, reinstated status

Parnassius behrii EDWARDS (1870: 10). — T.L. USA, California, Yosemite Valley, Mt. Lyell.

Was originally described as a good species.

WEISS (2005) already used several of the names at the subspecific level of his *P. phoebus* (*sensu* BRYK 1935) complex. Now that they are put at the specific level, it is easier to address the problem of all *Parnassius* taxa: there is clearly an excess of subspecies names. WEISS (2005) listed 19 subspecies for his *P. bremeri*, 25 subspecies for his *P. corybas*, 1 subspecies for his separate species *P. rueckbeili*, 23 subspecies for his *P. smintheus*, 2 subspecies for his *P. behrii* and 15 subspecies for his *P. sacerdos*.

The European populations

Parnassius sacerdos STICHEL, 1906, stat. n.

Parnassius sacerdos STICHEL (1906: 86). — T.L. “Schweiz, Tirol” [sic].

= *Papilio delius* ESPER, [1804]. Junior homonym of *Papilio delius* DRURY, 1782, invalid.

Was originally described as: *Parnassius phoebus sacerdos* STICHEL, 1906

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