Mayfly types and additional material (Insecta: Ephemeroptera) examined by F.-J. Pictet and A.-E. Pictet, housed in the Museums of Natural History of Geneva and Vienna

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Abstract: Here we revise the entire Ephemeroptera collection of F.-J. Pictet deposited in the Natural History Museum of Geneva (MHNG) and voucher specimens housed in the Natural History Museum of Vienna (NMW). Due to several unforeseen turns of events, the MHNG collection was already in bad condition at the end of the 19th century. However, the specimens sent by V. Kollar to F.-J. Pictet, and used by the latter for his monograph (1843-1845), have been well curated after their return to the NMW and allow an important nomenclatural change. The species Baetis forcipula F.-J. Pictet, 1843 is now considered a junior subjective synonym of Ephemera venosa Fabricius, 1775, currently Ecdyonurus (Ecdyonurus) venosus (Fabricius, 1775). The specimens described by Thomas in 1968b from southwestern France under the name Ecdyonurus forcipula (F.-J. Pictet, 1843) belong to a new species, Ecdyonurus alaini Bauernfeind sp. nov., which is described herein. Mayfly specimens described by F.-J. Pictet’s son, A.-E. Pictet, are also reviewed. Furthermore, information is provided on some other valuable specimens housed in the MHNG and NMW, such as Ametropus fragilis Albarda, 1878 which was already collected in Italy in the 19th century, or Rhithrogena cincta Navás, 1921 from the Spanish Pyrenees, which is the second specimen currently known of this species.

Keywords: Ephemeroptera - taxonomy - type material - new species - new combination.

INTRODUCTION

The book “Histoire naturelle générale et particulière des Insectes Névroptères. Famille des Ephémérides” written by F.-J. Pictet (text volume published in 1843, plates volume in 1845) is considered the first modern synthesis of this insect order (Peters et al., 1980). It followed two other monographs published by the same author in 1834 on Trichoptera and in 1841-1842 on Plecoptera. In his work on Ephemeroptera, F.-J. Pictet gives an account of the morphology of these insects, the characters to be used for their identification and mentions all species known at that time. His monograph encompasses the detailed descriptions of 54 species placed in seven genera only: Ephemera Linnaeus, 1758, Palingenia Burmeister, 1839, Baetis Leach, 1815, Potamanthus F.-J. Pictet, 1843, Cloë Burmeister, 1839, Caenis Stephens, 1836 and Oligoneuria F.-J. Pictet, 1843. Eaton published the framework for the modern systematics of supraspecific taxa later in his numerous contributions to Ephemeropetera and in his monograph (Eaton, 1883-1888).

Among the 54 species mentioned in F.-J. Pictet’s work, 33 were described as new for science. The material used for these descriptions had two origins: First, the specimens he had collected himself or those he had found in the collection of the Natural History Museum of Geneva (MHNG); these he described in his monograph and the species name is followed by the Latin word “Mihi”, i.e. “mine”. The second source were the specimens and a “manuscript” (presumably rather a list of names proposed by Kollar) sent by Vincenz Kollar from the Natural History Museum of Vienna. F.-J. Pictet acknowledged Kollar’s contribution by giving these new species the names Kollar had proposed. These names are followed in the monograph by the letters “Kollar. Mss.” or “Koll. Mss.”, but the author, according to article 50.1 of the code of zoological nomenclature (International Commission on Zoological Nomenclature, 1999), is F.-J. Pictet. Part of the Kollar bequest is still housed at the Natural History Museum of Vienna (Dept. Archives of NMW). In a letter to Kollar, dated 7.6.1844, F.-J. Pictet confirmed the receipt of “un petit ballot intéressant des
insectes… de mes Perlides et Ephémérines”. The material was sent back to Vienna after he had finished his study. F.-J. Pictet’s own collection was kept at that time in the family mansion at Genthod, near Geneva. Although less important, the contribution by his son, Albert-Edouard Pictet, is worth being mentioned. He published a monograph (A.-E. Pictet, 1865) in which he described, among other neuropteroid insects, two species of Ephemeroptera.

The Pictet Collection in the Natural History Museum of Geneva

The collection of the Pictets arrived at the Natural History Museum of Geneva in 1887. It presumably contained the original material used by the father and the son in their research. The collection was catalogued in 1892 and bears the number 620/48. Most of the pinned specimens possess a label with this code. Currently the collection is in five insect boxes and contains 353 specimens. The first two boxes contain most of the material and most species. Two other boxes are smaller and contain a subset of one or two specimens of each species present in the first two boxes. The fifth box has labels of a different handwriting and is also a subset of selected species. As most of the specimens are labelled “coll. Pictet”, they are considered in this catalogue although it is doubtful whether this is all part of the material seen either by F.-J. or A.-E. Pictet.

This collection has lost its originality to such an extent that it is difficult to recognise it as the one built up by F.-J. Pictet. The same had also been pointed out by Aubert (1947) and Zwick (1971) about the Plecoptera collection, as well as by Botosaneanu & Schmid (1973) about the Trichoptera collection of the MHNG. More dramatic is that most of the specimens studied by F.-J. Pictet are evidently lacking. Less than 10% of the specimens bear a label with a locality mentioned in his monograph, such as “Genthod” or “Genève”, and only 7 specimens bear a label with the original handwriting of F.-J. Pictet. Most specimens have labels indicating that they originate from Burgdorf near Bern (often abbreviated “Bgdf”) and were formerly part of Meyer-Dür’s collection. Other specimens simply bear a label with “coll. Pictet” but without any locality written on them, and others just indicate “Europe” or “Europe centr[ale]”. There are other indications that this collection has been supplemented, possibly several times, after it arrived in the MHNG. Several specimens originate from places never mentioned by F.-J. Pictet, such as the Balkans, Turkey, England, and Swiss localities outside the Lake Geneva area (e.g. Burgdorf, Aarau, Bernina). Secondly, the person (or persons) who “rearranged” the collection was not a specialist on Ephemeroptera. There are several examples of incredible mixing of species. Among the 10 specimens labelled as “Leptophlebia submarinata Steph.” one can find 7 Paraleptophlebia submarinata, 1 Baetis rhodani, 1 Ecdyonurus venosus and 1 Ephemera glaucops! There also are some Baetis alpinus among Electrogena lateralis, Ephemera danica among Ecdyonurus venosus, Serratella ignita among Habrophlebia fusca and so on. What happened to this collection? We have no solid information, but we can try to reconstruct its history.

François-Jules Pictet (1809-1872) (Fig. 1) married Eleonore de la Rive (1812-1887) in 1834 and had five children with her. The elder was Albert-Edouard Pictet (1835-1879) who was also an entomologist and who published a synopsis of Spanish Neuroptera (A.-E. Pictet, 1865). This work is based on a 4-months trip he made together with the Swiss entomologist Rudolf Meyer-Dür (1812-1885) in 1859. François-Jules’ second son, Alphonce Pictet (1838-1903) is less known but was also an entomologist. Albert-Edouard Pictet married Emilie Mallet (1844-1897) in 1863, and together they had several children, the elder being Camille Pictet (1864-1893), a naturalist, who donated the collection to the MHNG in 1887.

Another important event in the history of this collection concerns F.-J. Pictet himself. His monograph on Ephemeroptera was in fact his last contribution to the extant neuropteroid insects on which he had been working since 1830. In 1844 he turned to palaeontology and published a number of important papers and treatises...
on that topic, including some fossil Ephemeroptera (F.-J. Pictet, 1846; F.-J. Pictet & Hagen, 1856). Supposedly his collection was subsequently left unused, his son Albert-Edouard being 10 years old at that time. According to information provided by Hagen (1859, cited by Meyer-Dür, 1874) “[F.-J.] Pictet’s eigene Sammlung war zur jener Zeit schon längstens zerstört”. Knowing the good relationships between Meyer-Dür and Albert-Edouard Pictet, one can suppose that it was at that time that F.-J. Pictet’s collection was supplemented and rearranged with material given or sold by Meyer-Dür. In his obituary of Albert-Edouard Pictet, Saussure (1879) wrote: “Malheureusement Edouard Pictet n’a jamais terminé les autres travaux d’Entomologie qu’il avait entrepris. Il avait en lui l’étoffe d’un homme d’action, plutôt que celle d’un homme de cabinet” (Unfortunately, Edouard Pictet had in him the stuff of a man of action, rather than that of a scholar). This may explain, in part, the neglect of the collection.

Alfred Edwin Eaton (1844-1929) did see this collection at least two times. In his 1871 paper (Eaton, 1871: 2) he wrote “At Geneva, M. A.E. Pictet very kindly submitted to me the remains [our italics] of Professor J.F. [sic] Pictet’s collection…” In the same text (Eaton, 1871: 11) he also stated more precisely: “As the authentic and spurious specimens are not distinguished in M. Pictet’s collection, an accurate enumeration of them could not be made”. He is more precise when dealing with the species Potamanthus ferreri (F.-J. Pictet, 1843 (see Eaton, 1883-1888: 80): “The unique specimen formerly in the Geneva Museum, was not there in 1867”. He saw the collection a second time, probably in 1879. He wrote about Leptophlebia cincta (Retzius, 1783) (see Eaton, 1883-1888: 96): “Pictet probably confused this species with Habroplebia lauta […] because it was mingled with a Habroplebia in his collection, and is found in the neighbourhood of Geneva. In September 1879 I found both of these species beside a stream at Troinex, near Mt. Salève”. When describing Ephemerella hispanica Eaton, 1888 in the same publication (Eaton, 1883-1888: 306), he noted that “[the specimens were] captured by Messrs Ed. Pictet and Meyer-Dür in the year 1859. […] I have lately examined all that remains of the Spanish Ephemeridae collected by the deceased Swiss entomologists above mentioned. […] part of a male imago in Ed. Pictet’s Mus. but the ravages of Anthrenus preclude full description of the insect from these materials”. The Pictet collection arrived at the Natural History Museum of Geneva in 1887 but was not catalogued until 1892. What happened in the meantime?

During the 20th century the remains of the collection were partially studied by several mayfly specialists. The first one was probably Kimmis (1936) when dealing with the problematic species Rhithrogena semicolorata (Curtis, 1834) and R. semitincta (F.-J. Pictet, 1843). Thomas (1968b) later solved the problem of Ecdyonurus fluminum (F.-J. Pictet, 1843), then Sowa (1971) cleared up the status of Rhithrogena semitincta. In three publications Puthz also revised part of the collection, i.e. Epeorus sylvicola (A.-E. Pictet, 1865) (see Puthz, 1973c), Rhithrogena picteti Sowa, 1971 (see Puthz, 1975) and Siphlonurus flavidas (A.-E. Pictet, 1865) (see Puthz, 1977). Later, Sartori and co-workers cited some material from this collection (Sartori et al., 1989, 1996).

A short history of the entomological collection at the Natural History Museum of Vienna

The Vienna Entomological Collection dates back to 1793, when the German Emperor Franz II. (Franz I. of Austria after 1806) acquired a collection of insects and birds from Josef Natterer sen. A separate department of insects (within the so called “Vereinigtes Naturalien-Cabinet”) was first established officially on May 2nd, 1802, when Johann Georg Megerle was appointed amanuensis for this collection. When Vincenz Kollar (1797-1860) systematically re-arranged the entomological collection between 1817 and 1820, its holdings included, among others, the following important collections: Johann Christian Gerning (1745-1802) Coll., acquired in 1796 (European Lepidoptera); Ludwig Heinrich v. Block (1764-? 1818) Coll., acquired in 1797 (Insects and Arachnida); Leopold v. Fichtel (1770-1810) Coll., acquired in 1804, 1807 (East India, mainly Lepidoptera); Nepomuk C. M. Denis (1729-1800) & Ignaz Schiffermüller (1727-1806) Coll., acquired in 1806 (Austrian Lepidoptera, destroyed by fire in 1848); Johann Carl Megerle v. Mühlfeld (1765-1832) Coll., acquired in 1808 (all insect orders); Johann Natterer (1787-1843) Coll., acquired 1818-1838 (Brazil, all insect orders). Between 1836 and 1839 the collection was again revised by Kollar, adopting Latreille’s system, and (most probably) in this time fell his main contact with Francois-Jules Pictet.

Only few collectors, most prominent among them Josef Johann Mann (1804-1889), V. Kollar, J. Natterer, Emerich Frivaldszky (1799-1870) and Johann Lhotsky (1795-1866), had contributed Ephemeroptera specimens, and acquisitions remained rather casual in later decades too. Friedrich Moritz Brauer (1832-1904), curator since 1876, collected some specimens during the Novara-Expedition (1857-1859) and also on several excursions in Austria. Other collectors contributing Ephemeroptera from Austria include Ludwig Redtmbacher (1814-1876), Alois Rogenhofer (1831-1897), Hans Rebel (1861-1940), Anton Handlirsch (1865-1935), Peter Kempny (1862-1906), Hans Fruhstorfer (1866-1922), Franz Werner (1867-1939) and Egon Galvagni (1874-1955). Hans Zerny (1887-1945) collected many interesting specimens mainly in Austria, Spain and in the Balkans, material from Poland (Friedrich Kolenati, 1812-1894) and Greece (Theobald Krüper, 1829-1921) was purchased in 1847 and 1869, respectively.
Since F.-J. Pictet, only few scientists used the collection for new descriptions or revisions: Brauer (in Brauer & Löw, 1857) described *Ephemera mesoleuca* and later published several faunistic records for *Ephemeroptera* (Brauer, 1876, 1878, 1885). Georg Ulmer revised the collection before 1919, describing *Paraleptophlebia werneri* (Ulmer, 1920a) and later redescribed several taxa from type material housed at that time in the NMW and elsewhere (Ulmer, 1921). Parts of the collection (western Palaearctic taxa) have been studied by Volker Puthz in 1971 and 1973. For his revision of European taxa of the family Caenidae (Malzacher, 1984, 1986), Peter Malzacher checked the respective material in 1983. Between 1985 and 1990 Ernst Bauernfeind catalogued the collection (in manuscript), established an annotated Austrian check-list (Bauernfeind, 1990) based in part on NMW material, and described *Rhithrogena zernyi* Bauernfeind, 1991 from material collected by H. Zerny in Bosnia-Herzegovina in 1929.

Presently the Ephemeroptera collection at the Natural History Museum of Vienna consists of pinned specimens, a small collection of material preserved in alcohol (in part derived from originally pinned specimens) and a small collection of microscopic slides. Associated with the historic collection is the second author’s collection (alcohol material and slides). For the pinned specimens, originally no identifications had been given on individual labels, the scientific name was provided separately at the head of each column of specimens within each entomological drawer. Only in a few cases the first specimen of a series carried a collector’s label, and specimens originating from the same date and locality could only be distinguished by their grouping. However, subsequent changes in the arrangement (due to nomenclatural changes or prior misidentifications) did not always respect this principle and consequently assignment of original identification and label data to specimens has sometimes been rendered rather difficult. Fortunately no problems of that kind were observed concerning the specimens examined by F.-J. Pictet, which have all been carefully marked with the handwritten label: Pictet vidit (Kollar’s handwriting).

Ephemeroptera form a rather insignificant part of the very large entomological collections and have been incorporated into the so called appended collections within the “insecta varia”. Data concerning collections and their date of acquisition have mostly been compiled from Fitzinger (1868a, b, 1880a, b) and from the card files of collectors in the bird department of the NMW. Helpful information on biographies has also been derived from the collector’s data bases at the German Entomological Institute (available at sdei.senckenberg.de/biographies/) and at the Oberösterreichisches Landesmuseum (www.zobodat.at/personen.php).

MAYFLY TAXA DESCRIBED BY FRANÇOIS-JULES PICTET

In the following list – if available – the status, sex, literally transcription of label data and condition are provided for all specimens. Different labels are indicated by strokes, additional remarks are between square brackets. The order of presentation follows the one adopted by F.-J. Pictet in his monograph (F.-J. Pictet, 1843) and using the original names as title. The currently accepted name is given separately.

**Ephemera glaucops** F.-J. Pictet, 1843

Fig. 2

*Ephemera glaucops* F.-J. Pictet, 1843-1845: 132-134, pl. 8, figs 1-3.

**Accepted name**: *Ephemera glaucops* F.-J. Pictet, 1843.

**Locus typicus**: “... Genève au bord du lac...”.

**Type material**: MHNG; syntype, ♂ imago; 620 Gent hod 48 Genève, coll. Pictet / Ghod, 27.7 [written by F.-J. Pictet, probably giving the place (Genthod) and the date (July 27) of collecting]. – MHNG; syntype, ♂ imago bearing 4 labels (Fig. 2): 620 Gent hod 48 Genève, coll. Pictet / Ephemera glaucops ♂ imago [F.-J. Pictet’s handwriting] / Ghthd 21.7 [Pictet’s handwriting]/ Ephemera glaucops Pictet 1843 M. Sartori det. 1996. – MHNG; syntype, ♀ imago; 620 Gent hod

![Fig. 2. Ephemera glaucops F.-J. Pictet, 1843, labels of one male imago syntype.](image-url)
48 Genève, coll. Pictet / G[en]thod, 27.7 [F.-J. Pictet’s handwriting]. – MHNG; syntype, ♀ imago; 620 Gentod 48 Genève, coll. Pictet / G[en]thod, 21.7 [F.-J. Pictet’s handwriting].

Remarks: This is the best series at the MHNG. Besides numerous subsequent misidentifications, there are 4 specimens that still bear a label handwritten by F.-J. Pictet and that were collected at Gentheid, near Geneva. Only these 4 specimens can be considered syntypes of *E. glaucops*.

_Ephemera guttulata_ F.-J. Pictet, 1843

_Ephemera guttulata_ F.-J. Pictet, 1843-1845: 135, pl. 8, fig. 4.  
_Accepted name:_ *Ephemera guttulata* F.-J. Pictet, 1843.  
_Locus typicus:_ Not mentioned [North America].  
_Type material:_ Holotype [by monotypy], presumably a male imago (Eaton, 1871: 70). Not in MHNG, not traced.  
_Remarks:_ F.-J. Pictet mentioned that he had seen an incomplete female coming from the National Museum of Natural History (MNHN) in Paris. Attempts made by Jean Legrand, former curator at the Museum in Neuchâtel, the first author to locate the specimen failed. It is presumably lost.

_Palingenia puella_ F.-J. Pictet, 1843

_Palingenia puella_ F.-J. Pictet, 1843-1845: 145, pl. 11, fig. 4.  
_Campsurus puella._ – Eaton, 1871: 58 (transfer).  
_Polymitarcys albus_ Say, 1824. – Eaton, 1883: 47 (erroneous synonymization).  
_Tortopus puella._ – McCafferty, 1996: 3 (transfer).  
_Tortopsis puella._ – Molineri, 2010: 27 (transfer).  
_Accepted name:_ *Tortopsis puella* (F.-J. Pictet, 1843).  
_Locus typicus:_ “… qui provenait des Indes Orientales”.  
_Type material:_ Holotype [by monotypy], ♀ imago; Pictet vidit / *Polymitarcys indicus* Pict. Type [Ulmer’s handwriting].  
_Remarks:_ The specimen, sent by Kollar, is slightly damaged (distal half of right fore wing, right middle leg, left hind leg and right cercus missing). Most probably it was collected by Carl August v. Hügel (1759-1870), who travelled in southern India and Punjab in 1831-1836. His material was acquired in 1839. The most complete description of this species was provided by Chopra (1928) based on new material from India. Moreover, he had the opportunity to examine the holotype deposited in Vienna. His material has in common with the type: (i) the costal field of the forewing tinted with violet, (ii) a longitudinal violet band dorsally on the abdomen, (iii) the coloration of the fore legs of the female. It differs, however, by the number of intercalaries in the cubital field (4-5 on the type specimen but 6 in the Indian material) and by the length of the terminal filament, equal in length to the cerci according to F.-J. Pictet’s description and drawing. In the type specimen the right cercus is broken near the base (remainder missing), the left cercus and the terminal filament are apparently of equal length, but in fact the tip of the left cercus is missing and the correct measurements presumably correspond with Chopra’s material. The paracercus is obviously shorter in the Indian material (“in the female the lateral ones are 11-13, while the median seta is 7-8 mm long”; Chopra, 1928: 128). According to Lestage (1921) the single female from Tonkin (Vietnam) and referred to *E. indicus* possessed a terminal filament as long as its cerci. Ulmer (1913) reported several females of *E. indicus* from Java. According to his short description, the terminal filament is shorter and the cubital field of the forewing is slightly different to what Lestage observed in his Vietnamese specimens.

_Palingenia savignyi_ F.-J. Pictet, 1843

_Fig. 3_  
_Ephemera sp._ – Savigny, 1817: 194, pl. 2, fig. 5.  
_Palingenia Savignyi_ F.-J. Pictet, 1843-1845: 157.  
_Polymitarcys Savignyi [sic]._ – Eaton, 1871: 61 (transfer).  
_Polymitarcys Savignyi._ – Eaton, 1883: 46.  
_Ephoron savignyi [sic]._ – Olliff, 1960: 339 (transfer).  
_Accepted name:_ *Ephoron savignyi* (F.-J. Pictet, 1843).  
_Locus typicus:_ “Haute Egypte”.  

\[\text{Polymitarcys indicus. – Eaton, 1871: 61 (transfer).} \]
\[\text{Polymitarcys australis} \text{ Hagen, 1888. – Ulmer, 1924b: 32 (tentative synonymization).} \]
\[\text{Ephoron indicus. – Spieth, 1940: 110 (transfer).} \]
Type material: Holotype [by monotypy] female sub-imago, not traced.

Remarks: F.-J. Pictet brieﬂy mentioned this species in the addenda of the genus Palingenia, saying he had not seen any specimens and based his diagnosis on the drawing provided by Savigny (of a female subimago), in accordance with article 12.2.7 of the International Code on Zoological Nomenclature (International Commission of Zoological Nomenclature, 1999). However, Eaton (1871) mentioned that several specimens were kept in F.-J. Pictet’s collection, and that later F.-J. Pictet gave him a specimen (Eaton, 1883). In the MHNG two specimens are still present: a male imago (Fig. 3), 620 48 Egypte coll. Pictet / Savignyi Pict. [purple label broken in four pieces], and a male imago, 620 48 Egypte coll. Pictet / M. De Selys Longchamp. None of them can be considered as type material. The type material should be in Savigny’s collection in the National Museum of Natural History in Paris, but a recent visit by the first author failed to find it. However, this is of no consequence for the validity of the species name (see International Commission on Zoological Nomenclature, 1999: article 73.1.4).

Baetis fluminum F.-J. Pictet, 1843

Baetis fluminum F.-J. Pictet, 1843-1845: 164-166, pl. 16-19. Heptagenia fluminum. – Eaton, 1871: 146 (transfer). Ecdyurus fluminum. – Eaton, 1888: 289 (transfer). Ecdyonurus fluminum. – Ulmer, 1920b: 136 (transfer). Ecdyonurus dispar (Curtis, 1834). – Thomas, 1968b: 52 (synonymization).

Accepted name: Ecdyonurus (Ecdyonurus) dispar (Curtis, 1834).

Locus typicus: “… le Rhône, tant dans les environs de Genève qu’à l’autre extrémité du lac”.

Type material: Syntypes (male and female imagines and subimagines), not traced. No original material of B. fluminum remains in the MHNG.

Remarks: Eaton (1871) already mentioned that only subimagines were present in the collection, but none could be found during our study. The status of this species was enigmatic for a long time until Thomas (1968b) clarified it and suggested that the concept of E. fluminum had been applied differently among the mayfly taxonomists of the first half of the 20th century. Thomas (1968b) convincingly demonstrated that F.-J. Pictet’s concept of E. fluminum corresponds to that of E. dispar Curtis, 1834.

Baetis forcipula F.-J. Pictet, 1843

Baetis forcipula F.-J. Pictet, 1843-1845: 170. Heptagenia forcipula. – Eaton, 1871: 152 (transfer). Ecdyurus forcipula. – Eaton, 1888: 286 (transfer). Ecdyonurus forcipula. – Ulmer, 1920b: 136 (transfer). Ecdyonurus (Ecdyonurus) venosus (Fabricius, 1775: 304). new synonym

Accepted name: Ecdyonurus (Ecdyonurus) venosus (Fabricius, 1775).

Locus typicus: “… la plus grande partie de l’Allemagne, … Autriche, Bohême et de Bavière… Piémont”.

Type material: NMW; syntype, ♂ imago; Reichenau, Koll[ar] / Ecdyonurus forcipula Pict. [Ulmer’s handwriting] / Genitalia in glycerin in microvial. – NMW; syntype, ♂ imago; Reichenau, Koll[ar.] / Genitalia in glycerin in microvial, right fore leg missing. – NMW; syntype, ♂ imago; Aust[ria], Kollr. [= Kollar].

Remarks: F.-J. Pictet proposed the new taxon with reservations in a note (F.-J. Pictet, 1843: 169): “Il y a probablement une nouvelle espèce... Si c’est bien une espèce distincte, elle devra porter le nom de B. forcipula, nom sous lequel elle m’a été communiquée par M. Kollar”. As the description of F.-J. Pictet was expressly based on material (and/or manuscript notes) provided by Kollar from Austria, those specimens are syntypes (International Commission on Zoological Nomenclature, 1999: article 73.2.1). While proposed
only conditionally by F.-J. Pictet, the name is clearly available under article 11.5.1. Although Ulmer (1921: 241) stated “Typen dieser Art finde ich nicht” [I cannot find types of this species], he nevertheless mentioned two of the above listed syntype specimens, which he (correctly) identified as _Ecdyonurus venosus_. Among the specimens present in the NMW collection and placed under the species name _E. forcipula_, three pinned specimens were without doubt collected by Kollar and bear his handwritten label. Considering all the circumstantial evidence, these specimens must be considered as part of the type series (syntypes) although they bear no direct reference to F.-J. Pictet.

The concept of _E. forcipula_ has been interpreted differently among taxonomists in the past (e.g., Meyer-Dür, 1874: 314; Eaton, 1887: 286; Rostock, 1888: 154; Ulmer, 1929: 32; Schönemund, 1930: 23; Kimmins, 1942a: 123; Kimmins, 1942b: 504) and redescriptions have almost certainly been based on material that belongs to several taxa. Bauernfeind (1990: 76) stated that Kollar’s specimens belong to _Ecdyonurus venosus_ but did not propose a formal synonym. In the meantime that Kollar’s specimens belong to _Ecdyonurus venosus_ was proposed (Bauernfeind & Haybach, 2012) and subsequently fixed (International Commission on Zoological Nomenclature, 2015) which enables us to formally place _Baetis forcipula_ F.-J. Pictet, 1843 (currently in _Ecdyonurus_ in the synonymy of _Ephemera venosa_ Fabricius, 1775 (currently in _Ecdyonurus_). The thorough description of _Ecdyonurus forcipula_ by Thomas (1968b: 61) denotes a taxon new to science, for which the name _Ecdyonurus (Ecdyonurus) alaini_ sp. nov. is proposed in honour of our friend Alain Thomas and his outstanding work on Ephemeroptera.

_Ecdyonurus (Ecdyonurus) alaini_ Bauernfeind, sp. nov.

_Fig. 4_

_Ecdyonurus forcipula_. – Thomas, 1968b: 61. [misidentification, nec _Ecdyonurus forcipula_ (F.-J. Pictet, 1843)]

**Type material:** NMW; holotype, ♂ imago [reared], with legs, wings and genitalia on microscope slide and accompanied by its nymphal skin (in parts on slide); Neste d’Aure, app. 42°48’N 0°6’E, Massif de Néouvielle, 1600 m a.s.l., Hautes-Pyrénées, France; 10.7.1965; leg. A. Thomas. – NMW; paratype, 1 ♀ imago [reared], accompanied by its nymphal skin; same data as for holotype. – NMW; paratype, 1 ♂ imago [reared], accompanied by its nymphal skin; Aure Valley, 1200 m a.s.l., Hautes-Pyrénées, France; 30.7.1965; leg. A. Thomas.

**Diagnosis:** The new taxon is characterized by the following combination of characters: Imagines usually slightly smaller than those of _E. venosus_ (forewing length of holotype 14.0 mm), overall abdominal colouration more sombre, dull yellowish brown (in _E. venosus_ more reddish), laterally a rather indistinct triangular brownish blotch in posterior half of abdominal segments 2–8 (frequently missing; a distinct triangular dark red to violet-black blotch in posterior half of abdominal segments in _E. venosus_), posterior margin of forceps base almost straight (distinctly convex in _E. venosus_) with (rarely) without low, broad and rounded lateral teeth. Penis lobes (Fig. 4A) slightly more massive, basal sclerite more broadly triangular, with few or no teeth along posterior margin (basal sclerite narrowly triangular, with strong teeth along posterior margin in _E. venosus_), median titillators with a longitudinal row of inconspicuous subapical teeth or smooth (median titillators with a longitudinal row of strong subapical teeth in _E. venosus_). Last instar larvae are characterized by rather strong, almost straight, apically broadly rounded pronotal processes (Fig. 4B) (apically bluntly pointed in _E. venosus_) and comparatively weak and short lateral processes (Fig. 4C) (1/5 of segment length) on abdominal sternum 2–9 (strong and long, 1/3 of segment length in _E. venosus_).

**Baetis cyanops** F.-J. Pictet, 1843

_Baetis cyanops_ F.-J. Pictet, 1843-1845: 171-172, pl. 20, fig. 2.

_Heptagenia elegans_ (Curtis, 1834). – Eaton, 1871: 145 (synonymization).

_Heptagenia sulphurea_ (Müller, 1776). – Eaton, 1888: 268 (synonymization).

**Accepted name:** _Heptagenia sulphurea_ (Müller, 1776).

**Locus typicus:** “... au bord du Rhône ...” [Geneva].

**Type material:** Syntypes (male imagines?), not traced.

**Remarks:** A well-established synonymy. _Heptagenia sulphurea_ is still present in the Rhone River at Geneva (Sartori et al., 1989).

**Baetis montana** F.-J. Pictet, 1843

_Baetis montana_ F.-J. Pictet, 1843-1845: 172-173, pl. 20, fig. 3.

_Heptagenia montana_. – Eaton, 1871: 154 (transfer).

**Accepted name:** _Baetis montana_ F.-J. Pictet, 1843 nom. dub.

**Locus typicus:** “... petit ruisseau qui descend du Brévent au-dessus de Chamounix”.

**Type material:** Holotype [by monotypy], male imago?, not in MHNG.

**Remarks:** F.-J. Pictet gave a very brief description of this alpine species. Eaton (1888) was unable to place it with certainty among the Heptageniidae. No original
material of this taxon could be traced. In the MHNG there is one female imago with the following label data “620 Burgdorf 48 coll. Pictet / Baetis montana P. Bgdf 9 Juni”, obviously a specimen collected and identified by Meyer-Dür and most probably belonging to the so called Ecdyonurus helveticus species-group. The name Baetis montana F.-J. Pictet, 1843 should be considered a nomen dubium (see also Haybach, 2010).

Fig. 4. Ecdyonurus (Ecdyonurus) alaini sp. nov. (A) Penis of holotype (dorsal view, slide preparation). Scale bar 0.2 mm. (B) Left half of pronotum (last larval instar exuvia of holotype; slide preparation). Scale bar 0.5 mm. (C) Abdominal sterna 4-6 (last larval instar exuvia of holotype; slide preparation). Scale bar 0.5 mm. Photos by Mag. H. Bruckner.

Baetis purpurascens F.-J. Pictet, 1843

Baetis purpurascens F.-J. Pictet, 1843-1845: 174-175, pl. 20, fig. 4.
Heptagenia venosa (Fabricius, 1775). – Eaton, 1871: 151 (syonymization).
Ecdyurus venosus (Fabricius, 1775). – Eaton, 1888: 302 (transfer).
Ecdyonurus venosus (Fabricius, 1775). – Ulmer, 1920b: 136 (transfer).
Accepted name: Ecdyonurus (Ecdyonurus) venosus (Fabricius, 1775).

Locus typicus: “... au bord de la petite rivière de Viaison derrière le mont Salève”.

Type material: Holotype [by monotypy], female imago, not in MHNG.

Remarks: The description was obviously based on a single female and the taxon was considered by F.-J. Pictet to be closely related and very similar to Baetis venosa Fabricius, 1775, except for some differences in colouration. No material could be traced and the name Baetis purpurascens F.-J. Pictet can be considered a well-established junior synonym of Ecdyonurus venosus, a species widespread in Europe.

Baetis semitincta F.-J. Pictet, 1843

Baetis semitincta F.-J. Pictet, 1843–1845: 180–181, pl. 22, figs 1–3.

Heptagenia semicolorata (Curtis, 1834). – Eaton, 1871: 136 (synonymization with doubt).

Rhithrogena semicolorata (Curtis, 1834). – Eaton, 1888: 256 (transfer).

Rhithrogena semitincta. – Kimmins, 1936: 279 (revalidation of species name).

Rhithrogena semicolorata (Curtis, 1834). – Sowa, 1971: 897 (synonymization).

Accepted name: Rhithrogena semicolorata (Curtis, 1834).

Locus typicus: “…sur les bords de la petite rivière qui se jette à Versoix dans le lac de Genève”.

Type material: MHNG; 3 syntypes (♀ and ♂ imagines, ♂ subimago).

Remarks: The two male specimens (considered by Sowa as part of the original type series) are pinned on the same needle, and the lower one has been designated as lectotype by Sowa (1971: 897). It bears the following labels: 620 Genthod 48 Genève coll. Pictet / Baetis semitincta [in Sowa’s opinion probably F.-J. Pictet’s handwriting] / Rhithrogena semitincta (Pictet), lectotype [= semicolorata (Curtis)] Det. R. Sowa. This taxon has been controversial for a long time. Eaton (1888) mentioned several variants in the coloration of the wings, which he did not consider of taxonomic value. Kimmins (1936) proved that the concept of R. semicolorata sensu Eaton (1888) fits at least two species and he re-established R. semitincta as a valid name. Finally, Sowa (1971) studied the type series, proposed R. semitincta (F.-J. Pictet, 1843) as a junior subjective synonym of R. semicolorata (Curtis, 1834) and described R. semitincta sensu Kimmins (1936) nec R. semitincta (F.-J. Pictet, 1843) as a new species, R. picteti Sowa, 1971.

Baetis cerea F.-J. Pictet, 1843

Baetis cerea F.-J. Pictet, 1843–1845: 183–184, pl. 23, fig. 2.

Heptagenia flavipennis (Dufour, 1841). – Eaton, 1888: 273 (synonymization).

Heptagenia longicauda (Stephens, 1836). – Kimmins, 1942a: 122 (synonymization).

Accepted name: Heptagenia longicauda (Stephens, 1836).

Locus typicus: “… sur les bords du lac de Genève...”.

Type material: Holotype [by monotypy], male imago, not traced.

Remarks: In the absence of any specimen of this species in the MHNG, we follow the synonymy proposed by Kimmins (1942a). F.-J. Pictet (1843: 193) already noticed that B. longicauda Stephens, 1836 was closely related to his B. cerea. Heptagenia longicauda is extremely rare in Switzerland, the last record from the lake of Geneva area is more than 30 years old (Sartori & Dethier, 1985).

Baetis flaveola F.-J. Pictet, 1843

Fig. 5

Baetis flaveola F.-J. Pictet, 1843–1845: 186–187, pl. 23, fig. 4.

Heptagenia flaveola. – Eaton, 1871: 136 (transfer).

Ecdyurus verticis (Say, 1839). – Eaton, 1888: 256 (synonymy).

Heptagenia interpunctata (Say, 1839). – Ulmer, 1921: 242 (synonymization).

Stenonema flaveolum. – McCafferty & Bae, 1992: 169 (transfer and considered a nomen dubium).

Accepted name: Baetis flaveola F.-J. Pictet, 1843 nom. dub.

Locus typicus: “… Amérique septentrionale...”.

Remarks: F.-J. Pictet (1843: 187) mentioned only one female specimen from the NMW sent by Kollar (“L’exemplaire qui a servi a cette description... “), and provided only one illustration (F.-J. Pictet, 1843: pl. 23, fig. 4). There is a heavily damaged specimen in the NMW, which corresponds well with Pictet’s written description (but not with the illustration in fig. 4). As already pointed out by Ulmer (1921), another specimen has obviously been illustrated on plate 23, fig. 4 of the original publication.

Type material: NMW; ♂ subimago [syntype ?] (Fig. 5A); Pöp[pig] 852 / Pictet vidit / Baetis flaveola Pict. [Hermann Hagen’s handwriting] / Heptagenia interpunctata Say [Ulmer’s handwriting] / coll. Nat. Mus. Wien / (Fig. 5B). Heavily damaged (head, left wings, left middle leg, right middle and hind leg missing, right wings partly missing and glued to thorax, end of abdomen damaged and cerci missing). – NMW; ♂ subimago [syntype ?] (Fig. 5C); Par[reyss]. c. 17. 196. / Pictet vidit / Heptagenia pulchella Walsh (?) [Ulmer’s
handwriting] / coll. Nat. Mus. Wien (Fig. 5D). Slightly damaged (left fore leg, basal half of left hind wing and right hind wing completely missing, distal part of cerci missing).

**Remarks:** Eduard Friedrich Poeppig (1797-1868) travelled in Cuba (1823-24) and Pennsylvania (1824-26). In 1826 he departed for Valparaiso and spent several years performing scientific explorations throughout Chile, Peru and Brazil during 1827-1832. Material from his travels was acquired by the NMW in 1840. In later years he also sold specimens from different sources (Cuba 1843, Port Natal 1845, etc.). Ludwig Parreyss (1796-1879) was an established natural history dealer (mostly in insects and birds) in Vienna and material has been very frequently acquired from him by the NMW.

McCafferty & Bae (1992: 70) in their discussion confused part of the labels and erroneously reported Hagen’s label as being with the male subimago. None of the specimens, however, can be identified with any degree of certainty and McCafferty & Bae’s decision to consider the name *Baetis flaveola* F.-J. Pictet, 1843 as a nomen dubium should be followed.

**Baetis guttata** F.-J. Pictet, 1843

*Baetis guttata* F.-J. Pictet, 1843-1845: 187-188, pl. 24, fig. 3. *Heptagenia guttata.* – Eaton, 1871: 156 (transfer). *Ecdyurus guttatus.* – Eaton, 1888: 301 (transfer). *Ecdyonurus guttatus.* – Ulmer, 1920b: 136 (transfer). *? Siphlonella guttata.* – Flowers & Peters, 1981: 153 (transfer). *Siphlonella guttata.* – Domínguez et al., 2006: 556 (nomen dubium).

**Accepted name:** *Baetis guttata* F.-J. Pictet, 1843 *nom. dub.*

**Locus typicus:** “Chili”.

**Type material:** Holotype [by monotypy] female imago, not traced.

**Remarks:** F.-J. Pictet examined a single female from the National Museum of Natural History in Paris. This species certainly does not belong to the genus *Ecdyonurus* nor to the family Heptageniidae, which is absent from South America. The combination with *Siphlonella* (Oniscigastridae) proposed by Flowers & Peters (1981) is mainly based on the colour pattern. The holotype is presumably lost and the name *Baetis guttata* should be considered a nomen dubium.
**Baetis australasica** F.-J. Pictet, 1843

*Baetis australasica* F.-J. Pictet, 1843-1845: 189-190, pl. 24, fig. 1.  
*Leptophlebia australasica.* – Eaton, 1871: 78 (transfer).  
*Atalophlebia australasica.* – Eaton, 1888: 86 (transfer).  
*Atalophlebia costalis* (Burmeister, 1839). – Ulmer, 1920b: 115 (synonymization).  
*Atalophlebia australasica.* – Harker, 1954: 248 (*Baetis costalis* Burmeister, 1839 is a *nomen praecipuum*).

**Accepted name:** *Atalophlebia australasica* (F.-J. Pictet, 1843).

**Locus typicus:** “...Nouvelle-Hollande” [New South Wales, Australia].

**Type material:** NMW; holotype [by monotypy], ♂ imago; Pictet vidit / Atalophlebia costalis Burm. (australasica Pict.) [Ulmer’s handwriting].

**Remarks:** F.-J. Pictet mentioned “Les deux exemplaires figurés ...” and described the male imago and [female] subimago, attributing the latter only dubiously (F.-J. Pictet, 1843: 189 “Id.? Pseudimago, Planche XXIV, FIG. 2”; F.-J. Pictet, 1845: 10 “Probablement le mâle [sic] subimago ...”). According to the International Commission on Zoological Nomenclature (1999: article 72.4.1), the male specimen is therefore the holotype by monotypy.

Kollar probably had sent three specimens to F.-J. Pictet: a male (listed above), a female subimago (Lotz. 12 [= Johann Lhotsky, who collected in New South Wales in 1832-1838] / australasica subimago), and a female (Pictet vidit / Lotz. 11).  
Ulmer (1921: 243) listed “drei Typen [three types]” but obviously confused one label. The remark “Sidney” [probably in F.M. Brauer’s handwriting] refers to an obviously confused one label. The remark “Sidney” [probably in F.M. Brauer’s handwriting] refers to an obviously confused one label. The remark “Sidney” [probably in F.M. Brauer’s handwriting] refers to an obviously confused one label. The remark “Sidney” [probably in F.M. Brauer’s handwriting] refers to an obviously confused one label.

Ulmer (1920b) synonymized *B. australasica* F.-J. Pictet, 1843 with *B. costalis* Burmeister, 1839, but Harker (1954) recognized that *Baetis costalis* Burmeister, 1839 is a homonym of *B. costalis* Curtis, 1834 and so she reinstalled the older synonym as the valid name of the species.

**Potamanthus f_erreri** F.-J. Pictet, 1843

*Potamanthus Ferreri* F.-J. Pictet, 1843-1845: 203-204, pl. 25, fig. 1.  
*Potamanthus luteus* (Linné, 1767). – Bac & McCafferty, 1991: 53 (synonymization).

**Accepted name:** *Potamanthus luteus* (Linné, 1767).

**Locus typicus:** “… aux environs de Turin...” [Italy].

**Type material:** Holotype [by monotypy], male imago, not traced.

**Remarks:** Eaton (1884) already noticed that the type was missing in F.-J. Pictet’s collection in 1867. The synonymy proposed by Bae & McCafferty (1991) is consistent with the fact that *P. luteus* is the only *Potamanthus* species found throughout Europe.

**Potamanthus geerii** F.-J. Pictet, 1843

*Potamanthus Geerii* F.-J. Pictet, 1843-1845: 211-214, pl. 26, figs 1-3.  
*Leptophlebia helvipes* (Stephens, 1836). – Eaton, 1871: 85 (transfer and synonymization).  
*Leptophlebia submarginata* (Stephens, 1836). – Eaton, 1884: 94 (synonymization).  
*Paraleptophlebia submarginata* (Stephens, 1836). – Lease, 1917: 344 (transfer).

**Accepted name:** *Paraleptophlebia submarginata* (Stephens, 1836).

**Locus typicus:** “J’en possède des exemplaires de l’Italie septentrionale, ... elle n’est pas rare aux environs de Genève...”.

**Type material:** Syntypes (male and female imagines, female subimago, larva), not traced.

**Remarks:** In the MHNG there is a series of *Leptophlebia submarginata*: 3 specimens (1 male, 2 females) among them bear the label “Potamanthus geerii L.”, but they originate from Burgdorf (ex. coll. Meyer-Dür) and have obviously been collected after the publication of the original description. Note the obvious printing error in the original description (F.-J. Pictet, 1843: 211), attributing this species to Linnaeus instead of declaring it a new species.

**Potamanthus castaneus** F.-J. Pictet, 1843

*Potamanthus castaneus* F.-J. Pictet, 1843-1845: 215-216, pl. 26, figs 4-5.  
*Leptophlebia castanea.* – Eaton, 1871: 86 (transfer).  
*Paraleptophlebia castanea.* – Ulmer, 1920: 116 (transfer).  
*Paraleptophlebia submarginata* (Stephens, 1836). – Puthz, 1978: 262 (synonymization).

**Accepted name:** *Paraleptophlebia submarginata* (Stephens, 1836).

**Locus typicus:** “… au bord d’un ruisseau d’eau vive, à l’extrémité du lac de Genève, près des marais de Villeneuve...”.

**Type material:** Syntypes (male and female imagines, male subimago), not traced.

**Remarks:** As already mentioned by Puthz (1978), material housed in the MHNG consists of 10 subimagines, none of them originating from the type locality or its surroundings. Description and drawings of the subimaginal wing pattern correspond well with *P. submarginata*. 
Potamanthus brunneus F.-J. Pictet, 1843

Potamanthus brunneus F.-J. Pictet, 1843-1845: 217-219, pl. 27.
Leptophlebia fusca (Curtis, 1834). – Eaton, 1871: 90 (transfer and synonymization).
Habrophlebia fusca (Curtis, 1834). – Eaton, 1884: 116 (transfer).

Accepted name: Habrophlebia fusca (Curtis, 1834).

Locus typicus: “… dans des ruisseaux qui prennent leur source au pied du mont Salève”.

Type material: Syntypes (male and female imagines, male subimago, larva), not traced.

Remarks: In the MHNG five non-type specimens are present under the name H. fusca. One bears the label “Potamanth. brunneus Pict.” representing in fact a male imago of Serratella ignita (Ephemerellidae). Among the four others, three also belong to S. ignita and the last one probably to H. fusca, with a label “Rch 19.5” (for May 19?).

Potamanthus gibbus F.-J. Pictet, 1843

Potamanthus gibbus F.-J. Pictet, 1843-1845: 226-228, pl. 31-32.
Ephemera gibba. – Eaton, 1871: 99 (transfer).
Ephemera ignita (Poda, 1761). – Eaton, 1884: 126 (synonymization).
Serratella ignita (Poda, 1761). – Jacob, 1993: 107 (transfer).

Accepte name: Serratella ignita (Poda, 1761).

Locus typicus: “… sur les bords d’un petit ruisseau d’eau vive près de Villeneuve, à l’extrémité du lac de Genève”.

Type material: Syntypes (male and female imagines and subimagines), not traced.

Remarks: In the MHNG no specimens remain from the type locality and/or bear an original identification. Some of them are labelled “Ephemera lignita Poda Eaton deter[invat]”. Serratella ignita is a species widespread and common throughout Europe that exhibits various colour patterns, from green to red.

Potamanthus aeneus F.-J. Pictet, 1843

Potamanthus aeneus F.-J. Pictet, 1843-1845: 229-231, pl. 33.
Ephemera aenea. – Eaton, 1871: 99 (transfer).
Ephemera ignita (Poda, 1761). – Eaton, 1884: 126 (synonymization).
Serratella ignita (Poda, 1761). – Jacob, 1993: 107 (transfer).

Accepted name: Serratella ignita (Poda, 1761).

Locus typicus: “… un ruisseau qui prend sa source au pied du mont Salève”.

Type material: Syntypes (male and female imagines and subimagines, larva), not traced. No relevant material in the MNHG.

Potamanthus inanis F.-J. Pictet, 1843

Potamanthus inanis F.-J. Pictet, 1843-1845: 232-234, pl. 24, fig. 4.
Potamanthus (?) inanis. – Eaton, 1888: 296 (incertae sedis).
Leptohyphodes inanis. – Ulmer, 1920a: 50-51 (transfer). – Domínguez et al., 2006: 279.

Accepted name: Leptohyphodes inanis (F.-J. Pictet, 1843).

Locus typicus: “… elle provient du Brésil” [Rio de Janeiro].

Type material: NMW; 7 syntypes (Fig. 6A): 6 ♂ imagines, Shttt.[Schott] (blue label) / Pictet vidit; 1 ♂ imago, Shttt.[Schott] (blue label) / Pictet vidit / Leptohyphodes (Ulm.) inanis Pictet Typen [Ulmer’s handwriting].

Remarks: Some specimens are more or less damaged but on the whole in comparatively good condition (Fig. 6B-C). Heinrich Wilhelm Schott collected in Rio de Janeiro during 1817-1821, where he was practically all the time restricted to the vicinity of the city (Schott, 1822). Two of his excursions reached Canta Gallo (= Cantagalo 21°58’S 42°22’W) and Macacú (22°42’S 43°02’W). Ulmer (1921: 244) listed “acht Typen” and provided a redescription of the material. It seems probable that Kollar sent just a sample of 2 specimens to F.-J. Pictet (he based his description on “… deux exemplaires secs”), and afterwards labelled the complete series. F.-J. Pictet, however, seems to have recognized this and according to the International Commission on Zoological Nomenclature (1999: article 72.4.1.1), the seven existing specimens constitute the type series. Leptohyphodes inanis is the type species of the genus Leptohyphodes Ulmer, 1920a and is so far only known from Brazil (Domínguez et al., 2006).

Cloe rhodani F.-J. Pictet, 1843

Cloe rhodani Pictet, 1843-1845: 248-251, pl. 36-39.
Baetis rhodani. – Eaton, 1871: 114 (transfer).

Accepted name: Baetis rhodani (Pictet, 1843).

Locus typicus: “… aux environs de Genève, dans le Rhône…”.

Type material: Syntypes (male and female imagines and subimagines, larvae), not traced and most probably lost.

Remarks: Most of the material still present in the MHNG came from Meyer-Dür and is labelled...
Fig. 6. *Leptohyphodes inanis* (F.-J. Pictet, 1843). (A) Type series. Scale bar: 5 mm. (B) Syntype. Scale bar: 1 mm. (C) Labels of the type series. Scale bar: 5 mm.
“Burgdorf”. *Baetis rhodani* is considered as one of the most abundant mayfly species in Europe. However, recent investigations indicate that it is a species complex (Bisconti et al., 2016; Gattolliat et al., 2015; Lucentini et al., 2011; Rutschmann et al., 2014; Williams et al., 2006). Therefore Gattolliat & Sartori (2008) designated a neotype, which is deposited in the collection of the Museum of Zoology, Lausanne, with voucher specimens in the MNHN and the NMW.

**Cloe translucida** F.-J. Pictet, 1843

*Cloe translucida* F.-J. Pictet, 1843-1845: 255-256, pl. 40, figs 3-4. *Baetis luteolus* (Müller, 1776). – Eaton, 1868: 88 (transfer and synonymization). *Centroptilum luteolum* (Müller, 1776). – Eaton, 1871: 108 (transfer).

**Accepted name:** *Centroptilum luteolum* (Müller, 1776).

**Locus typicus:** “… sur les bords du lac de Genève… Des exemplaires venant d’Autriche m’ont été communiqués par M. Kollar, et la collection du chanoine Ferrero en renfermait un pris aux environs de Turin”.

**Type material:** Syntypes (male and female imagoes), not traced and most probably lost.

**Remarks:** Ulmer (1921: 246) already stated that he could not locate any specimens of *Cloe translucida* in the NMW collection.

**Cloe alpina** F.-J. Pictet, 1843

*Cloe alpina* F.-J. Pictet, 1843-1845: 257-258, pl. 40, fig. 5. *Baetis alpinus*. – Eaton, 1871: 118 (transfer).

**Accepted name:** *Baetis alpinus* (F.-J. Pictet, 1843).

**Locus typicus:** “… au bord d’un torrent très rapide, qui descend du mont Brévent dans la vallée de Chamounix”.

**Type material:** Holotype [by monotypy], male imago, not traced. Müller-Liebenau (1969: 201) already mentioned that the type was probably missing.

**Remarks:** *Baetis alpinus* is a widespread species in montane and submontane zones of Europe. It is by far the most abundant species in the Alps.

**Cloe melanonyx** F.-J. Pictet, 1843

*Cloe melanonyx* F.-J. Pictet, 1843-1845: 258-259, pl. 40, fig. 6. *Baetis melanonyx*. – Eaton, 1871: 118 (transfer).

**Accepted name:** *Baetis melanonyx* (F.-J. Pictet, 1843).

**Locus typicus:** “… dans la vallée d’Entremont (Faucigny)” [France].

**Type material:** Holotype [by monotypy?], male imago, not traced and most probably lost.

**Remarks:** Müller-Liebenau (1969: 201) designated a neotype in the collection of McLachlan deposited in the Natural History Museum of London, which was identified as *Baetis melanonyx* by Eaton and originates from Samoens in France.

**Cloe litura** F.-J. Pictet, 1843

*Cloe litura* F.-J. Pictet, 1843-1845: 258-259, pl. 41, figs 1-3. *Centroptilum lituratum*. – Eaton, 1871: 109 (transfer).

**Accepted name:** *Cloe litura* F.-J. Pictet, 1843 nom. dub.

**Locus typicus:** “… au pied du mont Salève…”.

**Type material:** Syntypes (male and female imago, male subimago), not traced and probably lost.

**Remarks:** In the MHNG eleven specimens are present under the name *Centroptilum lituratum*. All originate from Burgdorf (coll. Meyer-Dür) and cannot belong to the type series. All belong to the genus *Baetis* except for one female of *Centroptilum luteolum*. Seven are unidentifiable *Baetis* females, and three are males of *Baetis alpinus*. The taxon is only known from F.-J. Pictet’s description and illustrations, and the name *Cloe litura* F.-J. Pictet should be considered a nomen dubium.

**Cloe fasciata** F.-J. Pictet, 1843

*Cloe fasciata* F.-J. Pictet, 1843-1845: 262-263, pl. 41, fig. 4. *Baetis fasciatus*. – Eaton, 1871: 123 (transfer). *Callibaetis fasciatus*. – Eaton, 1885: 197 (transfer). *Callibaetis (Abaeetetuba) fasciatus*. – Cruz et al., 2017: 147 (transfer and designation as type species of the subgenus *Abaeetetuba*).

**Accepted name:** *Callibaetis (Abaeetetuba) fasciatus* (F.-J. Pictet, 1843)

**Locus typicus:** “… provient du Brésil” [Ipanema, Sao Paulo; 23°26’S 47°36’W].

**Type material:** NMW; holotype [by monotypy], ♀ imago; Nat[erer]: Brasi.: Ypanema / N[atterer]. c[ollection]. Y[panema], [on blue paper] / *Callibaetis fasciatus* Pict. [Ulmer’s handwriting] / Pictet vidit.

**Remarks:** Damaged (most legs, left hind wing and right cercus missing). The holotype was already in bad condition when F.-J. Pictet described it. Ulmer (1921: 246) quoted the label incompletely (and probably misread “N.c.Y.” for “No. 31”) when he provided a complete redescriptions of the specimen and confirmed Eaton’s (1885) assignment to the Panamerican genus *Callibaetis* Eaton, 1881. Johann Natterer collected in Brasil during 1817-1835 and stayed several times at Ipanema (1819-1822; see Vanzolini, 1993).
**Cloe undata** F.-J. Pictet, 1843
Cloe undata F.-J. Pictet, 1843-1845: 264-265, pl. 41, fig. 6. 
Callibaetis undatus. – Eaton, 1885: 196 (transfer).

**Accepted name:** Cloe undata F.-J. Pictet, 1843 **nom. dub.**

**Locus typicus:** “… elle provient du Mexique”.

**Type material:** Holotype [by monotypy], female imago, not traced and most probably lost.

**Remarks:** The specimen F.-J. Pictet examined was already in bad condition and was sent by Mr Coulon from Neuchâtel. The specimen is neither housed in the Natural History Museum of that town (J.P. Haenni in litt.) nor in the MHNG. The taxon is only known from Neuchâtel. The specimen is neither housed in the NMW; holotype [by monotypy], female subimago / Cloe undata F.-J. Pictet, 1843 [nom. dub.]. Ulmer (1921: 248) erroneously quoted three male subimagines in the NMW carrying F.-J. Pictet’s label: “… davon stammen zwei aus Sizilien, eins aus Ischl.”. None of these specimens actually bears F.-J. Pictet’s label nor could they have represented type material, and most probably Ulmer’s remark was based on a confusion with later acquisitions from Sicily not seen by F.-J. Pictet. Two additional male specimens and one female (in the NHW, all without labels) have been transferred to glycerin: “Caenis horaria (L.) sub nom. C. lactea (Pict.) det. Malzacher 6. 1983”. None of them can be considered to represent type material.

**Cloe undata** F.-J. Pictet, 1843

**Accepted name:** Cloe undata (Stephens, 1836).

**Locus typicus:** “… dans un petit marais situé au pied du mont Salève”.

**Type material:** Syntypes (male imago and subimago), not traced and most probably lost.

**Remarks:** In the MHNG there is one specimen (female subimago) which bears the name Caenis halterata Fabr. and originates from Burgdorf (coll. Meyer-Dür). This specimen belongs to Caenis lactuosa (Burmeister, 1839). Without any new available data, we accept the synonymy proposed by Eaton (1871) and followed by Malzacher (1986), but in our opinion C. grisea could also be considered a junior subjective synonym of C. lactuosa (Burmeister, 1839).

**Caenis grisea** F.-J. Pictet, 1843

Caenis grisea F.-J. Pictet, 1843-1845: 278-279, pl. 45, figs 1-2. Caenis macrura (Stephens, 1836). – Eaton, 1871: 93 (synonymization). – Malzacher, 1986: 15. Caenis halterata (Fabricius, 1777). – Eaton, 1885: 145 (synonymization).

**Accepted name:** Caenis macrura (Stephens, 1836).

**Locus typicus:** “… se trouve dans les partie supérieures de l’Egypte”.

**Type material:** Syntypes (male imago and subimago), not traced and most probably lost.

**Remarks:** In the MHNG there is one specimen (female subimago) which bears the name Caenis halterata Fabr. and originates from Burgdorf (coll. Meyer-Dür). This specimen belongs to Caenis lactuosa (Burmeister, 1839). Without any new available data, we accept the synonymy proposed by Eaton (1871) and followed by Malzacher (1986), but in our opinion C. grisea could also be considered a junior subjective synonym of C. lactuosa (Burmeister, 1839).

**Caenis argentata** F.-J. Pictet, 1843

Caenis argentata F.-J. Pictet, 1843-1845: 279-280, pl. 43, fig. 6. – Kluge, 2020 (nom. dubium). Caenis halterata (Fabricius, 1777). – Ulmer, 1921: 248 (synonymization).

**Accepted name:** Caenis argentata F.-J. Pictet, 1843 **nom. dub.**

**Locus typicus:** “… se trouve en Sicile”.

**Type material:** NMW; holotype [by monotypy], female subimago.

**Remarks:** F.-J. Pictet wrote “Je ne connais que la femelle subimago de cette espèce… elle m’a été communiquée par le musée de Vienne”. It is, however, rather doubtful whether the specimen in the NMW actually represents the type specimen: female subimago / Caenis argentata ? Kollar lactea Hffm. [Kollar’s handwriting] / Caenis horaria (L.) det. Malzacher 1983 [no collector’s label, no locality]. Ulmer (1921: 248) erroneously quoted three male subimagines in the NMW carrying F.-J. Pictet’s label: “… sinon contiennent deux magasins de vacs, deux imago, mais l’un a été conservé à l’état naturel par Monsieur le Dr. Malzacher”. Note that the name Cloe undata is actually a junior subjective synonym of Caenis horaria (L.) sub nom. C. lactea (Pict.) det. Malzacher 6. 1983”. None of them can be considered to represent type material.

Caenis horaria has so far not been recorded from Sicily and in our opinion it is most likely that Kollar incorrectly labelled a specimen of unknown origin at a later time. The specimen in question lacks the “Pictet vidit” label as well as any evidence concerning its origin, and it therefore seems justified to consider the name Caenis argentata F.-J. Pictet, 1843 as a **nom. dubium**.

**Caenis varicauda** F.-J. Pictet, 1843

Ephemera sp. – Savigny, 1817: 194, pl. 2, figs 6-7. Caenis varicauda F.-J. Pictet, 1843-1845: 281-282, pl. 43, fig. 5. 
Tricorythus varicauda. – Eaton, 1868: 82 (transfer).

**Accepted name:** Tricorythus varicauda (F.-J. Pictet, 1843).

**Locus typicus:** “… se trouve dans les partie supérieures de l’Egypte”.

**Type material:** NMW; syntype, ♀ imago; KOTS 1 [= Kotschyi leg.] / Pictet vidit / Typus [Ulmer’s handwriting]. – NMW; syntype, ♀ imago; KOTS 2 / Pictet vid. – NMW; syntype, ♂ imago; KOTS 3 / Pictet vid.

**Remarks:** Theodor Kotschyi (1813-1866) travelled the White and Blue Nile (Cairo to Torra, El Obeid, Torra, Karthum, Beni Shanqul) during 1836-1839. Material from this expedition was acquired by the NMW in 1839. In his redescriptions Ulmer (1916: 14; 1921: 248) quoted “vier Typen [four types]” misreading the collector’s acronym for “No. 21”. The fourth specimen, however, does not represent type material and actually originates from a series collected by Josef Franz Natterer (1819-1862) in “Egypt” [Karthoum], acquired by the NMW in 1858 and not seen by F.-J. Pictet. Beside this material, and as F.-J. Pictet mentioned “… et je la possède aussi dans ma collection”, four specimens are located in the MHNG. They were found under the name Caenis lacteola Eaton, 1884 (a synonym of...
C. horaria) and all bear the same label: 620 48 Europe central coll. Pictet. As no Tricyrthys species has ever been reported from Europe, we can conclude that this is an example of the poor care the collection has suffered. These specimens fit the description given by F.-J. Pictet and may well constitute part of the original type series. This material is currently in ethanol.

Eaton (1868) based his genus Tricyrthys on Caenis varicauda F.-J. Pictet, 1843 which was recently redescribed by Kluge (2010).

Caenis oophora F.-J. Pictet, 1843

Caenis oophora F.-J. Pictet, 1843-1845: 284-285, pl. 45, fig. 4. Caenis macrura (Stephens, 1836). – Ulmer, 1921: 248 (synonymization).

Accepted name: Caenis oophora F.-J. Pictet, 1843 nom. dub.

Locus typicus: “... originaire de Sardaigne”.

Type material: NMW; holotype [by monotypy], ♀ [subimago]; Caenis macrura Stephens, female subimago / Dhl. a. c. [= Dahl, alte collection?] / Pictet vidit.

Remarks: The type specimen, denoted “femelle imago” by F.-J. Pictet, corresponds with his description and illustration. It had presumably been collected by Georg Dahl (1769-1832), naturalist and dealer in natural history specimens, who collected in Sardinia and whose respective material was acquired by the NMW in 1826. Ulmer (1921: 248) mentioned two female specimens with F.-J. Pictet’s label, originating from Sardinia, but Pictet (1843) expressly mentioned that he examined only one specimen: “L’individu que j’ai eu à ma disposition...”. The second specimen, with protruding eggs and labelled “Pictet vidit” (but without collector’s label or locality) which corresponds with Ulmer’s description, and labelled “Pictet vidit” (but without collector’s label or locality) which corresponds with Ulmer’s description, was doubtfully identified as “C. ? luctuosa (Burm.)” det. Malzacher 1983”. Another female specimen, labelled “C. oophora Pict. Sardinien (Mann) [probably Kollar’s handwriting] / Pictet vidit” does not correspond with F.-J. Pictet’s description and was probably subsequently identified by Kollar, but it had not been examined by F.-J. Pictet. It had either been obtained from or collected by Josef Johann Mann (1804-1889), who travelled Corsica in 1855 and Sicily in 1858 (Rogenhofer, 1889). In the light of this poor and contradictory evidence, the name C. oophora Pictet, 1843 is probably best considered a nomen dubium.

Oligoneuria anomala F.-J. Pictet, 1843

Oligoneuria anomala Pictet, 1843-1845: 291-292, pl. 47 gs 1-2.

Oligoneuria (Oligoneuria) anomala. – Salles et al., 2014: 241.

Accepted name: Oligoneuria anomala F.-J. Pictet, 1843.

Locus typicus: “… venant du Brésil” [Rio de Janeiro district, Brasil].

Type material: NMW; one syntype (♀ subimago); Shtt [= Schott] [blue paper] / Pictet & Hagen vid. [remark: “& Hagen” obviously added later, probably by Hagen] / Oligoneuria anomala Kllr. Pict. [in Kollar’s handwriting] / Oligoneuria anomala Pict. Type [Ulmer’s handwriting]. Slightly damaged, hind wings crumpled and legs missing. – MHNG; one syntype (female subimago); not traced, probably lost.

Remarks: The original illustrations (F.-J. Pictet, 1845: pl. 46, figs 1-5) have obviously been drawn from the second syntype (femelle subimago, Pictet’s specimen from an unknown locality [presumably Switzerland], “conservé dans alcool”) which belongs to Oligoneuriella rhenana (Imhoff, 1852), as already stated by Hagen (1855: 270). This taxon has been quite enigmatic for a long time although additional descriptions had been provided by Hagen (1855), Ulmer (1921), Needham & Murphy (1924) and Puthz (1973a). Domínguez et al. (2006) recently published supplementary information on the type material. A cladistics analysis by Salles et al. (2014) showed this species to be distinguishable by wing venation, but no other specimens are currently known.

MAYFLY TAXA DESCRIBED BY ALBERT-EDOUARD PICTET

Baetis flava A.-E. Pictet, 1865

Baetis flava A.-E. Pictet, 1865: 24, pl. 3, figs 1-6.

Siphlonurus flavidus. – Eaton, 1871: 125 (transfer).

Siphlonurus flavidus. – Ulmer, 1920b: 135 (transfer).

Accepted name: Siphlonurus flavidus (A.-E. Pictet, 1865).

Locus typicus: “… à San Ildefonso...”.

Type material: MHNG; lectotype, ♂ imago [Puthz design.]; 620 Granjas 48 coll. Pictet / 156 female [sic] / Siphlonurus flavidus (Pictet) (= Baetis flavida) Pictet, V. Puthz vide 1969, spec. in alcohol, wings & genitalia on microsc. slides. – MHNG; 2 ♂ and 1 ♀; same data as for lectotype; also in alcohol.

Remarks: Puthz (1977) redescribed the species from the type series and designated a lectotype. This taxon seems to be endemic to the Iberian Peninsula.

Baetis sylvicola A.-E. Pictet, 1865

Baetis sylvicola A.-E. Pictet, 1865: 24, pl. 3, figs 7-12.

Heptagenia sylvicola. – Eaton, 1871: 147 (transfer).

Epeorus sylvicola. – Eaton, 1887: 6 (transfer).
Accepted name: *Epeorus sylvicola* (A.-E. Pictet, 1865).

**Locus typicus:** “... à San Ildefonso...”.

**Type material:** MHNG; ♂ lectotype [Puthz design.]; *Baetis sylvicola* Edouard Pictet / 4 males / Granjas Juillet 1859 / 4 / 620 Granjas 48 Espagne coll. Pictet / *Epeorus sylvicola* (Pictet) (= *Baetis sylvicola* Pictet) male / LECTOTYPUS Puthz 1971 Genitalia im mikrosk. Präp.

**Remarks:** Besides the lectotype and according to Puthz (1973c), two other specimens have been transferred to ethanol. Two damaged paralectotypes are still pinned, but only the thorax of one specimen and the thorax and hind legs of the other are still present. One specimen has a label saying “Hind wing of *Epeorus sylvicola* Ed Pictet, Eaton exam[navit].” and the other the following: “*Epeorus sylvicola* (A.-E. Pictet) Syntypes because of fragmental character not designated as paralectotypes PUTHZ, 1971”.

Since Puthz (1973c), it has been admitted that the central European species known as *Epeorus assimilis* Eaton, 1885 is a junior subjective synonym of *E. sylvicola*. However, more recent investigations by Thomas et al. (2000) indicate that *E. assimilis* is a closely related but distinct taxon. Hence, *E. sylvicola* seems restricted to the Iberian Peninsula and also to North Africa.

**OTHER MAYFLY TAXA DESCRIBED FROM SPECIMENS OF THE PICTET COLLECTION**

In order to avoid presenting the complicated nomenclatural history of these taxa, we list them with their current names in this chapter and in the following one.

**Ecdyonurus (Helvetoraeticus) picteti**
(Meyer-Dür, 1864)

_Baetis_ sp. ? Picteti Meyer-Dür, 1864: 221.  
_Heptagenia Picteti._ – Eaton, 1871: (transfer).  
_Ecdyonurus picteti._ – Puthz, 1975: 321 (transfer).  
_Ecdyonurus (Helvetoraeticus) picteti._ – Bauernfeind & Soldán, 2012: 279 (transfer to new subgenus).

**Locus typicus:** “… Muraglbach bei Pontresina, im Rosegthal, an Chalchagn und am Bernina bis 6700‘ ü.M...”.

**Type material:** MHNG; lectotype, ♀ subimago; 620 Engadin 48 Alpes coll. Pictet / val Muragl 25 (6) / *Baetis Picteti Meyer Engadin / Ecdyonurus picteti* (Meyer-Dür) ♀ Lektotypus Puthz 1973 (Fig. 7).

**Remarks:** Puthz (1975) was the first to rediscover specimens of this species in F.-J. Pictet’s collection. Besides the lectotype, there is another female subimago with the following labels: 620 Pontresina 48 Alpes coll. Pictet / Pontresina 5/6 selten / Ecdyonurus picteti (Meyer-Dür) ♀ Paralektotypus Puthz 1973.

**Choroterpes picteti** (Eaton, 1871)

_Potamanthus marginatus._ – F.-J. Pictet, 1843-1845: 208-211, pl. 55, figs 4-5 (nec _Ephemera marginata* Linne, 1767; misidentification).  
_Leptophlebia Picteti._ – Eaton, 1871: 87 (original description).  
_Habrophlebia Picteti._ – Eaton, 1881: 195 (transfer).  
_Choroterpes picteti._ – Eaton, 1884: 105 (transfer).

**Locus typicus:** “… aux environs de Genève...”.

**Type material:** Syntypes (male and female imago, female subimago), not traced and probably lost.

**Remarks:** From F.-J. Pictet’s text and illustrations it is clear that he based his descriptions on material from the surroundings of Geneva. Obviously Eaton (1871) based his description of _Leptophlebia picteti_ only on F.-J. Pictet’s description of _P. marginatus_, which he literally translated into Latin, and according to the International Commission on Zoological Nomenclature (1999: article 72.4.2) the type series consists of the material originally examined by F.-J. Pictet. When Eaton erected the genus _Choroterpes_ Eaton, 1881, he based it exclusively on his new species _C. lusitanica_ Eaton, 1881. It was only later (Eaton, 1884: 105) that he considered _C. lusitanica_ a junior subjective synonym of _C. picteti_ and consequently used this name for the type species of _Choroterpes_.

In the MHNG exists at least one specimen which had
been examined by Eaton: male / 620 48 Espagne coll. Pictet / 66 / 31 / M. 2 Selys Longchamps / Chloroterpes [sic] Picteti Eaton Eaton type. The material is in alcohol and in poor condition, in several pieces, and it is completely faded, as are the labels. The origin of the specimen (Spain) indicates that it came from A.-E. Pictet’s collection and was seen and labelled by Eaton himself, but obviously at a later time than the original description in 1871. The specimen is most probably not part of the original type series and therefore not available for lectotype fixation (International Commission on Zoological Nomenclature, 1999: article 74.1) and Eaton’s remark on the label (“type”) cannot be understood as a valid neotype designation (International Commission on Zoological Nomenclature, 1999: article 75.3).

There is also a pinned specimen in the MHNG placed under the name Leptophlebia marginata L. It is a male subimago with the following labels: 620 Burgdorf 48 Suisse coll. Pictet / Pot. Marginatus. This specimen (probably collected by Meyer-Dür) also belongs to C. picteti but can also not be considered to represent type material.

**Teloganopsis hispanica** (Eaton, 1888)

*Ephemerella hispanica* Eaton, 1888: 306.

*Serratella hispanica.* – Gonzalez del Tanago & Garcia de Jalon, 1983: 149 (transfer).

**Locus typicus:** “Spain, San Ildefonso, Segovia”.

**Type material:** MHNG; syntype, ♂ imago; 620 48 Espagne coll. Pictet / n°5 Potam. / 22 / Potam. n.sp. / *Ephemerella hispanica* Eaton MS sp. nov. Eaton type [abdomen missing] (Fig. 8). – Rijksmuseum van Natuurlijke Historie, Leiden; syntype, female subimago.

**Remarks:** The MHNG specimen is damaged and was already broken when Eaton (1888) described it, since he gave no information about abdominal colouration, forceps and cerci. Nevertheless, the specimen fits well the concept that following taxonomists have applied (Studemann & Tomka, 1987), especially regarding the shape of fore and hind wings.

The second syntype (a female subimago, “female allotype” sensu Kimmins, 1960: 304) should be in Herman Albarda’s collection at the Rijksmuseum van Natuurlijke Historie in Leiden, The Netherlands.

**Rhithrogena picteti** Sowa, 1971

*Baetis semicolorata.* – F.-J. Pictet, 1843-1845: 208-211, pl. 22, figs 4-7 (nec *Baetis semicolorata* Curtis, 1834; misidentification).

**Rhithrogena semitincta.** – Kimmins, 1936: 280, fig. 2 (nec *Baetis semitincta* Pictet, 1843; misidentification).

**Rhithrogena picteti** Sowa, 1971: 903 (original description).

**Locus typicus:** “… la Versoix à Richelien...”.

**Type material:** MHNG; holotype, ♂ imago; bords de la Versoix à Richelien vers 450 m.; 19.V .1968; leg J.C. Régnier. – MHNG; paratypes, 3 ♂ imagines; same data as for holotype.

**Remarks:** Sowa (1971) described this species based on fresh material collected by J.-C. Régnier, a former technician at the MHNG, in the Versoix River, close to Geneva. In the F.-J. Pictet collection at the MHNG there are several pinned specimens which had also been studied by Kimmins (in part; 1936) and by Sowa. However, contrary to what Sowa stated, these specimens do not constitute the “original material” studied by F.-J. Pictet (“... commune dans les ruisseaux des environs de Genève”). The old MHNG series consists of 12 male imagines labelled: 620 Hindelbank 48 Suisse coll. Pictet / Rh. semicolorata Curtis / Rhithrogena picteti Det. R. Sowa. This locality is not mentioned in the original work of F.-J. Pictet and the material was certainly collected later by Meyer-Dür.

**Asthenopodes picteti** Hubbard, 1975

*Palingenia albicans* Percheron in Guerin & Percheron, 1838. – F.-J. Pictet, 1843-1845: 149-150, pl. 13, figs 1-3 (nec *Ephemera albicans* Percheron in Guérin & Percheron, 1838; misidentification).

**Asthenopus albicans** (F.-J. Pictet, 1843) (unavailable species name). – Ulmer, 1921: 239 (transfer).

**Asthenopodes albicans** (F.-J. Pictet, 1843) (unavailable species name). – Ulmer, 1924a: 27 (transfer).

**Asthenopodes picteti** Hubbard, 1975: 111 (establishment of available species name). – Molineri et al., 2015: 73 (reverse transfer).

**Asthenopus picteti.** – Hubbard & Domínguez, 1988: 209 (transfer).

**Locus typicus:** “… il provient du Brésil” [Rio de Janeiro province, Brasil].

**Type material:** NMW; 1 ♂, presumably a syntype; Shtt[= Schott]. [blue paper] / Pictet vidit / *Asthenopus albicans* Pict. Type [Ulmer’s handwriting] / TYPE
[printed on red paper]. Damaged, most legs, hind wings and abdomen missing. – NMW; 1 ♂, presumably a syntype; Pb [= probably reads Paraíba, collected by Schott]. [blue paper] / Pictet vidit / Campsaurus truncatus Ulmer [in Ulmer’s handwriting].

Remarks: The status of the NMW material is not altogether clear; these are probably syntypes (male images). The first specimen had been collected by H.W. Schott during 1817-1821 in Brazil, Rio de Janeiro province. Although F.-J. Pictet stated “L’exemplaire figuré m’a été communiqué par le Musée de Vienne, …”, Ulmer (1921: 239) found two male specimens arranged under the name Palingenia albicans Pictet and identified the second specimen as Campsaurus truncatus Ulmer, 1920a. It is not known whether F.-J. Pictet really examined both specimens or rather Kollar later added a second male when he labelled the material. F.-J. Pictet’s description and illustration, however, agree with the specimen labelled “type” by Ulmer, suggesting that this specimen actually represents the holotype by monotypy. Palingenia albicans F.-J. Pictet, 1843 nec Ephemera albicans Percheron, 1838, which was transferred as Campsaurus albicans by Eaton (1883), has a long and controversial nomenclatural history. Palingenia albicans F.-J. Pictet, 1843 is actually a misidentification, not a formally established species name. Ulmer (1924b) based his genus Asthenopodes on this incorrectly named taxon, and Hubbard (1975) proposed a valid name (nomen novum) in honour of F.-J. Pictet, because the species-group name used by Ulmer was not available (species-group name wrongly applied through misidentification; International Commission on Zoological Nomenclature, 1999: article 49).

OTHER VALUABLE MAYFLY SPECIMENS HOUSED IN NMW AND MHNG

During the preparation of his monograph, F.-J. Pictet also used several specimens from the Vienna Museum collection for his (re)descriptions of taxa of previous authors. Usually they are recognizable by the label “Pictet vidit”. The collection in Geneva houses some uncommon species, which are also briefly listed here.

Hexagenia limbata (Serville in Guerin, 1829)
Ephemera limbata Serville in Guérin, 1829: 384, pl. 60, figs 7-9.
Palingenia limbata. – F.-J. Pictet, 1843-1845: 146-148, pl. 12, figs 1-3 (transfer).
Hexagenia limbata. – Walsh, 1863: 197 (transfer).

Material: NMW; ♂ subimago; Am[ericana]. Parreyss / Pictet vidit. – NMW; ♀ subimago; 190 Par[reyss]. / Pictet vidit; legs and abdomen missing.

Campsaurus dorsalis (Burmeister, 1839)
Palingenia dorsalis Burmeister, 1839: 803. – F.-J. Pictet, 1843-1845: 153-154, pl. 13, fig. 5.
Campus dorsalis. – Eaton, 1883: 41 (transfer).

Material: NMW; 6 ♀ subimagines; N[atterer]. c[ollectio]. Y[panema]. [blue paper; presumably collected by J. Natterer in Ipanema, Sao Paulo, Brasil, 23°26’S 47°36’W] / Pictet vidit [slightly damaged].

Remarks: F.-J. Pictet mentioned only “deux exemplaires qui m’ont été communiqués par le musée de Vienne”. It seems probable that Kollar sent just a sample (2 specimens) to F.-J. Pictet but afterwards labelled the complete series accordingly.

Palingenia longicauda (Olivier, 1791)
Ephemera longicauda Olivier, 1791: 418.
Palingenia longicauda. – F.-J. Pictet, 1843-1845: 155-157, pl. 14, 14bis, 15, fig. 1 (transfer).

Material: NMW; 2 ♂ imagines; Ungarn, Fríveldsy leg[.]

Remarks: F.-J. Pictet (1843: 157 “de Hongrie”) mentioned specimens provided by Kollar. This probably relates to the mentioned material, but no specimens with F.-J. Pictet’s label are to be found in the NMW collection.

Baetis fuscatus (Linnaeus, 1761)
Ephemera bioculata Linnaeus, 1758: 547 [nomen suppressum; see International Commission on Zoological Nomenclature, 1966: 209].
Cloe bioculata (Linnaeus, 1758). – Pictet, 1843-45: 244, pl. 4-35 (transfer).
Baetis fuscatus (Linnaeus, 1761). – Eaton, 1871: 111 (synonymization).

Material: NMW; 5 ♂ imagines [without data]; Pictet vidit / Baetis venustulus Etn. [Ulmer’s handwriting].

Remarks: F.-J. Pictet (1843: 244) did not expressly mention any specimens from Austria.
Alainites muticus (Linnaeus, 1758)

Cloe pumila. – F.-J. Pictet, 1843-1845: 253, pl. 40, fig. 2. (nec Cloe pumila Burmeister, 1839; misidentification).

Baetis pumilus. – Eaton, 1870: 5 (transfer).

Baetis muticus (Linnaeus, 1758). – Bengtsson, 1912: 7 (synonymization).

Alainites muticus (Linnaeus, 1758). – Waltz et al., 1994: 34 (transfer).

Material: NMW; 3 ♂ imagines; “Pictet vidit”, one male labelled “Baden [about 22 km southeast of Vienna], Kollar”.

Remarks: F.-J. Pictet mentioned “M. Kollar m’en a communiqué quelques exemplaires des environs de Vienne”. A female specimen of B. muticus bears the label: vitreipennis Kllr Pictet Austria [Kollar’s handwriting?] / Baetis pumilus Burm. [Ulmer’s handwriting]. Kollar’s manuscript name “Cloe vitreipennis” obviously has never been published and is therefore a nomen nudum.

Caenis horaria (Linnaeus, 1758)

Caenis lactea. – F.-J. Pictet, 1843-1845: 276-277, pl. 43, figs 1-4, pl. 44 (nec Oxycypha lactea Burmeister, 1839; misidentification).

Caenis horaria (Linnaeus, 1758). – Jacob, 1974: 94.

Material: NMW; 2 ♂ imagines, 1 ♂ subimago; coll. Nat. Mus. Wien [without locality data].

Remarks: F.-J. Pictet did not mention that he received material from Kollar, but in the NMW three specimens presumably had originally been deposited under the name Caenis lactea Pictet and identified by Malzacher as: Caenis horaria (Linnaeus, 1758) / Malzacher det. 1983.

Caenis luctuosa (Burmeister, 1839)

Oxycypha luctuosa Burmeister, 1839: 797.

Caenis luctuosa. – F.-J. Pictet, 1843-1845: 283-284, pl. 45, fig. 3 (transfer).

Material: NMW; 1 ♂, 1 ♀ (without data); Pictet vidit / Caenis luctuosa (Burmeister, 1839) / Malzacher det. 1983.

Remarks: F.-J. Pictet did not mention that he received material from Kollar. The female specimen presumably had originally been placed under Caenis oophora (see above).

Ametropus fragilis Albarda, 1878

Ametropus fragilis Albarda, 1878: 129.

Material: MHNG; 1 ♂ imago; 600 81 Italie Ancienne Collection / 192 61 / 30 / Ametropus fragilis Albarda Eaton determ. [abdomen broken, remaining parts with fungal growth] (Fig. 9B).

Remarks: This specimen is intriguing. The identification made by Eaton is correct, because it is based on the peculiar arrangement of veins in the cubital and anal fields (Fig. 9A). Eaton (1885) did not mention this specimen from Italy, restricting the distribution of the species to the type locality in Holland. It is therefore possible that the specimen was identified by Eaton after the publication of his monograph. The first record of A. fragilis from Italy was by Turin et al. (1997). These authors suspected this surprising discovery to be due to a recent introduction with fishes from Eastern Europe. The fact that this specimen was collected more than 150 years ago indicates that further investigations on the distribution of this species in Italy are needed and that its occurrence may be natural. The recent discovery of A. fragilis in Croatia points in the same direction (Cuk et al., 2015).

Rhithrogena cincta Navás, 1921

Rhithrogena cincta Navás, 1921: 14, fig. 1. – Thomas, 1968a: 212 (lectotype designation).

Material: MHNG; 1 ♂ imago; 620 Pyrénées 48 Espagne coll. Pictet / Pyrénées Juillet 1859 / 149 [handwriting] / 24 [printed] / Potamanthus n. sp. / Rhithrogena aurantiaca Burm. Eaton determ. [fore legs

Fig. 9. Ametropus fragilis Albarda, 1878. (A) Male imago in dorso-lateral view; A1: first anal vein, CuP: posterior cubital vein. Scale bar: 1 mm. (B) Corresponding labels.
missing, forewings damaged, genitalia rehydrated and put in microvial with glycerine].

**Remarks:** This specimen has certainly been collected by A.-E. Pictet on his way back to Geneva when he left San Ildefonso in mid July 1859. The identification by Eaton followed the common interpretation of *Baetis aurantiaca* at that time. Since then, it has been shown that Burmeister’s concept of *R. aurantiaca* applies to an *Ecdyonurus* species (Puthz, 1973b). *Rhithrogena cincta* has been redescribed by Thomas (1968a), who designated from Navás’ collection a lectotype originating from Vilallonga in the Spanish Pyrenees. The specimen collected by A.-E. Pictet completely fits the diagnosis proposed by Thomas (1968a), particularly in the shape of the styliger plate with well marked postero-lateral protuberances, in the marking of the abdomen, and in the marking of the coxae with two elongated stripes (see Thomas 1968a: pl. I, figs 2-3, pl. II, fig. 2 and Fig. 10). Penes lobes clearly correspond to those of the *diaphana*-group, but differences between *R. diaphana* and *R. cincta* are insignificant. The status of this species should be solved on the basis of new material. This specimen is only the second one known for this species.

![Fig. 10. Rhithrogena cincta Navás, 1921. Male imago in lateral view. Scale bar: 1 mm.](image)

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