

CORRECT AUTHORSHIP OF THE NAME *PHALAENA RICINI* AND THE NOMENCLATURAL STATUS OF THE NAME *SATURNIA CANNINGI* (LEPIDOPTERA: SATURNIIDAE)

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Abstract - The eri silkmoth (*Samia ricini*) is the third most important silk producer in the world. The moth exists only in captivity, having been artificially selected from a wild progenitor, generally recognized as *Samia canningi* (Hutton) of the Himalayas. In the taxonomic and sericultural literature, there has been considerable confusion and inconsistency regarding the correct authorship of the name *Phalaena ricini* as originally described. The author of *P. ricini* has most often been cited as Boisduval, but other researchers have attributed authorship to Anderson, Jones, Donovan, or Hutton. The original description was located, thus revealing that *P. ricini* should be credited to Sir William Jones. In turn, the date of publication fixes the name *P. ricini* as the senior subjective synonym for both the wild and cultivated entities, thereby forcing *Saturnia canningi* into synonymy.

Key words: Assam, eri silk, ericulture, India, Sir William Jones, wild silk

INTRODUCTION

The eri silkmoth (Fig. 1a), currently recognized as *Samia ricini*, is one of the most important silk producers in world commerce, among the wild silks second only to Chinese tussah derived from *Antheraea pernyi* (Guérin-Méneville). Most eri silk is produced in northeastern India, but ericulture is also carried out in other parts of India (CSB 2006), as well as in Ethiopia, Brazil, Thailand, Vietnam, China, and other countries. The natural color of this unique silk is creamy-white or beige. The finished textiles look and feel like cotton, yet are more durable. For centuries, eri silk has been an integral part of the culture of the Indigenous Peoples of northeastern India (Fig. 1b), as well as people in Bhutan and Tibet. Although eri silk is little known to westerners, it is currently becoming fashionable with the emerging middle class of India, in the form of scarves, cushion covers, bed linens, and shawls (Sharma et al. 2009, Badola & Peigler 2012). Although called *eri* in Bengali and Asamiya, this silk is called *endi* in Hindi and Oriya, so the term *endi* silk is occasionally used by writers in English.

Samia ricini exists only in captivity, and is entirely of sericultural origin, having been derived centuries, or more likely millennia, ago from the Himalayan taxon that was later described as *Saturnia canningi* Hutton, 1859, now recognized as *Samia canningi*. Peigler and Naumann (2003) demonstrated this relationship based on morphological, cytological, and sericultural evidence. The sericultural silkworms are disease-resistant, the moths cannot fly, and the cocoons are large and puffy and lack peduncles, all features that reflect a long history of artificial selection. The larvae are reared indoors primarily on leaves of castor bean (*Ricinus communis* L.; Euphorbiaceae), which gave rise to the name *ricini*. In much of the older literature, *ricini* and *canningi* were considered to be subspecies of *Phalaena cynthia* Drury, now recognized as *Samia cynthia*.

Despite their relationship, it can be argued that the wild and sericultural entities should retain separate names (Peigler & Naumann 2003). There are numerous examples in which artificially selected animals and plants carry separate scientific names from their wild progenitors. Opinion 2027 (ICZN

2003) conserved the binomials of 17 species of wild animals, including *Bombyx mandarina* (Moore), which was eventually identified as the wild ancestor of *Bombyx mori* (Linnaeus), the mulberry silkmoth. However, because *ricini* and *canningi* were not specifically cited in Opinion 2027, such treatment cannot automatically be applied.

The genus *Samia* was revised by Peigler and Naumann (2003), but those authors were unable to reliably determine the original and correct author to which the name *ricini* should be attributed. They summarized the issues pertaining to the confusion and uncertainty of the correct authorship of the name, but reluctantly decided to list the authorship of *ricini* as “Anonymous,” citing Articles 14 and 50.1 of ICZN (1999). Based on the results presented herein, the name *Saturnia canningi* must be placed into the synonymy of *Phalaena ricini*.

NOMENCLATURAL HISTORY

Many published works on Saturniidae (e.g., Seitz 1926a–c, Bouvier 1936, Ferguson 1972, Arora & Gupta 1979) or sericulture (e.g., Hutton 1863, Rondot 1887, Watt 1908, Srivastav & Thangavelu 2005) have attributed the name *ricini* to Boisduval ([1855]). Following a passage in which he rejected the manuscript name *Saturnia Dupuiseti*, Boisduval wrote, “Je suis d’avis toutefois qu’il sera préférable de donner à cette espèce le nom de *Saturnia Ricini*, qui rappellera sa manière de vivre” [I am of the opinion however that it will be preferable to give this species the name of *Saturnia ricini*, which will recall its manner of subsistence]. Subsequent authors possibly assumed that Boisduval had validated a name that had only been mentioned *in litt.* by James Anderson (see below).

Silbermann (1897) cited the species and authorship as “*Attacus ricini* (Boisduval, Jones).” Kirby (1892), Packard (1914), Aue (1933), Sharma et al. (2009), and other authors considered the original description of *ricini* to be published by Hutton (1859). Others credited James Anderson (e.g., d’Abrera 1998) or Edward Donovan (e.g., Esaki 1973, Zhu & Wang 1996).

There have, in fact, been published clues about the correct

authorship of *P. ricini*. Donovan (1798) perhaps offered the best hint, writing in a lengthy footnote, “A Gentleman resident in the East Indies, speaks of a large Phalaena, producing silk in that country: ‘We have a beautiful silk worm north-east of Bengal, that feeds on the Ricinus, whence I call it Phalaena Ricini: it is sea green, with soft spines, very large, and voracious, and spins a coarse, but strong and useful silk. The moth is of great size, with elegant dark plumage.—Is it known to European Naturalists?’—In a collection of papers published by Dr. ANDERSON, in MADRAS, 1788, 1789.” Moore (1859) listed the species as “*Attacus ricini* (Boisduval)” but in the first line of the synonymy wrote: “?Phalaena ricini, Sir W. Jones.” Hutton (1863) listed “*Phalaena Ricini*, Sir W. Jones, 1791” in his brief synonymy of the species, but as indicated above, considered the authorship to belong to Boisduval. The earliest published use of the name listed by Schüssler (1933) was “*ricini* [Jones, (i. l.) Letter to Dr. Anderson (17.5.1791)]” (“Jones” is the Latinized form of Jones, as Latin technically has no letter J.) Later authors (e.g. Bowers & Thompson 1965, Meister 2011) have occasionally attributed the name *ricini* to William Jones, probably following some of these previous writers.

Roxburgh (1804) wrote “The late Sir William Jones mentions this animal, in a letter to Dr. Anderson, dated 17th May 1791, under the name *Phalaena Ricini*, a name that I cannot well continue for fear of confounding it with Fabricius’s *Bombyx Ricini*; which is certainly a very different species.” Concern was also expressed by Peigler and Naumann (2003) that the name of the eri silkmoth might be found to be a junior primary homonym of *Bombyx ricini*, a name applied by Fabricius (1775) to another *Ricinus*-feeding moth in the Noctuidae (Arctiinae), if the specific epithet of the saturniid had been first published in combination with *Bombyx*. If that had been the case, the saturniid would have required a replacement name. However, because we herein demonstrate that *Phalaena* is the original generic name for the saturniid, there is no primary homonymy with the arctiine, a colorful moth found in Sri Lanka and India, and now known as *Pericallia ricini* or *Olepa ricini*.

ORIGINAL DESCRIPTION

We discovered that Anderson (1791) published a portion of the letter in which Jones named *Phalaena ricini*, as well as provided a brief description of the larva and adult. This is the passage quoted by Donovan (1798), but his citation was inaccurately dated. Anderson copied this extract in a letter to Sir Charles Oakeley (1751-1826) dated 6 June 1791 as follows (Fig. 1c):

A letter just received from Sir William Jones is so flattering to our endeavours, I cannot omit communicating the following Paragraph.

ARIFNAGAR, 17th May 1791.

I thank you heartily for the pleasure I have received from your interesting letter to Government on the planting Mulberry Trees on the Coast, and for the answer to it,—which gives me hopes that your public-spirited proposal will be carried into Effect. We have a beautiful Silk-worm in the northeast of

Bengal, which feeds (wholly I believe) on the Ricinus, whence I call it Phalaena Ricini: it is Sea green with soft spines, very large and voracious, and spins a coarse, but strong and useful silk; the moth of a great size, and with elegant and dark Plumage. Is it known to European Naturalists?

James Anderson. Born to a wealthy family near Edinburgh, Scotland, James Anderson (1738-1809) was a medical doctor who served as a surgeon aboard ships owned by the East India Company, an important English mercantile firm and political entity that maintained a far-reaching trading empire specializing in Asian cotton, silk, dyes, spices, and opium (Constable 1810, Roy 2012). The East India Company’s conspicuous presence in India led Anderson to relocate to that country where he later served as Physician-General for the firm. He lived the remainder of his life at Madras, now known as Chennai, the capital of the Indian state of Tamil Nadu, on the Coromandel Coast (Anonymous 1792, Constable 1810). Anderson was deeply interested in natural history and maintained an extensive garden near his home. His botanical and horticultural contributions are well known (Raman 2011). Anderson studied the cultivation of silk and indigo, two commodities which he believed were very important to the Indian people (Anonymous 1792). He was also fascinated with scale insects, specifically “cochineal” species (Hemiptera: Coccoidea), which are used in the production of crimson dyes (Constable 1810). Through these pursuits he described eight new species of scales (Williams 2002).

Anderson’s correspondence was extensive and discussed his various studies of cochineal insects, sericulture, botany, and other matters. Intending to “disseminate useful knowledge as universally as possible in India,” Anderson published many of his letters in a series of booklets between 1787 and 1796 (Anonymous 1792, Williams 2002). Copies of these publications were sent to his foreign correspondents, thus some have made their way into various libraries, including those in the United States. Several installments were microfilmed, and one or two titles are now available as on-demand reprints. Copies of the original publications are quite rare.

Sir William Jones. Sir William Jones (1746-1794) (Fig. 2) must not be confused with the naturalist of the same name, William Jones (1745-1818) of Chelsea. Born in London, Sir William was raised among the elite of England, where his father was a fellow of the Royal Society and collaborated with Isaac Newton (SDUK 1835, Brine 1995). Jones possessed a photographic memory and at an early age demonstrated an extraordinary aptitude for linguistics (he spoke and/or understood 28 languages). He attended Oxford and worked as a barrister (Edgerton 1946). By his early 20s, he was established as a significant Orientalist and later published works on Persian, Arabic, and Sanskrit languages. In 1783, he was knighted and appointed to the Judgeship on the Supreme Court in Bengal, India. The following year he founded the Asiatic Society of Bengal (later called the Asiatic Society of Bengal). Jones also had broad interests in history and natural science. He wrote several scholarly essays during his residency in India, including works on systematic botany, anthropology, archaeology, astronomy, geography, and mythology (Brine 1995). He was

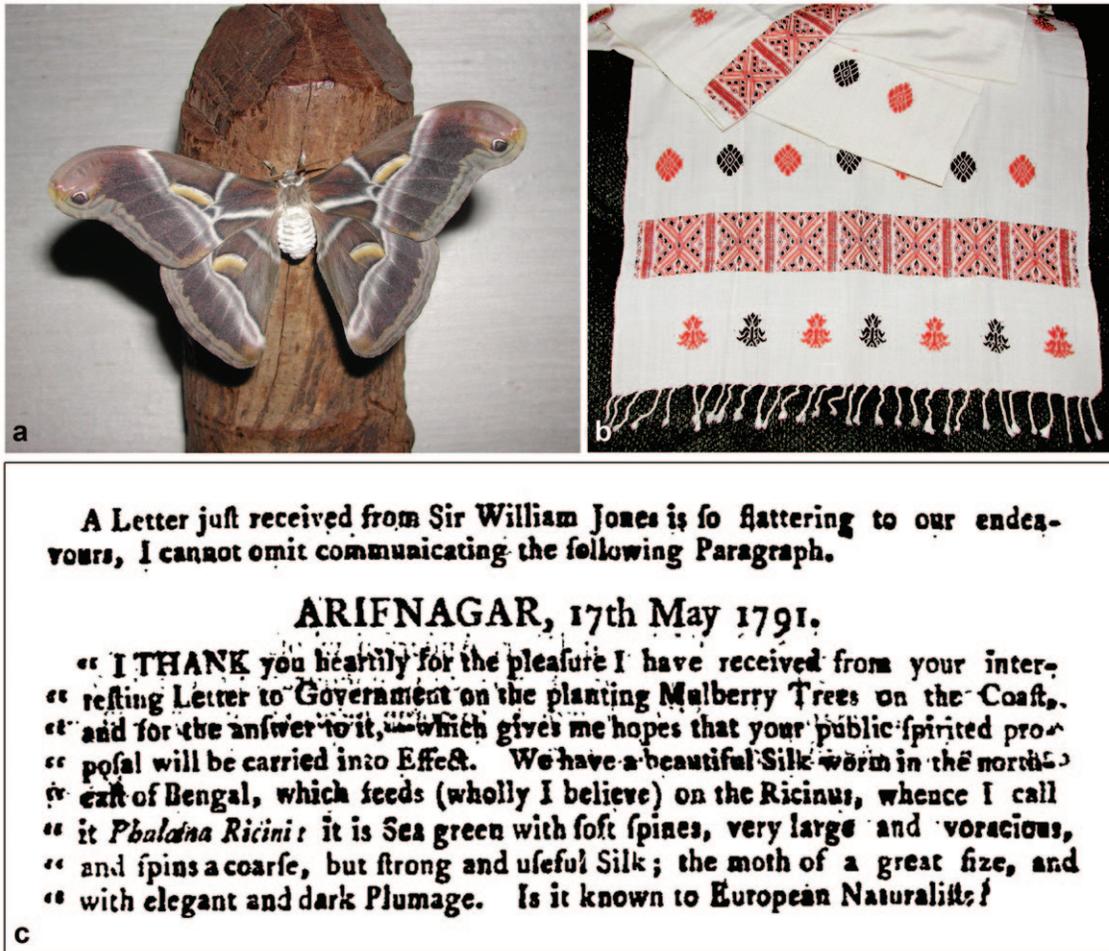


Figure 1. *Samia ricini* and related images; a) dorsal adult female; b) Woman’s chaddar (shawl) of natural colored eri silk, handspun and handwoven in Assam, brocaded with typical Assamese motifs (Musée des Confluences, Lyon); c) Relevant text from Anderson (1791; from microfilm, combined from pp. 43 and 44).

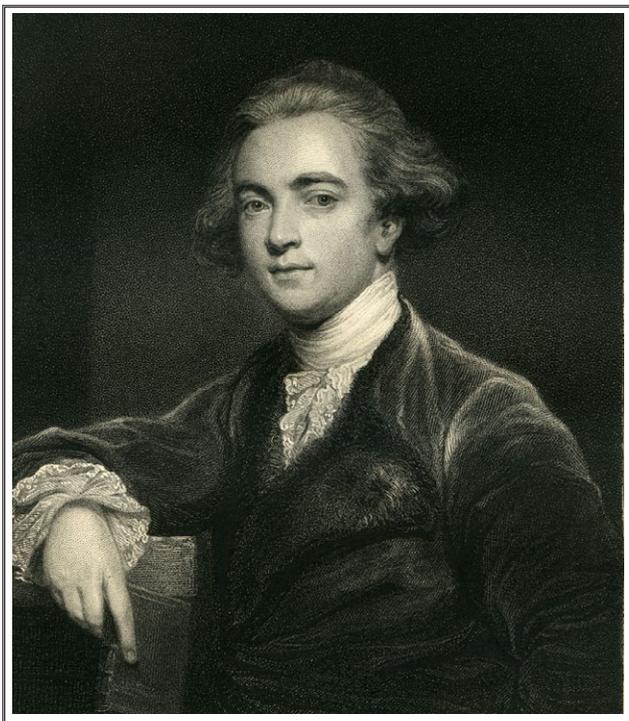


Figure 2. Engraved portrait of Sir William Jones (SDUK 1835).

keenly interested in botany and it reportedly “constituted the principal amusement of his leisure hours” (Edgerton 1946). He contributed seeds and plants to the Botanical Gardens in Calcutta and Kew Gardens in London (Edgerton 1946, Kennedy 1995). Jones died in India of a liver ailment at the age of 47.

The location of Arifnagar, where Jones wrote his letter to Anderson, was a neighborhood of Calcutta (now Kolkata), Bengal, India. Jones wrote an unpublished list of plants growing between Arifnagar and Khidirpur in Calcutta, which is preserved at the Elmer Holmes Bobst Library, New York University.

CONCLUSION

The name *Phalaena ricini*, as proposed by William Jones in his letter to James Anderson, satisfies the criteria of availability except for actual publication. The latter was satisfied when Anderson (1791) published Jones’ comments. Therefore, per Article 50.1.1 of the Code (ICZN 1999), the proper name of this nominal taxon is *Phalaena ricini* Jones, 1791. The example given for this provision in ICZN (1999) is identical with the present case, where a letter was published verbatim by Anderson, explicitly demonstrating in the work itself that Jones alone was responsible both for the name and for the

description which made it available. Although this taxon is of artificial origin, the type locality is proposed to be “northeast of Bengal,” India, as recognized by Jones.

Prevailing usage of the name *canningi* cannot be maintained per Article 23.9.1 of ICZN (1999), as *ricini* has been employed numerous times in the literature since 1899 (Peigler and Naumann 2003). For the purposes of nomenclatural stability, it may be desirable to petition the International Commission on Zoological Nomenclature to conserve the name *Saturnia canningi*, Hutton, 1859, for the wild progenitor of this species, citing Opinion 2027 (ICZN 2003).

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