

JOHANNES ALBERTUS SCHLOSSER, THE FIRST AUTHOR DESCRIBING *ARTEMIA SALINA* (L.) (BRANCHIOPODA: ANOSTRACA): A BIOGRAPHICAL SKETCH

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ABSTRACT

Here we provide information about the life of Johannes Albertus Schlosser (1733-1769). Schlosser was a Dutch medical doctor and naturalist. He was a Fellow of the Royal Society in London and provided the first description of *Artemia salina* (L.) in 1755. The drawings showing male and female animals of this species published in 1756 together with an excerpt of Schlosser's original description were drawn by Matthew Maty (1718-1776). Schlosser's name is today still linked to three other taxa: he described in 1768 the Amboina sail-finned lizard. Both a sea squirt species and the Giant mudskipper carry the name "*schlosseri*" in honour of him and his work.

KEY WORDS: *Artemia*, description, pre-Linnaean

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THE LETTER

Johannes Albertus Schlosser (given names also: Jan Albert, John Albert, Johann Albert, Johannis Alberti) was baptized on 14 June 1733 in Utrecht (Utrecht Municipal Archives 711: 21, page 154) as the son of a lawyer and named after his grandfather Jan Albert Schlosser. Johannes Albertus studied medicine and enrolled on 22 September 1750 in Leiden University with previous years of study being acknowledged (Rieu, 1875; transcribed from the original files as "Johannes Albertus Schlosse"). Schlosser underwent the Final Doctoral Examination on the 12 June 1753 in Leiden when he was not yet 20 years old. His doctoral thesis was a truly experimental one and provided – amongst other things – evidence for the presence of iron in the salts of human urine (Schlosser, 1753). The study of minerals in living and in non-living nature was the primary passion of Schlosser as obviously declared to contemporary naturalists in his later letters (Smith, 1821).

His activities for the first two years after his doctoral promotion are not entirely clear. The famous Dutch botanist Johannes Burman (1707-1779) noted in a letter sent in 1759 to Carl Linnaeus (1707-1778) that Johannes Albertus Schlosser "travelled (once) through France and England" (Burman, 1759). We might assume that in 1754 he was at least briefly in France as he reported that he collected "minerals" at Meudon near Paris (Schlosser, 1755a). There is no doubt that Schlosser arrived in London in 1755 and stayed in England for scientific studies for almost the whole year. During this time he travelled through Hampshire, Dorset, Somerset, Cornwall, and Surrey to collect fossils or see geological phenomena (Schlosser, 1755b), and he was a guest of William Borlase (1695-1772; Schlosser, 1755c).

Some of his studies were published during this time as letters in the "Philosophical Transactions" of the Royal Society and reported new animals (Schlosser and Ellis, 1755) and observations about lime water (Schlosser, 1755d). Because of the support by Emmanuel Mendes da Costa (1717-1791), a colourful person, who was working as the society's clerk at that time (Siemer, 2001), Schlosser was elected as a Fellow of the Royal Society in January 1756 (Thomson, 1812; see Table 1). Around the same time he returned to Amsterdam and probably started to practice there as a physician. Around 1758 Schlosser obtained a "medical position" outside of Amsterdam (Burman, 1759).

While still in England, Schlosser wrote on the 7 October 1755 a letter addressed to Matthew Maty (1718-1776), the Secretary of the Royal Society in London and editor of the "Journal Britannique," describing a new "insect genus" found in the salt water at Lymington on the English coast. Maty published not only an excerpt of this letter in his journal (Schlosser, 1755e), but also added that he obtained such "insects" from "his friend Schlosser," investigated the animals via a microscope (provided by John Cuff) and produced drawings on copper plate showing a male and a female animal both in original size and enlarged (Maty, 1755). However, a panel made from Maty's drawings was not included in the printed journal (cf. Siebold, 1871; Kuenen and Baas Becking, 1938). The extract of Schlosser's letter was re-published both in a French journal (Schlosser, 1756a) and – translated into German – in the "Hamburger Magazin" (Schlosser, 1756b), in both cases together with illustrations (Fig. 1). The erroneous conclusion of Kuenen and Baas Becking (1938) that the drawings were made by Schlosser is probably due to the fact that the re-publication

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Table 1. Memberships of J. A. Schlosser.

Scientific organisations:

Fellow of the Royal Society of London (elected 22 January 1756)

Member of the Royal Zeeland Society of Science in Vlissingen/Netherlands (Koninklijk Zeeuwsch Genootschap der Wetenschappen (founder member 26 July 1768)

Non-scientific organisation:

'Directeur' and Member of the (Dutch) Society to Rescue People from Drowning (Maatschappij, tot redding van Drenkelingen opgerecht binnen Amsterdam)

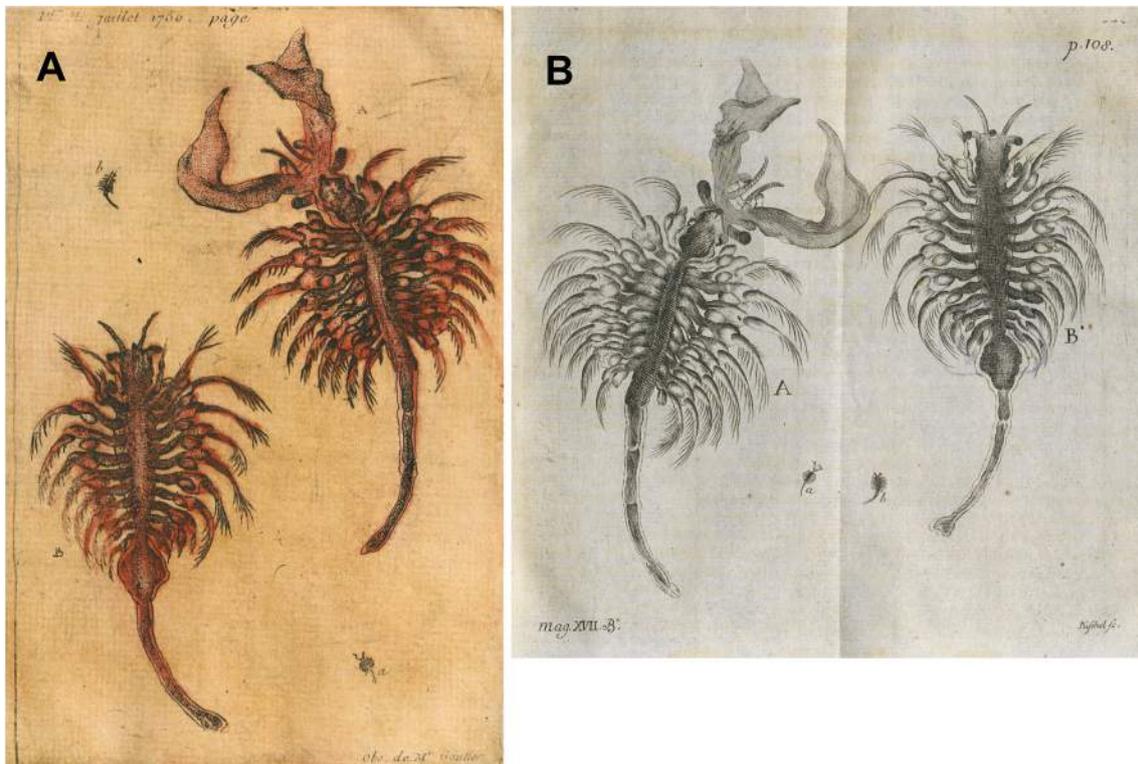


Fig. 1. Illustrations showing *Artemia salina* published in 1756 together with the excerpt of Schlosser's letter to M. Maty printed originally in 1755 in the "Journal Britannique." Panel A in "Observations periodiques sur la physique, l'histoire naturelle et les arts" (Paris, France) and panel B in "Hamburgisches Magazin, oder gesammelte Schriften, zum Unterricht und Vergnügen" (Hamburg, Germany). Note the identical drawings of the animals but their different orientation and arrangement in panel A versus panel B. Also note the greater wealth of detail in B. Illustrations reprinted with permission of the Bayerische Staatsbibliothek, Munich, Germany.

of the letter in the French Journal reports that "the panel accompanying this letter shows ... the male and ... the female ..." but – other than the original and the re-print translated into German – does not mention that the editor of the "Journal Britannique" made the drawings, i.e., Maty. Support for this conclusion comes from the fact that the panels in the two Journals show the identical drawings of the male and female animals mirror inverted and differently arranged (Fig. 1) thereby suggesting that the originals obtained from Maty were individually re-arranged in the two journals.

Surprisingly, there was confusion concerning the name (and obviously also the identity) of the scientist who reported his observations on the "brine worms" in the secondary literature from early on: Linnaeus, referring to this animal in his "Systema Naturae" as *Cancer salinus*, provided a misleading quotation of the author (Maty instead

of Schlosser), the wrong year of publication (1756 instead of 1755), and the wrong number of leg pairs (10 instead of 11; Siebold, 1871). It took almost 80 years until these mistakes were finally corrected by Milne Edwards (1840). Nevertheless the initials of the given names of the first author to describe the branchiopod anostracan, *Artemia salina*, remained unclear until now (his name varies in recent scientific literature between "D. Schlosser," "M. Schlosser," "L. Schlösser," or even "A. F. Schlösser"). Unfortunately, not only the original description of 1755, and both of there-publications in 1756, but also the review paper concerning the natural history of *A. salina* published in the late 1930's by Kuenen and Baas Becking did not unravel the identity of the "M(onsieur). le Docteur Schlosser" (as quoted by Maty); all these sources report his family name only (Kuenen and Baas Becking, 1938).

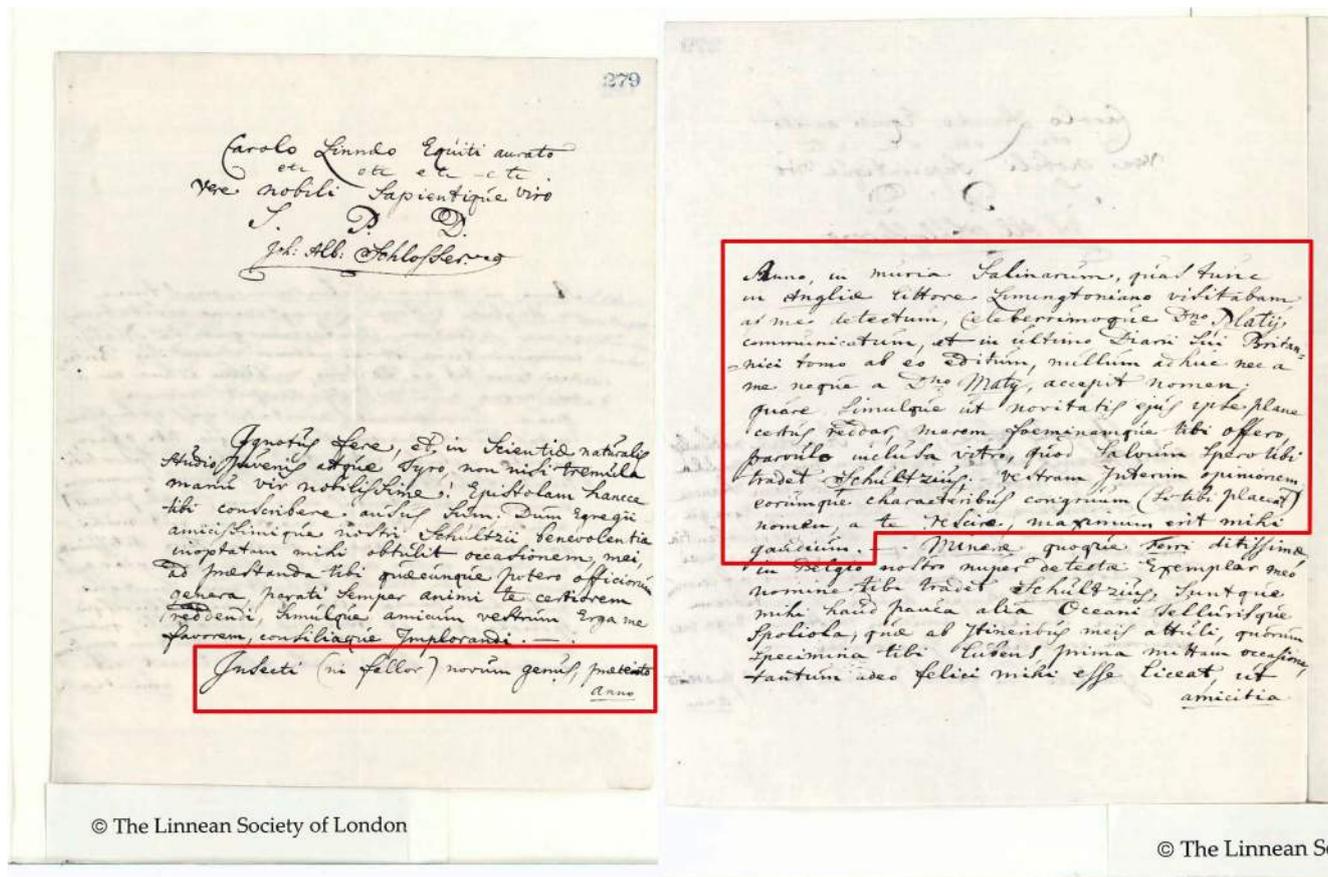


Fig. 2. Letter written by Johannes Albertus Schlosser addressed to Carl Linnaeus dated 23 March 1756. In the second and third paragraph Schlosser writes (red frame): “*Insecti (ni fallor) novum genus, praeterito (anno) Anno, in muria Salinarum, quas tunc in Angliae littore Limingtoniano visitabam a me detectum celeberrimoque Dno Maty communicatum, et in ultimo Diarii Sui Britannici tomo ab eo editum, nullum adhuc nec a me neque a Dno Maty, accepit nomen. Quare simulque ut novitatis ejus ipse plane reddar marem foeminamque tibi offero, parvulo inclusa vitro, quod salivum spero tibi tradet Schultzzius; vestram Interim opinionem eorumque characteribus congruum (si tibi placeat) nomen, a te rescire, maximum erit mihi gaudium.*”

English translation: “I discovered in the last year in the saltwork brine next to Lymington on the English coast a new (unless I am mistaken) insect species when I visited the site. I communicated the discovery to the very famous Mr. Maty, and it was published in the last volume of his Diarium Britannicum without, however, a name being given by me or by Mr. Maty. Therefore, and that I myself am becoming clear about the discovery, I send you a male and a female in a glass jar, passed to you by Schultze hopefully undamaged. It will be the greatest pleasure to hear your preliminary opinion and to accept a name that (if you like) corresponds to the characteristics of the insects.” Letter reprinted by permission of The Linnean Society, London, UK.

The proof that Johannes Albertus Schlosser was indeed the author of the description of *A. salina* is provided by the correspondence archive of Linnaeus. The archive holds a letter written in Latin dated the 23 March 1756 by “Joh: Alb: Schlosser” from Amsterdam, reporting that he observed among Lymington animals (probably insects) of a new genus (Schlosser, 1756c; Fig. 2).

SCHLOSSER'S LATER LIFE

Back in Amsterdam, Schlosser continued to write articles about his observations concerning salts and salt solutions (Schlosser, 1760, 1769) and gave talks about this topic (Sliggers, 2004). Because of the contacts established primarily in England, the Schlosser name was quite well known in the community of contemporary natural scientists. He communicated not only with Linnaeus and Burman, but also – about botanical questions – with Alexander Garden (1730-1791) and John Ellis (1710/1714-1776; Smith, 1821). Schlosser exchanged plants with Ellis, collected minerals and fossils,

and was considered to be a “highly esteemed friend” of Johann Leonard Hoffmann (1710-1782) and Petrus Camper (1722-1789; Sliggers, 2004). He also suggested different naturalists as new members of the Royal Society including the Swedish botanist Daniel Carlsson Solander (1736-1782; Sliggers, 2004). Among his closest friends was Peter Simon Pallas (1741-1811). Pallas named a sea squirt species *Botryllus schlosseri* because, as mentioned above, Schlosser published in 1755 in the “Philosophical Transactions” a description of a “coral-like substance” and the Giant mudskipper *Periophthalmodon schlosseri* (Pallas, 1767; see Table 2).

Pallas reported in a letter to Mendes da Costa that Schlosser started around 1762 to build up, probably in his house on the Reguliersgracht in Amsterdam, a collection of animals, minerals, and fossils called “Kunstammer” or “Wunderkammer” (natural history cabinet; Wendland, 1991). An essential part of this collection consisted of exotic animals that Schlosser received from his friend Ferdinand Dejean (1731-1797) and from Wilhelm August Hommel (1723-1767), both working as surgeons for the

Table 2. Taxonomic references for animal species.

Described by Schlosser before 1758

Artemia salina (Linnaeus, 1758), described 1755 as brine worm; but actually no scientific name was given by Schlosser (see legend to Fig. 2)

Botryllus schlosseri (Pallas 1766), described 1755 as *alcyonium*; John Ellis called it in an addendum to Schlosser's letter *alcyonium carnosum*

Described by Schlosser after 1758

Hydrosaurus amboinensis (Schlosser 1668), described as *Lacerta amboinensi*

Species names dedicated to him

Botryllus schlosseri (Pallas, 1766)

Periophthalmodon schlosseri (Pallas, 1770)

Dutch East India Company and living during that period in Batavia (now Jakarta, Polynesia; Bleker and Lequin, 2013). Schlosser's natural history cabinet provided the material for the flawed report that the butterfly fish *Chelmon rostratus* (Linnaeus, 1758) hunts its prey in a similar way to the archer fish (Schlosser, 1764), and the first description of the Amboina sail-finned lizard (*Hydrosaurus amboinensis* Schlosser, 1768; see also Table 2).

Schlosser was a devoted physician and natural scientist. He was among the founders of the Royal Zeeland Society of Science in Vlissingen/Netherlands (Anonymous, 1769) and is listed as one of the "Directeuren" of the Dutch Society to Rescue People from Drowning (Anonymous, 1768; Table 2). He was also hired to maintain the collection of the Amsterdam "Hortus Botanicus," containing not only plants but also animals preserved in alcohol and stuffed animals (Schlosser, n. d.).

While Schlosser took part in public life as a popular medical doctor and as an honoured and well-reputed naturalist, the last years of his private life were tragic. He married twice, but both marriages were struck by misfortune. His first wife, Anna Jacoba de Harde (married: 11 April 1765 in Vreeswijk, near Utrecht; Utrecht Municipal Archives 45: 423, page 24) died young in November 1766 (funeral: 11 November 1766; in the Westerkerk), less than half a year after she gave birth to a daughter. His second wife, Catharina Maria Washington (married: 21 August 1768 in Den Haag), was not yet 19 years old and pregnant when she died on the 2 March 1769 (Bicker-Raye, 1935). Johannes Albertus Schlosser survived his second wife for a few weeks only; he died on 20 March (Sandifort, 1765; funeral: 24 March in the Westerkerk, Amsterdam). Both Johannes Albertus and Catharina were victims of a scarlet fever epidemic (Bicker-Raye, 1935).

After Schlosser's death, his property was sold in an auction in July 1769 including his library containing about 1000 (!) books covering the fields of medicine, surgery, anatomy, botany, natural history, philosophy, chemistry, history, literature; as well as more than forty pieces of printed and written pieces of music (Sliggers, 2004); and his fossils and the collection of his prepared animals. His friend and executor Pieter Boddaert (1730-1795) inherited all the duplicates from Schlosser's collection (Boddaert, 1769). Boddaert published later three letters providing the first descriptions of the Asiatic soft shell turtle (*Amyda cartilaginea* Boddaert, 1770a), the giant leaf frog (*Phyllomedusa bicolor* Boddaert,

1772a), and the royal angelfish (*Pygoplites diacanthus* Boddaert, 1772b), based on a specimen from Schlosser's collection. Boddaert's fourth description (Boddaert, 1770b), based on the inherited material dealing with the spotted scat (*Scatophagus argus*) is obsolete as this fish is considered to have been described already in 1766 by Linnaeus.

A few years before and after the publication of Schlosser's letter about *A. salina* two other large species of Branchiopoda were described: *Branchipus schaefferi* (Fischer, 1834) in 1752, and *Lepidurus apus* (Linnaeus, 1758) in 1756. The author of these descriptions was Jacob Christian Schaeffer (1718-1790; Schaeffer 1752, 1756), who worked as a priest and later as superintendent in Regensburg, Bavaria. Like Johannes Albertus Schlosser, Schaeffer owned a natural history cabinet, was a Fellow of the Royal Society, and part of the network of contemporary naturalists. For both authors it holds true that their descriptions of the mentioned large branchiopod species were too early for their being – according to the rules of taxonomy – referred to as the first authors. However, Jacob Christian Schaeffer was clearly recognized as the author of his descriptions from early on.

The present biographical sketch may help to link the name of Johannes Albertus Schlosser to the first description of *A. salina* from now on.

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