

A reassessment of the validity and affinities of
***Belemnites sulcatus* MILLER, 1826,**
***Belemnopsis* EDWARDS in GRAY, 1849, and *Belemnopsis* BAYLE, 1878**

Simon F. MITCHELL ¹

Abstract: A reinvestigation of the validity of the belemnite genus *Belemnopsis* BAYLE is undertaken, together with a survey of the early history of the usage of the names *Belemnites sulcatus*, *Belemnopsis* BAYLE and *Belemnopsis* EDWARDS. *Belemnites sulcatus* MILLER has been variously equated with either *Belemnites apiciconus* BLAINVILLE or with the group of belemnites including *Belemnites Altdorfensis* BLAINVILLE and *B. Beaumontianus* ORBIGNY. RIEGRAF (and not PHILLIPS) subsequently designated a lectotype which may be valid and, in case it is not, is validated here. The species concept for *Belemnites sulcatus*, as based on this lectotype, places it in the genus *Holcobeloides* GUSTOMESOV. *Belemnopsis* EDWARDS has date priority over *Belemnopsis* BAYLE, but must be interpreted as an "incorrect original spelling" and, therefore, does not enter into homonymy according to the ICZN; *Belemnopsis* BAYLE is thus a valid genus. DOUVILLÉ subsequently nominated *Belemnites sulcatus*, which was figured as *Belemnopsis sulcata* by BAYLE, and therefore is a valid designation because this species is amongst the original species included in *Belemnopsis* by BAYLE. One of BAYLE's figures of *Belemnopsis sulcata* agrees with *Belemnites apiciconus* BLAINVILLE, but does not agree with *Belemnites sulcatus* as defined by its lectotype; as such this is a case of misidentified type species. *Belemnites apiciconus* BLAINVILLE, the species involved in the misidentification, is therefore designated type species of *Belemnopsis* BAYLE here and validated by citing the ICZN. The actions taken here maintain nomenclature at the genus, family and suborder level in respect to the names *Belemnopsis* and *Belemnites* and serve to stabilize the complicated nomenclature issues related to these taxa.

Key Words: Belemnites (Belemnitida); taxonomy; International Code of Zoological Nomenclature; *Belemnopsis* BAYLE; *Belemnopsis* EDWARDS; *Belemnites* EDWARDS; *Belemnites sulcatus* MILLER; *Belemnites apiciconus* MILLER.

Citation : MITCHELL S.F. (2015).- A reassessment of the validity and affinities of *Belemnites sulcatus* MILLER, 1826, *Belemnopsis* EDWARDS in GRAY, 1849, and *Belemnopsis* BAYLE, 1878.- *Carnets Géol.*, Madrid, vol. 15, n° 4, p. 31-39.

Résumé : Une réévaluation de la validité et des affinités de *Belemnites sulcatus* MILLER, 1826, *Belemnopsis* EDWARDS in GRAY, 1849, et *Belemnopsis* BAYLE, 1878.- Une réévaluation de la validité du genre de bélemnites *Belemnopsis* BAYLE est réalisée conjointement à un survol rétrospectif des premières utilisations des noms *Belemnites sulcatus*, *Belemnopsis* BAYLE et *Belemnopsis* EDWARDS. *Belemnites sulcatus* MILLER a été indifféremment assimilé soit à *Belemnites apiciconus* BLAINVILLE, soit au groupe de bélemnites constitué de *Belemnites Altdorfensis* BLAINVILLE et de *B. Beaumontianus* ORBIGNY. Ultérieurement, RIEGRAF (et non PHILLIPS) a sélectionné un lectotype qui pourrait être valide et qui, pour le cas où il ne le serait pas, est validé ici. Le concept d'espèce pour *Belemnites sulcatus*, tel que fondé sur ce lectotype, permet de l'attribuer au genre *Holcobeloides* GUSTOMESOV. *Belemnopsis* EDWARDS bénéficie de l'antériorité (date de priorité) sur *Belemnopsis* BAYLE, mais doit être interprété comme une "faute orthographique originelle" et, par conséquent, ne saurait être considéré comme un cas d'homonymie selon le CINZ ; *Belemnopsis* BAYLE est donc un genre valide. Ce fut ensuite au tour de DOUVILLÉ qui désigna *Belemnites sulcatus*, qui avait été figurée comme *Belemnopsis sulcata* par BAYLE, et qui est donc une désignation valide parce que cette espèce fait partie de celles incluses à l'origine dans *Belemnopsis* par BAYLE. L'une des figurations de *Belemnopsis sulcata* par BAYLE correspond bien à *Belemnites apiciconus* BLAINVILLE, mais pas à *Belemnites sulcatus* tel que défini par son lectotype ; ainsi il s'agit d'un exemple d'espèce-type mal identifiée. *Belemnites apiciconus* BLAINVILLE, l'espèce impliquée dans l'erreur d'identification, est donc choisie ici comme espèce-type de *Belemnopsis* BAYLE et validée en invoquant le CINZ. Les mesures prises ici permettent de préserver la nomenclature au niveau du genre, de la famille et du sous-ordre en ce qui concerne les noms *Belemnopsis* et *Belemnites* et de résoudre des problèmes nomenclaturaux complexes directement liés à ces taxons.

Mots-clefs : Bélemnites (Belemnitida) ; taxonomie ; Code International de Nomenclature Zoologique ; *Belemnopsis* BAYLE ; *Belemnopsis* EDWARDS ; *Belemnites* EDWARDS ; *Belemnites sulcatus* MILLER ; *Belemnites apiciconus* MILLER.

Introduction

Belemnites sulcatus was erected by MILLER (1826, p. 59) with the description "Guard sub-

cylindrical, elongated, having a longitudinal sulcus, and terminating in an acute apex" and was recorded from the "Inferior Oolite" from "Dundry, near Oxford". Two specimens were figured,

¹ The University of the West Indies, Mona, Kingston 7 (Jamaica)
simon.mitchell@uwimona.edu.jm
 Published online in final form (pdf) on February 28, 2015
 [Editor: Bruno GRANIER]

MILLER's Pl. VIII, figs. 3-4 and Pl. VIII, fig. 5. Following an extensive discussion, RIEGRAF (1999) concluded that PHILLIPS (1870), as First Reviser of *Belemnites sulcatus* MILLER, fixed the species concept and restricted the name *Belemnites sulcatus* to MILLER's Pl. VIII, fig. 5, a form that was regarded by PHILLIPS (1865, p. 5; 1870) as originating from the Oxford Clay (Callovian) from near Oxford. This conclusion has had serious implications for belemnite taxonomy (RIEGRAF, 1999). *Belemnites sulcatus* was designated as type species of the genus *Belemnopsis* BAYLE, 1878, by H. DOUVILLÉ in 1879, but RIEGRAF (1999, p. 60) maintained that the real *Belemnites sulcatus* MILLER, 1826, as emended by PHILLIPS, 1870, is not represented amongst the species figured by BAYLE (1878) and, as such, would represent an invalid designation. Furthermore, RIEGRAF (1999) points out that STRAND (1926) recognised that *Belemnopsis* BAYLE, 1878, was preoccupied by *Belemnopsis* EDWARDS in GRAY, 1849, and that therefore BAYLE's genus name was invalid. This leads to further complication because the family name Belemnopseidae NAEF, 1922, emend JELETZKY, 1946, and the suborder name Belemnopseina JELETZKY, 1965, are derived from *Belemnopsis*, whereas the family name Belemnoseidae WILTSHIRE, 1865, is based on *Belemnosis*. If *Belemnopsis* EDWARDS in GRAY, 1849, is valid then this genus would be placed under the Family Belemnoseidae WILTSHIRE creating extensive nomenclature confusion. Further, *Belemnites sulcatus* MILLER as emended by PHILLIPS would be placed today in the genus *Holcobeloides* GUSTOMESOV, 1958 (DZYUBA, 2011), which belongs to the Cylindroteuthididae STOLLEY, 1919. To reduce such nomenclatural complexity, RIEGRAF (1999) suggested that *Pachybelemnopsis* RIEGRAF (1980) should be used for those forms previously attributed to *Belemnopsis*, with the Suborder Pachybelemnopseina RIEGRAF (in RIEGRAF *et al.*, 1998) and Family Mesohibolitidae NERODENKO, 1983, replacing Belemnopseina and Belemnopseidae, respectively. However, this course of action does not remove the problem of what to do with the generic names *Belemnopsis* EDWARDS in GRAY, 1849, and *Belemnopsis* BAYLE, 1878 (depending on which one is valid), and some belemnite workers (*e.g.*, CHALLINOR & HIKUROA, 2007, p. 6) are unhappy with discarding so well-entrenched a generic name as *Belemnopsis* BAYLE, 1878.

In this paper I explore the nomenclature problems surrounding *Belemnites sulcatus* MILLER using the rules of the International Code for Zoological Nomenclature (ICZN, 1999) and come to different conclusions. I present these arguments in this paper.

The historical concept of *Belemnites sulcatus* MILLER

The exact composition of MILLER's 1826 type series for his species *Belemnites sulcatus* is now impossible to determine, but some observations can be made. MILLER (1826) figured two speci-

mens of *Belemnites sulcatus*, and therefore MILLER's 1826, Pl. VIII, fig. 5 and MILLER's 1826, Pl. VIII, figs. 3-4 clearly comprise part of the type series. In giving localities for his belemnite species, MILLER indicated different localities separated by commas; so that for *Belemnites abbreviatus* MILLER (1826, p. 59), we have two localities which were written as "Weymouth, Dundry", and which now would represent different species: a species of *Pachyteuthis* from the Oxford Clay or Corallian of Weymouth, and a species of *Brevibelus* from the Inferior Oolite of Dundry – yet both are recorded as coming from the "Inferior Oolite". For MILLER (1826), the "Inferior Oolite" at that time would appear to have included what we would now consider as Inferior Oolite (Aalenian-Bajocian) as well as the Oxford Clay (Callovian-early Oxfordian). The specimen illustrated in MILLER's 1826, Pl. VIII, fig. 5 as *B. sulcatus* was presumably found "near Oxford" in the Oxford Clay (PHILLIPS, 1865, p. 5; 1869, p. 101; 1870, p. 114), and MILLER's 1826, Pl. VIII, figs. 3-4 illustration of *B. sulcatus* was presumably collected from the Inferior Oolite of Dundry, Somerset (MORRIS, 1843, 177; GRAY, 1849, p. 136; PHILLIPS, 1865, p. 5). MILLER (1826, p. 59) also refers to a specimen from the Oxford Clay of St. Clements that was illustrated in PLOT's {sic PLOT} (1677, Pl. III, fig. 6) *History of Oxford*, and this therefore also qualifies as a syntype because MILLER (1826, p. 59) specifically makes reference to it. MILLER (1826) may have had more specimens available, but no other specimens are mentioned, nor preserved in museum collections as far as is known.

The first question to ask is if any of MILLER's syntypes are still in existence? Mr. J.S. MILLER was from Gdańsk and resided in Bristol where he was curator of the Museum of the Institute in Bristol (PHILLIPS, 1865, p. 5). He wrote various papers on fossils and much, if not all, of his collection was deposited in the Bristol Museum (*Bristol Mercury*, Tuesday 2nd November 1830, p. 4). It is therefore likely that most of the belemnites illustrated by MILLER in 1826 were in the collection of the Bristol Museum. It is notably that PHILLIPS (1869, p. 101) stated that MILLER's 1826, fig. 5 seems to be modelled on specimens that then existed (note the past tense even in 1869) in the Bristol Museum (which he states were labelled "B. *sulcatus*, Inferior Oolite"), and presumably MILLER's 1826, figs. 3-4 was also in this collection. Unfortunately, the geology department and geological collection in the Bristol Museum were destroyed by bombing during the Second World War (*Western Daily Press*, Friday 6th December 1940, p. 5) and these specimens no longer exist. The whereabouts of PLOT's 1677, Pl. III, fig. 6 is also unknown.

BLAINVILLE (1827, p. 68-69) discussed MILLER's 1826 syntypes of *B. sulcatus* in relation to the new species that he erected in his memoir (see RIEGRAF, 1999, for BLAINVILLE's various earlier papers on belemnites). BLAINVILLE (1827) introduced two new species, *Belemnites Altdorfensis* and *B. apiconus*, and unambiguously referred MILLER's

1826, Pl. VIII, fig. 5 to the former, and MILLER's 1826, Pl. VIII, figs. 3-4 to the latter. However he stated that he did not use MILLER's name because there were at least five or six different belemnite species that had ventral grooves. As such, BLAINVILLE (1827) did not revise *Belemnites sulcatus* MILLER, or make an appropriate designation of a type specimen.

John PHILLIPS produced the first edition of his *Geology of Yorkshire* in 1829. In this work (p. 138) he recorded *Belemnites sulcatus* from the Oxford Clay and Kelloways Rock. PHILLIPS (1829, p. 117) stated that he referred to figures in his own work or to works of others; for *Belemnites sulcatus* he lists MILLER's 1826, Pl. VIII, fig. 5. So even in 1829, PHILLIPS may have been restricting MILLER's *Belemnites sulcatus* to the form from the Oxford Clay, but there is no unambiguous indication of that in his publication. By the second edition of his work, published in 1835, he no longer listed *Belemnites sulcatus* from Yorkshire, and later stated (PHILLIPS, 1870, p. 117): "*I doubt the occurrence of the species [Belemnites sulcatus] in Yorkshire, and regard the mention of it in the first edition of my work on the geology of that county (1829) as requiring confirmation*". PHILLIPS (1829) clearly does not designate a lectotype for *Belemnites sulcatus* MILLER (ICZN article 74.5).

Several authors discussed the relationship between *Belemnites sulcatus* MILLER and *B. apiciconus* BLAINVILLE in the 1840s. MORRIS (1843, p. 177), in his *Catalogue of British Fossils*, restricted *B. sulcatus* MILLER to MILLER's 1826, Pl. VIII, fig. 3, and listed it as occurring in the Inferior Oolite of Dundry, Somerset (thus excluding the reference to 'near Oxford'). MORRIS (1843) does not refer to ORBIGNY's work on the Jurassic of France (which was published in parts from 1842 to 1847, and which described *Belemnites sulcatus* in 1843). It appears that MORRIS (preface dated July 1843) had not yet seen ORBIGNY's work on the Jurassic. ORBIGNY (1843, p. 105) also restricted *Belemnites sulcatus* MILLER to MILLER's 1826, Pl. VIII, figs. 3-4 (excluding fig. 5 from his synonymy list) and stated that this form was originally described by MILLER (1823, *sic* 1826) under the name *Belemnites sulcatus* and that BLAINVILLE (1827) changed the name to *Belemnites apiciconus*. ORBIGNY (1843, p. 105) stated that he is returning to the first name, and includes *B. apiciconus* in the synonymy of *B. sulcatus* MILLER. Notably, ORBIGNY (1843) makes no reference to the work of MORRIS (1843), suggesting he has not seen that work. GRAY (1849, p. 136) followed MORRIS (1843) and ORBIGNY (1843) in referring only MILLER's 1826, Pl. VIII, figs. 3-4 to *B. sulcatus* and also included *B. apiciconus* as a synonym. GRAY (1849, p. 136) also reproduced the description given by ORBIGNY (1843, p. 105). BROWN (1849) provided an illustrated guide of fossils of Great Britain and Ireland and listed *Belemnites sulcatus* MILLER from the "Inferior Oolite, Daudry {*sic* Dundry}, Somersetshire". On his Pl. XXIX, figs. 9-11, he reproduced the

illustrations of both specimens of *Belemnites sulcatus* as given by MILLER (1826). By 1854, MORRIS acknowledged the 1843 work by ORBIGNY (p. vi) and, on p. 301, restricted *Belemnites sulcatus* to MILLER's Pl. VIII, fig. 3 and included *B. apiciconus* BLAINVILLE as a synonym. According to ICZN article 74.5, none of these publications (MORRIS, 1843, 1854; ORBIGNY, 1843; GRAY, 1849; BROWN, 1849) qualify as a valid designation of a lectotype for *Belemnites sulcatus* MILLER.

At this point it is worthy of note that Dundry undoubtedly refers to Dundry Hill which exposes an outlier of Aalenian-Bajocian limestone attributed to the Inferior Oolite (PARSONS in COPE *et al.*, 1980) and contains abundant belemnites belonging to the genera *Belemnopsis* BAYLE, 1878 (inclusive of *Belemnites apiciconus* BLAINVILLE), *Holcobelus* STOLLEY, 1927, and *Brevibelus* DOYLE, 1992 (author's pers. observ., 1992). Oxford is built on the Oxford Clay which here yields common specimens of belemnites referable to *Belemnites sulcatus* (*B. altdorfensis* and *B. beaumontianus*) in the sense of PHILLIPS 1870 (PHILLIPS, 1870, p. 117).

Neither MORRIS (1843, 1854) nor GRAY (1849) specifically mentioned MILLER's 1826 specimen shown in his Pl. VIII, fig. 5. GRAY (1849, p. 140) did describe *Belemnites Altdorfensis* BLAINVILLE from the Oxford Clay, and MORRIS (1854, p. 300) listed *Belemnites Beaumontianus* ORBIGNY from the Oxford Clay of Loch Staffin on the authority of I. MURCHISON. For the Loch Staffin occurrence, HOPKINS (1852, p. lxxvi) reported that Prof. FORBES had found a bed with "Ammonites cordatus, *Belemnites Owenii*, and *B. Beaumontianus*, [that] *distinctly proved it to be of the period of the Oxford Clay*".

The available evidence therefore indicates that by the middle of the nineteenth century the name *Belemnites sulcatus* had first been (tentatively?) restricted to the Oxford Clay form by PHILLIPS (1829). Yet, by the 1840s, *Belemnites sulcatus* was universally used for the belemnite from the Inferior Oolite (the *Belemnites apiciconus* of BLAINVILLE) of southern England and France, whereas the Oxford Clay form was referred to *B. altdorfensis* BLAINVILLE or *B. beaumontianus* ORBIGNY.

John PHILLIPS' (1865, 1869, 1870) work on the British Belemnitidae is still a major work for the Jurassic belemnites of England. In revising *Belemnites sulcatus*, PHILLIPS clearly looked towards his earlier record of *Belemnites sulcatus* in the Kelloways Rock and Oxford Clay of Yorkshire, and not the works of MORRIS (1843, 1854), ORBIGNY (1843), nor GRAY (1849). PHILLIPS (1870, p. 114) therefore considered that both *B. Altdorfensis* and *B. Beaumontianus* were closely related to *B. sulcatus* MILLER and that *B. apiciconus* was distinct. RIEGRAF (1999) suggested that PHILLIPS (1870) was the "First Reviser" of *Belemnites sulcatus* MILLER (although even in his monograph, PHILLIPS first mentioned *Belemnites sulcatus* in 1865, p. 5), but PHILLIPS had indicated his interpretation of the fossil in 1829. For RIEGRAF (1999) therefore, PHILLIPS (1870, p. 114), as the

First Reviser, restricted *B. sulcatus* to the form figured by MILLER (1826), Pl. VIII, fig. 5. Furthermore, PHILLIPS (1869, p. 101) stated that MILLER's 1826, Pl. VIII, figs. 3-4 appeared to represent *Belemnites apiciconus* BLAINVILLE, 1827, but did not include it in the synonymy list for *B. apiciconus* in his monograph. PHILLIPS' 1829 work is hardly a revision of the species, but the works of MORRIS (1843) and ORBIGNY (1843) clearly are and both retain the name *Belemnites sulcatus* for the form figured as *Belemnites apiciconus* by BLAINVILLE (1827). From ICZN article 24.2 it is possible to argue that either MORRIS (1843) or ORBIGNY (1843) were first revisers, but not PHILLIPS (1870) as indicated by RIEGRAF (1999).

Lectotype of *Belemnites sulcatus* MILLER

The question of whether there has been a valid designation of a lectotype for *Belemnites sulcatus* is therefore very critical to the understanding of the species concept and its relationship to higher taxonomic rankings. There is no formal nomination of a lectotype in either PHILLIPS (1829, 1865, 1869, 1870), MORRIS (1843, 1854), ORBIGNY (1843) or GRAY (1849). RIEGRAF (1999) took PHILLIPS' 1870 restriction of *Belemnites sulcatus* to MILLER's 1826, Pl. VIII, fig. 5 as a designation of lectotype, but this is not admissible under ICZN article 74.5.

In 1999 (p. 66), RIEGRAF formally designated lectotypes for *Belemnites altdorfensis* BLAINVILLE and *Belemnites apiciconus* BLAINVILLE and these are valid under ICZN article 74.5. For *Belemnites sulcatus* MILLER, RIEGRAF (1999) did not formally designate a lectotype, but figured "the" lectotype that he considered had been designated by PHILLIPS (1870). Since PHILLIPS (1870) had never selected a lectotype for *Belemnites sulcatus* MILLER, RIEGRAF's 1999 illustration of a lectotype (on the authority of PHILLIPS), without formal designation, may or may not be a suitable designation of a lectotype according to ICZN article 74.5. RIEGRAF's 1999 p. 64 statement in regard to his fig. 6 states "'Inferior Oolite' [=Oxford Clay Formation], ?Dundry near Oxford, England, Lectotype of *Belemnites sulcatus*" serves as a more formal designation of a lectotype according to ICZN article 74.5. In order to stabilize nomenclature, this specimen (MILLER, 1826, Pl. VIII, fig. 6) is formally designated lectotype herein in case RIEGRAF's 1999 designation should subsequently prove to be in doubt.

Status of *Belemnopsis* EDWARDS in GRAY, 1849, and *Belemnopsis* BAYLE, 1878

RIEGRAF (1999) stated that *Belemnopsis* EDWARDS in GRAY, 1849, was a senior homonym of *Belemnopsis* BAYLE, 1878, and attributed the discovery of this homonymy to STRAND (1926, p. 65). If correct, this means that *Belemnopsis* BAYLE is invalid. The nomenclature issues that would prevail if *Belemnopsis* EDWARDS in GRAY

(1849) is deemed valid are far reaching. The generic name *Belemnopsis* would have to replace *Belemnosis* in the Family Belemnoseidae NAEF, 1922. The relationship and validity of *Belemnopsis* EDWARDS in GRAY, 1849, and *Belemnopsis* BAYLE, 1878, therefore, need to be more fully evaluated from insight from further studies of the literature and in light of the rules of the ICZN (1999).

In his *Catalogue of the Mollusca in the British Museum*, GRAY (1849) described the species of mollusc then known from the British Isles. In that volume he described the belemnites, some of which have been discussed above, together with various teuthids and sepiids. Amongst the sepiids was J. de C. SOWERBY's 1829 species *Beloptera anomalus* which was described by GRAY (1849) on page 118. In the section on "Additions and Corrections" at the end of this work, GRAY (1849, p. 157-158) added a description of *Belemnopsis anomala* with the genus attributed to J.E. EDWARDS', as then unpublished, work on the cephalopods of the London Clay.

EDWARDS' 1849 monograph on the cephalopods of the lower Tertiaries describing a new sepiid taxon (both genus and species) *Belemnopsis plicata* appeared in the Palaeontographical Society volume for the year 1848, which was published in July 1849 (EDWARDS & WOOD, 1877). EDWARDS introduced the new genus *Belemnopsis*, but also introduced a new specific name *plicata* which, since there was only but a single specimen that had received the specific name *anomalus* by J. de C. SOWERBY, becomes a junior synonym. EDWARDS (1849, footnote at the bottom of p. 38) indicated the derivation of the name *Belemnopsis* as being from: Βελεμνον, telum and ενωσις, conjunctio, relating to the transition between belemnites and sepiids. In contrast RIEGRAF (1999, p. 60) suggested the suffix *-opsis*, as used in *Belemnopsis* EDWARDS in GRAY, 1849, was derived from the Greek for 'form' or 'shape' which does not agree with the eponym given by EDWARDS (1849). The question then is: which, *Belemnosis* or *Belemnopsis*, has priority?

Dating the publication of GRAY's various catalogues of animals in the British Museum is difficult as each only has the year of publication indicated. SHERBORN (1926) attempted to determine the date of issue of each catalogue (that is issue to book sellers), but could only determine the dates when the Catalogues were laid down on the table for the trustees of the British Museum, and not the actual date when the Catalogues were issued to dealers. SHERBORN (1926) determined that GRAY's Catalogue for 1849 was laid on the table for trustees on the 30th June 1849, and this was confirmed by KABAT (1979). If it was immediately submitted to dealers, then GRAY's 1849 work would be deemed to have appeared one month earlier than EDWARDS' 1849 work (ICZN, 1999, article 21.3.1). Yet GRAY (1849, p. 158) cited the page numbers from EDWARDS' 1849 work for the description of both the genus and the species of *Belemnopsis plicata* as well as giving the plate and figure

numbers of the illustration (although he cited the title of the work incorrectly as "Cephalopes of London Clay"). GRAY (1849) also amended the specific name from *plicata*, which must be a junior synonym as there was only one specimen, to *anomalus*. The citation of actual page and figure numbers, as well as specific names, indicates that GRAY (1849) must have seen page proofs or a preprint of EDWARDS' 1849 work before publication so as to allow him to include these details in his own work. Furthermore, EDWARDS' 1849 paper was included in the volume of the Palaeontological Society for 1848, suggesting it was completed in 1848 and was awaiting publication; additionally there is no mention of GRAY's 1849 work in EDWARDS (1849). It seems therefore irrefutable that GRAY had access to EDWARDS' 1849 work in the latter stages of completing his own (1849) Catalogue, but that his Catalogue must be deemed to have appeared a month earlier than EDWARDS' work. According to the Code (ICZN, 1999, article 21.8), prior to the year 2000, the distribution of preprints of a work before the recognized publication of the work advances the date of publication, but this does not apply to page proofs, and since no preprints have been recorded it is most likely that GRAY saw the page proofs of EDWARDS' work. Given the fact that GRAY acknowledged EDWARDS' work, it is clear that GRAY was not trying to claim authorship of EDWARDS' generic name and it would also seem clear that *Belemnopsis* EDWARDS in GRAY, 1849, is a spelling mistake for *Belemnosis* EDWARDS, 1849, even though it was published earlier. It is worthy of note that, according to IREDALE (1913), there are many spelling mistakes in GRAY's works during the interval 1838-1845, and it would appear that the spelling *Belemnopsis* is another case.

There are two ways of treating this situation. Firstly, that *Belemnopsis* is an "incorrect original spelling" of *Belemnosis* (ICZN, 1999, article 32). Secondly, that *Belemnopsis* is an "incorrect subsequent spelling" of *Belemnopsis* (ICZN, 1999, article 33). From the derivation of the name *Belemnosis* as given by EDWARDS (1849, footnote at the bottom of p. 38) it is clear that *Belemnosis* was the intended spelling for the generic name and that *Belemnopsis* is therefore an "incorrect original spelling", rather than an "incorrect subsequent spelling" because GRAY's work appear before that of EDWARDS'. Because GRAY (1849) clearly referred to EDWARDS' 1849 work, this could be taken as an indication of where to find the correct spelling of the generic name as required in ICZN article 32.5.1. However this does not entirely fit the article. If we look at current usage, *Belemnopsis* EDWARDS in GRAY, 1849, is not used even by RIEGRAF *et al.* (1998, p. 312; even though on p. 253, *Pachybelemnopsis* RIEGRAF is used in preference to *Belemnopsis* BAYLE) and seems to be universally regarded as an "incorrect original spelling" (*e.g.*, HERRMANNSEN, 1852, p. 17). It is therefore acceptable to

consider *Belemnopsis* EDWARDS in GRAY (1849) as an "incorrect original spelling" which therefore cannot enter into homonymy (ICZN, 1999, 32.4).

In 1878, BAYLE introduced a new genus *Belemnopsis* for a group of belemnites carrying an elongate ventral groove, yet only the volume illustrating the plates, but not the text volume, was issued. Furthermore, there was no indication of a selection of a type species for *Belemnopsis* (or the other genera). In his volume, BAYLE (1878) illustrated four species which he included in *Belemnopsis*, namely: *Belemnopsis Altdorfensis* BLAINVILLE (BAYLE, 1878, Pl. XXIX, figs. 3-4); *Belemnopsis Bessina* ORBIGNY (BAYLE, 1878, Pl. XXX, fig. 1); *Belemnopsis unicanaliculata* HARTMAN (BAYLE, 1878, Pl. XXX, fig. 2, 5); and *Belemnopsis sulcata* MILLER (BAYLE, 1878, Pl. XXX, figs. 3-4).

The following year, BLAKE (1882) writing in *The Geological Record for 1878* listed the new belemnite genera that BAYLE (1878) had introduced and recorded that *Belemnopsis* BAYLE was preoccupied. RIEGRAF (1999) stated that STRAND (1926) was the first to recognize that *Belemnopsis* BAYLE, 1878, was preoccupied, yet BLAKE in 1882 clearly indicated that *Belemnopsis* BAYLE, 1878, was preoccupied, but without specifying that it was preoccupied by *Belemnopsis* GRAY, 1849. Yet, because *Belemnopsis* EDWARDS in GRAY (1849) must be regarded as an "incorrect original spelling", *Belemnopsis* BAYLE, 1878, is an available, and therefore valid, name.

The first designation of a type species for *Belemnopsis* BAYLE was made by DOUVILLÉ (1879, p. 91) who selected *Belemnites sulcatus* MILLER as type species. BAYLE's 1878 four "species" which he placed in *Belemnopsis* would now be placed amongst several genera and species, but it is important to record that BAYLE's 1878, Pl. XXX, fig. 4, represents *Belemnites sulcatus* MILLER as represented in MILLER's 1826, Pl. VIII, fig. 3 and also equivalent to *Belemnites apiciconus* of BLAINVILLE, 1827. BAYLE (1878) clearly followed MORRIS (1843, 1854) and ORBIGNY (1843) in his concept of *B. sulcatus* and did not use the name *Belemnites apiciconus* BLAINVILLE for this form. Therefore, DOUVILLÉ's 1879 designation of *Belemnites sulcatus* MILLER as type species for *Belemnopsis* is valid, contrary to the suggestion by RIEGRAF (1999), and BAYLE did not establish a new nominal species "*Belemnopsis sulcatus* BAYLE 1878".

BAYLE (1878) figured two specimens under the name *Belemnopsis sulcata*, his plate 30, figure 3 is attributable to *Holcobelus subblainvillei* (EUDES-DESLONGCHAMPS) and his plate 30, figure 4 is attributable to *Belemnites sulcatus* as figured by MILLER (1826) plate 8, fig. 3 (= *Belemnites apiciconus* BLAINVILLE) (see RIEGRAF, 1999, table 1). As such, one of the specimens illustrated by BAYLE (1878) as *Belemnopsis sulcata* belongs to the same species as one of the specimens in the type species of *Belemnites sulcatus* of MILLER (1826). Therefore, DOUVILLÉ's 1879 nomination of *Belemnites sulcatus* as type species of *Belemnopsis* BAYLE is valid.

However, if RIEGRAF's 1999 selection of a lectotype for *Belemnites sulcatus* is valid then the type species for *Belemnopsis* BAYLE, 1878, can be either *Belemnites sulcatus* MILLER "the nominal species originally cited as type species" as defined by RIEGRAF's 1999 lectotype (article 70.3.1) or *Belemnites apiciconus* BLAINVILLE, 1827, "the taxonomic species actually involved in the misidentification" (article 70.3.2). DOUVILLÉ's 1879 designation of a lectotype needs to be validated by citation to ICZN articles 11.10, 67.13 and 69.2.4 to serve stability and universality. The following courses are available: A) to select *Belemnites sulcatus* MILLER as defined by its lectotype (RIEGRAF, 1999) as type species of *Belemnopsis*; or B) to define *Belemnites apiciconus* BLAINVILLE, the misidentified species in BAYLE (1878), as type species of *Belemnopsis*. Stability is best served by the latter course, and herein *Belemnites apiciconus* BLAINVILLE, the misidentified species attributed to *Belemnites sulcatus* MILLER by DOUVILLÉ (1879) and figured as *Belemnopsis sulcata* MILLER by BAYLE (1878) is selected as type species of *Belemnopsis* as validated by ICZN article 70.3.2.

Summary

This paper has discussed the complex nomenclature and literature relating to the species *Belemnites sulcatus* MILLER and has come to the following conclusions.

1. To recognise three specimens as the syntypes of MILLER's *Belemnites sulcatus*: specimen 1: MILLER's Pl. VIII, figs. 3-4; specimen 2, MILLER's Pl. VIII, fig. 5; and specimen 3, PLOT's 1677, Pl. III, fig. 6. All the specimens appear to be lost or destroyed.

2. To conclude that there was no valid designation of a lectotype under the rules of ICZN for *Belemnites sulcatus* MILLER by BLAINVILLE (1827), PHILLIPS (1829, 1865, 1869, 1870), MORRIS (1843, 1854), or ORBIGNY (1843).

3. To accept RIEGRAF's 1999 nomination of a lectotype of *Belemnites sulcatus* MILLER as MILLER's 1826, Pl. VIII, fig. 5, either directly or by designation herein if such a nomination is not valid according to ICZN articles.

4. To accept *Belemnopsis* EDWARDS in GRAY, 1849, as an "incorrect original spelling" of *Belemnosis* EDWARDS, 1849, as indicated by universal usage. As such *Belemnopsis* EDWARDS cannot enter into homonymy.

5. To designate *Belemnites apiciconus* BLAINVILLE, 1827, as the type species of *Belemnopsis* BAYLE, 1878, the species misidentified by BAYLE, 1878, as *Belemnites sulcatus* (as subsequently fixed by nomination of a lectotype) which was subsequently nominated as type species of *Belemnopsis* BAYLE by DOUVILLÉ (1879).

This action has the advantage of: A) stabilizing the generic name *Belemnopsis* BAYLE for a group of belemnites centred around *Belemnites apiciconus* BLAINVILLE with a correctly identified

type species as illustrated by BAYLE (1878) and designated by DOUVILLÉ (1879); B) Stabilizing the name *Belemnosis* EDWARDS, 1849, for the sepiid *Belemnosis anomala* (J. de C. SOWERBY); and C) maintaining the previous used family names (*Belemnopsiedae* NAEF, *Belemnoseidae* NAEF) that are well entrenched in the literature.

Systematic palaeontology

No formal descriptions are given here, only systematic lists and brief discussions. For detailed descriptions of taxa see the indicated resources below.

Order BELEMNITIDA ZITTEL, 1895

Suborder BELEMNITINA ZITTEL, 1895

Family HOLCOBELIDAE GUSTOMESOV, 1977

Genus *Holcobelus* STOLLEY, 1927

Type species. *Belemnites munieri* EUDES-DESLONGCHAMPS, 1878.

Holcobelus blainvillii (VOLTZ, 1830)

1830 *Belemnites blainvillii*: VOLTZ, p. 37, Pl. 1, fig. 9.

1878 *Belemnites unicanaliculatus* HARTMANN; BAYLE, p. XXX, fig. 5.

Holcobelus munieri (EUDES-DESLONGCHAMPS, 1878)

1878 *Belemnites munieri*: EUDES-DESLONGCHAMPS, p. 63, Pl. V, figs. 3-6, 12-14, Pl. VI, figs. 5-11.

1878 *Belemnopsis unicanaliculatus* HARTMANN; BAYLE, p. XXX, fig. 2.

?1878 *Belemnites sulcatus* MILLER; BAYLE, p. XXX, fig. 3.

Discussion. WEIS *et al.* (2012) have revised the belemnite Family Holcobelidae STOLLEY, but I disagree that it should be placed in the Belemnopseinae JELETZKY (*Pachybelemnopseinae* RIEGRAF) and instead place it in the Belemnitinae ZITTEL following JELETZKY (1965).

Family CYLINDROTEUTHIDIDAE STOLLEY, 1919

Subfamily LAGONIBELINAE GUSTOMESOV, 1977

Genus *Holcobeloides* GUSTOMESOV, 1958

Type species. *Belemnites beaumontianus* ORBIGNY, 1843 (= *Holcobeloides altdorfensis* BLAINVILLE, 1827 = *Belemnites sulcatus* MILLER, 1826).

Holcobeloides sulcatus MILLER, 1826

1826 *Belemnites sulcatus*: MILLER, p. 59, Pl. VIII, fig. 5 [non figs. 3-4 = *Belemnopsis apiciconus* (BLAINVILLE, 1827)]

1827 *Belemnites Altdorfensis*: BLAINVILLE, p. 67-69, Pl. 2, fig. 1.

1843 *Belemnites Beaumontianus*: ORBIGNY, p. 118, Pl. XVI, figs. 7, 11.

1849 *Belemnites sulcatus* MILLER; BROWN, p. 248, Pl. XXIX, fig. 10 [non fig. 9 = *Belemnopsis apiciconus* (BLAINVILLE, 1827)]

1870 *Belemnites sulcatus* MILLER; PHILLIPS, 115-117, Pl. XXIX, figs. 71-73, Pl. XXX, figs. 74-75.

1878 *Belemnopsis altdorfensis* BLAINVILLE; BAYLE, Pl. XXIX, figs. 3-4.

Discussion. The genera of the Family Cylindro-

teuthididae have been revised recently by DZYUBA (2011).

Suborder BELEMNOPSEIDINA
JELETZKY, 1965

(=*Pachybelemnopsis* RIEGRAF in RIEGRAF *et al.*, 1998)

Family BELEMNOPSEIDAE NEAF, 1922,
emend JELETZKY, 1946

(=*Mesohibolitidae* NERODENKO, 1983)

Genus *Belemnopsis* BAYLE, 1878

Type species. *Belemnites apiciconus* BLAINVILLE, 1827 (= *Belemnites sulcatus* MILLER as designated type species by DOUVILLÉ, 1879, and figured as *Belemnopsis sulcatus* MILLER by BAYLE, 1878).

(= *Pachybelemnopsis* RIEGRAF, 1980, type species: *Belemnites canaliculatus* SCHLOTHEIM, 1820; non *Belemnopsis* GRAY, 1849, which is an unavailable name which cannot enter in homonymy because it is based on an incorrect original spelling of *Belemnosis* EDWARDS, 1849).

Belemnopsis apiciconus
BLAINVILLE, 1827

1826 *Belemnites sulcatus*: MILLER, p. 59, Pl. VIII, figs. 3-4 [non fig. 5 = *Holcobeloides sulcatus* (MILLER, 1826)]

1827 *Belemnites apiciconus*: BLAINVILLE, p. 69, Pl. 2, fig. 2.

1843 *Belemnites sulcatus* MILLER; MORRIS, p. 177 (restricted to MILLER's 1826, Pl. VIII, fig. 3).

1849 *Belemnites sulcatus* MILLER; GRAY, p. 136 (restricted to MILLER's 1826, Pl. VIII, figs. 3-4).

1849 *Belemnites sulcatus* MILLER; BROWN, p. 248, Pl. XXIX, fig. 9 [non fig. 10 = *Holcobeloides sulcatus* (MILLER, 1826)]

1854 *Belemnites sulcatus* MILLER; MORRIS, p. 301 (restricted to MILLER's 1826, Pl. VIII, fig. 3).

1869 *Belemnites apiciconus* BLAINVILLE; PHILLIPS, p. 101-102, Pl. XXV, fig. 58.

Type specimen. Specimen figured by BLAINVILLE, 1827, Pl. 2, figs. 2, 2a; designated lectotype by RIEGRAF (1999, p. 66).

Order SPIRULIDA POMPECKJ, 1912

Family BELEMNOSEIDAE
WILTSHIRE, 1869

Genus *Belemnosis* EDWARDS, 1849

(= *Belemnopsis* EDWARDS in GRAY, 1849, an unavailable incorrect original spelling of *Belemnosis* EDWARDS, 1849)

Type species. *Beloptera anomalus* J. de C. SOWERBY, 1829.

Belemnosis anomala
(J. de C. SOWERBY, 1829)

1829 *Beloptera anomalus* J. de C. SOWERBY, p. 183, Pl. 591, fig. 2.

1838 *Beloptera anomala* SOWERBY; BROWN, p. 43, Pl. XXIX, figs. 23-24.

1849 *Beloptera anomala* SOWERBY; GRAY, p. 118.

1849 *Belemnopsis anomala* (SOWERBY); GRAY, p. 157-158.

1849 *Belemnosis plicata*: EDWARDS, p. 40, Pl. 2, fig. 3a-c.

Acknowledgments

I would like to thank the reviewers for their comments on this paper, especially Philippe BOUCHET for taking time to go through my arguments and making detailed suggestion with regard to the operation of the ICZN rules. Nico M.M. JANSSEN is thanked for correcting some problems with the paper.

Bibliographic references

- BAYLE E. (1878).- Atlas. Première partie. Fossiles principaux des terrains.- *Explication de la Carte géologique de la France*, Paris, t. IV, pt. 1, 158 Pls. URL: <http://gallica.bnf.fr/ark:/12148/bpt6k6310840g/f11.image.r=>
- BLAINVILLE M.H. D. de (1927).- Mémoire sur les Bélemnites, considérées zoologiquement et géologiquement.- F.G. Levrault, Paris, 136 p. (5 Pls.). URL: <https://archive.org/stream/mmoiresurlesble00blaignoog#page/n13/mode/2up>
- BLAKE J.F. (1882).- BAYLE, Prof. E. (p. 315). In: 2. Invertebrata.- *The Geological Record for 1878*, London, p. 313-350. URL: <https://archive.org/stream/geologicalrecor04unkngoog#page/n350/mode/2up>
- BROWN T. (1838).- Genus XI.- *Belemnites*.- LAMARCK.- Illustrations of the fossil conchology of Great Britain and Ireland, with descriptions and localities of all the species hitherto discovered.- Smith, Elder & Co., London, n° 8, Pl. XXIX; n° 10, p. 41-43. URLs: <https://archive.org/stream/illustrationsoff00brown#page/n121/mode/2up> and <https://archive.org/stream/illustrationsoff00brown#page/41/mode/2up>
- BROWN T. (1849).- Illustrations of the fossil conchology of Great Britain and Ireland, with descriptions and localities of all the species.- Smith, Elder & Co., London, Concluding part, n° 29-35, p. 137-273. URL: <https://archive.org/stream/illustrationsoff00brown#page/n437/mode/2up>
- CHALLINOR A.B. & HIKUROA D.C.H. (2007).- New Middle and Upper Jurassic belemnite assemblages from West Antarctica (Latady Group, Ellsworth Land): taxonomy and paleo-biogeography.- *Palaeontologia Electronica*, vol. 10, Issue 1 (6A), 29 p.
- COPE J.C.W., DUFF K.L., PARSONS C.F., TORRENS H.S., WIMBLEDOM W.A. & WRIGHT J.K. (1980).- A correlation of Jurassic rocks in the British Isles: Part two: Middle and Upper Jurassic.- *Geological Society of London, Special Report*, n° 15, 109 p.
- DOUVILLÉ M. (1879).- Atlas du IVe volume de l'Explication de la Carte géologique de la France.- *Bulletin de la Société géologique de France*, Paris, (3ème série), t. 7 (1878-1879), p. 91-92. URL: http://jubilotheque.upmc.fr/img-viewer/fonds-bulsgrf/GB_000051_001/Contenu/JPEG_HD/viewer.html?ns=GB_000051_001_J3_0001.jpg
- DOYLE P. (1992).- The British Toarcian (Lower

- Jurassic) belemnites. Part 2.- *Monograph of the Palaeontographical Society of London*, no. 144 (1991), p. 50-79.
- DZYUBA O.S. (2011).- Subfamily classification within the Cylindroteuthididae (Belemnitida).- *News of palaeontology and stratigraphy*, vol. 16-17; *Supplement to Russian Geology and Geophysics*, t. 52, p. 103-108. [in Russian]
- EDWARDS F.E. (1849).- A monograph of the Eocene Mollusca, or descriptions of shells from the older Tertiaries of England. Part I. Cephalopoda.- *Palaeontographical Society Monograph*, London, p. 1-56 (Pls. I-IX). URL: <https://archive.org/stream/monographofeoc/en02edwa#page/n7/mode/2up>
- EDWARDS F.E. & WOOD S.V. (1877).- A monograph of the Eocene Mollusca, or, descriptions of shells from the older Tertiaries of England. Part IV. Pulmonata and Prosobranchiata.- *Palaeontographical Society Monograph*, London, p. 331-361 (Pl. XXXIV) URL: <https://archive.org/stream/monographofeoc/en02edwa#page/n17/mode/2up>
- EUDES-DESLONGCHAMPS E. (1878).- Le Jura Normand. 2ème Livraison. Monographies VI. Assises supérieures des marnes infra-oolithiques.- Savy, Paris, 78 p. (XI Pls.).
- GRAY J.E. (1849).- Catalogue of the Mollusca in the collection of the British Museum. Part 1: Cephalopoda Antepedia.- Spottiswoodes and Shaw, London, 164 p. URL: <https://archive.org/stream/cataloguemollus01zoolgoog#page/n6/mode/2up>
- GUSTOMESOV V.A. (1958).- New Upper Jurassic belemnites from the Russian Platform.- *Bulleten Moskovskogo Obshchestva Ispytateley Prirody*, (*Seriya Geologicheskikh*), Moscow, vol. 33, n° 4, p. 158-159 [in Russian].
- GUSTOMESOV V.A. (1977).- On a revision of Jurassic belemnites.- *Bulleten Moskovskogo Obshchestva Ispytateley Prirody*, (*Seriya Geologicheskikh*), Moscow, vol. 52, n° 2, p. 103-117 [in Russian].
- HERRMANNSEN A.N. (1852).- *Indicis generum malacozoorum supplementa et corrigenda*.- Theodori Fischer, Cassellis (Kassel), 140 p.
- HOPKINS W. (1852).- Anniversary address of the president.- *The Quarterly Journal of the Geological Society of London*, vol. 8, p. xxi-lxxx. URL: <https://archive.org/stream/quarterlyjournal81852geol#page/n33/mode/2up>
- ICZN (1999).- International Code of Zoological Nomenclature.- 4th Edition, London, 306 p. URL: <http://www.nhm.ac.uk/hosted-sites/iczn/code/>
- IREDALE T. (1913).- A collation of the molluscan parts of the synopses of the contents of the British Museum, 1838-1845.- *Proceedings of the Malacological Society of London*, vol. X, p. 294-309. URL: <https://archive.org/stream/proceedingsofma121041912213mala#page/294/mode/2up>
- JELETZKY J.A. (1946).- Zur Kenntnis der oberkretazischen Belemniten.- *Geologiska Föreningens i Stockholm Förhandlingar*, vol. 68, p. 87-105.
- JELETZKY J.A. (1965).- Taxonomy and phylogeny of fossil Coleoidea (= Dibranchiata).- *Papers of the Geological Survey of Canada*, Ottawa, vol. 65, n° 2, p. 72-76.
- KABAT A.R. (1989).- The "GRAY Catalogues". [Mollusca] of the British Museum.- *The Nautilus*, Sanibel, vol. 103, n° 3, p. 113-115.
- MILLER J.S. (1826).- V. - Observations on belemnites.- *Transactions of the Geological Society of London*, (Series 2), vol. 2, p. 45-62 (Pls. VII-IX).
- MORRIS J. (1843).- A catalogue of British Fossils comprising the genera and species hitherto described; with references to their geological distribution and to the localities in which they have been found.- John Van Voorst, London, 1st Edition, 222 p.
- MORRIS J. (1854).- A catalogue of British Fossils: comprising the genera and species hitherto described; with references to their geological distribution and to the localities in which they have been found.- Printed privately, London, 2nd Edition, 372 p. URL: <https://archive.org/stream/acataloguebriti00morgoog#page/n4/mode/2up>
- NAEF A. (1922).- Die fossilen Tintenfische. Eine paläozoologische Monographie.- G. Fischer, Jena, 322 p. URL: <http://www.biodiversitylibrary.org/item/18349#page/5/mode/1up>
- NERODENKO V.M. (1983).- Early Cretaceous belemnites from the south of the USSR. In: STAROBOGATOV Y.I. & NESS K.N., eds., Systematics and ecology of cephalopods.- Zoological Institute, Leningrad, p. 42-43 [in Russian].
- ORBIGNY A. d' (1843).- Terrains oolitiques ou jurassiques. In: Paléontologie française. Description zoologique et géologique de tous les animaux mollusques et rayonnés fossiles de France, comprenant leur application à la reconnaissance des couches.- Tome Premier, Cosson, Paris, 642 p. URL: <https://archive.org/stream/palontologiefr11orbi#page/n5/mode/2up>
- PHILLIPS J. (1829).- Illustrations of the geology of Yorkshire; or, A description of the strata and organic remains of the Yorkshire coast: accompanied by a geological map, sections, and plates of the fossil plants and animals, Part 1, The Yorkshire coast.- Privately printed, York, 1st Edition, 192 p. (XIV Pls.) URL: <http://www.biodiversitylibrary.org/item/74325#page/9/mode/1up>
- PHILLIPS J. (1835).- Illustrations of the geology of Yorkshire; or, A description of the strata and organic remains of the Yorkshire coast: accompanied by a geological map, sections, and plates of the fossil plants and animals, Part 1, The Yorkshire coast.- John Murray, London, 2nd Edition, 184 p. (XIV Pls.). URL: http://books.google.fr/books?id=qm_nAAAAAMAAJ&hl=fr&pg=PR1#v=onepage&q&f=false
- PHILLIPS J. (1865).- A monograph of British

- Belemnitidæ.- *Monographs of the Palaeontological Society of London* (1863), vol. XVII, p. 1-28. URL: <https://archive.org/stream/monographof171865pala#page/n251/mode/2up>
- PHILLIPS J. (1869).- A monograph of British Belemnitidæ. Part IV.- *Monographs of the Palaeontological Society of London* (1868), vol. XXII, p. 87-108 (Pls. XXI-XXVII). URL: <https://archive.org/stream/monographof221869pala#page/n307/mode/2up>
- PHILLIPS J. (1870).- A monograph of British Belemnitidæ. Part V.- *Monographs of the Palaeontological Society of London* (1869), vol. XXIII, p. 109-128 (Pls. XXVIII-XXXVI). URL: <https://archive.org/stream/publication12britgoog#page/n161/mode/2up>
- POMPECKJ J.F. (1912).- Cephalopoda. Paläontologie.- *Handwörterbuch der Naturwissenschaften*, Jena, Band 2, p. 265-296f. URL: <http://www.biodiversitylibrary.org/item/17519#page/279/mode/1up>
- PLOT R. (1677).- The natural history of Oxfordshire, being an essay toward the natural history of England.- Theater, Oxford, 358 p. (XVI Pls.). URL: <http://www.biodiversitylibrary.org/item/64513#page/7/mode/1up>
- RIEGRAF W. (1980).- Revision der Belemniten der Schwäbischen Jura. Part 7.- *Palaeontographica Abteilung A*, Stuttgart, vol. 169, p. 128-206.
- RIEGRAF W. (1999).- Taxonomic status of the belemnite genus *Belemnopsis* BAYLE 1878.- *Palaeontologische Zeitschrift*, Stuttgart, vol. 73, n° 1-2, p. 59-76.
- RIEGRAF W., JANSSEN N. & SCHMITT-RIEGRAF C. (1998).- Cephalopoda dibranchiate fossils (Coloidea) II. In: WESTPHAL F., ed., *Fossilium Catalogus I: Animalia pars 135*.- Backhuys Publishers, Leiden, 519 p.
- SCHLOTHEIM E.F. von (1820).- Die Petrefaktenkunde auf ihrem jetzigen Standpunkte durch die Beschreibung seiner Sammlung versteinerter und fossiler Überreste des Thier- und Pflanzenreichs der Vorwelt erläutert.- Becker, Gotha, 437 p. (XV Pls.). URL: <http://books.google.fr/books?id=4SQ-AAAACAAJ&hl=fr&pg=PR1#v=onepage&q&f=false>
- SHERBORN C.D. (1926).- Dates of publication of early catalogues of natural history issued by the British Museum.- *Journal of Natural History*, (Series 9), vol. 17, n° 98, p. 271-272.
- SOWERBY J., continued by SOWERBY J.D.C. (1829).- The mineral conchology of Great Britain; or coloured figures and descriptions of these remains of testaceous animals or shells, which have been preserved at various times and depths in the Earth.- Richard Taylor, London, vol. VI, 250 p. URL: <http://www.biodiversitylibrary.org/item/50339#page/5/mode/1up>
- STOLLEY E. (1919).- Die Systematik der Belemniten.- *Jahresbericht des Niedersächsischen Geologischen Vereins*, Hannover, vol. XI, p. 1-59.
- STOLLEY E. (1927).- Zur Systematik und Stratigraphie median gefurchter Belemniten.- *Jahresbericht des Niedersächsischen Geologischen Vereins*, Hannover, vol. XX, p. 112-136.
- STRAND E. (1926).- Miscellanea nomenclatorica zologica et palaeontologica I-III.- *Archiv für Naturgeschichte*, Berlin, (Abteilung A) Band 92, Heft 8, p. 30-75.
- VOLTZ P.L. (1830).- Observations sur les bélemnites.- *Mémoires de la Société d'histoire naturelle de Strasbourg*, t. I, p. 1-70 (VIII Pls.). URL: <https://archive.org/stream/mmoiresdelaso01soci#page/n13/mode/2up>
- WEIS R., MARIOTTI N. & RIEGRAF W. (2012).- The belemnite Family Holcobelidae (Coleoidea) in the European Jurassic: systematics, biostratigraphy, palaeobiogeography and evolutionary trends.- *Palaeodiversity*, Stuttgart, vol. 5, p. 13-49.
- WILTSHIRE T. (1869).- On the chief groups of the Cephalopoda (A paper read before the Geologists' Association, Nov. 1st, 1867.).- *Proceedings of the Geologists' Association, London, Supplement*, vol. I (1864-1871), p. 181-206.
- ZITTEL K.A. von (1895).- Grudzüge der Paläontologie (Paläozoologie). 1 Abteilung: Invertebrata.- R. Oldenbourg, München & Berlin, viii + 733 p. (Dibranchiata, p. 468-481). URL: <https://archive.org/stream/grundzgederpal00zitt#page/468/mode/1up>