

## Taxonomic Note

### A taxonomic correction after 140 years

Rakhi Dutta,\* and Subhendu Bardhan

Department of Geological Sciences, Jadavpur University, Kolkata-700032, India (rakhi.geol@gmail.com) (sbardhan12@gmail.com)

---

**Abstract.**—Waagen (1875) was the first who dealt with the Jurassic ammonites of Kutch based on detailed taxonomic work. In his monograph, he described among many species *Perisphinctes spirorbis* Neumayr, 1870 and *P. aberrans* Waagen, 1875 from the Callovian of Kutch, but the figures mentioned in the description did not correspond to the actual species. For *P. spirorbis*, the plate illustrated the holotype of an entirely different species (*P. aberrans*). On the other hand, *P. spirorbis* was illustrated as the lectotype of *P. aberrans*. Later, Spath (1924) introduced a new genus, *Subgrossouvria*, based on Waagen's *P. aberrans* as type species. He also erected another genus, *Indosphinctes*, and included *P. spirorbis* Waagen, 1875 within the synonymy of *I. indicus* (Siemiradzki, 1899). Spath (1931) was aware of wrong numbering of plates of Waagen's two species. But subsequent workers were ignorant of these taxonomic errors and continued to refer Waagen's wrong plate numbers. We have here described both the type specimens and provided diagnoses for Spath's two genera. We plead for this taxonomic correction in the incoming revised Treatise on Jurassic ammonites.

---

#### Introduction

A brilliant work in science generally comes of age and has a long lasting effect. But technical errors in it may confound the actual truth and mislead generations after. This is exactly what happened when a pioneering worker in the science of taxonomy of the nineteenth century, Waagen (1875), described his ammonite species *Perisphinctes aberrans* from the Jurassic of Kutch. The Jurassic of Kutch is famous worldwide for its extraordinary diversity of ammonites. Waagen (1875) was the first to produce a comprehensive taxonomic work on Kutch ammonites. Subsequently, Spath (1924, 1927–1933), another expert on ammonite taxonomy, revised and expanded Waagen's work on Kutch ammonites. Waagen (1875, p. 175) described the upper Callovian species *P. aberrans*, but inadvertently mentioned the wrong number on his plate (Waagen, 1875, pl. 40, fig. 1a–c instead of pl. 41, figs. 1a–c). In plate no. 40, figs. 1 and 2, another species, *Perisphinctes spirorbis* Neumayr, 1870, was illustrated. This apparent little error had far-reaching taxonomic consequences. Spath (1924), on the basis of Waagen's *Perisphinctes aberrans*, introduced a new genus *Subgrossouvria*, with *Subgrossouvria aberrans* designated as the type species. Spath (1924) was aware of the wrong numbering of plates made by Waagen (1875), but was not always explicit to mention it. Spath (1924, p. 13) introduced the genus *Subgrossouvria* “For *P. aberrans*, Waagen, pl. XL, fig. 1, non. 2 (= ? *Perisph. jupiter*, Loczy, non *A. jupiter*, Steinmann) represented by specimen 339 (genoholotype) which shows

extremely evolute inner whorls, the new genus *Subgrossouvria*, gen. nov. is proposed. Another specimen (351), between *S. morley-daviesi*, n. n. (= *P. aberrans*, Waagen, pl. XLI, fig. 2 only) and *S. coronaeformis*, Loczy sp. (50b), and only a little stouter than *S. villanoides*, Till sp. (95), also belongs to this genus.” While referring the type specimen of *Subgrossouvria*, Spath (1924) retained Waagen's wrong numbering of plate and figure (i.e., pl. 40, fig. 1), but for *S. morley-daviesi*, he correctly mentioned Waagen's true plate and figure number (i.e., pl. 41, fig. 2). These created further confusion. Curiously, Spath (1931, p. 374) maintained this stand, even though he was aware of the misplacement of Waagen's figure, and while systematically describing *Subgrossouvria aberrans*, he categorically mentioned, “This striking form was sufficiently well figured by Waagen to be recognized; but owing to the wrong numbering of his plate, writers like Noetling (1895, p. 21, pl. xxiii, fig. 5) have applied the name to species of quite different affinity.” Again, Spath (1931, p. 376) retained Waagen's wrong number of plate and figure in the synonymy list, but inserted the correct number in the same for *S. morley-daviesi*.

Many later workers were not aware of this technical lapse and compared their ammonite species with the figure illustrated by Waagen (pl. 40, fig. 1), which was not *Perisphinctes aberrans*. For example, Siemiradzki (1899) grouped Waagen's *P. aberrans* with an entirely unrelated and older genus, *Procerites* (Spath, 1931, p. 286). The greatest mistake took place when Arkell et al. (1957) made the robust ammonite compendium in the Treatise. They were perhaps not aware about the wrong numbering of Waagen's plate, and illustrated (p. L319, fig. 406) the specimen of Waagen's plate no. 40, fig. 1 as the holotype of

---

\* Corresponding author

*Subgrossouvria aberrans*. This specimen is actually the holotype of Waagen's *Perisphinctes spirorbis* (non Neumayr), which Spath (1931) described as *Indosphinctes indicus* (Siemiradzki, 1899). Arkell et al. (1957, p. L319) were so influenced that they provided the generic diagnosis of *Subgrossouvria* (Spath, 1924) based on the holotype of *Indosphinctes indicus* (Siemiradzki, 1899).

Subsequently many workers of the twentieth century and recent, reported *Subgrossouvria* from other regions, and they perhaps compared their forms with the incorrect figure of the holotype of *P. aberrans* Waagen, 1875. For example, Gerard and Contaut (1936), Callomon (1963), and Bonnot et al. (2014) treated *Subgrossouvria* as a distinct genus. Elmi (1962) considered *Subgrossouvria* as a macroconch subgenus within *Choffatia* (Siemiradzki, 1898). Mangold (1971) also included *Subgrossouvria* as a subgenus of *Choffatia* and described several species from the late Bathonian and early Callovian of France. Both Elmi (1962) and Mangold (1971) included the Bathonian genus *Loboplanulites* Buckman, 1925 as a junior synonym of *Subgrossouvria*. In Kutch, species of *Subgrossouvria* come only from the Callovian (Spath, 1931). Cox (1988) synonymized *Subgrossouvria* with *Choffatia*. The different taxonomic assignments of *Subgrossouvria* may be attributed to confusing ideas based on the incorrect figures of Waagen (1875) and Arkell et al. (1957).

## Materials and methods

We have recently revisited Waagen's original specimens of both true *Subgrossouvria aberrans* and *Indosphinctes indicus*, which are archived in Geological Survey of India (GSI), Kolkata, India. These are illustrated here (Fig. 1). Waagen's figures were actually drawings made by an artist, and Spath (1931), while introducing the new genus *Subgrossouvria*, did not illustrate the holotype of the type species. Therefore, this is the first time the photographs of the holotype of Waagen's *P. aberrans* have been made available (Fig. 1.1–1.3). We have also provided the original photographs of *Indosphinctes indicus* for comparison (Fig. 1.4–1.6). The descriptions of the type specimens and diagnoses for the two genera are also given below. We are aware that the Treatise of Jurassic ammonites is undergoing revision by the coordinating editor M.K. Howarth and his colleagues. We bring to their attention this historical error.

## Systematic paleontology

Phylum Mollusca Linnaeus, 1758  
 Class Cephalopoda Cuvier, 1795  
 Order Ammonoidea Zittel, 1884  
 Family Perisphinctidae Steinmann, 1890  
 Genus *Subgrossouvria* Spath, 1924

*Type species*.—*Perisphinctes aberrans* Waagen, 1875.

*Diagnosis*.—Macroconch large (maximum adult phragmocone diameter 165 mm); strongly evolute and generally depressed. Inner whorls with rounded flanks, which are finely and densely ribbed and have constrictions; ribs later become coarser and

distant; mostly bifurcating secondaries with furcation taking place at the outer flank; ribs prorsiradiate, may be rursiradiate; secondaries unlike *Choffatia* are stronger than primaries. Species mostly represented by phragmocones; in adult phragmocone, secondaries may disappear and primaries are present as bullae-like ridges. Microconchs replicate inner whorls of macroconchs in degree of involution, inflation, and style of ornamentation and lapped.

*Occurrence*.—England, France, Poland, Somalia, Kenya, Tanzania, Madagascar, Iran, Kutch (India), and Mexico.

*Subgrossouvria aberrans* (Waagen, 1875)  
 Figures 1.1–1.3, 2.1

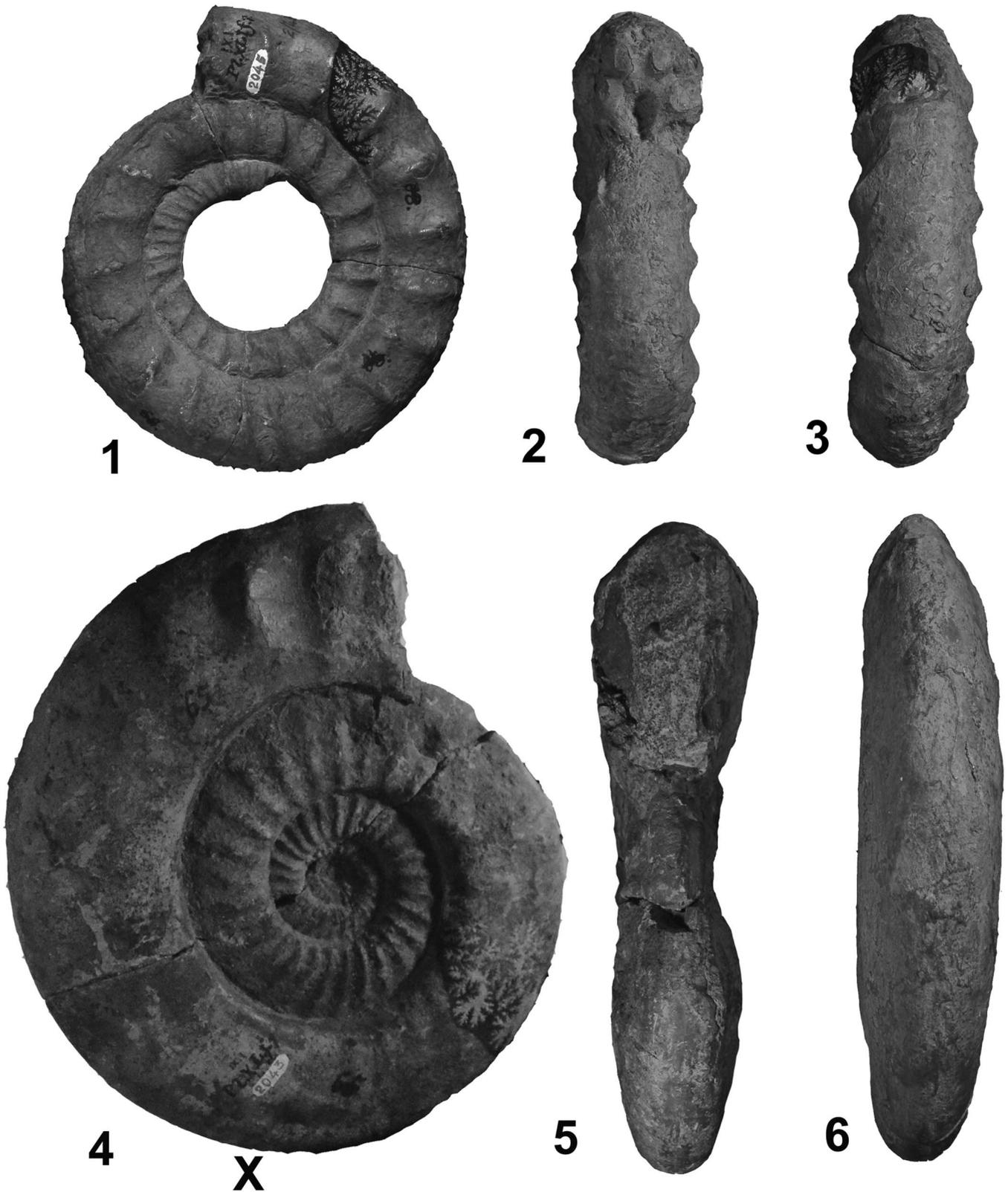
- 1875 *Perisphinctes aberrans* Waagen, pars, p. 175, pl. 41, figs. 1a–c.  
 1899 *Perisphinctes aberrans* Waagen; Siemiradzki, p. 305.  
 1924 *Subgrossouvria aberrans* (Waagen); Spath, p. 13.  
 1930 *Subgrossouvria aberrans* (Waagen); Spath, p. 40.  
 1931 *Subgrossouvria aberrans* (Waagen); Spath, p. 374, pl. 64, fig. 8.

*Lectotype*.—Geological Survey of India (GSI) type no. 2045. The genotype is the species *S. aberrans*, to be interpreted by its syntype, which were the examples figured by Waagen (1875, pl. 41, figs. 1 and 2), from which the larger specimen (Fig. 1.1–1.3) has been chosen as the lectotype.

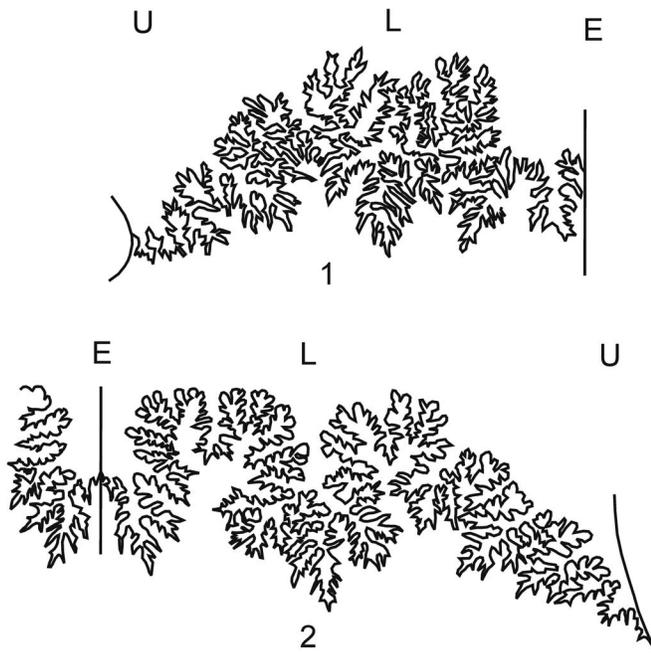
*Occurrence*.—Upper Callovian; Keera in the mainland of Kutch.

*Description*.—The lectotype is represented by mostly internal mold. Specimen is large, septate (maximum preserved diameter is 165 mm), strongly evolute (the ratio between the umbilical diameter and the shell diameter of the specimen, U/D, is 0.58) and depressed (the ratio between the whorl width and the whorl height, W/H, is 1.1). Inner whorls are missing. In the middle whorls, flanks are curved with numerous strong and dense primary ribs ( $P = 19$  per half whorl at ~83 mm diameter), which are prorsiradiate in nature. At this stage, primaries are long and secondary ribs are not visible. Shell is characterized by deep, prorsiradiate constriction at ~91 mm diameter. Primaries become strong with sharp crest and distant after the constriction.

At 137 mm diameter, primaries are 11 per half whorl and reduce to 9 at the outer half whorl at diameter 165 mm. Secondary ribs, which are first exposed at ~140 mm diameter, are short, two in number, and originate from the outer flank. There are short intercalatory ribs between two primary ribs. Both secondary and intercalatory ribs are feeble on the internal mold and disappear soon, rendering the venter smooth. Primary ribs become stronger during ontogeny and are present throughout the preserved end. Towards the end, primary ribs become obsolete near the umbilical margin and form elongated bullae-like ridges at the mid-flank. Body chamber missing, but from the trace of the umbilical seam, it appears to be short and occupies less than half of the outer whorl.



**Figure 1.** (1–3) Lectotype of *Perisphinctes aberrans* Waagen, 1875. GSI type no. 2045. Adult phragmocone from the ‘Athleta beds’ (= upper Callovian); (1) lateral, (2) apertural, (3) ventral views. (4–6) Holotype of *Perisphinctes spirorbis* Waagen 1875. GSI type no. 2043. Adult body chamber with missing peristome from the ‘Golden Oolite’ (= lower Callovian); (4) lateral, (5) apertural, (6) ventral views. X = Beginning of body chamber. All  $\times 0.5$ .



**Figure 2.** (1) Septal sutures of *Subgrossouvria aberrans* Waagen, 1875 at diameter ~156 mm, redrawn from Waagen (1875, pl. 40, fig. 1c). (2) Septal sutures of *Indosphinctes indicus* (Siemiradzki) at diameter ~162 mm, redrawn from Waagen (1875, pl. 41, fig. 1c). E = external lobe; L = lateral lobe; U = umbilical lobe. All  $\times 2$ .

Waagen (1875) vividly described the suture from this lectotype at diameter of ~156 mm (pl. 41, fig. 1c), which is refigured here (Fig. 2.1). The lobes are fine, delicate, and highly ramified; the siphonal lobe is broad, long with terminal branches; external saddle not very broad, bifid; first lateral lobe narrow, but longer than the siphonal lobe, highly incised, having asymmetrical trifid lobes; first lateral saddle narrower than the external saddle with long secondary lobe; second lateral lobe indistinct, four auxiliary lobes decreasing in size, hanging down to form a deep sutural lobe.

Genus *Indosphinctes* Spath, 1930

*Type species.*—*Ammonites calvus* Sowerby, 1840.

*Diagnosis.*—Macroconchiate shell large, diameter may exceed 250 mm, evolute, and compressed; inner whorls characterized by strong ribs, primary ribs furcate at the middle or slightly higher flanks; primary ribs often bundled or confined to a blunt node; ribs continue or may weaken or disappear completely with the beginning of adult body chamber. Adult body chamber occupies more or less half of the last whorl; peristome unknown. Suture is complex and highly frilled. Microconchs thoroughly ribbed and lappeded.

*Occurrence.*—France, Germany, England, Poland, Portugal, Hungary, Kenya, Tanzania, Madagascar, Turkey, Caucasus, Iran, Kutch, Baluchistan (Pakistan), Tibet, and Japan.

*Indosphinctes indicus* (Siemiradzki, 1899)  
Figures 1.4–1.6, 2.2

- 1875 *Perisphinctes spirorbis*, Neumayr; Waagen, pars, p. 154, pl. 40, figs. 1a–c.  
1895 *Perisphinctes aberrans* Waagen; Noetling, p. 22 (pars).  
1899 *Perisphinctes indicus*, Siemiradzki; p. 323 (non pl. 23, fig. 33).  
1911 *Perisphinctes indicus*, Siemiradzki; Till, p. 36.  
1924 *Grossouvria indica* (Siemiradzki) Spath, p. 13.  
1930 *Indosphinctes indicus* (Siemiradzki) Spath, p. 36.  
1931 *Indosphinctes indicus* (Siemiradzki); Spath, p. 333.

*Holotype.*—GSI type no. 2043.

*Occurrence.*—Lower Callovian, Keera in the mainland of Kutch.

*Description.*—The holotype is represented by mostly internal mold. Specimen with body chamber preserved (maximum diameter = 232 mm). It is strongly evolute (ratio between umbilical diameter and the shell diameter,  $U/D = 0.52$ ) and highly compressed (ratio between whorl width and the whorl height,  $W/H = 0.7$ ). Inner whorl at ~63 mm diameter is evolute ( $U/D = 0.39$ ), umbilicus wide and shallow, umbilical margin is rounded with steep wall. Flanks are curved with long, numerous, slightly prorsiradiate primary ribs (number of primaries per half whorl is 15). Secondary ribs are not visible.

At 132 mm diameter, specimen is relatively more evolute ( $U/D = 0.42$ ) and compressed ( $W/H = 0.6$ ). The primary ribs become thick and gradually start fading at ~182 mm in diameter, which marks the beginning of the body chamber. The body chamber appears to be smooth on the internal mold, but presence of traces of three bullae-like ridges at the preserved end indicates that the apparent smoothness of the body chamber is a preservational artefact. The length of the preserved body chamber is about three-fourths of the outer whorl. Peristome is missing.

Waagen (1875) described in detail the septal sutural patterns of the holotype at ~162 mm in diameter (pl. 40, fig. 1c), which is refigured here (Fig. 2.2). The lobes are fine and highly frilled; the siphonal lobe longer than broad with deeply incised branches; the external saddle broad, symmetrical with a well-developed secondary lobe; the first lateral lobe narrow, longer than the external lobe, deeply incised and trifid; the first lateral saddle narrow with asymmetrical lobes; the second lateral and four auxiliary lobes are small and hang down rapidly to form a large sutural lobe.

## Acknowledgments

We thank the Director of the Curatorial Division of the Geological Survey of India, Kolkata for granting access to the type materials. We also thank A. Roy and S. Mondal for critically reading the manuscript. We thank two anonymous reviewers, the editor (B. Hunda), and the associate editor (M. Yacobucci) for critically reviewing the manuscript and providing valuable suggestions. Partial aid from the DST (SERB - SR/S4/ES-638/2012) was received by SB; RD received aid from the UGC-BSR Scheme, Jadavpur University, Kolkata, India.

## References

- Arkell, W.J., Kummel, B., and Wright, C.W., 1957, Mesozoic Ammonoidea, in Moore, R.C., ed., Treatise on Invertebrate Paleontology. Part L. Mollusca 4: Boulder, Colorado, and Lawrence, Kansas, Geological Society of America and University of Kansas Press, p. L225–L489.
- Bonnot, A., Boursicot, P.-Y., and Ferchaud, P., 2014, Les genres *Subgrossouiria* Spath et *Orionoides* Spath (Ammonitina, Perisphinctidae) de l'Horizon à Leckenbyi (Callovien supérieur, Zone à Athleta) de Montreuil-Bellay (Maine-et-Loire, France): Carnets de Géologie (Notebooks on Geology), v. 14, p. 351–399.
- Buckman, S. S., 1925, Yorkshire Type Ammonites: London, William Wesley and Son, 446 p.
- Callomon, J.H., 1963, Sexual dimorphism in Jurassic ammonites: Transactions of the Leicester Literary and Philosophical Society, v. 57, 21–56.
- Cox, B.M., 1988, English Callovian (Middle Jurassic) Perisphinctid Ammonites. Part 1: Monograph of the Palaeontographical Society, London, 54 p.
- Cuvier, G., 1795, Second Mémoire sur l'organisation et les rapports des animaux à sang blanc, dans lequel on traite de la structure des Mollusques et de leur division en ordre, lu à la société d'Histoire Naturelle de Paris, le 11 prairial an troisième [30 May 1795]: Magazine Encyclopédique, ou Journal des Sciences, des Lettres et des Arts, 1795 [1. année], 2, p. 433–449.
- Elmi, S., 1962, Considerations sur *Choffatia* (*Subgrossouiria*) (Ammonitina, Pseudoperisphinctinae): Compte Rendu Sommaire des séances de la Société Géologique de France, no. 7, p. 205–206.
- Gerard, C., and Contaut, H., 1936, Les ammonites de la zone à *Peltoceras athleta* du Centre-Ouest de la France: Mémoire de la Société géologique de France, Paris, (Nouvelle Série), v. 29, 79 p.
- Linnaeus, C., 1758, Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Editio decima, reformata. Laurentius Salvius: Holmiae, v. 2, 824 p.
- Mangold, C., 1971, Les Perisphinctidae (Ammonitina) du Jura meridional au Bathonien et au Callovien: Documents des Laboratoires de Géologie de la Faculté des Sciences de Lyon, v. 41, 246 p.
- Neumayr, M., 1870, Ueber einige neue oder weniger hekannte Cephalopoden der Macrocephalen-Schichten: Jahrbuch der Kaiserlichen und Königlichen Geologischen Reichsanstalt, v. 20, p. 147–156.
- Noetling, F., 1895, Fauna of the Kellaways of Mazar Drik. Palaeontologia Indica: Geological Survey of India, Ser. 16, Pt. 1 (1), p. 1–22.
- Siemiradzki, J.V., 1898, Monographic description of the ammonite group Perisphinctidae: Palaeontographia, v. 45, p. 69–296.
- Siemiradzki, J.V., 1899, Monographic description of the ammonite group Perisphinctidae: Palaeontographia, v. 46, p. 297–352.
- Sowerby, J.De.C., 1840, Description of fossils procured by Capt. Smee and Col. Pottinger in Cutch and the desert to the north-east of Cutch: Transactions of the Geological Society London, v. 5, p. 715–719.
- Spath, L.F., 1924, On the Blake collection of ammonites from Kachh, India: Palaeontologia Indica. Geological Survey of India, New Series, 9, Memoir No. 1, p. 1–30.
- Spath, L.F., 1927–1933, Revision of the Jurassic cephalopod fauna of Kachh (Cutch): Palaeontologia Indica. Geological Survey of India, New Series 9, Memoir No. 1, p. 1–945.
- Steinmann, G., 1890, Cephalopoda, in Steinmann, G., and Döderlein, L., eds., Elemente der Palaeontologie: Leipzig, W. Engelmann, p. 344–475.
- Till, A., 1911, Die Ammonitenfauna des Kelloway von Villanv (Ungarn): Beiträge zur Paläontologie und Geologie Oesterreich-Ungarns und des Orients, v. 23, p. 175–199, 251–272, v. 24, p. 1–49.
- Waagen, W., 1873–1875, Jurassic fauna of Kutch, the Cephalopoda: Palaeontologia Indica, Series 9, Memoir 1, p. 1–247.
- Zittel, K.A., 1884, Handbuch der Palaeontologie, Band 1, Abt. 2, Lief 3, Cephalopoda: Munich and Leipzig, Oldenbourg, p. 329–522.

Accepted 11 October 2016