

THE BRACHIOPOD *STOLMORHYNCHIA* *STOLIDOTA* FROM THE BAJOCIAN OF DORSET, ENGLAND

by COLIN D. PROSSER

ABSTRACT. Numerous nominal species of the genus *Stolmorhynchia* have been recorded worldwide. These vary considerably in morphology and in reality are unlikely to belong to the same genus. The type species of *Stolmorhynchia* from the Bajocian of Dorset, *Stolmorhynchia stolidota* Buckman, 1918, is described in detail for the first time. This description provides a clear picture of the true nature of the genus *Stolmorhynchia*, and a sound foundation from which to redefine it. Species recorded from the Caucasus appear to be the only other forms which can definitely be attributed to *Stolmorhynchia*.

SPECIES of the Jurassic rhynchonellid genus *Stolmorhynchia* Buckman have been nominally recorded from around the world by a number of authors (see species lists given by Buckman 1918; Alméras 1964; Rousselle 1965, 1968, 1974; Kamyshan and Babanova 1973). Despite this, the genus is founded on a very poorly described type species, *Stolmorhynchia stolidota* Buckman, from the Bajocian Middle Inferior Oolite of Dorset, southwest England. As a result of being loosely defined, *Stolmorhynchia* has become something of a 'dustbin genus', with species being attributed to it because they do not appear to fit anywhere else (see Ager *et al.* 1972). The purpose of this paper, therefore, is to give a description of the type species in order to provide a better understanding of the nature of the genus and to facilitate future work in splitting-off nominal species groups which are found to vary significantly from the type species.

Buckman's (1918) initial description of this species consisted of only three lines and was accompanied by figures of a holotype and paratype. Unfortunately both specimens lack shells: a result of Buckman's technique of burning shells to produce internal moulds for examination of muscle scars and internal plates. In consequence, these types are difficult to relate to undamaged specimens.

Despite this rather poor description of *Stolmorhynchia stolidota*, the species has remained unstudied in Britain ever since. The only attempt to update knowledge of the taxon was made overseas by Kamyshan and Babanova (1973). Their study was not a detailed examination of *Stolmorhynchia stolidota*, as it was based solely on specimens from the Caucasus and no type material was examined.

The systematic descriptions provided below are based on re-examination of the type specimens, on topotype material examined in the Natural History Museum (BMNH) and on specimens collected by the author in the field. Previously unidentified topotype collections of 50 specimens (B. 71876) and 10 specimens (B. 71740) in the BMNH were particularly useful in demonstrating morphological variation within the species. Additional specimens were examined in the collections of the British Geological Survey (BGS GSM). The morphological terminology adopted here is widely accepted and is essentially that used in the *Treatise* (Moore 1965). The stratigraphical nomenclature adopted follows Parsons (1980).

SYSTEMATIC PALAEOLOGY

Class ARTICULATA Huxley, 1869
 Order RHYNCHONELLIDA Khun, 1949
 Superfamily RHYNCHONELLACEA Gray, 1848
 Family ?BASILIOLIDEA Cooper, 1959
 Subfamily LACUNOSELLINAE Smirnova *in* Ager, 1965
 Genus STOLMORHYNCHIA Buckman, 1918

Discussion. The generic diagnosis given below is based almost entirely on the type species, although minor morphological variations seen in species recorded by Kamyshan and Babanova (1973) are taken into consideration.

Diagnosis. Medium- to large-sized rhynchonellids with a subtrigonal to subpentagonal outline. Dorsal fold usually well developed, often asymmetrical. Anterior commissure uniplicate. Costae strong and fairly angular, 12–16 in number. No posterior smooth area. Beak small, strong and suberect; beak-ridges poorly developed. Dental lamellae strong and subparallel. Hinge plates strong and slightly convergent ventrally. Median septum absent or barely detectable; no septalium. Crura of falcifer type.

Stolmorhynchia stolidota Buckman, 1918

Text-figs 1–2

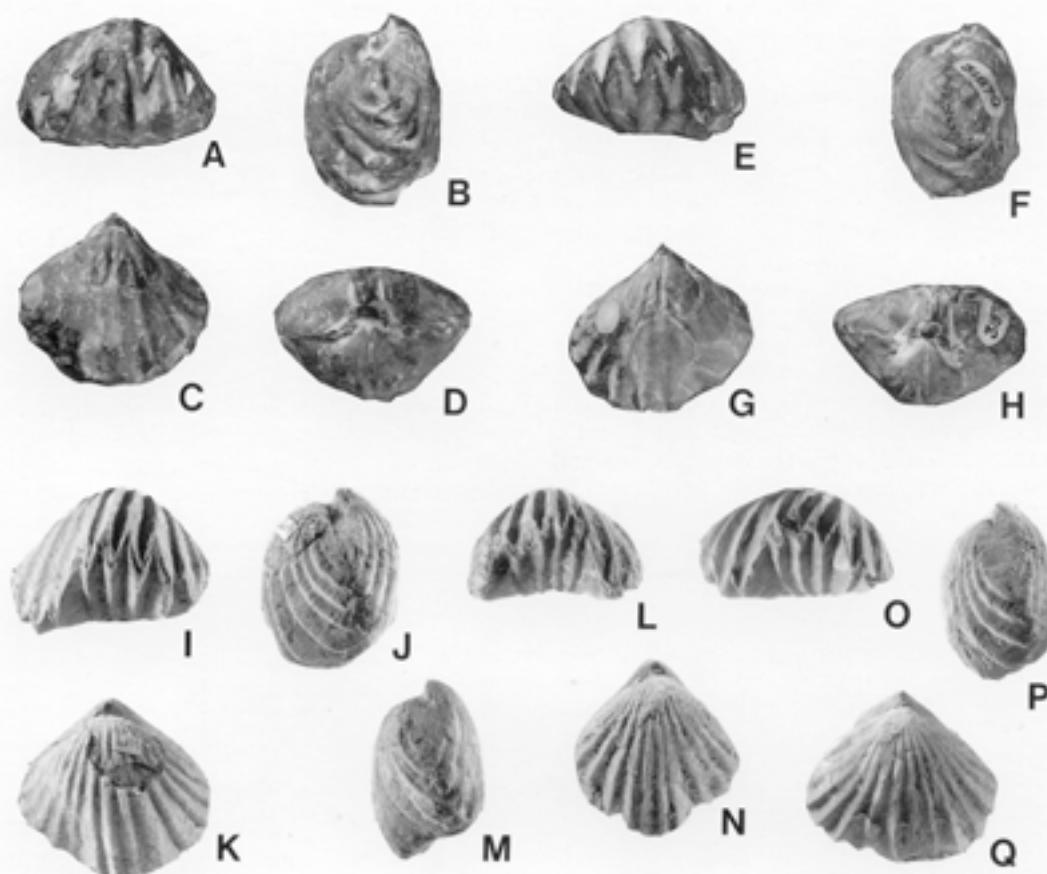
- 1918 *Stolmorhynchia stolidota* Buckman, p. 46, 228, pl. 13, figs 12–13.
 1962 *Stolmorhynchia stolidota* Buckman; Ager, p. 132.
 1965 *Stolmorhynchia stolidota* Buckman; Ager, p. H609, fig. 409, 3.
 1967 *Stolmorhynchia stolidota* Buckman; Ager, p. 164.
 1972 *Stolmorhynchia stolidota* Buckman; Ager *et al.*, p. 188.
 1973 *Stolmorhynchia stolidota* Buckman; Kamyshan and Babanova, p. 37, pl. 2, figs 9–11.
 1985 *Stolmorhynchia stolidota* Buckman; Prosorovskaya, p. 105, pl. 20, fig. 4.

Diagnosis. This is as given for the genus, with the addition that in this species the costae usually number 13–15.

Type specimen. Buckman (1918, pl. 13, figs 12–13) figured two specimens of this species from the Irony Bed, *blagdeni* Subzone of the *humphriesianum* Zone, of Louse Hill, Sherborne, Dorset. Buckman designated the original of figure 12 as the holotype and that of figure 13 as a paratype. These specimens are now located in the British Geological Survey, numbered BGS GSM 31869 and BGS GSM 31870 respectively. Their dimensions in mm are as follows: holotype: L = 21.9, W = 24.4, T = 16.7; paratype: L = 21.5, W = 23.8, T = 15.8. Both specimens are internal moulds.

Description. External characters: medium- to large-sized rhynchonellids with specimens measured being up to 22.6 mm long, 28 mm wide and 18.2 mm thick. Subtrigonal to subpentagonal in outline and biconvex in lateral view, with the brachial valve being the more convex of the two valves. The shell is often asymmetrical, with approximately equal numbers of left- and right-skewed specimens. The shell can be left-skewed, right-skewed or not skewed at all (see examples in Text-fig. 1). The anterior commissure is uniplicate. The dorsal fold starts to appear halfway down the valves, is usually well-developed, and is often skewed by the asymmetry. There are usually 13–15 strong, fairly angular costae. A widely spaced vascular system is clearly visible on many internal moulds, and is well demonstrated on Buckman's type specimens. The beak is small, strong and suberect, with beak ridges very poorly developed. The foramen is small, subcircular and submesothyrid, with small disjunct deltidial plates. In many specimens, however, the details of the foramen are obscured by sediment and are thus very difficult to examine.

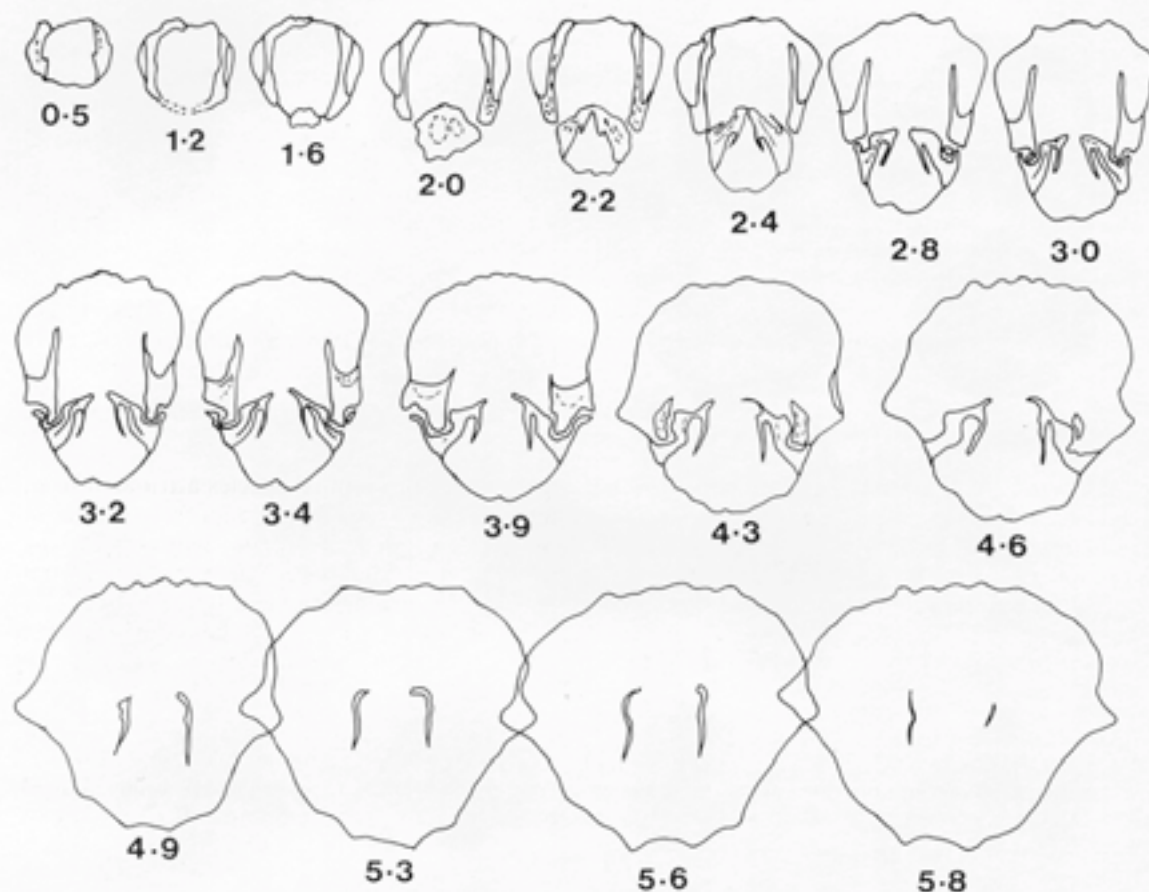
Internal characters. These are shown in Text-figure 2. Traces of a pedicle collar appear to be visible. The delthyrial cavity is rectangular. The dental lamellae are strong and virtually parallel. The lateral umbonal cavities are narrow and semi-elliptical. Ridges marking possible sites of muscle attachment are visible on the



TEXT-FIG. 1. *Stolmorhynchia stolidota* Buckman. Bajocian, *humphriesianum* Zone, Irony Bed; Louse Hill, Sherborne, Dorset. Specimens A-D and E-H are internal moulds and have been photographed uncoated to display internal plates and muscle scars. A-D, holotype GSM 31869; note asymmetry; figured Buckman 1918, pl. 13, fig. 12a-d. E-H, paratype GSM 31870. Internal mould showing vascular system; figured Buckman 1918, pl. 13, fig. 13a-d. I-Q, three topotypes; these specimens have shells and are coated with ammonium chloride. I-K, BMNH B.31890; Walker Collection; specimen with well-displayed asymmetry. L-N, BMNH. B.71740. Buckman Collection; specimen showing little asymmetry. O-Q, BMNH B.31609; specimen with strong asymmetry. All $\times 1$.

inside of the pedicle valve. The teeth are crenulated and are inserted into their sockets in a slightly dorsally convergent manner. The hinge-plates are strong, straight and slightly convergent ventrally. The median septum is absent to barely detectable and there is no septalium. The crura are of the falcifer type.

Occurrence and remarks. The type material and virtually all the other specimens examined in the BMNH are recorded as coming from the *humphriesianum* Zone (*blagdeni* Subzone) of the Sherborne area in Dorset. In this area, Louse Hill is type locality of the species and has yielded most specimens. The few specimens of this species in the BMNH not from the Sherborne area are recorded as coming from the same biostratigraphical horizon at Burton Bradstock on the Dorset coast. Outside Dorset, the species has only been recorded from the *sauzei* Zone of the north-west Caucasus (Kamyshan and Babanova 1973) and from the *humphriesianum* Zone of the Transcaucasus (Prozorovskaya 1986).



TEXT-FIG. 2. *Stolmorhynchia stolidota* Buckman. Bajocian (*humphriesianum* Zone) Irony Bed; Louse Hill, Sherborne, Dorset. Topotype BMNH B.71933; Buckman Collection; internal mould. A series of 17 serial sections through the posterior part of the shell; note the well-defined falcifer crura, $\times 2.5$.

Stolmorhynchia stolidota cannot easily be mistaken for its contemporaries in Britain. It is the only British Aalenian or Bajocian rhynchonellid with falcifer crura, and its often well-defined asymmetry is only matched in the Inferior Oolite by the larger and much more depressed Upper Bajocian *Rhactorhynchia*. Fürsich and Palmer (1984) investigated asymmetry in rhynchonellids, but concluded that it was not possible to prove whether or not asymmetry had an adaptive function. However, the relatively localized geographical and stratigraphical distribution of this species in the Inferior Oolite of England may suggest a degree of facies control.

Other nominal species of Stolmorhynchia. A full assessment of nominal species assigned to *Stolmorhynchia* would be a vast task, and this is not attempted here. However, the revision of the type species above suggests that considerable splitting-off of species from the genus is required. For example, the only other nominal species of *Stolmorhynchia* recorded from Britain, *Stolmorhynchia bouchardii* (Davidson) known from the Upper Lias of Ilminster, Somerset, has very little shell ornament (Ager 1962) and probably does not belong in this genus. This was in fact recognized by Ager in later papers (Ager 1967; Ager *et al.* 1972), where he expressed doubts as to whether his

earlier assignment of this species to *Stolmorhynchia* was correct, and recognized the need for a revision of the type species to clarify matters. *Stolmorhynchia bouchardii* is still, however, entrenched in the literature and is consistently referred to in current research (Alm eras *et al.* 1990). The same doubts apply to Upper Lias species of '*Stolmorhynchia*' described from Morocco by Rousselle (1974), which lack *falcifer crura* and which display a posterior smooth area, thus differing significantly from the type species. In fact, of all the nominal species investigated during the course of this study, it is only those described by Kamyshan and Babanova (1973) from the Caucasus which appear to be attributable with any degree of certainty to *Stolmorhynchia*. Whether or not the six new species (*S. inconspicua*, *S. karatschae*, *S. kusnetzovi*, *S. robinsoni*, *S. triplicata* and *S. urupensis*) from the *sauzei* and *humphriesianum* zones of the Bajocian, proposed by Kamyshan and Babanova (1973) are all valid species is debatable, as they vary little in morphology. They are all, however, very similar to *Stolmorhynchia stolidota*, which occurs with them, and are almost certainly attributable to the genus *Stolmorhynchia*.

CONCLUSIONS

Stolmorhynchia is a poorly defined genus with a large number of nominal species attributed to it. The taxonomic revision of the type species undertaken here, supplemented by data from species of *Stolmorhynchia* from the Caucasus, enables the first detailed and well-defined diagnosis for the genus *Stolmorhynchia* to be given. Thus, for the first time, a solid basis has been provided from which the generic validity of nominal species of *Stolmorhynchia* can be assessed. In the light of this work, it appears that the splitting-off of nominal species of *Stolmorhynchia* will be required in due course.

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