The mid-Palaeozoic camerate crinoid *Scyphocrinites* Zenker in southwest England

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Abstract

Přídolí (Upper Silurian) and Devonian rocks of the British Isles are mainly non-marine. The only occurrence of the wide-ranging planktonic crinoid *Scyphocrinites sensu stricto* in the British Isles is in Cornwall, southwest England. Although this occurrence was long thought to be Silurian, either Wenlock or Ludlow, the range of this genus is restricted to Přídolí (Upper Silurian) and lowermost Lochkovian (Lower Devonian). Available evidence supports a Lochkovian age for the Cornish specimens; Silurian rocks are absent from this area. These fossils were not illustrated in the original report; this omission is rectified herein.

Key words: Crinoidea, Scyphocrinites, England, Silurian, Devonian

Introduction

In the course of collaborative research with Professor G. D. Sevastopulo and co-workers on the Silurian (Ludlow) crinoid ‘Actinocrinites’ pulcher M’Coy, 1851, which represents a new genus of monobathrid camerate perhaps ancestral to planktonic *Scyphocrinites* Zenker, we were reminded of the occurrence of loboliths of *Scyphocrinites sensu stricto* in the Silurian of southwest England. Loboliths are modified attachment structures that are interpreted as serving as floats; *Scyphocrinites* was thus planktonic. These were documented by Bather (1907) over 100 years ago, since which the only detailed re-examination was in an unpublished Ph.D. thesis (Ramsbottom, 1995). No illustration of any of these specimens was published until recently (Donovan et al., 2008a, fig. 5) and their stratigraphic position has remained equivocal (see below).

The purpose of the present paper is not descriptive. The Cornish specimens, although diagnostic of *Scyphocrinites* loboliths, are poorly preserved. They add nothing to our knowledge of loboliths, structures that have been amply documented elsewhere. Rather, our aim is two-fold: to adequately illustrate some of the British specimens (Fig. 1), although they are admittedly poor specimens; and to clarify their stratigraphic position. This short communication is therefore provided as a supplement to Bather’s original paper and a slightly belated centennial celebration of the original report of the only *Scyphocrinites*-bearing deposits in the British Isles.


Locality and horizon

All specimens are from Catasuent Cove, Porthluney, Cornwall, southwest England [approximate NGR SW 980 408], and were collected by C. Reid and W. G. Fearnsides in 1904 (Ramsbottom, 1953, p. 201). See Sadler (1974, text-fig. 1) for a simplified geological map of this area. Green (1904, p. 289) reported “minute ossicles of crinoids” from this locality, which may have been derived from multiplated loboliths. The only other crinoids described from this area are Ordovician (Donovan, 1995, p. 160, text-fig. 48L, M).

The British Geological Survey (BGS) Palaeosaurus database (M. Howe, written comm.) notes that BGS GSM 85519 (Fig. 1C) came from a limestone lenticle. It is (erroneously) identified as the rhombiferan cystoid *Pseudocrinites magnificus* Forbes, 1848, which Paul (1967, pp. 321–322) considered a junior synonym of *Pseudocrinites bifasciatus* Pearce, 1843. This species is only known from the Much Wenlock Limestone Formation of Dudley, West Midlands (Wenlock). Palaeosaurus further noted that BGS GSM 85529 came from “Limestone and dolomite in a crush breccia along big overthrust.” Bather (1907, p. 191) recorded these fossils coming from “Black slates with limestone lenticles or inclusions.”

Ramsbottom (1953, p. 201) considered the horizon “probably Silurian.” BGS Palaeosaurus considers it Wenlock based on the misidentification of a lobolith as *Pseudocrinites*. The presence of loboliths of *Scyphocrinites* indicate a higher stratigraphic position, probably Přídolí, but possibly even lowermost Lochkovian (Haude, 1992). Indeed, Sadler (1974) considered that Lower and Middle Devonian slates, volcanic rocks and quartzites rest with non-angular unconformity on the Ordovician Gorran Quartzites, with no mention of Silurian. Matthews (in House et al., 1977, p. 25) noted that the rocks
that had previously yielded supposed Ludlow cephalopods were now found to include Devonian conodonts. Current interpretations include the Lower Palaeozoic and older Devonian rocks of south Cornwall in an olistostromic succession (Barnes, 1983; Bluck et al., 1992, p. 57). Therefore, a Devonian (lowermost Lochkovian) stratigraphic position for the Cornish loboliths must be preferred.

Systematic palaeontology

Class Crinoidea J. S. Miller, 1821
Subclass Camerata Wachsmuth and Springer, 1885
Order Monobathrida Moore and Laudon, 1943
Suborder Glyptocrinina Moore, 1952
Superfamily Melocrinitaeae d’Orbigny, 1852
Family Scyphocrinidae Jaekel, 1918
Genus Scyphocrinites Zenker, 1833

Type species: Scyphocrinites elegans Zenker, 1833, p. 25, by monotypy (Ubaghs, 1978b, p. T489).

Diagnosis: (After Ubaghs, 1978b, p. T489.) “Calyx large, expanding or contracting toward arm bases, with interradial areas depressed or protuberant, largely formed of fixed pinnulads; fixed secundibrachs 10 to 20 or even more, 1st pinnule borne by fixed secundibrach 2 (outer) and 2nd pinnule by fixed secundibrachs 4 (inner). Anal tube strong, subcentral on tegmen. Free arms composed of very short brachiads arranged uniserially or biseri ally. Column ending distally either in small encrusting root or (more typically) in large bulbous chambered structure designated separately as Lobolithus or Camarocrinus with walls of minute irregular plates, having their origin in bifurcations and modifications of innumerable root-branches; axial canal of stem quinquelobate to sharply quinquestellate.”

Range: Upper Silurian (Přídolí) to Lower Devonian (lowermost Lochkovian), global in distribution (Haude, 1992).

Remarks: Camarocrinus Hall, 1879, was considered to be merely a name for the chambered basal termination of the stem by Ubaghs (1978b), that is, similar to Lobolithus, but Haude (1992, p. 176 et seq.) re-established it as a valid genus.

Scyphocrinites sp.

(Fig. 1)

1907 Scyphocrinus; Bather, pp. 192–196.
1907 Scyphocrinus; Kitchen, p. 73.
1907 Scyphocrinus; Reid (loc. cit. Ramsbottom, 1953, p. 203).
1953 Scyphocrinites sp.; Ramsbottom, pp. 201–203, text-fig. 12A–C, pl. 29, figs. 1–3.
1958 Scyphocrinus; Ramsbottom, p. 106.
1977 Scyphocrinites; Matthews in House et al., p. 25.
1992 Scyphocrinites; Matthews in Cocks et al., p. 17.
2008a Scyphocrinites sp.; Donovan et al., p. 36, fig. 5, table 1.
2008b Scyphocrinites sp.; Donovan et al., p. 339, table 15.3.

Material: Twelve rocks fragments and slabs bearing loboliths, fragments of column and possibly plates of crowns, BGS GSM 85519–85530 (Fig. 1).

Locality and horizon: See above.

Description: See Bather (1907) and, particularly, Ramsbottom (1954, pp. 201–203).

Remarks: These specimens represent typical Scyphocrinites loboliths (Fig. 1), although their preservation is poor. Scyphocrinites Zenker was a highly distinctive camarate crinoid with an unusually wide geographic distribution. This was presumably due to its planktonic habit. This was facilitated by the distal ‘attachment’ forming the lobolith or flotation device. Its rarity in the British Isles, which perhaps can be considered the cradle of systematic crinoid studies (Miller, 1821; Knell, 2000, pp. 102–104), is undoubtedly facies controlled. Most Přidoli and Devonian rocks in the British Isles are non-marine in origin, the Old Red Sandstone. Only in southwest England are there common marine Devonian rocks, and only in southwest Cornwall do there appear to be marine Devonian (?) rocks of the correct age and facies to include Scyphocrinites.

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References


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