

A NEW HETEROMORPH AMMONITE FROM THE LOWER CRETACEOUS OF YORKSHIRE

by J. C. DOYLE

ABSTRACT. *Shastrioceras anglicum* sp. nov., which seems to be the earliest known species of the genus, is described and the significance of its occurrence in the Compound Nodular Band D.I., at Speeton in east Yorkshire, is discussed in the light of current knowledge.

RECENT collecting at Speeton has brought to light several genera of ammonites which are new to Britain. The present paper deals with one of these discoveries, apparently an ammonite of the genus *Shastrioceras*. If this identification is correct, then so far as is known, this will be the first European record of this genus.

Previously *Shastrioceras* has been recorded from North America: California, Oregon, Washington (Anderson 1938), and from south-western parts of British Columbia bordering on the State of Washington. In these localities *Shastrioceras poniente* Anderson has been selected as the index fossil of the lowest zone of the Barremian stage (Murphy 1956). The genus has also been described from Japan (Matsumoto 1953), where *S. nipponicum* Matsumoto together with *Pulchellia ishidoensis* Matsumoto form an ammonite zone which is taken to correspond with the Barremian stage.

Several species of *Shastrioceras* occur in the Barremian strata of the above localities, but only in the U.S.A. has the genus previously been found as low as the Upper Hauterivian (Popenoe *et al.* 1960). The occurrence of this genus at such a low Hauterivian horizon as the Compound Nodular Band in England would, if confirmed by later collecting of more satisfactory material, be of great interest and importance.

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SYSTEMATIC DESCRIPTION

Family ANCYLOCERATIDAE Meek 1876
Subfamily CRIOCERATITINAE Wright 1952
Genus SHASTRIOCERAS Anderson 1938

Shastrioceras anglicum sp. nov.

Plate 78, figs. 1-3; text-fig. 1*a*

Material. One small whorl fragment, D. 680, in the author's collection.

Horizon of holotype. The holotype was found on the upper surface of one of the large 'compound nodules' which characterize D.I. (for description of bed see Lamplugh [Palaeontology, Vol. 3, Part 1, 1963, pp. 575-8, pl. 78.]

1889). It is partly preserved in brown phosphate, and partly in the grey limestone of which the nodules are largely composed. Some of the shell is still retained, and the ammonite is almost certainly indigenous, for there is little indication of rolling.

Spath (1924) has shown that the Compound Nodular Band represents a low Hauterivian horizon, and he places it in the zone of *Lyticoceras noricus*. However, Arend Thiermann of Hamburg University is working on the Lyticoceratid fauna of an equivalent horizon in Germany, and his work should eventually make it possible to determine the horizon of D.I. more accurately. For the terminology of the detailed succession of 'D' beds, see Neale (1960).

Dimensions of holotype.

Maximum height of whorl	20.5 mm.
Width of whorl at maximum whorl height	10.0 mm.
Width of venter measured at maximum whorl height	2.5 mm.

Description. Whorl fragment exhibits slight coiling in one plane, and increases in height very slowly. Shell compressed in section, the height being a little more than twice the width. Ornament consists of dense, single, slightly sinuous ribs, which cross the narrow venter without interruption. At the ventro-lateral shoulders, the ribs are pinched into short, sharp spines, projecting backwards slightly, rather like the teeth of a saw. The characteristic form of these spines is only seen where the original shell is preserved. The latter is absent on one part of the holotype, where the low, blunt, internal cast of a spine base is exposed.

The spines are displaced to a certain extent (Pl. 78, fig. 2) thus disturbing slightly the bilateral symmetry of the specimen. This appears to be an original feature and not due to subsequent crushing; its significance is not apparent, but incipient helical coiling may be indicated. The suture-line is unfortunately not fully displayed, much of it being covered by the original shell. Sufficient is exposed, however, to show that the second lateral lobe is almost equal in length and breadth to the first lateral lobe (text-fig. 1a).

Affinities. Although the material leaves much to be desired, it is none the less sufficient to allow comparison with, and distinction from, other known forms.

Since little is known of Lower Cretaceous heteromorph ammonites (Casey 1960, p. 12), it is desirable to consider whether the specimen definitely belongs to the genus *Shastrioceras*. Compression is acute and the peculiar spines are carried on the shoulders of an exceptionally narrow venter. These characters could be considered of specific rank if it could be shown that the Speeton form agreed in coiling with *Shastrioceras*, and indeed it would appear to coil in a loose eriocone like *S. whitneyi* Anderson. Dr. R. Casey, however (*in litt.* 1961), has suggested that it might possibly be part of the straight

EXPLANATION OF PLATE 78

- Figs. 1-3. *Shastrioceras anglicum* sp. nov. Holotype, Bed D.1, Lower Hauterivian; Speeton, Yorkshire. 1, Side view, $\times 2.5$. 2, Ventral view, showing slightly oblique ventral ribbing, $\times 2.5$. 3, Reverse side of holotype showing suture line, $\times 2.5$.
 Figs. 4, 5. *Nullamphiura felli* sp. nov. Holotype, CPC 4642, F22163, Locality T.T. 51, Bathurst Island, Northern Territory, Australia; Cenomanian. 4, General view, $\times 4$. 5, Enlarged view of portion, $\times 11$.

shaft of some unnamed genus. Unfortunately the suture-line is not well enough shown to allow that to be used for a full comparison with the suture of a true *Shastrioceras*.

Dr. D. Jones of the U.S. Geological Survey (*in litt.* 1961) believes that the species of *Shastrioceras* described by Anderson (1938) intergrade and are not so morphologically distinct as might be supposed. After seeing plaster casts of the holotypes I am inclined to agree with him, but whilst it is not the object of this paper to discuss the validity of these forms, in my opinion *S. whitneyi* Anderson is sufficiently distinct to justify specific differentiation. This species seems to be most closely related to *S. anglicum* on morphological grounds, both species being well compressed and apparently loosely coiled. The



TEXT-FIG. 1. *a.* *Shastrioceras anglicum* sp. nov.; part of suture-line of holotype, $\times 2.5$. *b.* Suture-line of *Shastrioceras* sp. USGS Loc. 1519, $\times 2.5$.

other species of *Shastrioceras* tend towards having an inflated whorl section and much tighter coiling. *S. whitneyi* also seems to be most closely related to *S. anglicum* on stratigraphical grounds, for Imlay (1960) indicates that *S. whitneyi* and allied forms first occur in California in the zone of *Hertleinites aquila*, which is generally supposed to represent a high Hauterivian horizon. However, *S. whitneyi* would appear to range into the Lower Barremian. All the other known species of *Shastrioceras* occur in association with typically Barremian faunas.

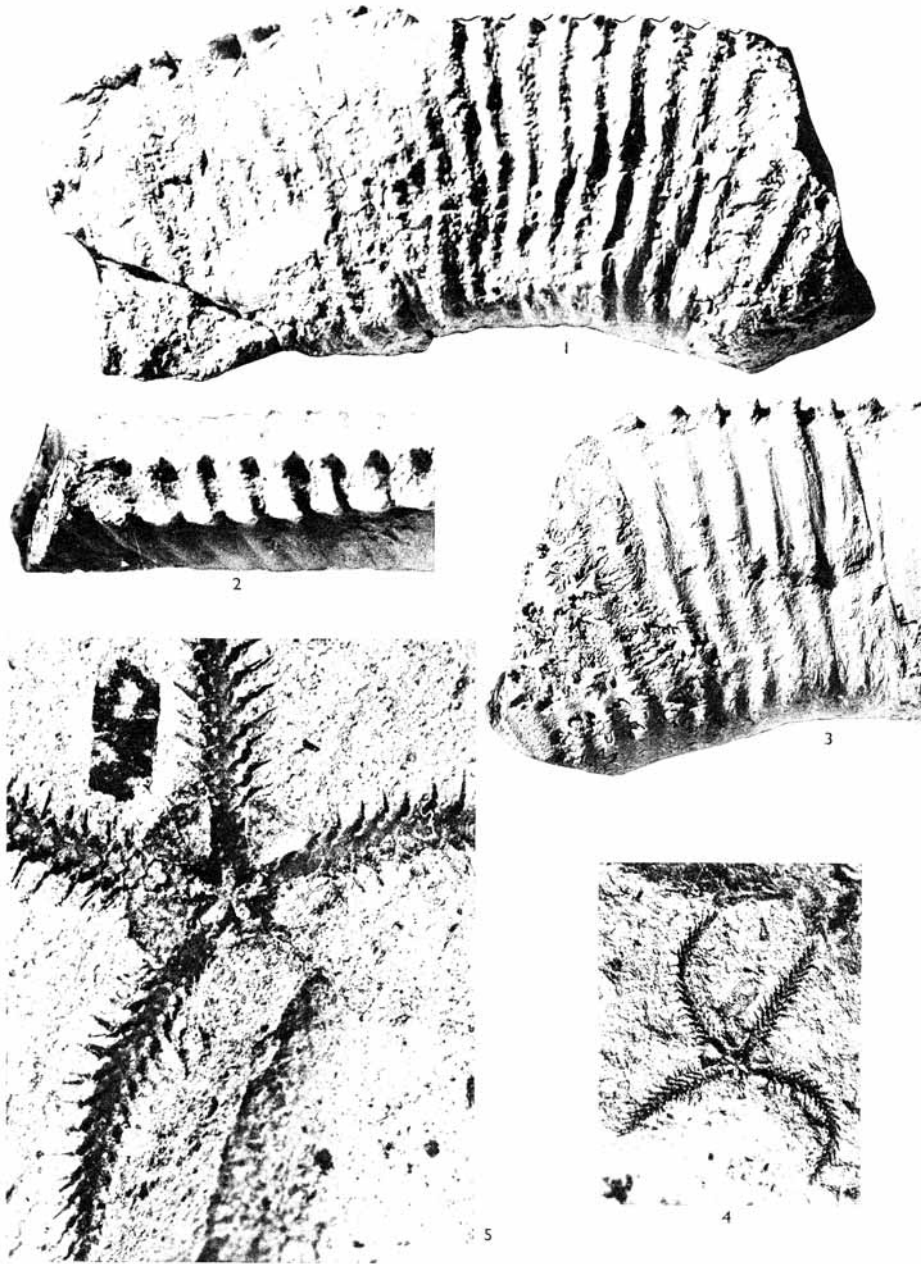
A specimen from the zone of *Hertleinites aquila* of Shasta County, California, described by Imlay (1960) as *S. aff. whitneyi* Anderson, possesses a rather narrow venter, but otherwise does not closely resemble *S. anglicum*. In the same paper, Imlay mentions a specimen of *Shastrioceras*, which, according to Murphy (quoted in Imlay, *op. cit.*), approximates to *S. whitneyi* in its openness of coiling, while differing in the ornamentation, which is similar to that of *S. poniente*. This observation may be significant, since unlike *S. whitneyi*, where the ribs are straight, those of *S. poniente* are flexuous, as in *S. anglicum*. However, it will be necessary to study many more specimens before any attempt at unravelling the lineage of the group can be made.

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