THE AMMONITE *EPARIETITES UNDARIES* (QUENSTEDT) IN THE LOWER JURASSIC (SINEMURIAN) OF BRITAIN

by

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Summary

The Sinemurian (Lower Jurassic) Frodingham Ironstone of Scunthorpe, South Humberside, has yielded two specimens of the compressed asteroceratinid *Eparietites undaries* (Quenstedt). This species, for which there is no previous record from a British locality, is compared with *E. denotatus* (Simpson), *E. fowleri* (J. Buckman), *E. impendens* (Young and Bird) and *E. tenellus* (Simpson). *E. undaries* (Quenstedt) differs from these other British species in being more evolute, with less prominent ribbing, and in having a tricarinate and bisulcate venter on the inner whorls.

Introduction

Recent field collecting by the author from the Sinemurian (Lower Jurassic) Frodingham Ironstone of Scunthorpe, South Humberside, has yielded two ammonite specimens belonging to the genus *Eparietites* Spath, 1924. They are allocated to the species *Eparietites undaries* (Quenstedt), a species common in France. The specimens were found within the top 0.8 m of the ironstone at Winterton Quarry (SE/913200). To the author's knowledge, this species has not been previously described from any British locality.

E. denotatus (Simpson) is common within the top 1.0 m, or so, of the Frodingham Ironstone and is laterally distributed throughout the outcrop from Winterton Quarry in the north to Yarborough Quarry in the south (SE/931102). *E. tenellus* (Simpson) also occur, but is less common. *E. impendens* (Young and Bird) and *E. fowleri* (J. Buckman) have not, however, been recorded from this area.

Systematic palaeontology

Suborder AMMONITINA Hyatt, 1889
Superfamily PSILOCERATACEAE Hyatt, 1867
Family ARIETITIDAE Hyatt, 1874
Subfamily ASTEROCERATINAE Spath, 1946
Genus *Eparietites* Spath, 1924

Type species. *Ammonites tenellus* Simpson, 1855. The holotype from Robin Hood's Bay, Yorkshire, is figured by S.S. Buckman (1912, Pl.54) and is housed in the Whitby Museum (Cat. No.293).

Diagnosis. Asteroceratinid ammonites which have a distinctly keeled venter and narrow umbilicus. The whorl section is compressed, higher than wide, having a maximum width at the umbilical margin. Ribbing is strong and smooth, becoming irregular and fading on the outer whorl. Sutures are simple with wide undivided saddles.

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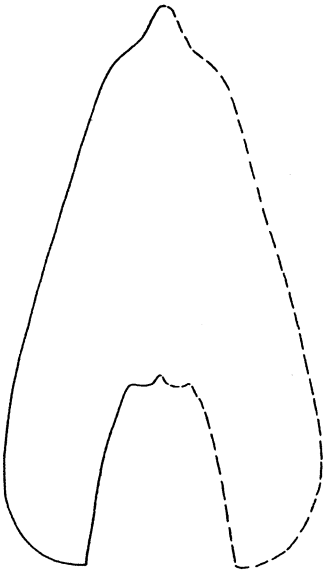
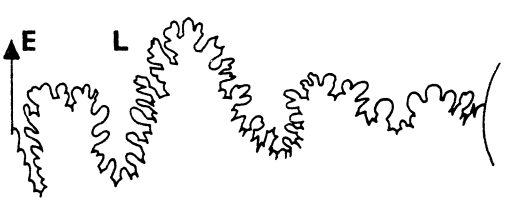
pp. 63-68, 26 text-figs., plate 1



Text-fig.1. Whorl section of *Eparietites undaries* (Quenstedt), No. KLJAM26, at a diameter of 144 mm. Scale 0 10 mm.



Text-fig.2. The external suture of *Eparietites undaries* (Quenstedt), No.KLJAM26. Scale 0 10 mm.

Eparietites undaries (Quenstedt, 1884), Pl.1; text-figs.1,2.

1884 *Ammonites undaries* Quenstedt, p.148, pl.20, figs.2-6.

1966 *Eparietites undaries* (Quenstedt); Guérin-Franiatte, p.319, pls.200-203.

Lectotype. No. Ce 5/20/3 (from Endingen, Wurttemberg, South West Germany), Quenstedt Collection, Geological Institute, Tübingen. Figured by Quenstedt (1884, pl.20, fig.3) and selected as lectotype and figured by Guérin-Franiatte (1966, pl.200).

British specimens. KLJAM26 from the Frodingham Ironstone (Sinemurian), Winterton Quarry (SE/913200), near Scunthorpe, South Humberside, KLJAM3 from the same locality. Both specimens are housed, at present, in the Geology Department, Sunderland Polytechnic (author's collection).

Dimensions. (mm) Table 1

D = diameter, N = number of ribs per whorl, U = umbilical diameter, Wb = whorl breadth, Wh = whorl height.

	D	Wb	Wh	U	N	Wb/Wh	(Wh/D)%	(U/D)%
Lectotype	148.5	37.5	61	45.5	-	0.61	41	30
Pl.1 KLJAM26	144.4	35	64	42	32	0.55	44	29
KLJAM3	125	-	48	43	32	-	38	34

Description. The features described here are mainly those of KLJAM26 because the other specimen is poorly preserved. The whorl section is compressed with convergent sides. On the inner whorls the ventral edge is tricarinate and bisulcate. At the start of the outer whorl, the central one-third of the venter is occupied by a tall, sharp, entire keel, which is flanked by very shallow sulci. On the outer whorl, the high, median keel gradually widens and becomes more rounded. The lateral sulci become indistinct and gradually disappear, forming two smooth bands on either side of the keel and, finally, the keel has concave slopes near the aperture.

There are at least four volutions and each whorl overlaps the previous one by three-quarters. The umbilicus is open (about 30 per cent. of the shell diameter) and the umbilical wall is vertical.

Ribbing is strong on the inner whorls, with 32 ribs per whorl, but weakening, becoming smooth and fading near the aperture on the outer whorl at a diameter of 10 to 12 cm. The ribs are straight until they near the ventro-lateral edge, where they swing adaperturally.

The suture line has a wide and relatively simple ventral lobe and a shorter lateral lobe. The saddles are wide, simple and undivided.

The species may attain a diameter in excess of 30 cm with at least the last whorl being totally without ribbing (Quenstedt, 1884, 148-151).

Discussion

Cross (1875), who was the first to study ammonites from the Frodingham Ironstone, recorded a total of nine species, including *Ammonites scipionanum* Quenstedt and *Am. compressaries* Quenstedt. Hallam (1963), after examining a number of ammonites, both from collections in the Scunthorpe Borough Museum and others collected *in situ*, assumed that these two species belonged to the genus *Eparietites*, which was proposed by Spath (1924) for the group of *Ammonites collenotii* d'Orbigny, *Am. denotatus* Simpson, *Am. tenellus* Simpson and *Am. impendens* Young and Bird. Thus, Hallam recorded *Eparietites denotatus* (Simpson) and *E. tenellus* (Simpson).

Table 2. A comparison of the main morphological features of the British species of the genus *Eparietites* Spath, 1924.

FEATURES \ AMMONITE SPECIES				E. undaries (Quenstedt) lectotype	E. undaries (Quenstedt) KLJAM 3	E. undaries (Quenstedt) KLJAM 26	E. tenellus (Simpson)	E. denotatus (Simpson)	E. impendens (Young and Bird)	E. fowleri (J. Buckman)
Diameter in mm.				149	125	144	68	145	70	63
Umbilical diameter per cent.				30	34	29	21	23	27	28
Umbilical edge	Steep			x	x	x		x		
	Rounded						x			x
	Overhanging								x	
Ribbing	strength	Very strong						x		
		Strong		x	x	x			x	x
		Weak					x			
	spacing	Close								x
		Less close					x		x	
		Wide		x	x	x		x		
	thickness	Fine – acute							x	x
		Thick					x			
		Undulating		x	x	x		x		
Venter	Near the aperture	keel	Median sharp						x	x
			Median rounded	x	x	x	x	x		
		sulci	Wide distinct							
			Flat:- shelf-like						x	
		Concave slopes		x	x	x	x	x		x
	Inner whorls and beginning of outer	keel(s)	Median sharp						x	x
			Median rounded				x	x		
			Tricarinate	x	x	x				
		sulci	Wide distinct	x	x	x			x	
			Flat:- shelf-like				x	x		x
		Concave slopes								

The main morphological features of the British species of the genus *Eparietites* are compared in Table 2. *E. fowleri* (J. Buckman) was figured by S.S. Buckman (1904, pl.37). The holotype (L11158) is in the collections of the Manchester Museum. This species is small; in general about 50 to 60 mm in diameter. It has a percentage ratio of umbilical diameter to total diameter of 28 but the ribs are slimmer and more closely spaced than those of *E. undaries* and the inner whorl margins are less thick, with no umbilical wall.

E. impendens (Young and Bird) was also figured by S.S. Buckman (1919, vol.2, pl.CXX) and the holotype is in the collections of the Whitby Museum (Cat. No.292). The inner margin of the whorl of this species overhangs the umbilicus; hence the name '*impendens*'. However, the inner whorl margins of *E. undaries* are vertical. Also, *E. undaries* is more evolute, has a larger diameter and has thicker, more undulating but less prominent ribbing. Neither *E. fowleri* nor *E. impendens* have been recorded from the Frodingham Ironstone.

Whitby Museum is also the repository of the holotype of *E. tenellus* (Simpson). This is the type species and is also figured by S.S. Buckman (1912, vol.1, pl.LIV). Simpson (1855, p.97) regarded *E. tenellus* as,

> "a more elegant species than the last (*A. impendens* Young and Bird); the radii are less prominent, and the groove on the side of the keel much flatter".

E. tenellus is much more involute than *E. undaries*, having a percentage ratio of umbilical diameter to total diameter of 21, and it is less than half the size (total diameter 68 mm) of the latter.

E. denotatus (Simpson) is the most common species of *Eparietites* present in the ironstone. It was figured by S.S. Buckman (1912, vol.1, pl.LXVII A, B), and the holotype (J3273) is in the Leckenby Collection in the Sedgwick Museum, Cambridge. This species is also more involute than *E. undaries*; the umbilical diameter is 23 per cent. of the total diameter. The inner whorl margins are similar to that of *E. undaries* but the ribbing is stronger and more closely spaced. The species was figured by Wright (1881, pl.XXII B) as '*Arietites collenotii*' but S.S. Buckman (1912, vol.1, p.67b) considered the ribs to be depicted far too strongly. However, Guérin-Franiatte (1966, p.317) suggested that *Ammonites collenotii* d'Orbigny ought to be returned to the genus *Oxynoticeras*.

Thus it is concluded that *Eparietites undaries* (Quenstedt) is more evolute than any of the other British species of the genus and may attain a much larger diameter. It is tricarinate and bisulcate on the inner whorls. The ribs are thick, not very prominent and less close than those of *E. denotatus* or *E. impendens*.

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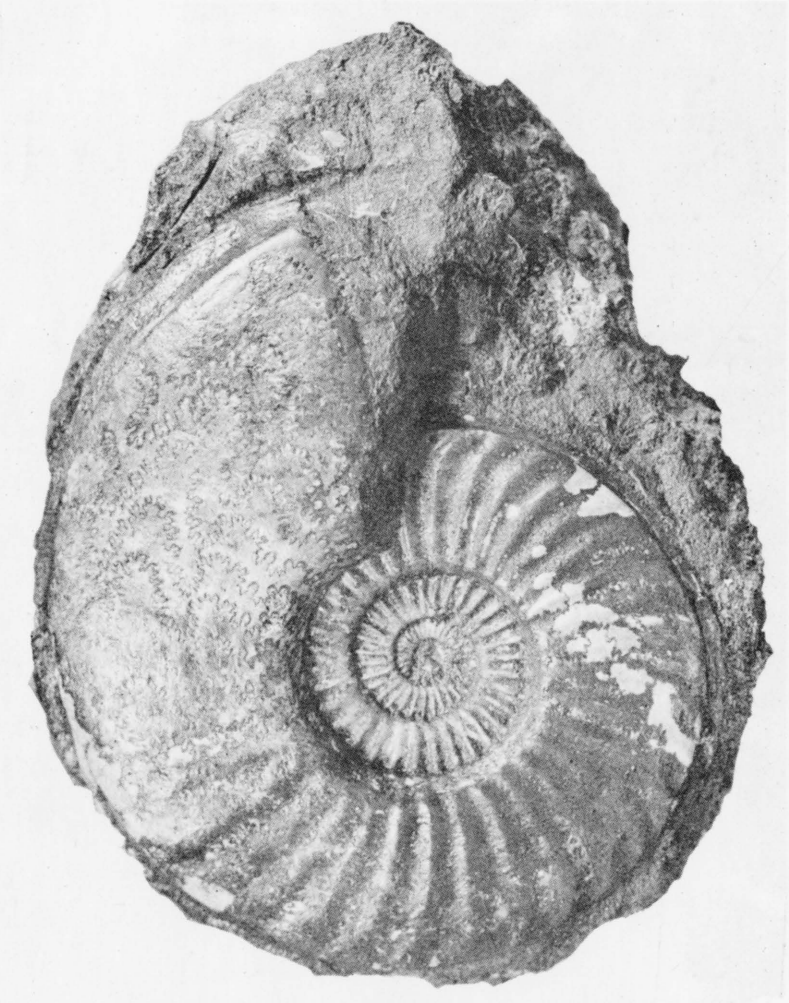

Eparietites undaries (Quenstedt), No. KLJAM26, x 0.7