

The first record of the Aalenian ammonite *Staufenia* (*Staufenia*) *sehdensis* (Hoffmann) in Britain

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1. INTRODUCTION

The Aalenian ammonite *S. (S.) sehdensis*, first described by Hoffmann (1913), is restricted in the Schwäbischen Alb, Germany (Rieber 1963) and in the Jura Franc-Comtois (Contini 1969) to the middle part of the *L. (L.) munchisonae* Zone. This narrow vertical range has encouraged its use as a stratigraphic index. The genus has previously been thought to be restricted to a small area of Europe and until now has not been recorded in Britain.

During a re-examination of Horn Park Quarry, Beaminstor, Dorset (ST 458022) the lithological and palaeontological subdivisions of the *L. (L.) munchisonae* Zone were studied. The resulting section (Table 1) for the lower beds of the Inferior Oolite is a modification and partial revision of that described by Senior, Parsons & Torrens (1970) with finer lithological sub-divisions. These beds display variable lithologies and are separable by their ammonite fauna into three horizons comparable with those recorded in Europe.

The zonal scheme used is based on that of Contini, Elmi & Mouterde (1971). The *L. (L.) munchisonae* Subzone is restricted to beds below those containing the first *B. (B.) bradfordensis*. In the *L. (L.) haugi* Subzone (= '*Ancolloceras hemera*', Buckman 1910) the *S. (S.) sinon* (Bayle) horizon, which has not been recorded in Britain, is replaced by the horizon of *A. opalinoides*. Ammonites are prolific throughout the Aalenian stage at Horn Park Quarry, but mainly fragmentary specimens of *Staufenia* seem to be confined to bed 3b. In Europe, *S. (S.) stauffensis* (Oppel) co-exists with ammonites of the *B. (B.) bradfordensis* Subzone, so that the vertical range of the genus *Staufenia* in Europe is from the *L. (L.) haugi* to *B. (B.) bradfordensis* Subzones of the *L. (L.) munchisonae* Zone.

2. DESCRIPTION

Fig. 1, (1 and 2) show an example of *S. (S.) sehdensis* from 0.10 m below the top of bed 3b. It is an internal mould, 190 mm in diameter with part of the body chamber and its termination absent, these being crushed and impossible to extract. The *in situ* impression had a diameter of 220 mm at the point assumed to be the mouth border. The innermost whorls are replaced by soft ironstone matrix. The remainder of the phrag-

mocone shows well defined sutures of which the last eight are approximated, indicating the specimen to be mature. At the last suture, marked with a cross on the plate, the diameter is 150 mm. The first lateral saddle is short and bifurcated and there are four accessory lobes. These are similar features to those observed in a sample from Amaurandes Du Bas (Contini, 1969, p. 33). The whorl section is oxyconic, tall and acute, with a sharp keel, the greatest whorl width being near the umbilicus.

A typical *S. (S.) sehdensis* collected by the author from 'Sous les Roches', SSE of Cornol, Switzerland, (580250/248500, Carte nationale de la Suisse, 1/25000, N° 1085, St. Ursanne) is shown for comparison in Fig. 1, (3 & 4). This ammonite came from a site first described by Laubscher (1948). Lieb (1953) later cited specimens of *Costileioceras discoideum* (Quenstedt em. Hoffmann) from bed 15 of the *L. (L.) munchisonae* Zone from which the figured specimen also came. Rieber (1963, p. 42) includes two specimens of this ammonite as synonyms of *S. (S.) sehdensis*.

The Horn Park and Cornol specimens are very similar although the Swiss example has the shell preserved. A portion of the body chamber is absent in both cases, but it is estimated that if complete, both specimens would be of similar diameter. A useful comparison may also be made with the specimen figured by Contini (1969, p. 13, fig. 2) on which the suture lines are similar to the Dorset example.

3. DISCUSSION

The specimen of *S. (S.) sehdensis* described here is the first of the species and genus to be reported in Britain. It is therefore possible to further subdivide the *L. (L.) munchisonae* Zone of this locality, correlating an upper part of British beds previously included in the '*Ancolloceras hemera*'/*L. (L.) haugi* Subzone with the German *S. (S.) sehdensis* horizon/Subzone. As determinable *Staufenia* are rare at the quarry and the sequence is highly condensed its use in correlation elsewhere in Britain is limited.

In much of Europe (e.g. Southern Germany, Rieber (1963)) the *L. (L.) munchisonae* Zone is also condensed. The *L. (L.) haugi* Subzone contains *S. (S.) sinon* while in the *S. (S.) sehdensis* Subzone/horizon, *S. (S.) sehdensis*

TABLE 1

Zonal scheme for the Aalenian, *Ludwigia* (L.) *murchisonae* Zone of Horn Park Quarry, Dorset. Bed numbers are modified from Senior and others (1970), while the Zonal scheme is essentially that of Contini and others (1971).

SUBZONE	HORIZON	BED NOS	DETAILS
		THICKNESS m	
<i>Ludwigia</i> (L.) <i>murchisonae</i> ZONE	<i>Brasilgia</i> (B.) <i>bradfordensis</i>	4c	Ferruginous limestone with abundant <i>B. (B.) bradfordensis</i> (S. BUCKMAN)
	<i>B. (B.) bradfordensis</i>	0.10	
		4b	Hard buff limestone with <i>Brasilgia</i> spp.
		0.05	
		4a	Ferruginous limestone <i>B. (B.) bradfordensis</i> , <i>Ludwigia</i> spp.
		0.30	
	<i>L. (L.) murchisonae</i>	3c	Grey ferruginous limestone <i>L. (L.) murchisonae</i> (J. de. C. SOWERBY)
	<i>L. (L.) murchisonae</i>	0.15	
		3b	Whitish hard limestone with occasional ammonites <i>S. (S.) sehndensis</i> (HOFFMANN), <i>Ludwigia (L.) obtusiformis</i> (S. BUCKMAN) <i>Ancolloceras</i> spp.
	<i>Staufenia</i> (S.) <i>sehndensis</i>	0.30	
	<i>Ludwigia</i> (L.) <i>haugi</i>	3a	Yellow grey ferruginous limestone with abundant ammonite body chambers <i>A. opalinoides</i> (MAYER), <i>L. (L.) haugi</i> DOUVILLE
	<i>Ancolloceras opalinoides</i>	0.30	

and *Staufenia* (S.) *discoidea* (Quenstedt) were considered by Rieber to be separate species. Contini (1969) observed that both forms can co-exist, they may therefore be variants of a single species, synonyms at a specific level. It is not until the *B. (B.) bradfordensis* Subzone that *S. (S.) staufensis* is found. At Horn Park *Staufenia* appears to be rare or absent outside bed 3b. Contini (1969) records an abnormal example of

Staufenia one side of which was identical to *S. (S.) sehndensis*, while the other possessed ribs and tubercles like those of *S. (S.) sinon*. If *S. (S.) sehndensis* is derived from *S. (S.) sinon* it would appear that *S. (S.) sinon* either became extinct before reaching Britain or was restricted to Central Europe by ecological or palaeogeographic factors as examples have not been found in bed 3a. However, its successor *S. (S.) sehndensis* did colonise

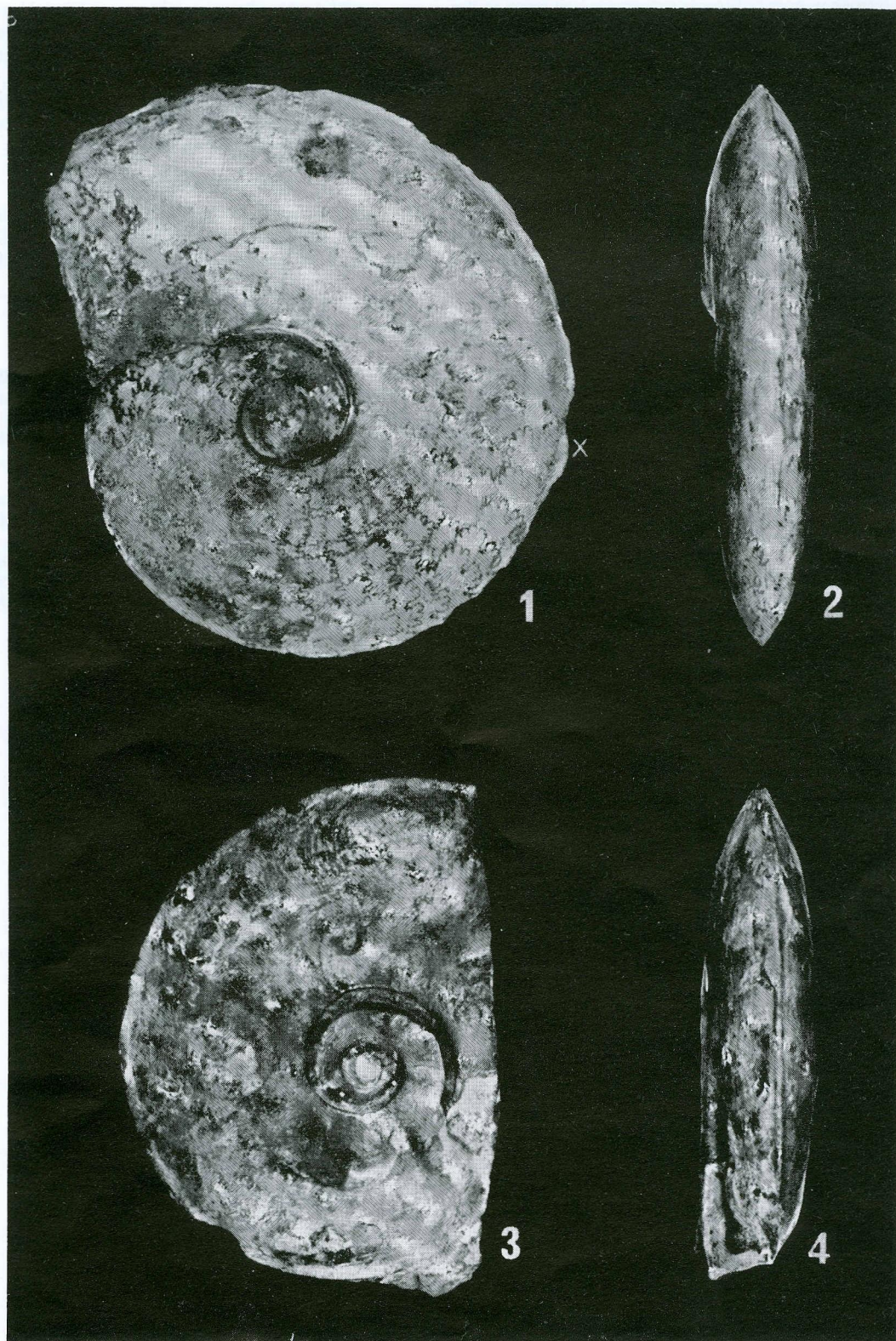


Fig. 1

some British waters before its extinction just prior to the *L. (L.) munchisonae* Subzone.

Similarity between *A. opalinoides* and *Staufenia* has led some authors to include it in the genus *Staufenia* (Rieber, 1963). Although some *Ancolioceras* do occur in bed 3b, it is clear that they show little similarity with the figured specimen. In *Ancolioceras*, the suture line is more complex, similar to *Leioceras*. Many of the specimens examined are complete and show part of their peristome, the variation in diameter between adult examples being quite small. The figured specimen is larger, indicating a diameter at termination greater than

any *Ancolioceras* the writer has seen from Horn Park.

This ammonite gives some support to the view that the lower Aalenian succession in Britain is rather incomplete and largely confirms Spath's (1936, p. 16) interpretation of the Aalenian Zonal scheme, although, *S. (S.) staufensis* is now thought to be restricted to the *B. (B.) bradfordensis* Subzone in Europe.

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References

- BUCKMAN, S. S. 1910. Certain Jurassic (Lias-Oolite) strata of South Dorset. *Quart. Jl. geol. Soc. Lond.*, **66**, 52–89.
- CONTINI, D. 1969. Les Graphoceratidae du Jura Franco-Comtois. *Ann. Sci. Univ. Beasancón*, (3), *Géol.*, **7**, 1–95, 24 pls.
- , S. ELMÍ & R. MOUTERDE. 1971. Les zones du Jurassique en France: Aalénien. *C.R.S. Soc. Géol. Fr.*, 84–5.
- HOFFMAN, G. 1913. *Stratigraphie und Ammoniten-Fauna des unteren Doggers in Sehnde bei Hannover*. (Stuttgart), V + 202 p., 18 pl.
- RIEBER, H. 1963. Ammoniten und Stratigraphie des Braunjura der Schwäbischen Alb. *Palaeontographica*, Stuttgart, *A. Bd.*, **122**, 1–89, pl. 1–8, 25 figs.
- SENIOR, J. R., C. F. PARSONS & H. S. TORRENS. 1970. New sections in the Inferior Oolite of South Dorset. *Proc. Dorset. Nat. Hist. Archaeol. Soc.*, **91**, 114–19.
- SPATH, L. F. 1936. On Bajocian ammonites and belemnites from eastern Persia (Iran). *Palaeont. Indica*, new ser., mem. **3**, 22, 1–21, pl. 1.
- LAUBSCHER, H. 1948. Geologie des Gebietes von siegfriedblatt St. Ursanne (Berner Jura). *Beitr. geol. Karte Schweiz*, n.F., 92, Bern.
- LIEB, F. 1953. Neue Beiträge zur Erforschung der Ammonitenhorizonte der Murchisonaeschichten des Schweizerischen Juraebirges. *Eclogae geol. Helv.*, **46/2**, 286–94.