

Bruton Railway Cutting, Somerset

[ST 688 347]

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Introduction

The cutting adjoining the railway station at Bruton, Somerset, exposes the Fuller's Earth Rock Member of the Fuller's Earth Formation. The Milborne Beds, Ornithella Beds and Rugitela Beds, into which the Fuller's Earth Rock Member is divided in Somerset (see (Figure 2.4)), are all present (Figure 2.43). Bruton Railway Cutting is famous for its ammonite fauna of tulitids, perisphinctids and rare oppeliids. The tulitid genera *Tulites* and *Morrisiceras* are, respectively, diagnostic of the Middle Bathonian Subcontractus and Morrisi zones (see also Troll Quarry GCR site report, this volume). When Torrens (1974) proposed the south side of the cutting at Bruton Railway Station as the type section of the Morrisi Zone (Torrens, 1965), the zonal fauna was known in detail only from southern England. He considered Bruton Railway Cutting to be an ideal type section because of its richness in ammonites and its probable permanence (the cutting lies on the line between Westbury and Taunton). The abrupt changes in the succession of ammonite faunas here enable the lower and upper boundaries of the Morrisi Zone to be placed precisely. As elsewhere along its outcrop in southern England, the zone is only 0.6 m thick, but there is no evidence of any major non-sequence at the top of the zone in this region (Torrens, 1974).

Description

The Bruton Railway Cutting GCR site includes both sides of the now partly overgrown cutting at Bruton Railway Station, but it is the longer section on the south side that was recorded by Torrens (1974) and proposed as the type section of the Morrisi Zone. The following section is based on his account together with that given in Torrens (1966). Bed numbers follow Torrens (1974). The presence of the Fuller's Earth Rock Member in the cutting had been noted earlier by Davidson (1878), Parsons (1879) and Richardson (1909c). Most recently, the section has been described briefly by Bristow *et al.* (1999).

	Thickness (m)
Fuller's Earth Formation	
<i>Fuller's Earth Rock Member</i>	
<i>Rugitela Beds</i>	
6: Marls and limestone; <i>Catinula knorri</i> (Voltz) common at base	0.23
<i>Ornithella Beds</i>	
5: Alternating thin marls and limestones; ammonites including <i>Procerites</i> (common 0.45 m above base) and <i>Oxyerites</i> ; brachiopods including <i>Ornithella bathonica</i> (Rollier) (very abundant between 0.45 m and 1.35 m above base), <i>Rhynchonelloidella</i> and <i>Wattonithyrus</i> ; bivalves including <i>Anisocardia fullonica</i> Cox, <i>Inoperna plicata</i> J. Sowerby, <i>Limatula cerealis</i> Arkell, <i>Modiolus anatinus</i> (Wm Smith), <i>Pleuromya alduini</i> (Brongniart), <i>Pseudolimea duplicata</i> (J. de C. Sowerby); echinoids including <i>Holactypus</i>	c. 3.0
<i>Milborne Beds</i>	
4: Limestone, Shelly; ammonites including <i>Morrisiceras morrisi</i> (Oppel), <i>M. sphaera</i> (S.S. Buckman) and oppeliids; bivalves (<i>Pleuromya subelongata</i> (d'Orbigny)); gastropods (<i>Pleurotomaria</i>)	0.23

3: Limestone, marly, softer than Bed 4; microconch and macroconch <i>Morrisiceras</i> ; <i>Wattonithyris</i> ; <i>Gresslya peregrina</i> 0.10 (Phillips) and <i>Pleuromya subelongata</i>	
2: Limestone, rubbly; <i>Morrisiceras</i> , <i>Rhynchonelloidella</i> , <i>Wattonithyris</i> , <i>Catinula</i> and <i>Gresslya peregrina</i>	0.30
1: Limestone, rubbly; <i>Tulites modiolaris</i> (Wm Smith) common; <i>Gresslya peregrina</i> and <i>Modiolus anatinus</i>	seen to 0.30

Interpretation

The tripartite division of the Fuller's Earth Rock Member in Somerset has already been discussed (see Shepton Montague GCR site report, this volume). Shepton Montague is sited c. 2.5 km south of Bruton Railway Cutting.

At both sections, the ammonite fauna enables recognition of three of the standard ammonite-based zones of the Bathonian Stage (Torrens, 1974, 1980b; Page, 1996a). At Bruton Railway Cutting, the presence of *Tulites* in the basal bed identifies the Subcontractus Zone. The base of the overlying Morrissi Zone is taken at the base of Bed 2. This zone is characterized by the genus *Morrisiceras*, the range of which does not overlap with that of *Tulites*. Page (1996a) referred the *Morrisiceras* from beds 3 and 4 at Bruton Railway Cutting to *M. ex gr. morrissi*, in which he included *M. sphaera*. Both *Tulites* and *Morrisiceras* are tulitids, the most typical and common forms of which are the cadicone–sphaerocone macroconchs. The corresponding microconchs are quite different, being small, lappetted, planulate serpenticones (Donovan *et al.*, 1981). For these 'partners' of *Tulites* and *Morrisiceras*, Torrens (1970) introduced, respectively, the names *Trolliceras* (see Troll Quarry GCR site report, this volume) and *Holzbergia*. Although Torrens (1974) proposed the site as type section for the Morrissi Zone, Page (1996a) referred to it as a reference section, the type area being southwest Germany.

The base of the next highest zone is taken at the base of Bed 5. When Torrens (1974) first published a description of the section, he assigned beds 5 and 6 to a 'Retrocostatum' Zone, which was tentatively based on the index taxon *Prohecticoceras retrocostatum* (de Grossouvre). He considered that this zone generally seemed to be characterized more by the absence of certain genera and species of the zones above and below than by its own characteristic assemblage. Nevertheless, he reported that in southern England the basal part of the zone was crowded with large perisphinctids (notably *Procerites*) such as occur in the rubbly limestone fades of the Ornithella Beds of the Fuller's Earth Rock Member. Such a fauna is relatively common in Bed 5 at Bruton Railway Cutting (see also Shepton Montague GCR site report, this volume). The naming of this zonal interval has since undergone two changes. First, Torrens (1980b) replaced the index taxon by *Procerites hodsoni* Arkell mainly because, in France, *Prohecticoceras retrocostatum* was used as an index taxon of a zone of partly different age, and because the species was less common in its eponymous zone than in the overlying zone.

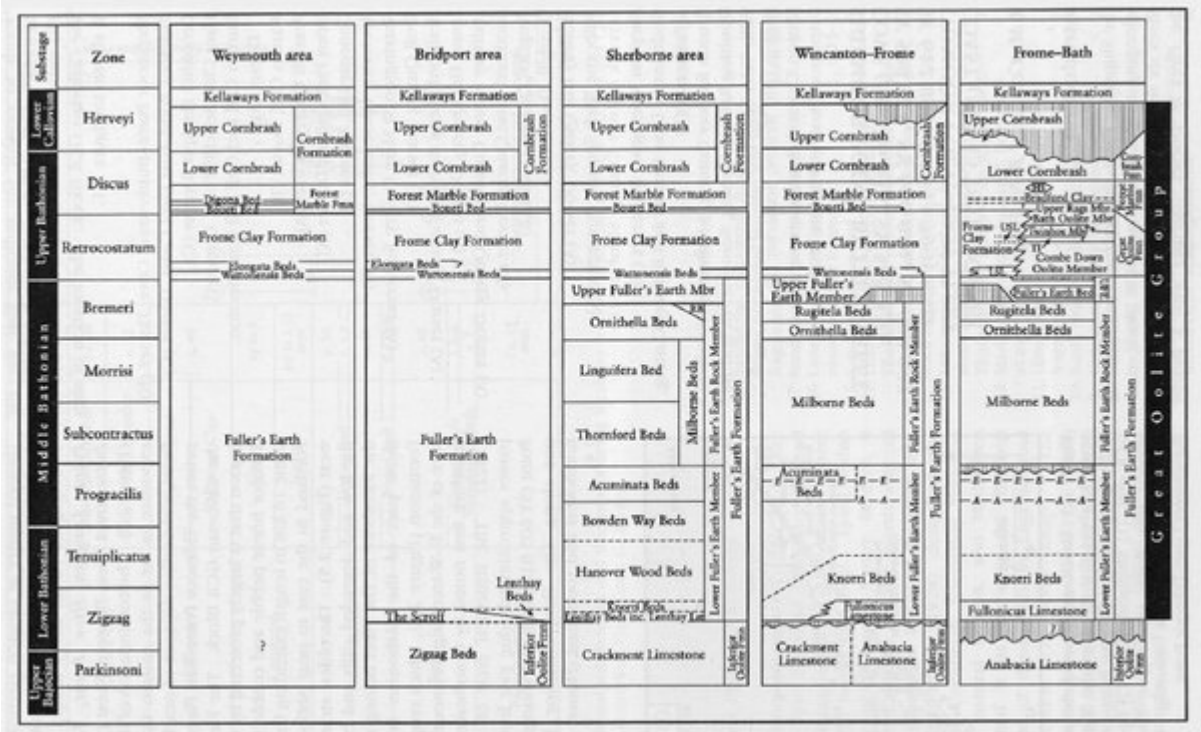
Torrens (1980b) listed a number of reasons why *Procerites hodsoni* was a suitable replacement index species not least of which was the fact that it seemed to be a distinctly recognizable 'proceritid' in a group that often shows morphological diversity at any one level as great as it is in successive beds. The Hodsoni Zone thus became well established in the British Bathonian succession. Secondly, recognition by Callomon and Cope (1995) of subzones in common with those of the slightly different zonation used farther south in Europe (Figure 2.44) prompted Page (1996a) to extend the usage of the latter zonation to the British succession. Thus, the interval covered by the Bullatimorphus and Fortecostatum subzones of the Hodsoni Zone (Callomon and Cope, 1995) can be referred instead to the Bremeri Zone (Page, 1996a). By analogy with the ammonite records from the Bullatimorphus Subzone in France and despite the lack of the subzonal index species, Page (1996a) concluded that the common *Procerites* and rare *Oxycerites* found 0.45 m above the base of Bed 5 at Bruton Railway Cutting could be accommodated in that subzone.

Conclusions

The Fuller's Earth Rock Member in Dorset and Somerset shows one of the best developments of Middle Bathonian rocks in Europe (see also Troll Quarry GCR site report, this volume). The section at Bruton Railway Cutting, where the upper

part of the Milborne Beds has yielded the ammonite *Morrisiceras*, provides a primary reference — if not the type — section for the Morrisi Zone. The lower and upper boundaries of the zone, which is here only 0.6 m thick, are well constrained because of marked and abrupt changes in the ammonite succession; these make this the best section in England for demonstrating the palaeontological differentiation of the Subcontractus and Morrisi zones. The site is thus a most important one for regional, national and international correlation.

References



(Figure 2.4) Lithostratigraphical classification of the Great Oolite Group in the Wessex region. Vertical ruled lines indicate non-sequence. (Based on data in Penn and Wyatt, 1979; Torrens, 1980b; Page, 1989, 1996a; Bristow et al., 1995, 1999; and Wyatt, 1998.) (-E-E-E-E- = Echinata Bed; -A-A-A-A- = Aculminata Bed of Penn and Wyatt (1979); HS = Hinton Sand Member; LSL = Lower Smithi Limestone; RB = Rugitela Beds; TI = Twinhoe Ironshot; UFE = Upper Fuller's Earth Member; USL = Upper Smithi Limestone.))



(Figure 2.43) Exposure of the Fuller's Earth Rock Member behind the westbound platform at Bruton Railway Station in Bruton Railway Cutting. Marls and muddy limestones of the Rugitela Beds overlie limestones and marls of the Ornithella Beds; the hammer-head marks the boundary (Photo: British Geological Survey, No. A15537; reproduced with the permission of the Director, British Geological Survey, © NERC, 1996.)

Zonation traditionally used in Britain and other areas of North West Europe (the 'Subboreal Province') with more recently recognized subzones ¹			Zonation used further south in Europe (the 'Submediterranean Province') but also, herein, for Britain ²		
Sub-stage	Zone	Subzone	Subzone	Zone	Sub-stage
Upper Bathonian	Discus	Discus	Discus	Discus	Upper Bathonian
		Hollandi	Hollandi		
	Orbis ³		Hannoveranus	Retrocostatum	
			Blanazense		
	Hodsoni ⁴	Quercinus	Quercinus	Bremeri	
		Fortecostatum	Fortecostatum		
Bullatimorphus		Bullatimorphus			
Middle Bathonian	Morrissi	—	—	Morrissi	Middle Bathonian
	Subcontractus	—	—	Subcontractus	
	Progracilis	—	Progracilis	Progracilis	
Orbigny					

(Figure 2.44) Comparison of the zonation of the Middle-Upper Bathonian used herein with that previously used in Britain. (Modified from Page, 1996a.) (¹ = Follows Torrens (1980b) emend.; Dietl and Callomon (1988); and Callomon and Cope (1995); Dietl and Callomon (1988) also divided the Orbis Zone into Blanazense and Hannoveranus subzones in the Subboreal Province of Germany; ² = Follows Mangold (1991); and Mangold and Rioult (1997) but, following Page (1996a), the Procerites quercinus Biohorizon, at the base of the Blazanense Subzone, is elevated to a full Subzone; ³ = Aspidoides Zone of Torrens (1965, 1974, 1980b); ⁴ = 'Retrocostatum' Zone of Torrens (1974).))