Godminster Lane Quarry and Railway Cutting, Somerset

[ST 681 345]

B.M. Cox

Introduction

The GCR site known as 'Godminster Lane Quarry and Railway Cutting' comprises the railway cutting more generally known as 'Lusty Cutting' or 'Bruton Cutting', together with the adjoining quarry on the northern side. The latter is not, incidentally, that known in the literature as 'Lusty Quarry', which is sited near the railway bridge *c.* 150 m farther west. The cutting lies to the west of Bruton Station in Somerset, on the line between Westbury and Taunton. It is located in the so-called 'Cole Syncline' (Figure 2.42), a geological structure that preserves an Aalenian–Upper Bajocian Inferior Oolite succession, which is nearly as complete as that in the Sherborne area, *c.* 15 km farther south (see (Figure 2.29)). North of the latter area, the older beds of the Inferior Oolite Formation are otherwise progressively cut out by overstep towards the Mendip Hills. At Doulting Railway Cutting (*c.* 10 km farther north) and Vallis Vale (*c.* 20 km farther north), the Inferior Oolite Formation is restricted to the Upper Bajocian Substage.

Description

The following section of the railway cutting (including bed numbers) is based on that recorded by Richardson (1916a) who described the succession in the adjoining quarry as being 'precisely the same'. The lithostratigraphical terms are from Richardson (1916a) and Parsons (1980a), but following Bristow *et al.* (1999), Bed 2 (the Ragstone of Richardson, 1916a and the Ragstones of Parsons, 1980a) is classified as Hadspen Stone.

	Thickness (m)
Inferior Oolite Formation	
Doulting Stone	
1: Limestone, fairly well bedded	seen to 1.8
Hadspen Stone	
2: Limestone; the brachiopod *Acanthothiris spinosa* (Linnaeus)	1.5
Pecten Bed	
3: Limestone, grey; upper surface level; abundant pectinacean bivalves (*Entolium demissum* (Phillips)); sonniniid and otoitid ammonites and small *Gryphaea;* irregular base 'joined to' Bed 4	
4: Limestone, grey, rather sandy; fossils including sonniniid ammonites, belemnites, common 'myid' bivalves, *Gervillia,* terebratulid brachiopods	0.4
4a: Marl, grey and brown	0.025
4b: Limestone, hard, grey	*c.* 0.15
5: Marl, brown	0.05
6: Limestone	0.15
7: Marl, brown, sandy; terebratulid brachiopods	0.05
Ammonite Bed	
8: Limestone crowded with ammonites including *Graphoceras;* bivalves; terebratulid brachiopods	0.6
Conglomerate Bed	

9: Limestone, bluish-grey-hearted, 'iron-shot'; numerous large limonite-coated and bored pebbles; bivalves (*Pseudolimea,* pectinaceans); corals (*Montlivaltia*)	0.55
Lias Group	
Bridport Sand Formation	
10: Sandstone	0.18
11: Sandstone with sand partings	seen

Richardson (1916a) gave no thickness for the 'Pecten Bed' (Bed 3) but in the nearby Lusty and Sunny Hill quarries, he recorded 1.75 m and 1.47 m respectively. In the quarry, now occupied by houses, adjoining the railway cutting, he reported that Bed 9 (the 'Conglomerate Bed') was the lowest stratum seen; its irregular upper surface made a marked, seemingly very level, feature at the western end of the quarry. He also reported a layer of oysters between the 'Pecten Bed' and overlying Hadspen Stone, describing the latter, overlain by the better-bedded Doulting Stone, as 'curiously rubbly'.

Interpretation

Bristow *et al.* (1999) considered that the so-called 'Cole Syncline' (Richardson, 1916a), in which a relatively complete Inferior Oolite Formation is preserved, is probably a shallow, east-trending graben or half-graben. It interrupts a general progressive northward overstep of the Aalenian and Lower Bajocian strata by Upper Bajocian sediments between the Sherborne area (see (Figure 2.29)) and the Mendip Hills.

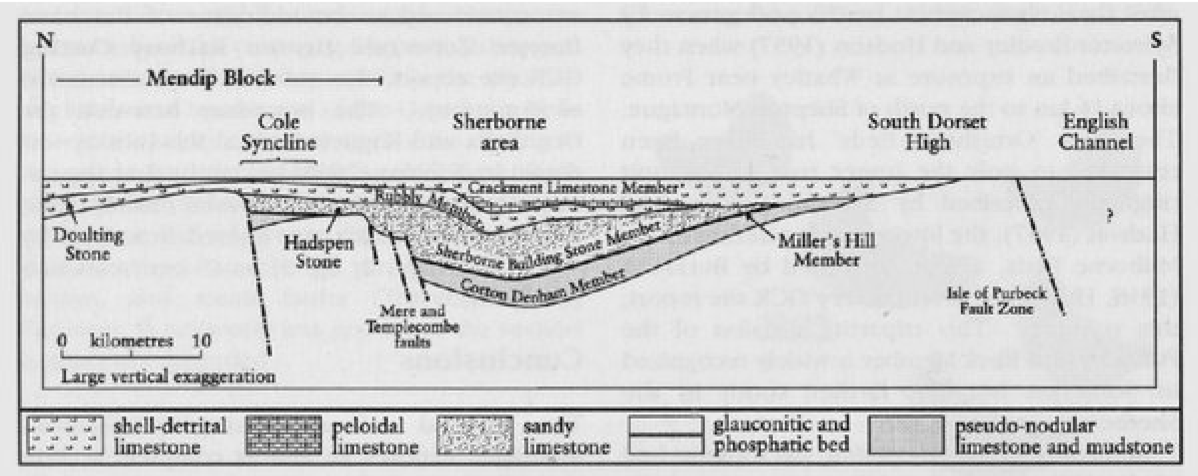
Richardson's (1916a) original description of the section was classified according to Buckman's scheme of 'hemerae' (see Chapter 1), but the ammonite identifications and consequent zonal interpretation have since been revised by Parsons (1979, 1980a). As in the Sherborne area (e.g. see Bradford Abbas Railway Cutting GCR site report, this volume), the succession is interrupted by major non-sequences. The oldest Aalenian stratum, which is separated from the Lower Jurassic Bridport Sand Formation by a non-sequence, is the conglomeratic Bed 9, which has yielded ammonites of the Murchisonae Zone (Parsons 1979, 1980a). The younger Bradfordensis Zone is unrepresented but the succeeding 'Ammonite Bed' (Bed 8) has yielded ammonites of both the Concavum and Discites zones, and therefore straddles the Aalenian–Bajocian stage boundary. Morton and Chandler (1994) recognized ammonite biohori-zons Aa-15 (*Graphoceras formosum*)*,* Aa-16 (*Euhoploceras acanthodes*)*,* Bj-1 (*Hyperlioceras politum*) and Bj-2b (*Hyperlioceras rudidiscites*) within this interval. The succeeding Ovalis, Laeviuscula and Sauzei zones are represented in the overlying limestones and marls, and 'Pecten Bed'. Ammonites from the limestones and marls (beds 4–7) include species of *Fissilobiceras,* '*Sonninia*'and *Witchellia,* and those from the 'Pecten Bed' (Bed 3) include species of *Emileia, Euhoploceras, Lissoceras, Mollistephanus, Shirbuirnia* and *Witchellia.* As current research on the ammonite faunas of these Aalenian–Bajocian successions in Dorset–Somerset progresses, there will no doubt be amendments to the ammonite taxonomy and further recognition and refinement of Callomon and Chandler's (1990) ammonite biohorizons (see Chapter 1).

Although Parsons (1980a) identified a representative of the Humphriesianum Zone at the nearby Lusty Quarry (Richardson, 1916a), no evidence of this zone nor the succeeding Subfurcatum Zone has been reported at the GCR site and it seems probable that there is a substantial non-sequence at the Lower-Upper Bajocian boundary as elsewhere in this region. It is not clear on what evidence Parsons (1980a) zoned the Upper Bajocian Hadspen Stone and Doulting Stone unless by analogy with Doulting Railway Cutting (see GCR site report, this volume) and/or unpublished records, but both the Garantiana Zone and the overlying Parkinsoni Zone were reported. Although both are building stones, the Hadspen Stone differs from the Doulting Stone (see Doulting Railway Cutting GCR site report, this volume) in being ferruginous and highly fossiliferous.

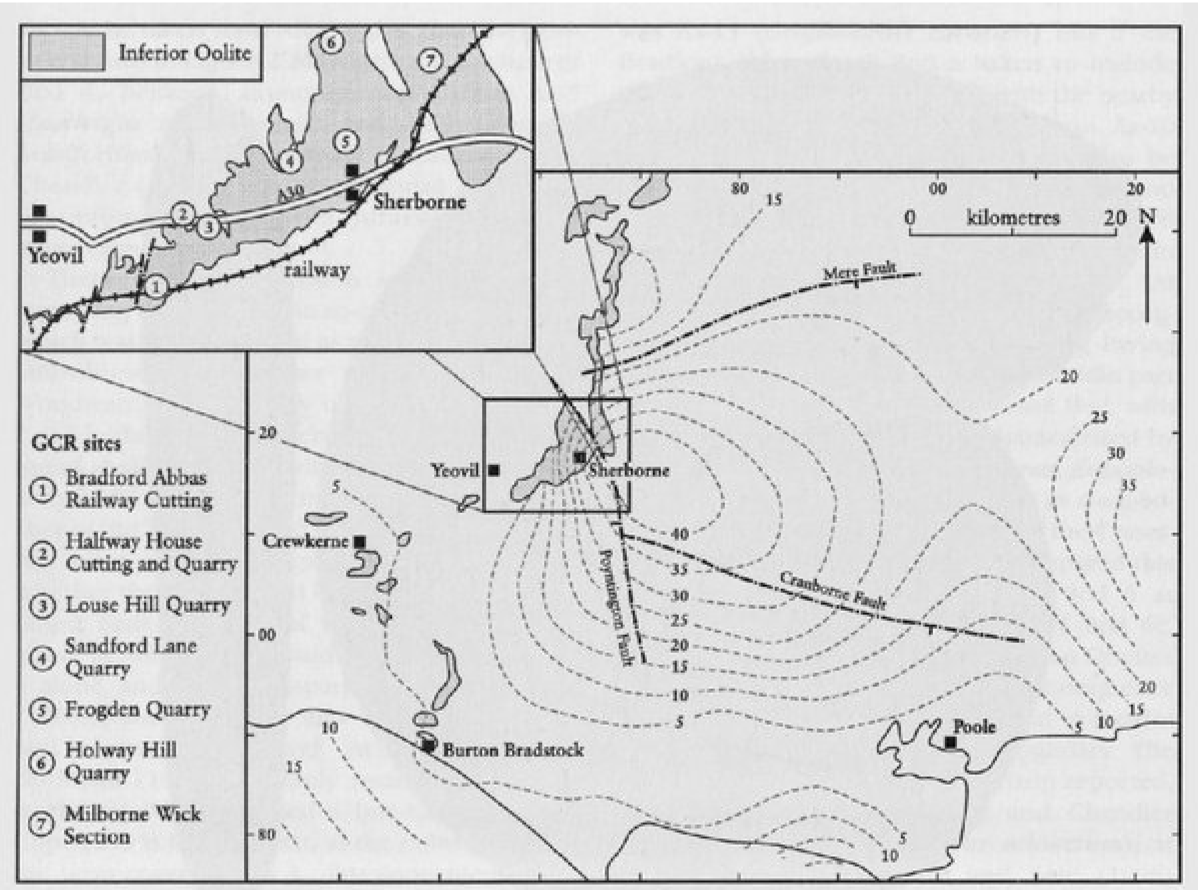
Conclusions

The Godminster Lane Quarry and Railway Cutting provide exposures of Aalenian–Bajocian strata that are fortuitously preserved in the geological structure traditionally known as the 'Cole Syncline' but which is more correctly described as a graben or half-graben. Generally, north of the Sherborne area, the Aalenian and Lower Bajocian successions are progressively cut out by the Upper Bajocian succession, which oversteps them towards the Mendip Hills, but in the Cole Syncline these older beds are still preserved. Northwards, the Lower and Middle Bajocian substages are not seen again until the Cotswolds and Dundry Hill (see Chapter 3). Although interrupted by substantial non-sequences, the section shows an ammonitiferous succession across the Aalenian–Bajocian stage boundary, and several of the ammonite biohorizons, crucial for documenting this boundary and enabling international correlation, have been recognized.

References



(Figure 2.42) Diagrammatic reconstructed cross-section through the Inferior Oolite Formation in part of Wessex in Late Bajocian times, illustrating the syndepositional development and fault-control of the so-called 'Cole Syncline'. The top of the Crackment Limestone Member is taken as the horizontal datum. (After Bristow et al., 1995, fig. 21.))



(Figure 2.29) Sketch map showing isopachytes (in metres) for the Inferior Oolite Formation in the Wessex Basin and the GCR sites in the Sherborne area. (After Parsons, 1976a, fig. 1; and Barton et al., 1993, fig. 5.))