

Sandford Lane Quarry, Dorset

[ST 628 178]

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Introduction

The now disused Sandford Lane Quarry, near Sherborne, Dorset, was first described by Buckman (1893a) who established it as an important locality for Aalenian and Bajocian stratigraphy. The rich and well-preserved ammonite faunas, particularly those of the famous 'Fossil Bed', have provided type material for many species and genera from the Lower Bajocian Laeviuscula and Sauzei zones. The site is also important as a reference section for the Upper Bajocian Garantiana Zone, all of the component subzones of which can be recognized (Parsons, 1980a).

Description

According to Callomon and Chandler (1990), the best published description remains Buck-man's (1893a) original section, which is therefore used, with his bed numbers, as the basis of that given below. Additional details from Richardson (1932) and Parsons (1974a) are also included. The lithostratigraphical subdivision mainly follows Parsons (1980a), who largely followed Buckman (1893a), and Bristow *et al.* (1995).

	Thickness (m)
Inferior Oolite Formation	
<i>Rubblly Member</i>	
1: Limestone in 'irregular masses with earthy marl intermixed'; terebratulid brachiopods in clusters at 2.3 m above base; ammonites (including <i>Garantiana</i>) 1.3 m above base	3.7
2: Limestone in 'fairly large blocks'	1.5
3: Limestone, sandy and marl; <i>Parkinsonia</i>	0.4
<i>Sherborne Building Stone Member</i>	
4: Limestone, grey, in five courses separated by sandy partings; clusters of brachiopods (? <i>Sphaeroidothyris</i>) in middle course	1.5
5: Limestone, sandy, dark-brown; poorly fossiliferous	0.7
<i>Miller's Hill Member</i>	
6: <i>Sandford Lane Fossil Bed</i> : Limestone, hard, ooidal, fossiliferous with abundant ammonites; upper surface smooth, planed off and level;	
6a: deep-blue and 'iron-shot', weathering dark-brown, with conglomerate of soft, pale-grey limestone clasts at base; ammonites including <i>Emileia</i> (<i>E.</i>), <i>E. (Otoites)</i> , <i>Kumatostephanus</i> , <i>Labyrinthoceras</i> , <i>Sphaeroceras</i> , <i>Stephanoceras</i> (<i>Normannites</i>), <i>S. (Skirroceras)</i> , <i>Sonninia</i> , <i>Sonninites</i> and <i>Witchellia</i>	
6b: pale-yellow and greenish-grey, marly, with yellow ooids and green glauconite grains; hardground at top with eroded ammonites, limonite encrustations and serpulid masses; ammonites including <i>Bradfordia</i> , <i>Emileia</i> (<i>E.</i>), <i>E. (Otoites)</i> , <i>Euhoploceras</i> , <i>Mollistephanus</i> , <i>Shirbuirnia</i> and <i>Witchellia</i>	0.5–0.7
<i>?Corton Denham Member</i>	

7: Sand	0.03
8: Limestone, sandy, greyish-green; poorly preserved sonniniid ammonites including large macroconch; astartid bivalves	0.15
9: Limestone, sandy, brown; fossiliferous with abundant terebratulid brachiopods; bivalves including <i>Gervillella</i> , <i>Gryphaea</i> , <i>Pseudolimea</i> and trigoniids; ammonites including <i>Hyperlioceras</i>	0.2
10: Limestone, sandy, grey; <i>Hyperlioceras</i> and terebratulid brachiopods	0.1
11: Limestone, sandy, grey; ammonites including <i>Graphoceras</i>	0.3
12: Earthy parting	0.08
13: Sandstone, grey; ammonites including <i>Euhoploceras</i> and <i>Graphoceras</i>	0.6

In addition to the fauna listed above, Richardson (1932) recorded species of belemnites, bivalves, corals, gastropods and nautiloids from the Rubbly Member.

Interpretation

The succession at Sandford Land Quarry ranges from the Aalenian Stage to the Upper Bajocian Substage but is interrupted by at least one major non-sequence (Parsons, 1980a; (Figure 2.32)). The oldest beds (11–13) recorded belong to the Aalenian Concavum Zone but Parsons (1980a) noted beds of similar lithology in a nearby temporary exposure that yielded ammonites of the older Murchisonae Zone and Subzone. Exposures of the intervening Bradfordensis Zone have not been reported from hereabouts. Callomon and Chandler (1990) recognized their biohorizons Aa-15/16 in Bed 13, and Aa-16 (representing the youngest Aalenian) tentatively also in Bed 11 (Figure 2.32). The succeeding Lower Bajocian Discites Zone is represented by beds 8–10. The oldest Bajocian ammonite biohorizon (Bj-1) was only tentatively recognized by Callomon and Chandler (1990) and therefore the Aalenian–Bajocian stage boundary is less well substantiated than at some other GCR sites in the Sherborne and adjoining area (notably Horn Park Quarry and Seavington St Mary Quarry, see GCR site reports, this volume).

It is not clear if the succeeding Ovalis Zone of the Lower Bajocian Substage is represented in Bed 7 and/or Bed 8 or whether there is a non-sequence at this level (Parsons, 1974a, 1980a; Callomon and Chandler, 1990) but the overlying Laeviuscula and Sauzei zones are well represented in Bed 6 (see below). There is no evidence of the Humphriesianum or Subfurcatum zones, and thus a non-sequence is assumed to be present beneath the Upper Bajocian Garantiana Zone at the base of Bed 5 (Figure 2.32). Extensive ammonite faunas of the latter occur in the Rubbly Member where the Tetragona and Acris subzones have been recognized (Parsons, 1980a). The Dichotoma Subzone, constituting the oldest part of the Garantiana Zone, is thought to be represented in the Sherborne Building Stone Member from which rare specimens of the eponymous ammonite *Garantiana dichotoma* (Bentz) have been recorded (Parsons, 1980a). The older (Truellei) subzone of the Parkinsoni Zone was reported by Parsons (1980a) in the top part of the Rubbly Member.

However, compared with the Lower Bajocian and Aalenian successions, the faunal succession of the Garantiana and Parkinsoni zones has, so far, received little more than cursory attention (Callomon, 1995).

Sandford Lane Quarry is perhaps most famous for Buckman's (1893a) 'Fossil Bed' (Bed 6). It was a major source of the ammonites described by Buckman (1887–1907), particularly from the Laeviuscula Zone (Parsons, 1974a). Buckman (1893a) used this stratum to point out a characteristic feature of the Inferior Oolite Formation of the Sherborne area, namely that what appear to be single beds, each less than a metre thick, may contain the faunas of several 'hemerae' (a term used by him for the smallest geochronological units discernable by biostratigraphy). On the basis of his hemeral scheme, Buckman (1893a) deduced that the succession around Sherborne was far from complete. According to Callomon (1995), Buckman's (1893a) observation that no other locality in England yielded the same fauna as the lower part of the Sandford Lane Fossil Bed held good for the best part of a century, and he described Buckman's recognition of

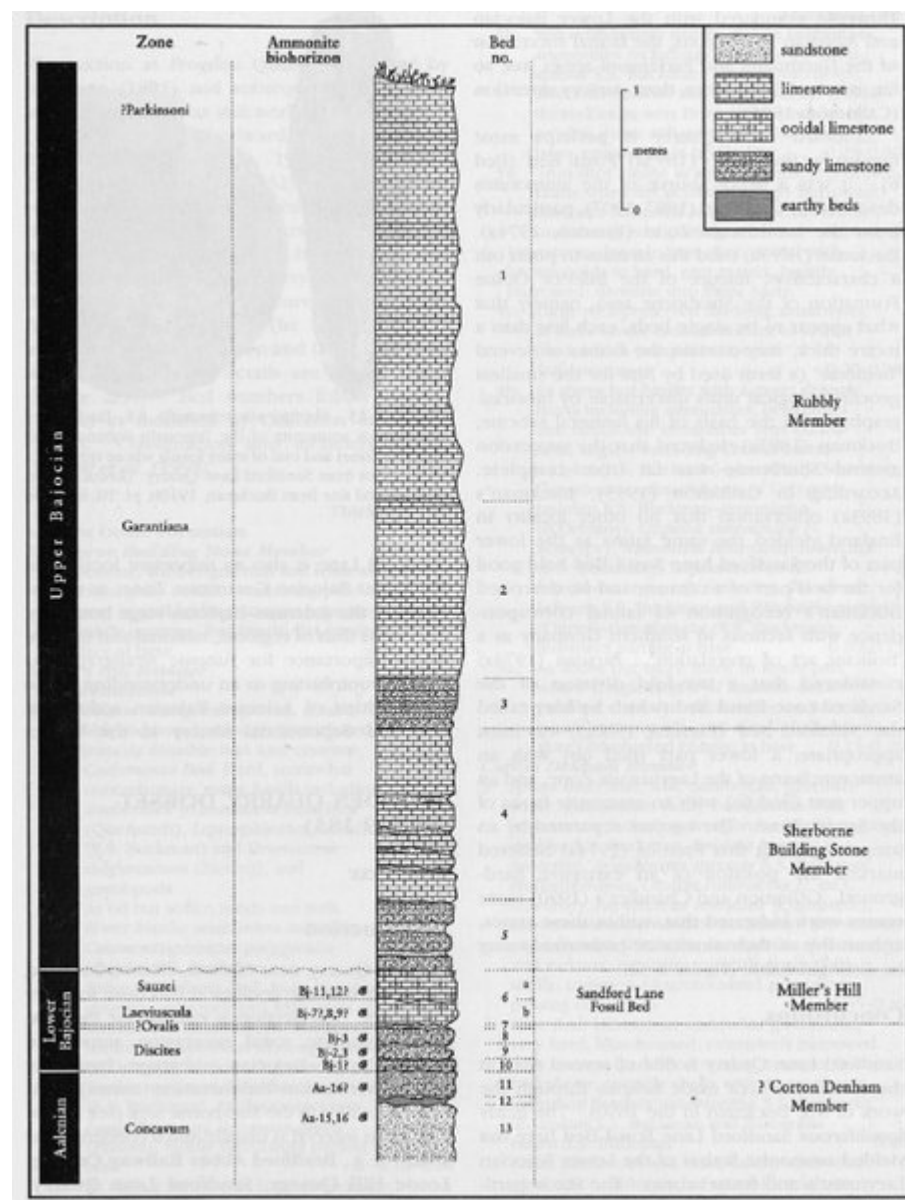
faunal correspondence with sections in southern Germany as a 'brilliant act of correlation'. Parsons (1974a) considered that a two-fold division of the Sandford Lane Fossil Bed (which he later called the 'Sandford Bed' (Parsons, 1980a)) was most appropriate; a lower part (Bed 6b) with an ammonite fauna of the Laeviuscula Zone, and an upper part (Bed 6a) with an ammonite fauna of the Sauzei Zone. The two are separated by an irregular parting that Parsons (1974a) believed marked the position of an extensive hard-ground. Callomon and Chandler's (1990) more recent work indicated that, within these zones, at least five of their ammonite biohorizons may be distinguishable (Figure 2.32).

Conclusions

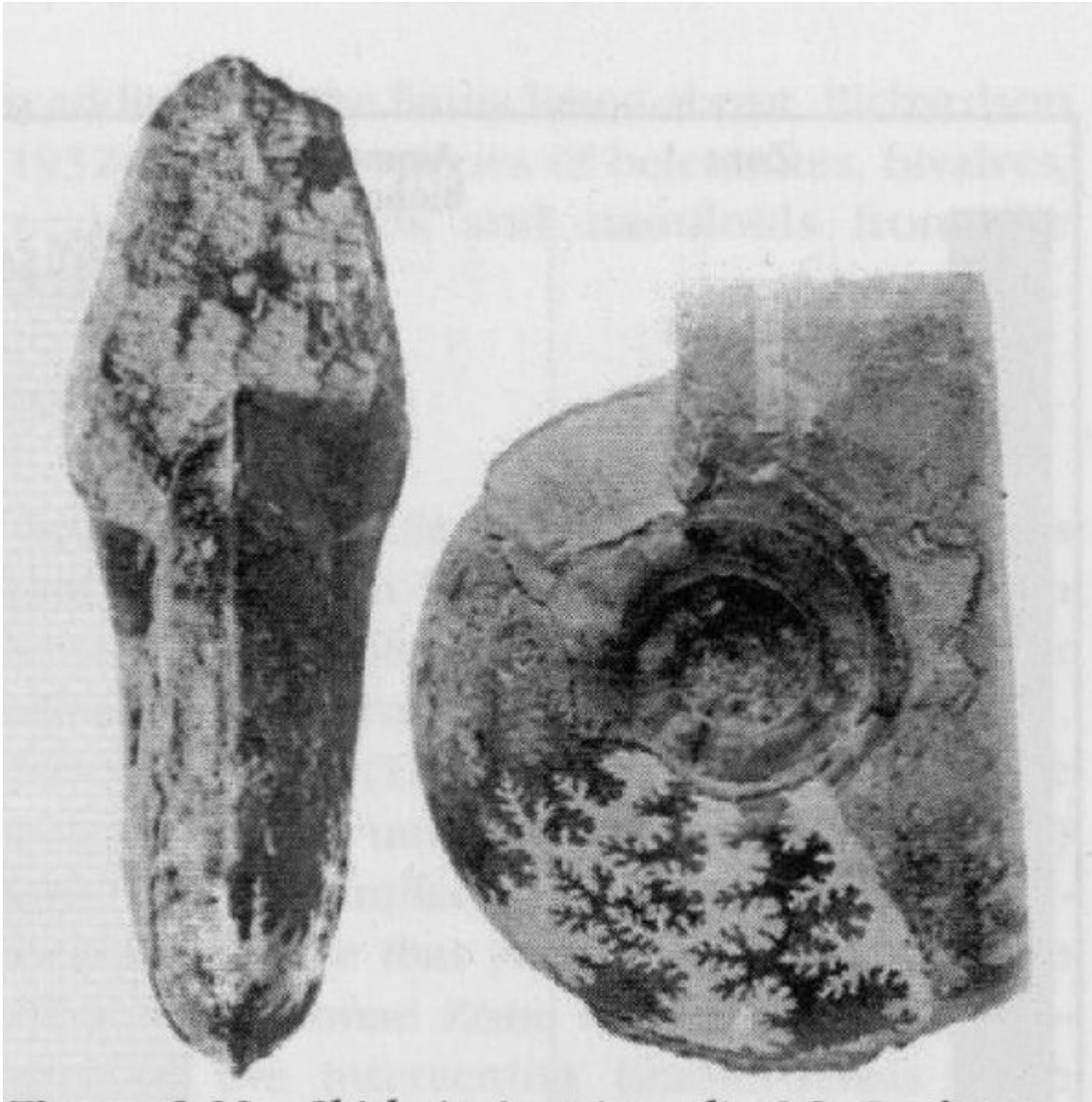
Sandford Lane Quarry is one of several sites in the Sherborne area made famous through the work of S.S. Buckman in the 1890s. The richly fossiliferous Sandford Lane Fossil Bed here has yielded ammonite faunas of the Lower Bajocian Laeviuscula and Sauzei zones. The site is particularly important for the faunas of the former zone, which are not well represented elsewhere in England but which can be correlated with those in continental Europe (Figure 2.33).

Sandford Lane is also an important locality for the Upper Bajocian Garantiana Zone, as well as showing the Aalenian–Bajocian stage boundary. The site is thus of regional, national and international importance for Jurassic stratigraphy as well as contributing to an understanding of the complexities of Aalenian–Bajocian sedimentation and depositional history in the Wessex region.

References



(Figure 2.32) Graphic section of the Inferior Oolite Formation at the Sandford Lane Quarry GCR site. (After Callomon and Chandler, 1990, fig. 4.) For lithologies, see text.)



(Figure 2.33) *Shirbuirnia trigonalis* S.S. Buckman —eponymous ammonite of the Trigonalis Subzone (Lae-viuscula Zone) and one of many fossils whose type specimen comes from Sandford Lane Quarry (Reduced to c. 50% natural size from Buckman, 1910b, pl. 10, figs 2, 3.)