
Maes Down, Somerset

[ST 647 406]

Introduction

The Maes Down GCR site is a small disused quarry located 150 m south-east of the summit of Maes Down (Figure 2.30). It exposes a section through the Beacon Limestone Formation that shows no evidence for attenuation or development of marginal facies, by comparison with correlative sections farther south in the Wessex Basin, despite its location on the north margin of the basin close to the Mendip structural high. It represents a key site for early Jurassic palaeogeographical reconstructions. There are few published references to the site. The section was logged by Richardson (1906b), while investigating the Inferior Oolite Group of the Doultling area, but even at that time it was rapidly becoming overgrown. The Marlstone Rock Member at the site was referred to subsequently by Richardson (1909, 1910a), Arkell (1933), Howarth (1980) and Bristow and Westhead (1993).

Description

The Dyrham Formation and Beacon Limestone Formation crop out only on the southern flanks of Maes Down. To the north a substantial east–west fault brings down Middle Jurassic sediments against this Lower Jurassic outcrop. North of this fault the Bridport Sand Formation appears to rest unconformably on the Charmouth Mudstone Formation and the correlatives of the succession described here are not seen again until north of the Mendips. The section as recorded by Richardson (1906b) exposed about 4.4 m of the Beacon Limestone Formation, comprising 3.2 m assigned to the Marlstone Rock Member overlain by 1.2 m of the Barrington Limestone Member. In May 2000 only the upper 1.5 m of the Marlstone Rock Member was visible, dipping gently north (Figure 2.31).

Richardson's (1906b) section, metricated and re-numbered from the base upwards, is as follows:

	Thickness (m)
Beacon Limestone Formation	
<i>Barrington Limestone Member</i>	
9: Clay, brown and bluish.	
8: Limestone, dark green, earthy, with dark-yellow specks resulting from the decomposition of the ferruginous granules. <i>Hildoceras</i> sp., <i>Dactylioceras</i> sp., <i>Pseudogibbirhynchia</i> cf. <i>jurensis</i> and <i>Pecten substriatus</i> .	0.4
7: Limestone, brownish-grey, with a few ferruginous granules.	0.05–0.15
6: Clay, dark-purplish.	0.45
5: Limestone, brownish-grey, somewhat earthy, but hard in places, devoid of ferruginous granules. ? <i>Cleviceras elegans</i> , <i>Cryptaulax scobina</i> ?	0.06
4: Clay, grey and brown.	0.10
<i>Marlstone Rock Member</i>	
3: Limestone, pale brown, ironshot. <i>Pleuroceras spinatum</i> .	0.08
2: Clay, brown.	0.08
1: Limestone, hard, dark, ironshot; top layer crowded with belemnites. <i>Passaloteuthis bisulcata</i> , <i>Lobothyris punctata</i> , <i>Tetrarhynchia tetrahedra</i> , <i>Cypricardia pellucida</i> .	3.1

Above the Marlstone Rock Member Richardson (1906b) assigned beds 5 to 7 to the Serpentinum Zone, although biostratigraphically diagnostic fossils were found only in Bed 5. Beds 8 and 9 were assigned to the Bifrons Zone. He

commented that the clay of Bed 4 occupied a position consistent with a *Tenuicostatum* Zone age but found no palaeontological evidence to confirm this. He noted (Richardson, 1909) that the Upper Lias beds had been visible when he first visited the site, implying that they had already become obscured. None of this part of the succession is visible today. Bristow and Westhead (1993) stated that fossils, including brachiopods, gastropods, bivalves, belemnites and ammonites, particularly species of *Pleuroceras*, were common in the Marlstone Rock Member.

Interpretation

The quarry at Maes Down exposes one of the most northerly developments of the Marlstone Rock and Barrington Limestone members of the Beacon Limestone Formation in the Wessex Basin. It is located less than 4 km south of outcrops of Carboniferous Limestone and only a few hundred metres south of outcrops where Upper Pliensbachian strata are absent and the Bridport Sand Formation rests directly on the Charmouth Mudstone Formation. Around Doulting, 3 km to the north, an attenuated Toarcian succession of sandy and ironshot limestones lies between days presumed to represent the Charmouth Mudstone Formation and limestones of the Inferior Oolite Group above (Green and Welch, 1965). The Hettangian to Lower Pliensbachian succession in this region is also characterized by coarse marginal facies, such as are exposed at the Viaduct Quarry GCR site. Despite the proximity of the Maes Down GCR site to the basin margin, the Marlstone Rock Member is unusually thick (3.2 m), a fact remarked upon by Arkell (1933). The thicknesses of the Serpentinum and Bifrons zones recorded by Richardson (1906b) are comparable with those of the more condensed sections around Yeovil (Wilson *et al.*, 1958) but, unlike them, the Maes Down succession includes a significant thickness of mudstones. The similarity of the Beacon Limestone Formation here to that in the Ilminster and Yeovil area suggests that the Mendip Massif exerted a minimal influence on sedimentation at that time and that the absence of this part of the Lower Jurassic succession farther north is due largely to pre-Aalenian erosion rather than to non-deposition. However, from the absence of Upper Pliensbachian strata immediately north of the fault on Maes Down it is clear that this fault was active during early Jurassic times and that the survival of such sediments to the south reflects this. The present relationship between the strata that crop out to north and south of the fault suggests an episode of tectonic inversion, as is well established elsewhere in the Wessex Basin (Chadwick, 1993).

The biostratigraphy of the succession has yet to be fully resolved. Bristow and Westhead (1993) included the top part of the Marlstone Rock Member in the *Tenuicostatum* Zone, as recorded elsewhere in the Wessex Basin (Howarth, 1980). However, Richardson's (1906b) record of *Pleuroceras spinatum* from Bed 3 contradicts this. The same authors stated that the Marlstone Rock Member in this area extended down into the Subnodosus Subzone. Although this has been claimed for parts of the Severn Basin (Simms, 1990a), it has yet to be demonstrated anywhere in the Wessex Basin. The unusual thickness of the Marlstone Rock Member in the Maes Down area may therefore be due either to earlier onset of deposition of this facies here than elsewhere in the Wessex Basin or to enhanced deposition rates in late Pliensbachian times.

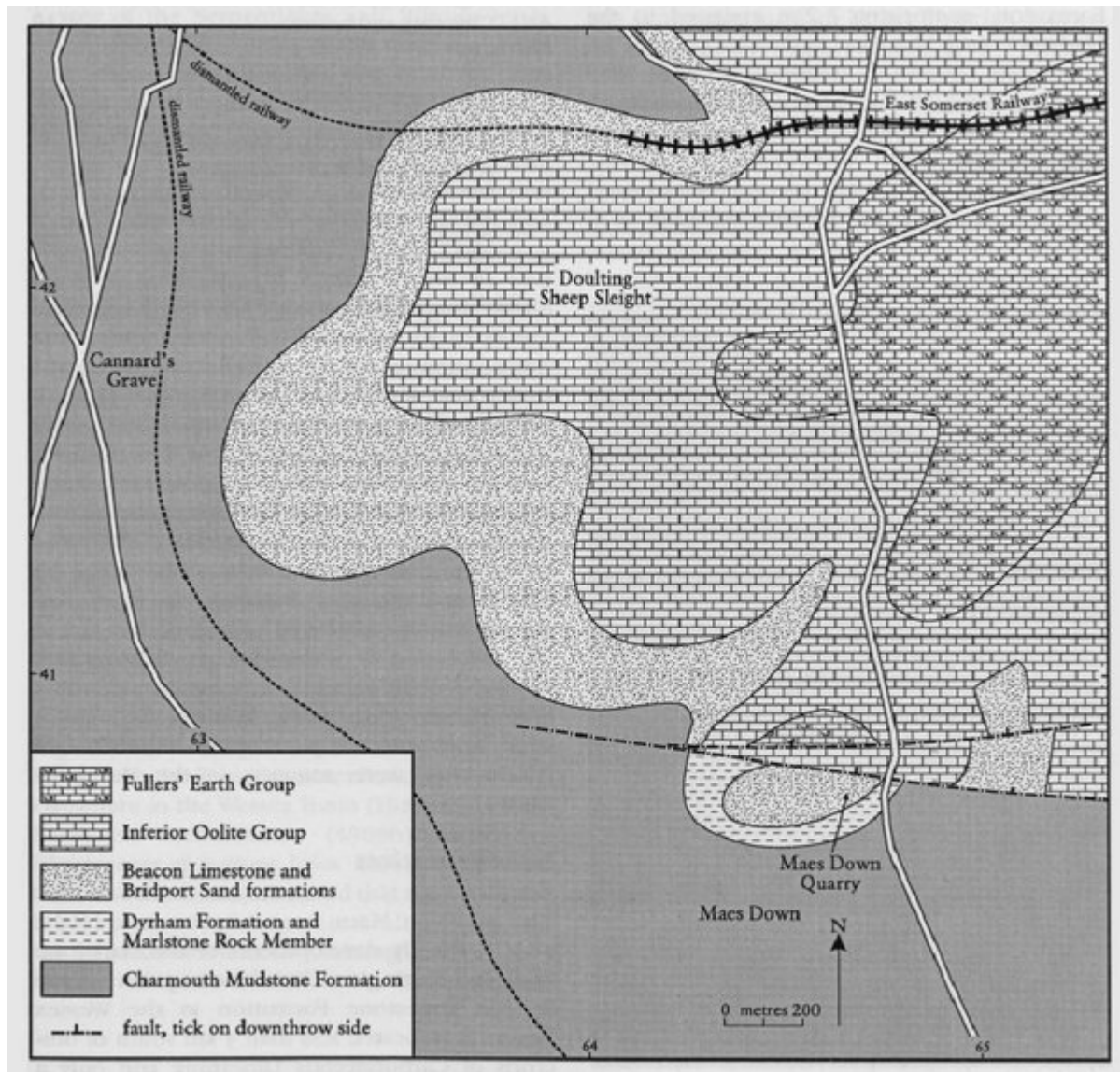
Within the Barrington Limestone Member Richardson (1906b) obtained ammonites from only beds 5 and 8. He assigned beds 6 and 7 to the Serpentinum Zone on the basis of their lithological similarity to Bed 5. However, the only ammonite he recorded from Bed 5, *Polyplectus capellinus*, is probably a mis-identification since this is a synonym of an Upper Toarcian species, *Polyplectus discoides* (Howarth, 1992). It might have been a *Polyplectus pleuricostata* or a *Cleviceras elegans*, both of which occur in the Serpentinum Zone (Howarth, 1992), but the specimen has been lost. Richardson (1906b) recorded *Hildoceras bifrons* and *Dactylioceras* cf. *hollandrei* in Bed 8. The latter is probably a mis-identification, being a synonym of a basal *Tenuicostatum* Zone species, *Dactylioceras pseudocommune* (Howarth, 1973). The identification of *Hildoceras bifrons* may also be suspect since other species of *Hildoceras*, from the Serpentinum to Variabilis zones, have commonly been mistaken for *H. bifrons*.

The ammonites recovered from the Toarcian part of the succession at Maes Down have not resolved the biostratigraphy at the site. Even though Richardson (1906b) acknowledged the assistance of the ammonite specialist S.S. Buckman, most would appear to have been mis-identified.

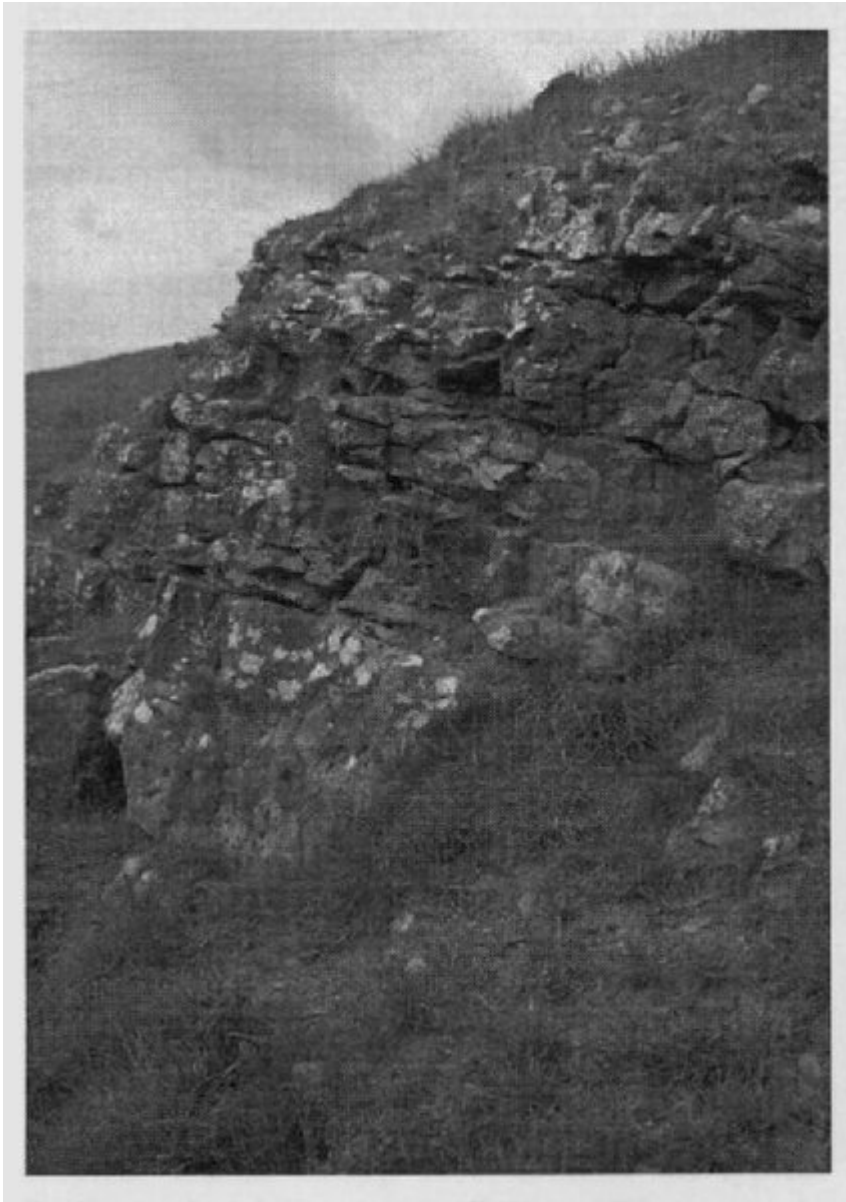
Conclusions

Despite the close proximity of the Maes Down GCR site to the Mendip structural high, the section through the Beacon limestone Formation shows little stratigraphical attenuation and is not a marginal facies. The site remains under-investigated despite its importance in elucidating the early Jurassic history of the northern margin of the Wessex Basin close to the Mendip structural high.

References



(Figure 2.30) Geology and location map of the Maes Down area.



(Figure 2.31) The Marlstone Rock Member of the Beacon Limestone Formation at Maes Down. (Photo: M.J. Simms.)