Haresfield Hill, Gloucestershire

[SO 819 088]

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Introduction

Haresfield Hill, an outlier of the main Cotswold hill-mass, lies some 5 km north-west of Stroud, Gloucestershire. The GCR site is situated at the western extremity of that part of the hill known as 'Haresfield Beacon'. The site encompasses a face, some 8 m high, that exposes the basal part of the Inferior Oolite Group and the underlying Cephalopod Bed at the top of the Lias Group (Figure 3.29). The section is essentially a natural scar caused by landslipping, owing to failure of the Lias mudstones that form the main slope of the hill. As in many other such instances along the Cotswold scarp (e.g. see Crickley Hill GCR site report, this volume), the exposure may have been accentuated by a modest amount of quarrying. The section (at 'Beacon Hill') was first recorded by Wright (1860) and repeated by Witchell (1882b). Buckman (1888) gave a generalized section of the escarpment at Haresfield Hill, which was summarized by Woodward (1894) and which also forms the basis of Richardson's (1904) abbreviated record.

Description

The section given below was recorded by the present author in 1997. It can be related to that of Buckman (1888) with a considerable degree of confidence, and bed numbers and most of the faunal data are taken from his account.

	Thickness (m)
Birdlip Limestone Formation	
Crickley Member	
4: Limestone, buff, medium-grained, well-sorted, ooidal and sparsely shell-fragmental grainstone, massive, with cryptic cross-bedding in places, weathering rather flaggy; not exposed in continuous section	*c.* 3.0
Leckhampton Member	
5–6: Limestone, brown and grey mottled, slightly sandy, somewhat rubbly, moderately shelly	1.15
7: Limestone, yellow-brown, very sandy, soft, with irregular, grey-hearted, well-cemented doggers; sporadic ammonites and bivalves	0.35
8–13: Limestone, brownish-grey, yellow-brown-weathering, somewhat sandy, coarse-grained, poorly sorted, peloidal and shell-fragmental packstone; massive, though markedly rubbly appearance on weathered faces due to preferential cementation around burrows; sporadic impersistent partings and softer layers; poorly preserved *leioceras ambiguum?* S.S. Buckman' in middle part (Bed 10)	1.95
14: Limestone, pinkish-grey, weathering brown, hard, poorly sorted, slightly sandy, peloidal and shell-fragmental packstone; massive, uniform appearance on weathered surfaces; marl parting at base	0.40

15–16: Limestone, as Bed 14 above; hard, forming overhang; sharp base; abundant large *Leioceras opalinum* (Reinecke) with *L. comptum* (Rein-ecke) in upper part (Bed 15); small *L. opalinum, Pleydellia aalensis* (Zieten), *Myophorella ramsayi* (Wright) in lower part (Bed 16)	0.35
Lias Group	
Cephalopod Bed	
17–19: Limestone, soft, somewhat marly, brown-ochreous-weathering, strongly burrowed and highly fossiliferous, particularly with belemnites but also ammonites and bivalves; marl seams 0.20 m and 0.40 m above base; sharp, markedly convoluted, loaded base; *Homoeorhynchia cynocephala* (Richard), '*Terebratula haresfieldensis*'Davidson, *Dumorteria moorei* (Lycett), *Lytoceras wrighti* S.S. Buckman	0.55
Bridport [Cotteswold] Sand Formation	
20: Sand, orange-brown to ochreous, very fine-grained, tough, partially cemented, becoming brownish-grey with deformed, brown ferruginous peloids in topmost *c.* 0.15m	0.43

Interpretation

Buckman (1888) assigned beds 17 to 19 (and perhaps parts of Bed 16) to the Cephalopod Bed, although later (Buckman, 1903) he apparently amended this, quoting a total thickness of 0.6 m, probably represented by beds 16 to 19. Richardson (1904) who, like Buckman, was influenced more by fauna than lithology or sedimentology, also included Bed 15 in the Cephalopod Bed but, as classified herein, the latter comprises only beds 17 to 19, which together form an obvious sedimentological unit near the bottom of the face, resting with a sharp, loaded junction on the underlying Bridport Sand Formation. The ammonite fauna of the Cephalopod Bed shows that it is a condensed unit of latest Toarcian (Early Jurassic) age. Here, it is very much thinner than farther south in the Cotswolds, for example at Nibley Knoll (see GCR site report, this volume) where it is some 4 m thick, but its ammonite fauna shows that it is also less complete with a substantial non-sequence, not present farther south, at its base.

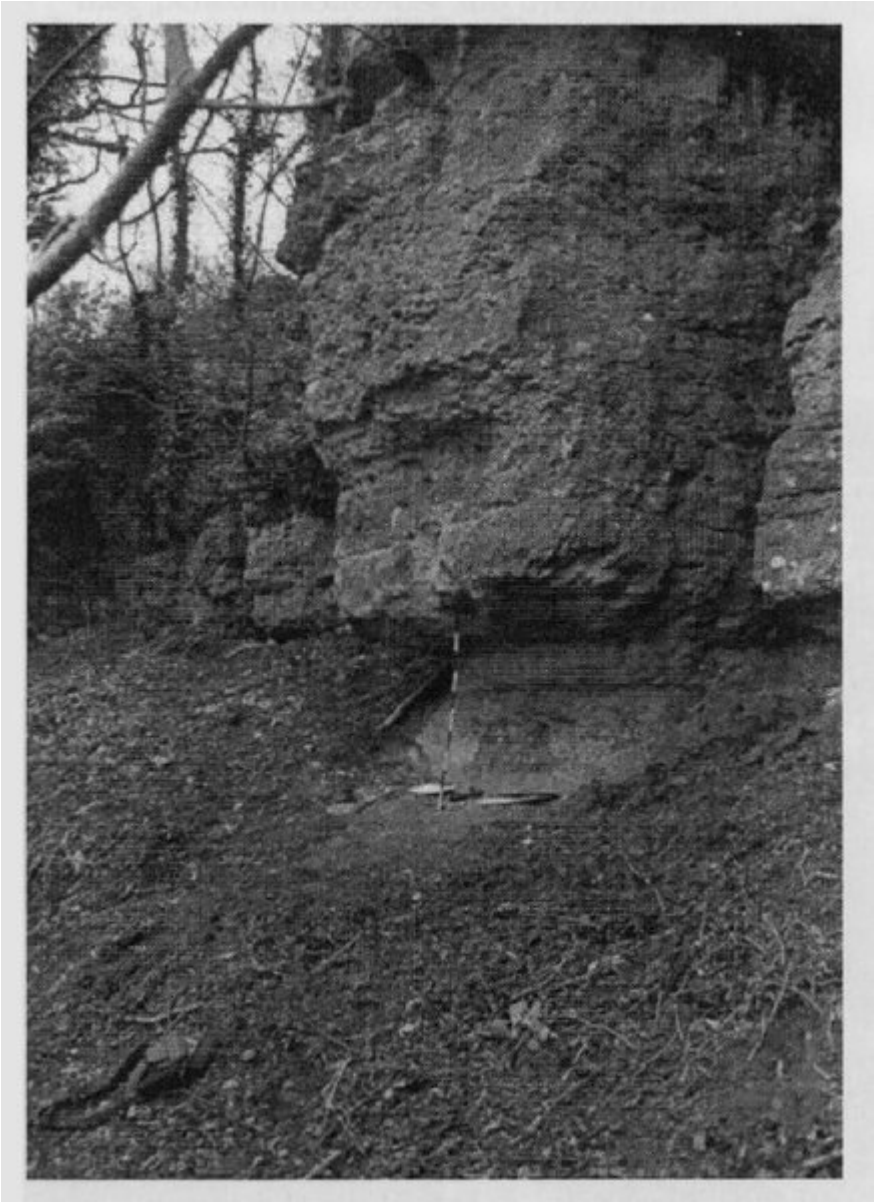
Beds 5 to 15 are mainly brown-weathering rubbly, rather sandy limestones that constitute the Leckhampton Member, the basal unit of the Inferior Oolite Group, and the most widespread and lithologically uniform unit of the Lower Inferior Oolite in the Cotswolds. It totals 4.2 m in thickness at Haresfield Hill, a little less than at the type locality (see Leckhampton Hill GCR site report, this volume). Beds 5 to 7 were formerly regarded as part of the Lower Limestone (now Crickley Member), although this is hard to justify on lithological grounds. At the base, beds 15 and 16, respectively the so-called 'Opaliniforme Bed' and Aalensis Bed' (Richardson, 1904; Buckman in Richardson, 1910), together form a single sedimentological unit. Buckman (1888) recorded the ammonite *Leioceras opalinum,* indicative of an earliest Aalenian age, throughout this unit, but the lower part (Bed 16) also yielded *Pleydellia aalensis,* indicating a latest Toarcian age. The succeeding part of the Leckhampton Member (beds 8 to 14) corresponds with the Ferruginous Beds of Witchell (1882b) or the Scissum Beds of Richardson (1904) and later workers. Richardson (1904) recorded small *Quadratirhynchia subdecorata* (Davidson) and *Pleuromya* within the Leckhampton Member, and the ammonite *Pseudolioceras* is recorded in English Nature files; the latter probably came from Bed 7, in which ammonites are conspicuous.

The basal part of the succeeding Crickley Member exposed in the current section belongs to the Lower Limestone of Witchell (1882b) and later authors. These beds are, at Haresfield Hill, dominated by cross-bedded, ooidal limestones assigned by Mudge (1978a) to his Frocester Hill Oolite.

Conclusions

The section at the Haresfield Hill GCR site is important for its exposure of the Cephalopod Bed at the top of the Lias Group, and the overlying Leckhampton Member at the base of the succeeding Inferior Oolite Group. Indeed, it is one of the few localities in the Cotswolds where this junction, corresponding with the Lower-Middle Jurassic boundary, can be examined, and so is significant in stratigraphical and palaeontological studies. Ammonites and brachiopods from this locality have featured in palaeontological monographs.

References



(Figure 3.29) Overhang of the Leckhampton Member (Birdlip Limestone Formation) above the Cephalopod Bed (Lias Group) at Haresfield Hill. (Photo: M.G. Sumbler.))