Hurcott Lane Cutting, Somerset

[ST 3985 1635]

Introduction

The Hurcott Lane Cutting GCR site, on Hurcott Lane, also known as 'Hollow Road', lies approximately 1 km south of the village of Shepton Beauchamp and about 4 km north-east of Ilminster (Figure 2.21). It provides the finest exposure currently available of the Barrington Limestone Member of the Beacon Limestone Formation, found in the banks of a sunken lane, a common feature of this area. The Barrington Limestone Member is a highly condensed facies of the Toarcian Stage developed locally in the Ilminster area. In little more than 2 m of strata it exposes a succession encompassing four ammonite zones and equivalent to more than 70 m of strata on the Yorkshire coast. The Barrington Limestone Member is spectacularly fossiliferous, yielding some of the most diverse Toarcian ammonite faunas anywhere in Britain as well as an unusual benthic fauna with a high prevalence of encrusting taxa.

This specific section was the subject of a MSc thesis by Constable (1992), on which the following account is partly based, and was mentioned briefly by Wilson *et al.* (1958, p. 56), but there have otherwise been no published descriptions. Previous accounts of correlative successions in the area were published by Moore (1867b), Hamlet (1922), Pringle and Templeman (1922), Spath (1922a), Wilson *et al.* (1958), Boomer (1992) and Howarth (1992).

Description

Hurcott Lane Cutting exposes just over 2 m of argillaceous limestones and calcareous mudstones of the Barrington Limestone Member, formerly known as the 'Junction Bed'. Much of the cutting is vegetated and exposure is commonly poor; two minor landslips on the east side of the lane have produced clearer sections, the larger of which is about 10 m long (Figure 2.22).

Constable (1992) identified 27 beds within the exposed part of the Barrington Limestone Member (Figure 2.23), with mudstone units greatly subordinate to limestones, which possibly are overlain by the basal part of the Bridport Sand Formation. The limestones typically have irregular surfaces and several are discontinuous or reduced to nodules within mudstone units. There is a general upward increase in the proportion of limestone to mudstone; mudstones predominate in beds 2–4 (middle Serpentinum Zone), and are common in beds 5–18 (upper Serpentinum and lower Bifrons zones), whereas beds 19–27 (upper Bifrons, Variabilis and Thouarsense zones) are developed very largely in limestone. The uppermost limestone bed is overlain by weathered and disturbed yellow-brown sands but the precise nature of the contact is difficult to ascertain. These may be the basal beds of the Bridport Sand Formation.

Fossils are abundant in the limestones and mudstones, with ammonites forming a conspicuous component of the fauna. The diverse fauna of hildoceratids and dactylioceratids has enabled biostratigraphical boundaries to be identified with precision and has demonstrated a virtually complete sequence from the middle part of the Serpentinum Zone through to the Thouarsense Zone at this site. On account of the quality of preservation and ease of extraction of the ammonites in the Barrington Limestone Member in this area, compared with the equivalent strata on the Dorset coast, many specimens have been figured in publications, notably those of Howarth (1992) who commented that the ammonites of the Falciferum Subzone in particular are more varied and abundant in this area than anywhere else in Britain.

The Barrington Limestone Member also yields common belemnites, occasional *Cenoceras,* and a rich and diverse benthic macrofauna of bivalves, gastropods, brachiopods, echinoderms and other groups, along with a similarly diverse microfauna and flora. Elements of the fauna were described and figured by Moore (1867b) and Boomer (1992). Aragonitic shell material is generally absent and many of the ammonites are preserved as steinkerns, or internal moulds, which subsequently have been incorporated into the sediment. Deformed ammonite steinkerns are common on the surfaces of many of the limestone beds. Preservation of original calcitic material is usually good, though often broken. Encrusting organisms are common on many of the macrofossils and on some of the limestone nodules. They include

foraminifera, oysters, serpulids and rarer solitary corals and cyrtocrinid holdfasts. A horizon near the base of the Commune Subzone at the nearby Ilminster Bypass [ST 406 157] (Figure 2.21) yielded an exceptionally rich echinoderm fauna dominated by cyrtocrinids and *Isocrinus lusitanicus* (Simms, 1989), with common echinoid and ophiuroid debris. Closer examination of the Hurcott Lane Cutting may perhaps also reveal its presence there. Vertebrate remains occur in the Barrington Limestone Member, but are rare and typically disarticulated. Spectacularly well-preserved fish and marine reptiles described from this area by Moore (1867b) appear to be confined to the 'Saurian and Fish Bed', which occurs Low in the Exaratum Subzone and is not exposed at Hurcott Lane Cutting.

Interpretation

The Toarcian succession at Hurcott Lane Cutting clearly is condensed. Four ammonite zones are present in little more than 2 m here compared with more than 70 m for correlative strata on the Yorkshire coast. The succession here is expanded by comparison with correlative sections in this area (Wilson *et al.,* 1958), and particularly with the Beacon Limestone Formation on the Dorset coast where equivalent strata locally are reduced to less than 1 m. No obvious hiatuses have been identified within the Barrington Limestone Member exposed at Hurcott Lane Cutting although they occur in the more condensed sections farther to the east, around Yeovil, and on the Dorset coast. The hildoceratid ammonites recorded from the Barrington Limestone Member indicate that the succession is also remarkably complete and includes some of the ammonite-correlated horizons proposed by Gabilly (1976) in his refined biostratigraphy of the Toarcian Stage. Despite the biostratigraphical detail with which the Hurcott Lane Cutting succession is known, lithostratigraphical correlation with other sections in the area (Boomer, 1992; Howarth, 1992) has proven difficult, suggesting that the Barrington Limestone Member shows rapid lateral variations. The succession at Hurcott Lane Cutting appears to be' thinner, and with a lower proportion of mudstone units, than that recorded by Hamlet (1922; reproduced in Howarth, 1992) at Barrington [ST 385 178], less than 2 km to the north-west (Figure 2.21). It is also slightly thinner than that published in Boomer (1992) on the Ilminster Bypass [ST 406 157], less than 1 km to the south-east. Kellaway and Wilson (1941a) commented on the changes in thickness of the Beacon Limestone Formation between Ilminster and Yeovil and noted the disappearance of *Grammoceras* faunas in the upper part of the formation near Yeovil.

Hesselbo and Jenkyns (1998) attributed the condensed nature of the Beacon Limestone Formation of Dorset to sediment starvation; the same probably is true for the Barrington Limestone Member. Sections in the Ilminster and Yeovil area include firrngrounds and/or hardgrounds which, together with the abundance of ammonite and other shells, support the rich encrusting fauna that is such an unusual element of the British Lower Jurassic Series but well represented in the Tethyan Province. These include encrusting oysters, serpulids, foraminifera and cyrtocrinid crinoids. Broken, distorted and heavily encrusted ammonite steinkerns found at many sites indicate periods of exhumation and reworking of fossil material, while fossils encased in oncolitic algal overgrowths indicate prolonged periods of non-deposition in shallow water.

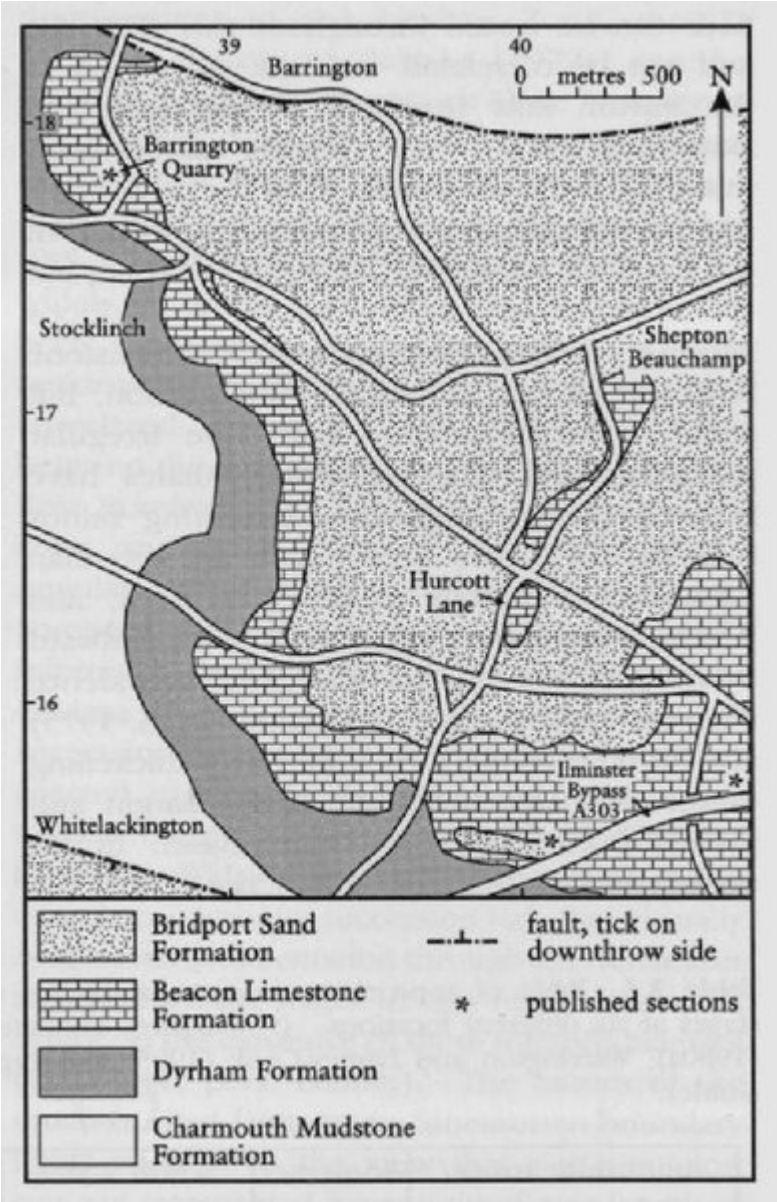
Some elements of the fauna indicate a palaeobiogeographical link between southern England and areas farther south, with Howarth (1992) noting the relatively frequent occurrence of Tethyan ammonite taxa in the Barrington Limestone Member. Boomer (1992) commented on the south European and north African affinites of the ostracod fauna and its distinctiveness from faunas recorded from basins farther north in England and Wales. A similar pattern is seen in the contrast between the hildoceratid-dominated faunas of southern England and the dactylioceratid-dominated faunas of Northamptonshire and Yorkshire. Boomer (1992) attributed this to the opening of new migration pathways associated with an early Toarcian sea-level rise.

Conclusions

The section exposed at Hurcott Lane Cutting is currently the best representative of the Barrington Limestone Member, a local development of the Beacon Limestone Formation, in the Ilminster area. It provides an important correlative section to the Beacon Limestone Formation exposed in the Pinhay Bay to Fault Corner GCR site, with which it shows significant contrasts. The Hurcott Lane Cutting section is highly condensed, with little more than 2 m of strata representing 4 ammonite zones and about 3 million years. It yields a more diverse and easily extractable fauna than that of the coastal exposures, including ammonites and many other fossils. The ammonite and ostracod faunas from the Barrington

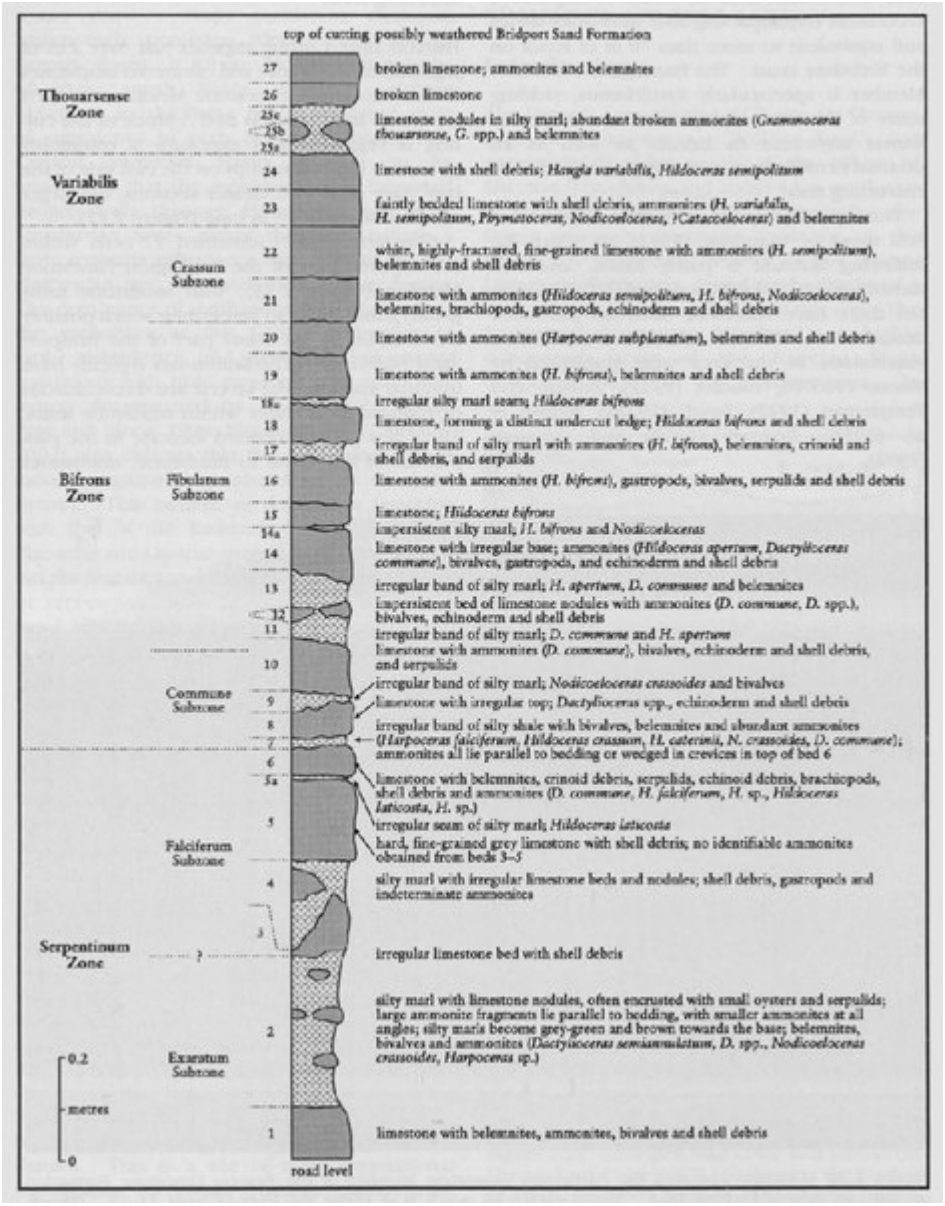
Limestone Member show evidence of Tethyan affinities and contrast markedly with faunas of the same age farther north in England. The encrusting benthos found in the Barrington Limestone Member provides valuable insights into aspects of the marine biota greatly underrepresented in the British Lower Jurassic Series by comparison with many sites in the Tethyan Province.

References



(Figure 2.21) Geological map of the area around the Hurcott Lane Cutting GCR site showing the location of other published sections through the Beacon Limestone Formation.

(Figure 2.22) Landslip exposing the Barrington Limestone Member of the Beacon Limestone Formation on the east side of Hurcott Lane. The conspicuous notch is at about the level of beds 11–13. (Photo: M.J. Simms.)



(Figure 2.23) Section through the Barrington Limestone Member of the Beacon Limestone Formation exposed in I Iurcott Lane Cutting. After B. Constable, 1992, MSc thesis, Birkbeck College, London.