Broom Hill, Gedgrave, Suffolk

[TM 4063 4995]

Potential GCR site

Highlights

Broom Hill pit is currently one of the deepest sections of Coralline Crag, and is probably the best section in the main outcrop to show the contact between the silty Ramsholt Member and the overlying cross-bedded Sudbourne Member. In contrast to many other sites, the Sudbourne Member retains an aragonitic shelly fauna throughout much of its thickness.

Introduction

The Broom Hill Pit was a very important collecting locality for mollusc fossils in the latter half of the 19th century and over 400 species are recorded in the monographs of Wood (1848–1882) and Harmer (1914–1925).

This pit was first described in detail by Prestwich (1871a) who described it then as already 'well-known' and listed 65 species of mollusc that had been collected there in 1863. Prestwich identified 7 feet of his 'zone e' overlying 15 feet of 'zone d', a total of 22 feet (approximately 6.7 m) or a little less than the 8 m exposed at the present time. Harmer (1898) identified this pit as 'locality 11' and proved the basal contact with the London Clay to be a further 22 feet (6.7 m) below the floor of the pit at that time. By 1890, Reid had described the pit as 'perhaps the best known of any in the Coralline Crag' (Reid, 1890, p. 29). According to Boswell (1928), large collections of fossils were still being made from this site in 1908, but subsequently the site appears to have become obscured by slips and talus (e.g. Bell and Notcutt, 1925) and by 1928 less than a metre of Coralline Crag was exposed (Boswell, 1928). In the last few years it has been re-excavated to expose one of the deepest sections of Coralline Crag.

Description

The pit is presently about 9 m deep and exposes a section of Coralline Crag about 40 m wide on the west side of the pit. Solution pipes penetrate a metre or more downwards into the upper surface. The uppermost 4.7 m of the Coralline Crag has been affected by selective aragonite dissolution and is dark orange-brown in colour. The sediments below are light grey when freshly exposed and contain abundant aragonitic shell debris. Cross-bedding is clearly seen in parts of the section where the sediments are weakly lithi-fied and the face has been weathered, and can be faintly seen on the more freshly excavated faces. Where seen, the foresets dip approximately to the south-west, in common with other exposures in this area. Faint cross-bedding is also visible in lower parts of the section which are unaffected by aragonite dissolution suggesting that most of the section can be ascribed to the Sudbourne Member of Balson *et al.* (1993). Occasional mud drapes are seen near the top of the section. The presence of small mud clasts in places indicates the erosion of mud drapes by renewed strong currents.

Near the base of the exposed section the sediments become noticeably siltier and contain abundant large and complete mollusc shells, particularly of *Venericardia aculeata scaldensis* and *Astarte* spp.

These sediments can probably be ascribed to the Ramsholt Member of Balson *et al.* (1993). It is interesting to note that Prestwich (1871a) ascribed the entire section of 22 feet (6.7 m) to his 'zones' d' and 'e' which are equivalent to the Ramsholt Member and made no mention of the presence of 'zone' g' which is equivalent to the Sudbourne Member.

Interpretation and evaluation

The Broom Hill Pit now shows one of the thickest sections of Coralline Crag. Unusually, the cross-bedded Sudbourne Member retains aragonitic skeletal material in its lower part, allowing examination of the aragonitic shelly fauna of this

facies. The Sudbourne Member forms an elongate outcrop running from Iken in the north to 'The Cliff' in the south. Most exposures of this member lie along the south-east flank of this outcrop (e.g. Crag Farm, Richmond Farm) but the Broom Hill Pit lies on the north-west flank, allowing a better reconstruction of the lateral variability of sediments and fauna within this facies. The extensive fauna yielded to early collectors from this pit may be a mixture of species from the lower part of the Sudbourne Member and the upper part of the Ramsholt Member, and further work is necessary to separate the two faunas to allow an improved palaeoenvironmental interpretation.

Conclusions

The Broom Hill Pit is of great significance in the reconstruction of the geometry and lateral variation of the Sudbourne Member of the Coralline Crag. It also represents an historically important site in the study of the Coralline Crag mollusc fauna.

References