
Veizey's Quarry, Gloucestershire

[ST 881 944]

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Introduction

Veizey's Quarry is situated 1.6 km north-west of Tetbury, near the hamlet of Tetbury Upton, Gloucestershire. It provides a representative section through part of the Upper Bathonian succession, from the upper part of the Athelstan Oolite Formation up into the Forest Marble Formation. A measured section was recorded by Cave (1977) from a face that has been removed by renewed quarrying in recent years (Figure 3.19). However, the current section on the eastern side of the quarry is broadly similar, although lateral variation in lithology and bedding structure is known to occur.

Description

Up to 6.4 m of the Athelstan Oolite Formation are exposed at the base of the section, the lower 3.2 m of which consist of massive, thick-bedded, compact, ooidal, finely shell-detrital limestone with clay flakes or pebbles in part; the limestone beds are separated by thin clay partings. Bivalves (*Camptonectes annulatus* (J. de C. Sowerby)), brachiopods (*Avonothyris*), gastropods (*Fibula*, *Strophodus*), and wood and echinoid fragments have been recorded from these beds, which pass up into white, fine-grained, well-sorted, gently cross-bedded oolite in units up to 0.6 m thick, yielding a variety of epifaunal bivalves and several gastropods. Most fossil remains are fragmentary but the following taxa have been recorded (Cave 1977): *Astarte wiltoni* Morris and Lycett, *A. (Ancliffia) pumila* J. de C. Sowerby, *Barbatia*?, *Camptonectes* sp., '*Corbula*' *attenuata* Lycett, '*C'hulliana*'? Morris, *Gervillella ovata* (J. de C. Sowerby), *Limopsis minima* (J. de C. Sowerby), *Placunopsis socialis* Morris, *Praeexogyra hebridica* (Forbes), *Pseudolimea* sp., *Tancredia angulata* Lycett, *T. extensa* Lycett, *Ceritella acuta* Morris and Lycett and *Procerithium* sp.. The top of the formation is capped by a brown, bored hardground bed. Boreholes drilled from the floor of the quarry have proved an additional 14.6 m of the Athelstan Oolite Formation below the exposed section.

Yellowish-fawn, shell-fragmental oolite, up to 3.5 m thick, overlies the Athelstan Oolite Formation. It is steeply planar cross-bedded in the lower part, below an ochreous, rubbly marl parting. There is a persistent, brown clay parting at the base. This oolite is assigned to the Combe Down Oolite Member of the Great Oolite Formation.

The succession is capped by the Forest Marble Formation, which consists mainly of brown, shelly, flaggy-weathering limestones, cross-bedded in part, with subordinate interbeds of grey clay containing thin partings of silty limestone. The basal limestone bed contains limestone pebbles and fish teeth, and there is a thin marl band at its base. The highest exposed bed in the quarry face is a 1.68 m-thick sandy limestone with clay pebbles, which weathers to a loose sand.

Interpretation

The cross-bedded oolites and ooidal limestones of the Athelstan Oolite Formation are interpreted as mobile barrier-bar shoal deposits, laid down in high-energy, shallow waters subject to vigorous currents at the outer margin of a carbonate shelf-sea. The gentle, bi-polar cross-bedding suggests a tidal influence. The good sorting of the upper oolites indicates a measure of current winnowing. The mudstone clasts in the lower ooidal limestones indicate erosion and transport of fragments eroded from nearby mudstone outcrops. The bored hardground at the top of the Athelstan Oolite Formation reflects a period of rapid lithification of sediment on the sea floor, associated with an interval of non-deposition and colonization of the substrate by boring organisms. The Great Oolite Formation was deposited under similar conditions; the planar, cross-bedded oolites with steeply inclined, foreset beds in the lower part were probably deposited in strong unidirectional currents.

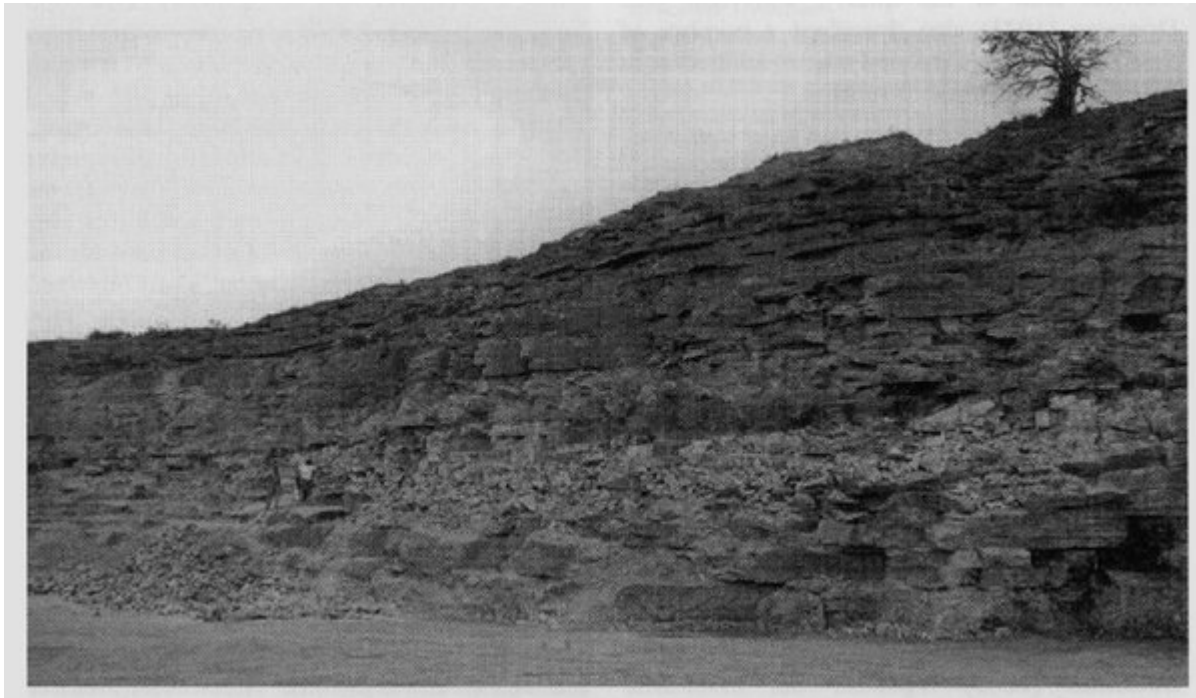
The limestones of the Forest Marble Formation indicate a continuance of high-energy depositional conditions with strong current activity; an influx of sandy sediment is evident in the highest bed exposed. The clay interbeds reflect low-energy, probably deeper water, episodes during which terrigenous muddy sediment was fed into the carbonate shelf-sea.

No fossils of diagnostic biostratigraphical value have been found in Veizey's Quarry, but the Forest Marble Formation, and the Great Oolite and Athelstan Oolite formations are inferred to belong mainly to the *Discus* and *Bremeri* zones, respectively; most of the upper part of the *Retrocostatum* Zone is inferred to be absent below the Forest Marble Formation because of regional overstep by the latter (Wyatt, 1996a).

Conclusions

Veizey's Quarry is the best reference section, displaying the typical development, of the Athelstan Oolite Formation in the Tetbury district. The dominantly ooidal limestones of this and the Great Oolite Formation bear witness to the mobile oolite shoals of a barrier-bar at the margin of a carbonate shelf-sea. Various forms of cross-bedding structure are displayed, as well as a characteristic Bathonian bored hardground bed.

References



(Figure 3.19) Veizey's Quarry: thin-bedded limestones and clay of the Forest Marble Formation overlying shell-detrital oolites (Combe Down Oolite Member, Great Oolite Formation) and the Athelstan Oolite Formation at the base. (Photo: British Geological Survey, No. A10941; reproduced with the permission of the Director, British Geological Survey, © NERC, 1967.)