
THE GEOLOGY OF LEIGH DELAMERE

Rowena Staff

Although hundreds of people every week stop to rest at the M4 service station at Leigh Delamere, Chippenham, not many realise that they are in fact eating their picnic in a disused quarry. It is one of the many quarries that provided a source of the Forest Marble for dry walls and local buildings. This fanciful name is actually rather misleading, as this rock is not marble at all but limestone.

The rock is a small component of Wiltshire's Stone Belt of Cornbrash Limestone, Great Oolite and Inferior Oolite, bordered by the Oxford and Lias Clays.

Part of the Great Oolite series, the Forest Marble consists mainly of blue clay with bands of the limestone containing numerous small shells. The limestone shows very marked layering and is easily split into these layers and polished to resemble a marble.

This layering, or current bedding, (*see photograph on next page*) shown by the outcrop at Leigh Delamere means that the pieces of shell that created the rock were deposited in shallow sea water by currents. These deposits are therefore not evenly laid out as normal bedding planes and form inclines instead. The current direction or speed then changes and the next set of deposits are inclined differently and some previous ones removed.

The limestones of this part of Wiltshire were formed during the Middle Jurassic period about 170 million years ago. At this time, Britain was at about 30° latitude, north of the Equator, around where the Mediterranean is today, with warm, shallow sea water full of the creatures whose shells now make up the rock.

When collecting sample rock specimens from the site it was a surprise that, though no bands of the blue/grey clay could be seen in situ on the outcrop, it was possible to pick up large pieces from the base of it. Quite a lot of the quarry sides were covered in vegetation and difficult to access so it is possible that these examples were weathered from an area that could not be seen or left at the base of the cliff from the time when the quarry was in use.



Current Bedding in the Jurassic Forest Marble, Leigh Delamere Service Station

The quarry face was estimated to be about 7m high. Up to the 6m mark, the current bedding planes are generally about 15cm thick and inclined with angles up to 20°. Above this is a discontinuity, on top of which the bedding planes appear to be almost horizontal and about 3cm thick at the most. There is a small layer of soil above this with stunted trees and shrub growth on top.

The rock face appears as bands of golden and sandy coloured rock. The golden colour is as a result of weathering and it is a creamy colour naturally. Some rock bands of the face consist mostly of large pieces of angular shell with some measuring 2cm across and some almost intact suggesting rapid deposition but these are interspersed with small pieces of 1mm or less so the sorting was poor. Other bands are made up of finer pieces of more rounded shell fragments and small ooids.

As the sun sets over Chippenham, the golden glow of the Forest Marble is a fine sight for weary travellers drawing their Travel Lodge curtains for the night.

Note from the Editor:

Having read Rowena's article about Leigh Delamere, members may also be interested to read the following: 'The shell-detrital calcirudites of the Forest Marble Formation (Bathonian) of southwest England by S. Holloway. Proceedings of the Geologists' Association, Vol. 94 (3), 259-266, 1983

Extract from the Abstract: Shell detrital calcirudite units occur at a level near the middle of the Forest Marble Formation are interpreted as shell shoals, shell sheets, tidal channels and tidal deltas. They are considered to separate a facies belt representing an open marine muddy shelf from one representing a sandy, very shallow, possibly somewhat restricted, marine environment.

