
Wetmoor, near Wickwar, Avon

[ST 741 877], [ST 743 878],

[ST 746 877]

Introduction

Wetmoor is a particularly important site for the study of the Cotham Landscape Marble, which is developed at two levels at this locality. The exposures are, particularly good, and include the Mercia Mudstone Group, and the Westbury Formation and the Cotham Member (Lilstock Formation) of the Penarth Group. Many fossils have been recovered, including vertebrates, for example remains of the fishes *Gyrolepis* and *Sargodon*. The site is historically important, having been noted by Roderick Murchison in 1839.

Although Wetmoor has been known to geologists since the early years of the 19th century, it has not been a major focus of scientific study. The first published documentation of the site was by Murchison (1839). Since then, the geology of the adjacent area has been briefly mentioned by Richardson (1904), Whittard and Smith (1944), and Cave (1977).

Description

Most of the exposures take the form of small stream sections at several locations within the Lower Woods, which form part of the Wickwar Site of Special Scientific Interest (SSSI) and the Wetmoor Wood Nature Reserve. There are three main areas of Upper Triassic exposure (Figure 4.19). To the west, a stream has cut a section into the Mercia Mudstone Group and the Westbury Formation. Streams in the central area of the nature reserve also expose the Westbury Formation. To the east, the Cotham and Langport members of the Lilstock Formation, and Lias Group strata are seen in stream banks.

Sedimentology

No complete Upper Triassic sections from Wetmoor have been published, although several descriptions of the geology of the surrounding area have been reported in the literature. Richardson (1904, p. 534) recorded the following Triassic and Jurassic succession nearby at Chase Hill, near Wickwar:

	Thickness (m)
Lias Group:	
Shales, pale-green, calcareous, with a few, thin, hard layers of limestone near the base	c. 0.20
Limestone, dark, earthy Shale parting	0.02
Limestone, hard, dark	0.09
Penarth Group:	
Cotham Landscape Marble	0.23

Richardson (1904) also recorded the 'Tea Green Marls', 'Red Marls' and 'Rhaetic Black Shales' (including the basal bone bed) from the nearby Chase Hill Lane.

Whittard and Smith (1944) produced a detailed account of the Palaeozoic and Mesozoic geology of the area around Wickwar. They described the valley of the Little Avon river as being cut into the horizontal Triassic strata; the Penarth Group stands out as a well-defined ledge. The following generalized stratigraphical summary for the area is modified from Whittard and Smith (1944, p. 66):

	Thickness (m)
Soil	

Penarth Group; Westbury Formation:

Black shales with bone bed at the base	1.6
Mercia Mudstone Group:	
<i>Blue Anchor Formation</i>	3.96
Red Marls	11.58
Wenlock Limestone (Silurian)	1.68

In an unpublished report for English Nature, R. Cottle describes three locations within the boundaries of the nature reserve and SSSI. In the western end of the reserve a small stream has cut through the Upper Triassic sediments to expose a good section of the Mercia Mudstone Group and the overlying Westbury Formation. The sediments are exposed around a 'T'-shaped junction in the stream (Figure 4.19)a. Here, the Mercia Mudstone Group comprises reddish-brown mudstones with small (0.01 m diameter) green spots and grey-green patches up to 0.10 m long, succeeded by grey and blue mudstones of the Blue Anchor Formation. The conglomeratic bone bed in the Westbury Formation is exposed here, along with the typical black or dark grey argillaceous layers and thin grey limestones of the formation. The bone bed contains the phosphatized remains of vertebrates (teeth, scales and bone fragments) and well-rounded quartz pebbles in a sandy matrix.

The Westbury Formation is also seen in the central area of the reserve. Here, the floodwaters that periodically flow along the course of a small ephemeral stream have eroded a channel in the shales and limestones. The eastern area of the reserve, in the vicinity of the footbridge, preserves the Lilstock Formation sediments, including the Gotham Landscape Marble (Figure 4.19)b, and the Lower Jurassic facies. There are several small ephemeral and permanent streams here, exposing outcrops of varying quality.

Palaeontology

The Mercia Mudstone Group has not yielded any fossils. The basal Westbury Formation bone bed preserves many fossils, mostly phosphatized bones, teeth, and scales, although rare invertebrate remains, for example *Mytilus*, have been recorded. The vertebrates include the fishes *Gyrolepis* and *Sargodon*. Beds higher in the Westbury Formation have yielded the bivalves *Eotrapezium ewaldi*, *Protocardia*, and *Lyriomyophoria*, as well as ostracods. Small gastropods are often associated with the Landscape Marble of the Cotham Member.

Interpretation

The stream bank exposures at Wetmoor preserve sediments that record the changing environmental conditions affecting south-western England during the Late Triassic Epoch. The dominantly terrestrial hypersaline palaeoenvironments represented by the red beds of the Mercia Mudstone Group were replaced by marine conditions under which the Westbury Formation was deposited. A return to mixed marine and continental conditions took place during the deposition of the Lilstock Formation. The succeeding Lias Group strata mark the beginning of a prolonged period of marine sedimentation.

The Cotham Marble is especially significant at Wetmoor, often forming a double layer (Whittard and Smith, 1944). For many years the processes responsible for the formation of the 'Landscape Marble' variety were a matter of debate and controversy (Hamilton, 1961); now it is known that the strange tree-like patterns and laminations were caused by the interactions of algae and sediment as the stromatolites (algal mounds) were formed (Hamilton, 1961; Wright and Mayall, 1981).

Conclusions

The area of the Wetmoor stream sections is one of the few inland sites where the youngest Triassic formations are exposed in south-west England. Although the outcrops are small and discontinuous, they are of good quality. Units exposed here include the Mercia Mudstone Group, the Penarth Group, and the Pre-*planorbis* Beds of the Lias Group. The site is especially important for the Cotham Marble of the Cotham Member, an unusual algal limestone that has long

been known from the Bristol area, but is now unavailable at most of the formerly rich locations.

References



(Figure 4.19) Wetmoor stream sections showing small exposures of Triassic sediments. (a) Mercia Mudstone Group mudstones, seen in the northern end of the western GCR area; (b) Cotham Member limestones and clays, and the Gotham Marble, which are overlain by basal Lias units, in the eastern GCR area. (Photos: R. Cottle.)