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## Mells and the Wadbury Valley

Limited on-road parking is available in Mells and Great Elm.

The Mells area and in particular the deeply incised Wadbury Valley to the south-east displays some fascinating geology and industrial archaeology. Mells [6][ST 72810 49200] is located on the northern flank of the Mendip Hills, close to where the Triassic and Jurassic rocks lap onto the older, highly folded and contorted Carboniferous Limestone and Coal Measures. The Carboniferous Limestone forms the extensively quarried higher ground south of the village, with the softer coal-bearing mudstones outcropping to the west. North of Mells, the Jurassic Inferior Oolite and the overlying Great Oolite Group (Fuller's Earth, Frome Clay and Forest Marble formations) overlie the Carboniferous strata and form the escarpment of Newbury Hill and Mells Down.

From Mells, the most spectacular geology can be seen on a walk down the Wadbury Valley [7] [ST 74000 48904]. The sudden narrowing of the valley occurs where the river flows from the Triassic Dolomitic Conglomerate onto the harder Carboniferous Limestone, shortly after crossing the Mells Fault. Outcrops of the steeply dipping Oxwich Head Limestone can be examined at the bluff on the corner.

On the bend of the river [8] [ST 73397 48839] is the site of one of Fussell's iron works. This site, known as the Upper Works, was one of six in the region. The factory produced some of the finest edged tools in Britain. The works were in operation in 1804, and were probably abandoned at the same time as the Lower Works farther down the valley in the 1870s. The site continued to exist as a water-powered sawmill throughout the first half of the 20th century.

On the opposite side of the river is a curious pile of boulders from which water sometimes pours [9] [ST 73317 48821]. This is not a natural spring, but the outflow from the workings in the neighbouring Whatley Quarry (see Whatley). Water is pumped here from the quarry to help maintain river flow and to help recharge the underground aquifers.

Just downstream, opposite the outfall of the old mill race at river level is the Mells River Sink [10] [ST 73492 48805]. This cleft acts as either a sink or a spring depending on the relative levels of the river and the water table. However, since the advent of quarrying at Whatley Quarry, groundwater levels are generally no longer high enough to permit spring flow. The water sinking here emerges at Hapsford Spring (see Vallis Vale).

Running up the hill behind the sink is a curious open rift [11] [ST 73528 48797]. This cave is developed along the line of a 'Neptunian dyke', a fissure in the Carboniferous Clifton Down Limestone infilled with younger Jurassic Lower Lias Downside Stone. Excavations by cavers followed this narrow rift down, reaching the underground river at a depth of 23 m. Farther down the valley are the impressive remains of Fussell's Lower Iron Works [12] [ST 73873 48871]. Set up in 1744 by James Fussell on the site of an earlier works run by James Naylor, the works produced edge tools such as scythes, spades, shovels and other agricultural implements. Iron ore was not smelted on site but brought in as scrap or pig iron. During the heyday over 250 people were employed here, but with the collapse of agriculture in the 1870s business declined and the firm closed because of bankruptcy in 1894. The site has been derelict ever since.

There have been at least eight water wheels on the site, powering the tilt hammers and grinding machinery. The water was fed through a complex series of stone-lined tunnels to emerge at a tail race 250 m farther down valley. The stone buildings, and the labyrinth of flues and tunnels are now home to a large roost of greater and lesser horseshoe bats. These rare bats are relatively widespread in Mendip caves and mines, and, unlike other British bats, can easily be recognised by their free-hanging roosting habit.

Mosses, liverworts and small wall ferns thrive in the diffused light and high humidity of the ruins. Brittle bladder-fern is found here close to the southernmost edge of its British range, whilst the diminutive wall-rue and curious rusty-back can be found anchored in the mortar of the walls.

The narrow valley is densely wooded, and interesting herbs that can be found near the old iron works including stinking hellebore and, in boggy ground, the creeping alternate-leaved golden saxifrage with its masses of attractive yellow

flowers in springtime. Limestone boulders on the steep valley sides support great masses of moss, especially *Thamnobryum alopecurum* and *Anomodon viticulosus*, and hart's-tongue is abundant on the ground, with its glossy, strap-like leaves. Dippers and kingfishers are frequent users of the stream, feeding on small fish and invertebrates.

A kilometre downstream on the southernmost point of a big bend, a small, but prominent cave entrance can be seen up on the south bank. This is Spleenwort Shelter [13] [ST 74625 49003] a short cave developed in the Carboniferous Clifton Down Limestone. Some nice examples of *Lithostrotion* coral can be seen standing proud of the fine-grained limestone, along with some chert nodules. The valley sides here are resplendent with hart's-tongue fern. A short distance downstream is the junction with Fordbury Bottom. About 150 m farther downstream is Great Elm Edge Tool Works [14] [ST 74991 49255], another of Fussell's iron works in the area. Now a private house, the site was a typical water-powered edge-tool works with at least three water wheels of which one still remains.

Continuing down-valley leads to Vallis Vale. Turning south-west, up Fordbury Bottom, the railway line to Whatley Quarry emerges from a tunnel. Following the path next to the stream leads to Tedbury Camp Quarry [15] [ST 74700 48967]. This quarry, although disused, is still owned by Hanson who allow public access to the site.

This quarry admirably exposes the angular unconformity between the steeply dipping, massively bedded, grey Carboniferous Clifton Down Limestone and the overlying horizontally bedded, yellow Jurassic Inferior Oolite limestone (see inset box p17). A large flat area of rock has been exposed where the Inferior Oolite has been stripped away to reveal the underlying Carboniferous Limestone in preparation for blasting.

This surface was once the sea floor in Jurassic times. A close examination of the unconformity surface shows that it has been encrusted with fossil oysters and the underlying Carboniferous Limestone has been bored by worms (*Trypanities*) and bivalves. This can be seen most clearly at the edge of unconformity surface. Worm borings several centimetres long occur in the grey Carboniferous Limestone and are infilled with yellow Jurassic sediment. Here the Clifton Down

Limestone dips at about 40° to the north. Beds of oolitic, shelly and muddy limestone, some with chert nodules, can be seen. Fossil corals (*Lithostrotion*), brachiopods and algal stromatolites occur at some horizons. The overlying Inferior Oolite is up to 7 m thick and is very fossiliferous. Many brachiopods, gastropods, bivalves and echinoids (sea urchins) can be found in the lower beds. If you look carefully at the rock, you can see lots of small rounded grains of calcium carbonate known as ooliths. These were formed in a shallow tropical sea about 180 million years ago. This cap of Inferior Oolite extends westwards to Whatley Quarry where it has been stripped off in order to work the underlying Carboniferous Limestone.

## Figures

(Figure 21) Aerial photograph of the Mells and the Wadbury Valley area.

(Figure 22) Water pumped from Whatley Quarry being discharged into the River Mells.

(Figure 23) Plan, section and cross-section of the Mells River sink, adapted from the University of Bristol Spelaeological Society Proceedings, Vol. 16(2), 1982.

(Figure 24) Fussell's Lower Iron Works, Mells, taken probably in the early 20th century. Courtesy National Stone Centre.

(Figure 25) The remarkably flat Jurassic unconformity exposed at Tedbury Camp Quarry. © Martin Whiteley, Barrisdale Ltd.

(Figure 26) Close up of the Carboniferous Limestone just below the unconformity surface bored and encrusted by Jurassic organisms. © Martin Whiteley, Barrisdale Ltd.

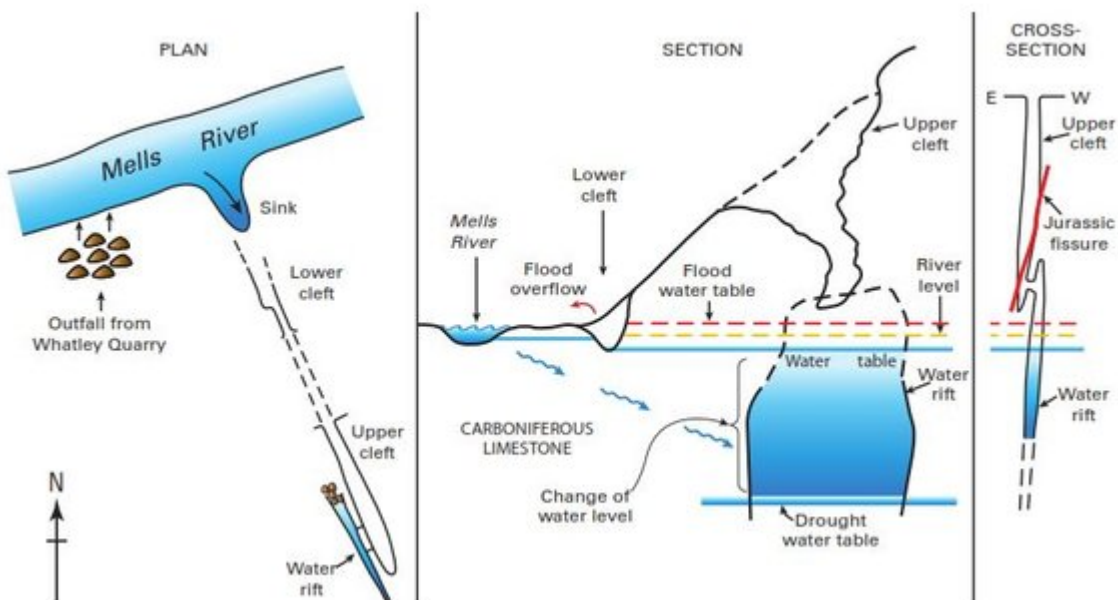
(Figure 27) Brittle bladder-fern. © Sharon Pilkington.



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(Figure 27) Brittle bladder-fern. © Sharon Pilkington.