Early iron workings were fuelled by charcoal and remnants of charcoal hearths are visible today. C18th and C19th lime kilns were fuelled with coal from Broseley, Benthall and other parts of the Gorge. Limestone has to be heated to between 900 and 1,000 C to make quicklime so a strong updraft was needed, hence the tall tower. Limestone and coal was fed in at the top and quicklime was extracted from the hole at the bottom. Most of the quicklime went for fertiliser to reduce soil acidity and the rest for mortar in the building industry. You can see a ruined lime kiln in what remains of Bower Yard. When you leave the yard spot the exit going under the railway embankment. A railway siding was was built to transport limestone from the quarries. When you walk by the disused railway line you pass the incline that brought stone from the Patten Quarry down to the Severn. The path goes over the incline on a bridge near Bowers Brook. Benthall Edge paths are old workers' routes or tramways, hence their relatively straight lines, direct routes and consistent slopes.

The lime kilns were originally built during the mid 1800s and operated until the 1870s, after which they fell into disrepair. A date of '1928' is inscribed above the kiln arch, indicating a date when this kiln was repaired and put into production again in the 1930s.

The bridge for the track along Benthall Edge from Bower Yard, which was cut off when the railway was built.

You can see coal slack from mines and remains of charcoal hearths underfoot in places. Bowers Brook drainage channels, old workings and the inclined plane slope up to the quarry can be glimpsed near Bower Yard paths (right).

Benthall Edge Woods SSSI

Benthall Edge is a beautiful mixed deciduous wood. Much of the ancient woodland was cut down to make charcoal from as early as the C13th for iron forges and furnaces, but some old oak, beech or ash trees have survived. There are also yew trees, which you will mostly see near the top of the Edge. Much of the woodland alongside the paths on this walk is secondary, trees which regenerated here naturally from seeds after the industry left. However, one can see survivors of the old forest ecosystem in the flora such as toothwort, an indicator species of ancient woodland, bluebells, wild garlic, violets, foxgloves, pyramid orchids and many other common and unusual woodland fungi and wildflowers, according to season.

Toothwort resembles a row of teeth. All parts of it are white, pinkish or cream as it has no chlorophyll (the green pigment that allows plants to obtain energy from light.) It remains below ground for most of the year as a parasite feeding on the roots on the roots of a range of woody plants, especially hazel, but also elm, ash, alder and beech. Its flowering parts emerge above ground to reproduce in early spring. It is a member of the broomrape family.

The underlying geology influences the plants. The Broseley fault bisects the Edge, to the east are the carboniferous coal measures with acidic, clay soils favoured by oak trees. On the later stages of the walk you will see coal slack on the path edges. Coal has been exploited since medieval times. The C18th and C19th lime kilns in the area were fuelled with coal. The upper and west paths are on Silurian limestone giving rise to alkaline soils liked by ash and wych elm trees.

As one might expect the Edge is home to a number of resident and migratory woodland birds. You will be lucky to spot the fauna as your footsteps are likely to give you away, but you may spot deer fleeing or feeding in quarries below you. There are badgers, foxes, slow worms, even adders living in the woods, with newts, frogs and toads breeding in the pools.

The grasslands at the foot of abandoned limestone quarries like Patten's Rock are home to rare grassland and lime loving plants, such as Butterfly and Bee Orchids. It is also home to two rare butterflies, the dingy skipper and the green hairstreak. Benthall Edge is an Site of Special Scientific Interest (SSSI).

Butterfly orchids, right, flower in early summer.

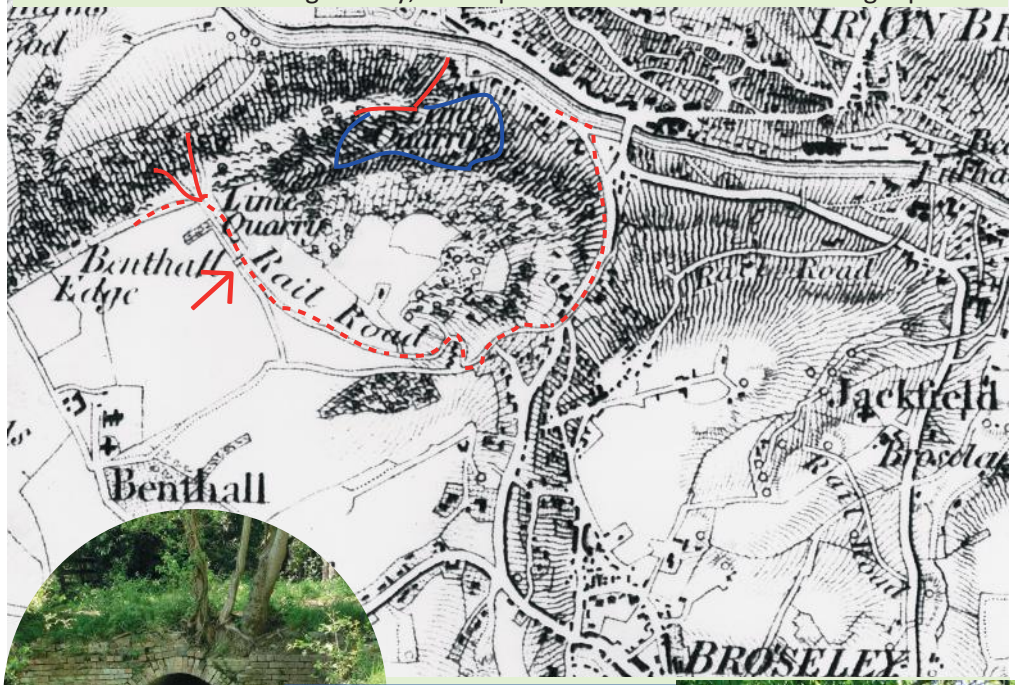
Patten's Rock, the Quarry and Bower Yard Kilns

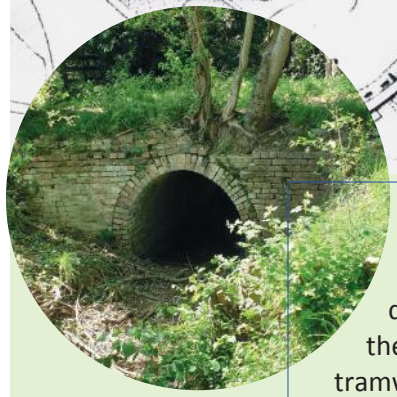
The limestones of Benthall Edge were formed 425 million years ago, from the remains of ancient coral reefs in tropical seas, when this part of Europe was much further south near the equator. Where animals have dug out underlying limestone rocks, or they have freshly fallen from old quarries, pick them up, you will likely see fragments of fossil shells, fossil corals and, if very lucky, parts of trilobites. The same Silurian limestones that can be found along Wenlock Edge underpin Benthall Edge, which is honeycombed with old limestone quarries and lime kilns. On the later Carboniferous coal measure rocks, are remains of shallow drift mines , spoil heaps and clay adits.

Limestone has always been valuable , originally quarried for stone and burnt in kilns to make quicklime for mortar and fertiliser, it was later used as flux in iron blast furnaces. There are few early records about quarrying and making quicklime here though it is said to have been used in building Buildwas Abbey. Limestone was not generally used as a fllux for charcoal iron smelting so it would not have been until after Darby first smelted iron with coke at Coalbrookdale, that there would have been a need for fluxing stone. The quarry now known as Patten's Rock, previously known as Tyke's Nest, likely dates from the C18th. The first reference to the Patten family dealing in lime is in 1764 when lime was supplied to Shrewsbury Borough, and later in 1817 to repair the Welsh Bridge. By 1800 at Benthall limestone was being lowered down an inclined plane and lime and quicklime shipped down river by Severn trows to the river ports of Bridgnorth, Stourport, Worcester and possibly as far as Bristol. In 1811 John Patten was living at Bower Yard near his kilns and was possibly leasing mines at Benthall to provide coal to heat them. By 1818 the quarry had become extensive and a steep inclined plane had been constructed to lower limestone to the kilns, of which there were nine by 1835, the same year in which a member of the family, William Patten was killed in an accident. '*Witness statement of John Patten of Benthall, limemaster. He had been at the top of the inclined plane, where the limestone is usually let down the hill to the River Severn, assisting and giving direction in taking down the winding barrel in order to repair it. A jack had broken, shifting the barrel sideways and throwing down a piece of timber on which it had usually worked, which in the fall struck the head of the deceased and killed him instantly*'.

The coming of the Severn Valley railway involved building an embankment: two kilns had to be demolished and tramways and tracks bringing lime to the Severn diverted under a railway bridge. A substantial retaining wall was needed at the river port edge. A brick bridge was built to take a tramway over the railway line. The railway opened in 1862 but proved to be the downfall of the local lime industry. A national rail network made small local kilns unprofitable compared to large industrial plants elsewhere. In 1866 Patten gave up the quarry and kilns and they fell into ruins, though there was a brief short lived revival in the 1930s.

The legacy of quarrying and transporting an astonishing 1.2 cubic metres of rock is seen all over Benthall Edge today, in the path network as well as the large quarries.

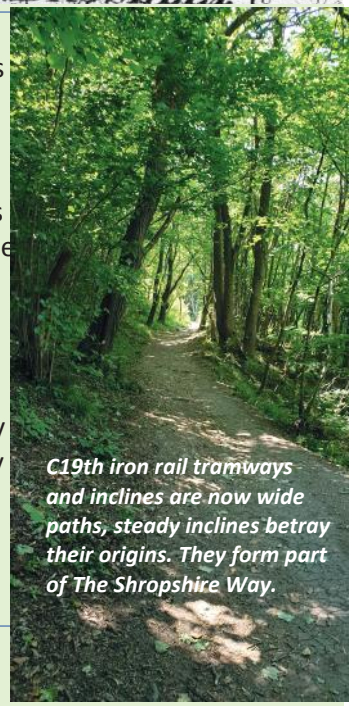




Old tramway bridge Spout Lane bridleway (red arrow on map)

An 1830 map shows the rail road tramways and inclined planes down to the river and the location of a rail tramway bridge in what was later becomes part of Spout Lane bridleway. Building the 1860s railway caused tramways to be diverted so the lime could still get down to the Severn. Patten's Quarry is circled in blue. Many old tramways (red dots) and inclined planes, (red lines) are followed on this walk.

Left: Tramway over 1860s railway near Bower Yard



C19th iron rail tramways and inclines are now wide paths, steady inclines betray their origins. They form part of The Shropshire Way.