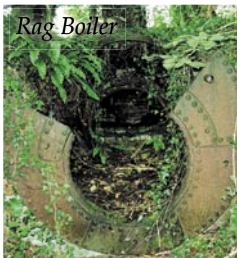




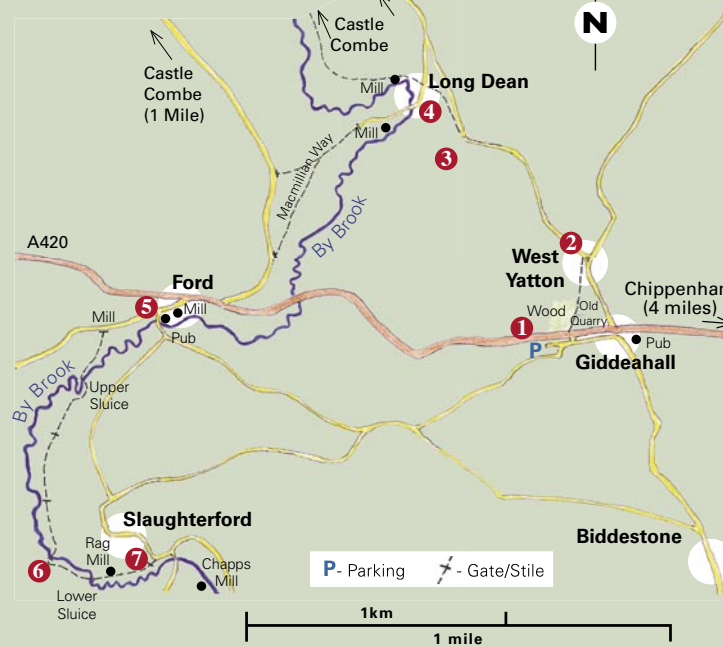
5 Here there were two mills with various uses over time from winding wool and fulling the cloth to paper-making and finally grinding corn.



7 The mills at Slaughterford were used over the years for fulling and paper-making. The remains of the rag mill include the rag boiler from the 1890s. Rags were boiled then pounded to a pulp. This was made into paper at Chapps Mill, where paper has been produced on and off for 200 years; it closed finally in 1994. Downstream from the road bridge, the river has been straightened to direct water to Chapps Mill - the old river course is marked by the willow trees in the field.



The route



WILTSHIRE GEOLOGY GROUP

c/o WILTSHIRE WILDLIFE TRUST
ELM TREE COURT • LONG STREET
DEVIZES • WILTSHIRE • SN10 1NS

The group aims to promote and protect our geological heritage. For more information about Wiltshire's geoconservation organisation and how to become a member write to the address above, call 01380 871008, email info@wiltsgelogy.org.uk or visit our website at www.wiltsgelogy.org.uk



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Designed by Resolution Design & Marketing www.getresolution.co.uk

The cover photo shows the Lower Sluice that controlled the Rag Mill leat



EXPLORE

THE LANDSCAPE AROUND

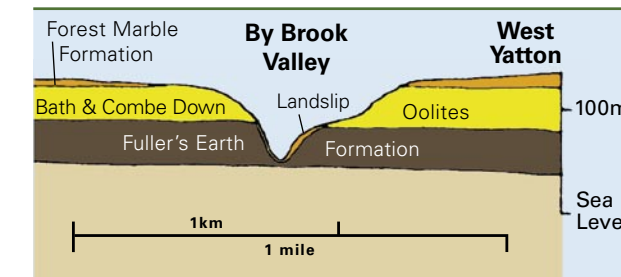
The Upper By Brook Valley



The By Brook valley cuts deeply down into the southern Cotswold Hills, as a result of slow but steady uplift of the land. The river cuts through three Jurassic rock formations as shown in the cross-section below. The hill-tops here are underlain by shelly limestones and clays of the Forest Marble; beneath are about 25m of more uniform Bath and Combe Down Oolite limestones, forming the valley sides, then at the bottom of the valley are mudstones of the Fuller's Earth. The rocks represent a variety of shallow marine sub-tropical sea floor environments of the mid-Jurassic sea which covered this part of Europe around 170 million years ago.

This trail shows how geology is linked to the activities of the people living here. The water-bearing permeable Cotswold limestones are the source of the rivers and the fast-flowing waters of the By Brook have been utilised since Roman times. Over the centuries they have powered a number of mills, by turning water wheels which drove machinery, originally grinding corn into flour.

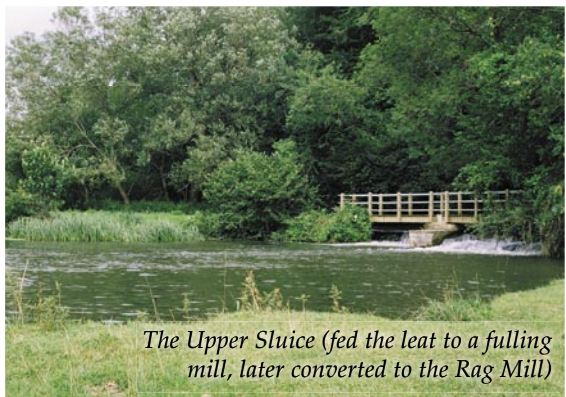
CROSS SECTION OF THE VALLEY BELOW LONG DEAN



LANDSCAPE & GEOLOGY TRAIL
4 miles (6km) ~ takes about 2 hours

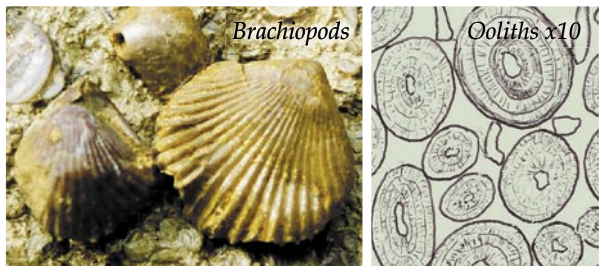
Later there was a period of prosperity in the West Country when by 1300 English broadcloth was in demand abroad. Fulling mills were established on suitable streams wherever wool was produced. The fulling process thickened the cloth by felting the fibres together using heavy wooden hammers; this involved beating the wet cloth with fuller's earth (a naturally occurring clay of volcanic origin, with the property of adsorbing oil); this removed dirt and grease from the wool at the same time. Fuller's earth was mined just south of Bath where a 2.5m thick bed has long been exploited - the extraction of this clay ceased there only in 1980. The Fuller's Earth Bed gave its name to the whole 30m thick rock formation.

Woollen cloth and paper-making both had the same basic requirements of clear water for the actual industrial processes as well as using the water as a source of power and fulling mills were often converted for paper-making or for grinding corn into flour when the woollen industry fell into decline.



1 The main road cuts through thick limestones of the Bath and Combe Down Oolites, widely used for building stone in this area. Close examination reveals the rock to be made of a mixture of broken shells and small round grains, about 1mm across, called ooliths ("egg rocks" in Greek) as they look like fish eggs. They form in warm, clear seas where the water is saturated with calcium carbonate. This is precipitated around shell or sand particles rolling around the sea floor. The process is aided by the growth of algae on the surface of the grain - further algal coatings result in the build-up of concentric layers. Thin silty layers rich in fossil oysters separate the thicker limestones; sea urchin spines, brachiopods and the burrows of animals living on the Jurassic sea floor can also be found in these fine-grained beds.

The thicker uniform beds, almost pure ooliths, are called 'freestones' as they can be cut freely in all directions. They rose to fame in the 18th century as the celebrated Bath Stone.



The poorer quality beds are known as 'ragstones', as they fracture raggedly - they have far more shell fragments. At the eastern end of the road-cutting, a patch of coral reef can be seen near the top of the section. The original corals have recrystallised into calcite so that they are no longer clearly visible but the fossilised shells of bivalves living in the reef can be found.



Just up the hill, on the east side of the wood, there is an old quarry in the Forest Marble immediately below the track. This limestone, which can be seen in the walls here, is made up of broken shell fragments. Cross-bedding at various angles indicates an environment of strong currents that moved banks of shell debris about on a shallow sub-tropical sea floor.

2 The local buildings all use the underlying freestones and ragstones: the former for up-market house walls and the thin ragstones for rougher work, including dry-stone walls. Fissile ragstones can be split for roof tiles.



3 Rainfall percolates through the permeable limestones on the upper valley sides as far down as the impermeable mudstones and clays of the Fuller's Earth, which form the valley floor. The water seeps out, causing erosion of the soft underlying rocks and undercutting the limestones above until they eventually slip downhill. This causes the hummocks in the fields here. On the steeper slopes, the small terraces, known as terracettes, are simply the result of soil creeping downhill over the millennia.

4 There were two mills at Long Dean: the upper one was a corn mill in the 20th Century and prior to that a blanket mill. The lower one made brown paper for more than 200 years to package Bristol's produce. Weavers lived in the row of cottages.

