Cheddar Gorge

Ample parking is available at the foot of the gorge, with limited parking at Black Rock Gate. Refreshments are available in Cheddar.

Cheddar Gorge [1] [ST 47228 54195] is perhaps the single best-known limestone karst feature in Britain. The superb scenery coupled with two show caves [2 and 3] make it a popular tourist destination. It is an excellent place to understand the local geology and contains many first-rate exposures of the Carboniferous Limestone. The cliffs also support a complex mosaic of valuable semi-natural habitats, home to a wide range of plant species, many of them rare. Please beware of falling rocks in the gorge!

As Cheddar Gorge and Caves are a major tourist attraction, it can be very busy in the summer months. There are public toilets, a tourist information centre and plenty of places for refreshment at the bottom end of the gorge. Parking is available in the lower part of Cheddar Gorge and at Black Rock Gate [4] [ST 48209 54528]. A good way to explore the area is to undertake the 5 km circular Gorge Walk from Cheddar to Black Rock Gate, returning on the other side of the gorge. On a clear day, there are superb views across the Somerset Levels to Glastonbury, the Quantock Hills and Exmoor.

Throughout the gorge the Carboniferous Limestone dips at about 20° to the south-west. As you travel down the gorge from Black Rock Gate, the dip causes successively younger rocks to descend to road level. The effect of the dip on the appearance of the gorge is readily apparent. The cliffs on the south side are dominantly vertical, cut along major fractures known as joints. The northern slopes are less steep, because the southerly dip of the rock allows loose blocks to slip down the bedding planes. This is particularly well seen in the old quarry opposite High Rock, just below Horseshoe Bend [5] [ST 47258 54276]; undercutting by the quarry here has caused a large landslide. In contrast, the southern side, towering to a height of 120 m, is relatively stable because the beds dip into the cliffs.

From Cox's Cave [3] [ST 46447 53878] up to Horseshoe Bend [5] [ST 47258 54276] the Clifton Down Limestone is exposed at road level while the overlying Oxwich Head Limestone forms the crags along the cliff-tops. The Clifton Down Limestone is mostly a fine-grained, dark, splintery limestone with chert nodules and Lithostrotion corals. Between Horseshoe Bend and the reservoirs, the underlying Cheddar Oolite can be seen at the base of the cliffs. This is typically a massively bedded, pale grey oolite with some fossiliferous bands.

Farther up the gorge from the reservoirs, the black, splintery, fine-grained Cheddar Limestone can be seen in the roadside crags, crowded with fossil brachiopods in some places. The pale grey Burrington Oolite dips down to road level at the bend just down from Black Rock Gate [4] [ST 48209 54528].

The origins of Cheddar Gorge have been the subject of much discussion since the early 1800s. Contrary to popular belief, Cheddar Gorge is not a collapsed cavern, but a fine example of a gorge cut by a surface river, and since left high and dry as drainage went underground.

Today the gorge is dry, but surface drainage has occurred in the past, particularly during the many cold periglacial periods over the last 1.2 million years (see p.10).

During these Arctic episodes, the development of permafrost blocked the caves with ice and frozen mud. Meltwater floods during the brief summers were forced to flow on the surface, carving out the gorge in the process. Each successive periglacial episode caused further erosion. During the interglacial periods underground drainage was renewed, creating the caves and leaving the gorge dry. Occasionally, extremely heavy rainfall such as that of July 1968 once again causes the gorge to become a torrent.

The caves that were formed during the earlier interglacials are now perched high and dry above the modern resurgence. Two of these are now show caves. The largest is Gough's Cave [2] [ST 46456 53887], a superb and easily accessible example of a phreatic cave, originally formed beneath the water table. Over 120 000 years ago, the ancestral River Yeo

flowed through the cave but it has now found a lower route, except in times of flood when water may pour out through the turnstiles. The cave was choked with sediment until 1890 when Richard Gough began excavating the entrance. After eight years of work the cave was opened to the public in 1898.

Just inside the entrance, remains of several human skeletons, including the 9000-year-old Cheddar Man, were found. DNA extracted from the teeth of this skeleton proves that a local school teacher is a direct maternal descendant. Other archaeological remains found here include flint arrowheads, human bones with cut marks (suggesting cannibalism), and possible inscriptions of mammoths on the walls. This makes Gough's Cave one of the most important Palaeolithic sites in Europe.

Most of the show cave is aligned on the southern side of a small upfold, or anticline, which can be seen at the top of the steps just beyond the 'Ring of Bells'. A 'Neptunian dyke' can be seen where the show cave passes through a blasted section, just before St Paul's Chamber. This is a rift within the limestone infilled with much younger red Triassic sandstone. Diamond Chamber marks the farthest point in the show cave, although it is possible to enter a further series of phreatic passages and chambers on one of the 'adventure caving' trips. In 1985, cave divers discovered the underground River Yeo and have followed it upstream through deep underwater sections known as sumps, 58 m deep, to a point near Horseshoe Bend in the gorge. Exploration continues. Some of the stalagmites within the cave have been dated at around 250 000 years old.

The water emerges to daylight at Cheddar Risings [6] [ST 46586 53916], the largest resurgence in the Mendip Hills. Water emerges from two springs (the higher one is often dry in summer) and from about 16 points in the large pond downstream. The combined mean flow is about one cubic metre per second, and once powered 15 watermills. The catchment area includes most of the caves along the southern flank of Blackdown and some farther east including Tor Hole [ST 574 520] about 11 kilometres away.

Farther downstream is Cox's Cave [3] [ST 46447 53878], the smaller of the two show caves. Discovered by George Cox in 1837 following widening of the road, it represents another short segment of abandoned phreatic passage. Several other short caves exist in the cliffs above Gough's Cave; these are the remnants of earlier courses of the underground River Yeo, long since abandoned by down-cutting of the gorge.

Many of the caves within Cheddar Gorge are important archaeological sites and also sites for roosting and hibernating bat species, including significant numbers of the greater horseshoe bat.

The limestone crags, rocky outcrops and cliff faces of the gorge are home to a wide range of plant species, including slender bedstraw and lesser meadow-rue, and the rare and protected Cheddar pink. Mixed scrub characterised by ash, yew, hazel and hawthorn is common on the steeper slopes, which also support whitebeam. The thin dry limestone soils on south-facing slopes are rich in lime-loving plants, including sheep's-fescue, salad burnet, wild thyme and common rock-rose. These grasslands are of outstanding importance for insects and other invertebrates, and in summer many different species of butterfly are abundant on open sunny slopes.

Scree slopes are common below the cliffs and in places support good populations of ferns, including maidenhair, spleenwort, rusty-back and the uncommon limestone fern. Peregrine falcons, ravens and feral rock doves can sometimes be seen soaring through the gorge.

To the north of Cheddar is Batts Coombe Quarry [7] [ST 46082 55230]. This quarry is developed in the Burrington Oolite, a very pure limestone (over 98 per cent $CaCO_3$) used for making quicklime, an essential material for the steel industry. It is one of only five sites producing the substance nationwide.

Cheddar village is located on a fan of 'head', which is a Pleistocene gravel washed out from the valleys north of the village. The soils here, coupled with the southerly aspect, favour market gardening, especially the production of strawberries.

Formation of caves

Caves form by the dissolution of limestone. Rainwater picks up carbon dioxide from the air and as it percolates through the soil, it turns into a weak acid. This slowly dissolves out the soluble limestone along the joints, bedding planes and fractures, some of which become enlarged enough to form caves.

The largest explored caves occur where water flowing off the impermeable Portishead Formation sandstone onto the Carboniferous Limestone sinks underground into holes known locally as ‘swallets’, some of which can be entered by cavers.The water reappears at the base of the limestone outcrop at large springs.

Over time, the water finds new lower routes leaving some caves high and dry. Some of these have been dug out by cavers.

(Figure 17) Aerial view of Cheddar Gorge

(Figure 18) Geology of Cheddar Gorge.

(Figure 19) Cross-section of the gorge and cave systems.

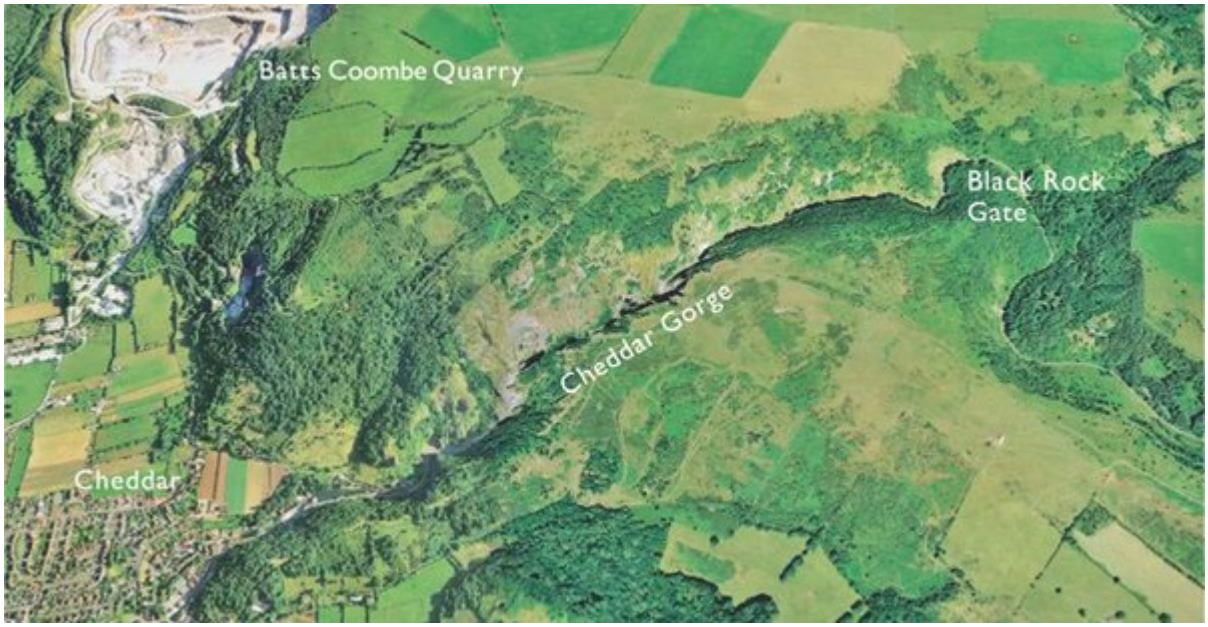
(Figure 20) Schematic diagram showing cave development in the Mendips.

(Figure 21) Hibernating horseshoe bats. © Tessa Knight.

(Figure 22) Cheddar Gorge as it is today.

(Figure 23) Maerz lime kiln at Batts Coombe Quarry, 1974. © National Stone Centre.

(Figure 24) Cheddar pink. © Sharon Pilkington.



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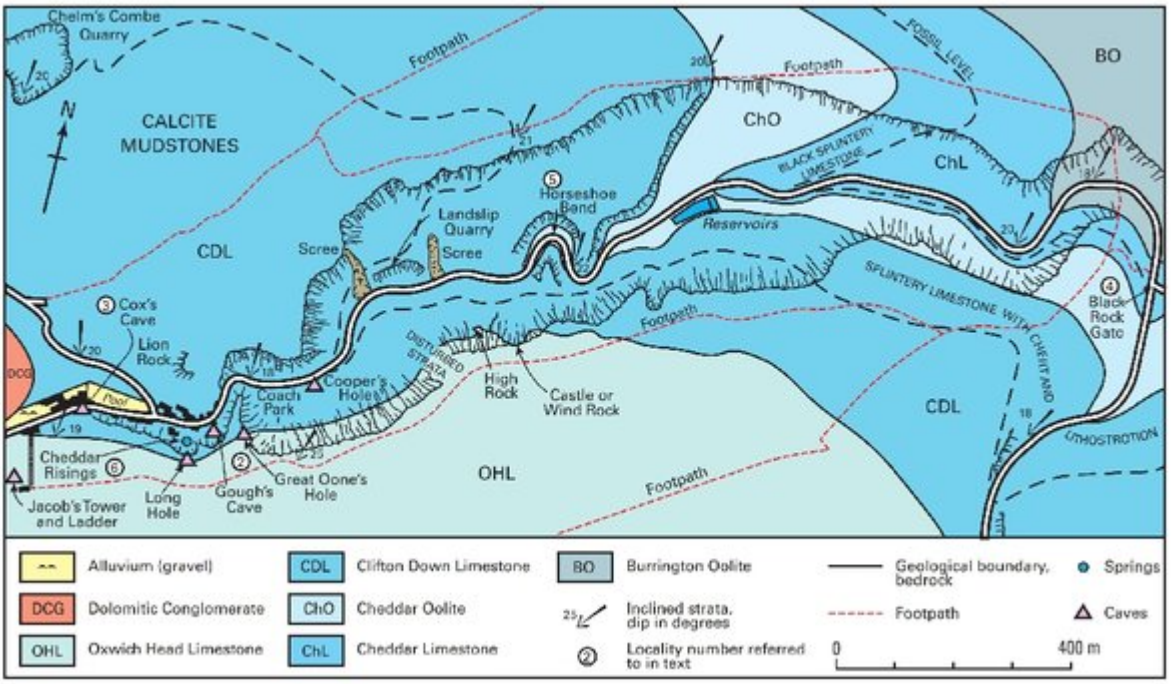

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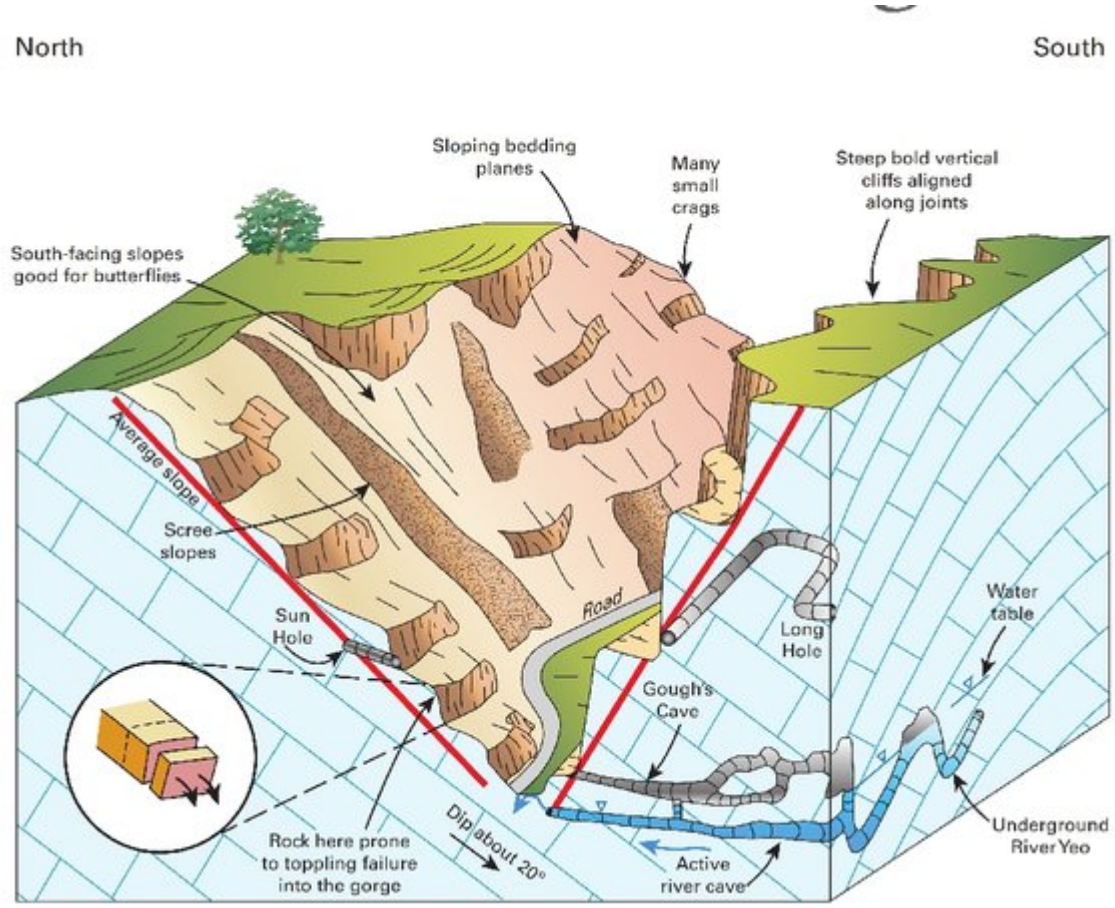

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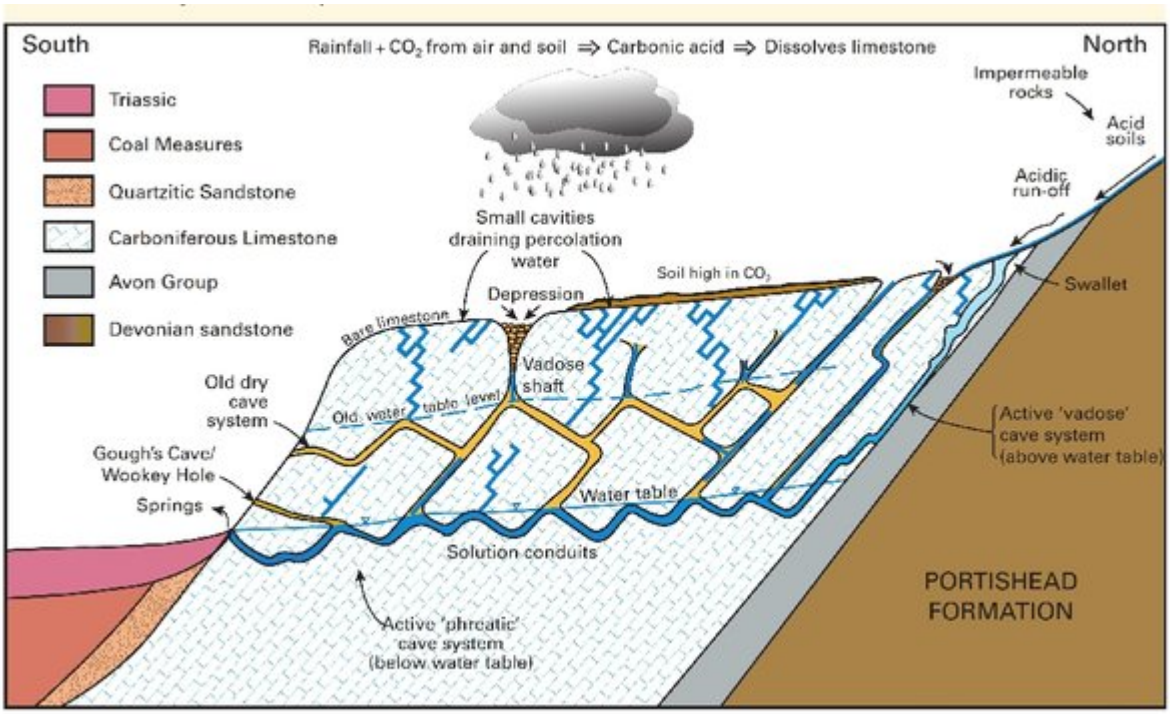

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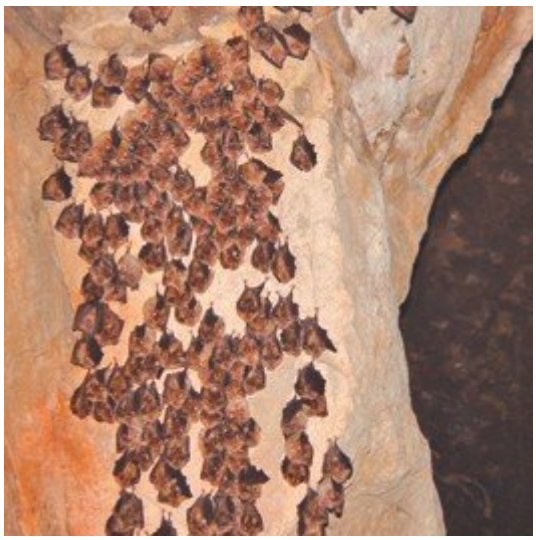

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