

## Fact Sheet No 8: RIVERS

The Mendip Hills conceal the largest underground river system in Britain: the catchment area of the Cheddar Yeo, which rises in Gough's Cave. The catchment measures 54 sq km. The marking shows that some of the water travels underground for up to 10 miles, taking up to 14 days to reach Cheddar. (See Figure 1). Although the flow which emerges from the Cheddar Gorge "risings" varies a good deal, it is greater than from any other British underground river.

The Mendips are well placed to intercept south-westerly air currents, and rainfall is high. The hills consist of a layer of Carboniferous Limestone lying over an anticline of Old Red Sandstone. This Sandstone is exposed in places, and forms the highest peaks. Sandstone is impermeable (will not allow water to pass through it). Rainwater runs off it in the form of surface streams, but there are no underground streams. The Limestone is permeable, and water sinks through it rather than remaining on the surface. It has underground streams but no surface streams.

When a surface stream running down one of the Sandstone peaks reaches the layer of Limestone it sinks below ground through a "swallet", continuing on its way down towards sea level by enlarging existing cracks in the rock to form caves. Eventually it re-emerges from the Limestone at a point low down on the hillslope. These points are called springs, risings and resurgences. The stream then continues as a surface river once more, until it reaches the sea. (See Figure 2). However most of the water that joins together to form the underground Cheddar Yeo River does not come from surface streams. The Limestone through which it runs is an "aquifer", a type of rock capable of carrying water. When rain falls on the surface of the Limestone it sinks below the surface immediately, without forming a stream bed. Water soaks down through the countless tiny cracks in the rock which never become large enough to be called caves. The Limestone layer is like a giant sponge, and the bottom of the sponge fills up with water, which cannot sink down any further because of the impermeable Sandstone beneath.

Fact Sheet No 1 explains how this water formed the great Mendip cave systems, which are all underground river beds. Gough's Cave was formed on several levels by the Cheddar Yeo River, which now passes below the level which visitors can explore in the Showcave. You can see this river water at the Skeleton Pit, and at its new risings 50m from the Showcave mouth. Divers have been able to trace part of Gough's River Cave back from the risings. It is much larger and longer than the Showcave, and contains several vast chambers.

Cave mouths are (or were) springs, and water cannot remain trapped in the Limestone sponge for long if it is above the level of a nearby spring. Underground water will run out of the spring until it drops below its level, like water leaking through a hole in a bucket. This creates a permanent water-level, or "water-table", within the Limestone. It will vary from time to time, depending on rainfall. In the Skeleton Pit you can see the Gough's Cave water table, the level to which all the water in Gough's Cave system sinks if it does not escape through the risings.

Water which sinks underground is purified by being filtered through the Limestone, and after several days it is very pure. Surface streams are often polluted, and reliable springs from underground rivers are an important source of pure drinking water. There are several large reservoirs around the Mendip Hills, mostly serving Bristol. The Cheddar Yeo River eventually joins the River Axe, which reaches the sea at Uphill. The whole development of the river system, and the great dry surface river bed which is Cheddar Gorge, can be traced and studied within a few miles.

FIGURE 1. THE CHEDDAR YEO CATCHMENT AREA BOUNDARY

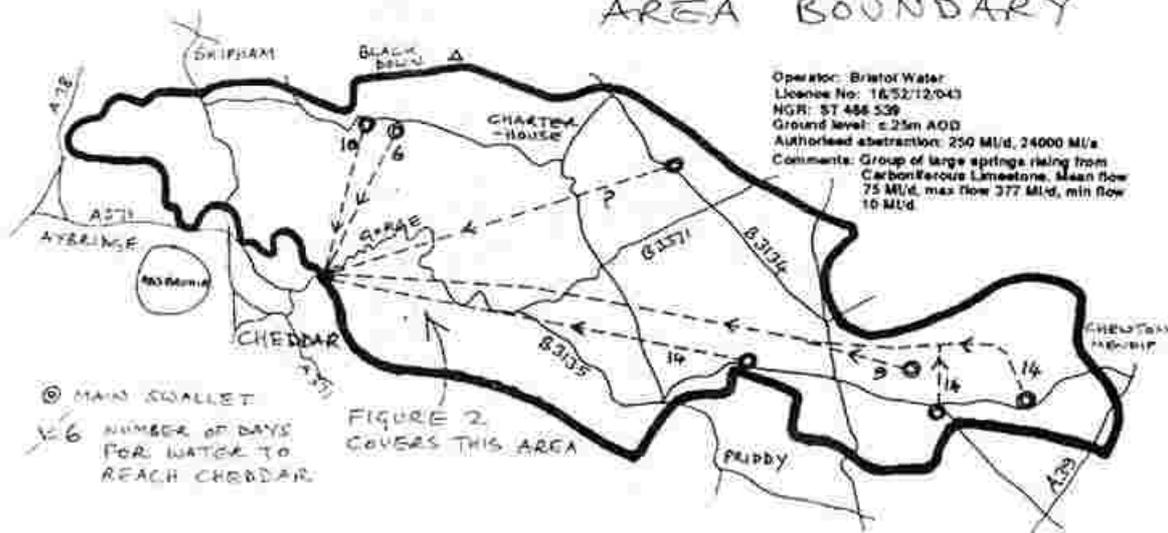


FIGURE 2:

