The walk from Malham village to Malham Tarn Field Centre

Notes

300 million years ago in the Carboniferous Period this part of the Yorkshire Dales National Park was a shallow tropical sea. Over a period of around 50 million years, a series of limestone beds were laid down under this sea, composed of the shells of marine organisms and chemical precipitates. The most important of these now form the Great Scar Limestone, a 200m layer of pale, hard, smooth rock. Over the last 50 million years, the rock laid down after the limestone has been eroded away. The special character of the limestone, and the subsequent action of ice and water, are responsible for the unique landscape.

The limestone is mechanically a very hard rock, capable of forming vertical cliffs, but it is also soluble: carbon dioxide in the rain water forms a weak acid which dissolves calcium carbonate. Rain water entering vertical faults and horizontal beds slowly dissolve the rock to produce many of the features you see - in particular the limestone pavements, and the extensive cave systems – 80 km of passage have so far been discovered in the Ease Gill system alone, and there are several similarly extensive systems. Many rivers in the area are seasonally dry, running deep underground during dry weather, when there is too little water to fill the system.

Ice has been as important as water in shaping the land. Major ice ages started 300,000, 190,000 and 80,000 years ago, each lasting for around 50,000 years. Glaciers covered most of the land, and in flowing downhill, carved the classic U-shaped valleys you can see in many of the dales. They also removed soil and other loose material overlying the limestone, and the scars left by the ice can still be seen in many of the limestone pavements. Bedding faults, and differences in the hardness of the different rock layers led to the steep, staircased valley sides.

Walking Directions

- Leave the village on the left hand fork of the road. A few hundred metres N, past the last buildings in the village, a path enters the field on the right (National Trust sign) and takes you towards the Cove.
- Malham Cove owes its existence to a massive geological fault - the Middle Craven Fault, which runs E-W - under your feet if you are about 200m along the path. The rocks S of this fault slipped almost vertically down, exposing a large part of the Great Scar limestone series in cliffs running from E of Gordale to W of Settle. These have been eroded over much of their length, but can still be clearly seen in many places. Malham Cove is a section of this cliff: water and ice erosion have moved it N from the fault line. During the last ice age a small glacier probably flowed over the edge to create the amphitheatre, and as the climate warmed, this will have turned into a waterfall, the water coming from the Tarn to the N.
- Look E to Cawdon Hill on the other side of Malham village. This is an ancient reef knoll, a ‘coral’ reef that separated the warm, shallow tropical sea to the N from the deeper sea to the S. It is limestone of a different character to that of the Cove, with a different fossil assemblage. Weets Top, beyond Cawdon, is on the S side of the Middle Craven Fault, and made of Gritstone. On the near slopes to the E, over Malham Beck, you can see shallow horizontal ridges in the fields: ancient cultivation terraces. You are in fact walking through similar structures, but they are often hard to see. At various locations W, N and E of the Cove there are field systems dating from 500 BC, through to more recent Anglo-Saxon ‘lynchets’. The stone walls were largely built during the Enclosure period - in this area from 1780-1840. On Pikedaw Hill to the W there are 19th century lead mines and a calomine mine.
- Carry on up to the Cove itself. About 100m before you get to the base of the cliff a path goes left to climb the left side of the Cove. Before you do that, two diversions.....
- Go to the base of the cliff, where the stream emerges. A glance at the map would suggest that this is the stream from the tarn - but in fact it comes from a more remote and unsuspected spot. Cave divers have explored the system for 1km so far. The water that actually comes from the Tarn sinks into the ground just south of the Tarn (you’ll pass the spot) and comes out at Aire Head Springs, just south of the car park you set off from. This is the River Aire which goes through Leeds.
- Peregrine falcons nest on the Cove. Though the nesting period is over, birds may still be in the area so keep your eyes open.
- OK - back to the path to the top of the Cove. Once over the stile bear E (right) along the top of the cove, across the limestone pavement. Look for signs of glacial action, and note what’s growing in the grikes (the cracks between the stone clints).
- You now want to find the path along the Watlowes. It start on the far (E) side of the limestone pavement. The Watlowes is a dry valley formed by meltwater running beneath a glacier. There’s a more spectacular example in nearby Gordale Scar. Watch out for stoats, hedgehogs and even little owls - they are all surprisingly active by day here. The wall you are following is older than most in the area - it is believed to be mediaeval in origin: E were the lands of Bolton Priory, W those of Fountains Abbey. Towards the end of the Watlowes the path rises through rocks, and over a stile there’s a choice of route - take the right hand path which loops back into the dry valley - this eventually takes you to the Water Sinks - where the stream from the Tarn drops underground. Why here? Because the line of crags you can (or soon will) see behind the Tarn marks the line of the North Craven Fault. S of the fault, where the rocks again slipped near vertically, the overlying limestone has been largely eroded away, and the Tarn lies on older, impermeable Silurian slates. The Water Sinks are at the boundary between the slate and the permeable limestone.
- Beyond the Sinks, cross the road and follow the path around the E side of the Tarn to the field centre, which you can see on the far side.