

Mam Tor the Shivering Mountain

At the western end of the Hope Valley is a mountain that looks as though it has been a large quarry. In fact you are seeing the result of a massive landslide that happened about four thousand years ago.

Put simply, a great slice of the Carboniferous shales and sandstones, the rocks from which Mam Tor is made, has slipped down into the valley below. The bare rock face is where it all came from. The debris from the landslide forms the lumpy broken slopes below the face of Mam Tor; it is continually moving downwards and covering some of the fertile fields of the Hope Valley.

The Mam Tor road crosses the landslide twice, above and below the Hairpin Bend. This area appears on maps as Little Mam Tor. All this debris is still moving slowly downwards under its own weight and taking the road with it.

The evidence for all this movement can be seen by looking at the destruction of the higher and lower parts of the road where it crosses the landslide. Also look down to the toe of the landslide and see how it is covering the fertile fields of the valley floor and destroying good grazing land. Within the last 60 years Blacketlay Barn, a substantial stone built structure which lay directly in the path of the landslide has been pushed over and totally obliterated by it.

The Mam Tor road known locally as the "New Road" was opened in 1810; it was built over the landslide debris, crossing it twice. This new road was to replace the very steep road through Winnats Pass. Because of the continual downward movement of the landslide debris the road needed constant repair and rebuilding until a larger slip in 1975-1976 caused its destruction. The road was totally closed in 1979 so once again the Winnats Pass became the only way out of Castleton to the West.

Current geological research suggests the Mam Tor landslide happened 3500 to 4000 years ago and the mean average downward movement of the landslide is about 25 centimetres per year but this movement increases considerably during a very wet winter following a significantly wet summer.

The landslide is about 1000 metres long, its head is about 300 metres across and the spread increases at the toe to about 450 metres. Maximum thickness of the landslide is about 40 metres. At a rough estimate the landslide contains about 15 million cubic metres of slipped debris weighing in the region of 45 million tonnes.

The natural erosion of the face of Mam Tor by sun, frost, wind and rain is negligible when compared to the landslide.

This is a simple explanation of a very complex geological feature. More scientific information may be obtained from Dr. Tony Waltham, Dept. of Civil and Structural Engineering, Nottingham Trent University, Nottingham NG1 4BU and from the Geology department, University of Manchester. They are continually monitoring the movement of the landslide.

Some more thoughts on the Mam Tor Landslide

As mentioned earlier scientists are continuing to monitor the Mam Tor landslide on the area marked on the Ordnance Survey map as Little Mam Tor.

Little Mam Tor is roughly the area between the top and bottom parts of the old Mam Tor road and bordered on the South by the Odin Fault and the on the North by the Hairpin Bend.

In the autumn of 2005 a large digger mounted on very wide caterpillar tracks climbed from the lower road, about 300 metres beyond Odin Fault, up into the middle of Little Mam Tor and dug three holes. I presume they were lined inside, probably with large concrete pipes. These holes are now covered by circular, 600mm diameter, screwed down metal lids. I have been informed they house some form of movement detectors and scientific instruments that can be down-loaded remotely by Manchester University.

There doesn't appear to be any monitoring of the landslide between the top part of the old road and the bottom of the face of Mam Tor, or for that matter, any monitoring of Mam Tor itself.

Two of my friends, both Ph.D. research geologists have said "they wouldn't be at all surprised if we woke up one day and found the whole lot down in the bottom", meaning what is left of Mam Tor.

I know of two places where fence posts have been driven into shale lying on the contact zone of the shale and limestone on Treak Cliff. This allowed rainwater to drain down into the normally impervious shale. In both cases after an interval of several

years' landslips of many tons occurred. This was immediately below the line of the fence posts leaving the posts and wire swinging in midair.

Because of the continuing erosion of the top of Mam Tor and the footpath that takes walkers over the top of Mam Tor and down to Hollins Cross, a few years ago a decision was made to lay sandstone slabs along the line of the footpath to try and limit anymore of the damage caused by walkers.

Nothing will stop the natural erosion of Mam Tor caused by sun, frost, wind and rain.

A long trench was dug and large stone flags were laid within it. Now, any rain falling on the flags will drain off them into the trench, but where does the water go then? It may soak down into the interspaced layers of shale and sandstone. When water gets into the layers of shale it becomes very slippery and allows the large blocks of sandstone to move. This is one of the main reasons for the collapse of the Mam Tor road.

We can only speculate whether it will, or will not, cause another landslide. One would think it would take a very long time, but who knows what damage is caused by humans interfering with nature.

From my observations the greater part of any new landslip would be contained by the highest part of the old slip and the large grassy area between it and the bottom of the face of Mam Tor.

I just hope I am not walking my dog up there if it happens!

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