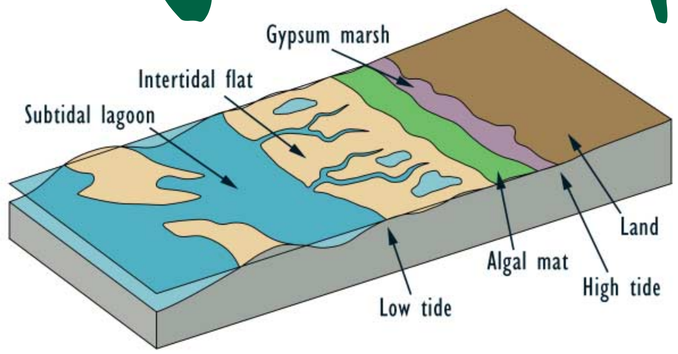
the geology of Quarry Moor

This site is unique. The Permian Magnesian Limestone rocks here are seen nowhere else in Britain. 255 million years ago, where you are standing was the shoreline of a shallow tropical sea surrounded by desert, much like the present day Arabian Gulf. The sea, called the Zechstein Sea, covered low-lying areas of what later became northern Europe. At the time 'Britain' was on the eastern edge of a super-continent and lay just north of the equator. It's hard to imagine, standing here surrounded by vegetation, that during this time Europe was hot and dry, much like the Sahara today. The shore was very flat with algal mats covering much of the area between low and high water. The high temperatures evaporated the water leaving gypsum deposits, especially nearest to the high water mark, to create a 'gypsum marsh'. This is preserved as the teepee like structures in the contorted rocks to your right. The wavy algal mats are preserved in the lower rocks to your left. No animal fossils have been found in these rocks formed at the mineral-rich waters edge. The diagram (above right) shows a section through the shoreline deposits, and the illustration (far right) shows how the coast would have looked.



(above) Cross section of the deposits on the Zechstein Sea shoreline. (right) Looking out over the gypsum marsh and algal mat towards the lagoon.

The Magnesian Limestone, which forms a marked ridge running from Bedale to Knaresborough passing to the west of Ripon, was quarried for Ripon's earlier buildings; it can be seen in boundary walls and the lighter coloured parts of Ripon Cathedral. When the Zechstein Sea dried up, gypsum was deposited in the marls and limestones that lie underneath Ripon. Some of the gypsum has been dissolved by water movement through the rock, leaving underground hollows that cause the land above to collapse creating subsidence holes in and around Ripon. Lewis Carroll may well have seen these holes and possibly used them for his ideas in *Alice in Wonderland*.

On the River Ure at Ripon Parks, gypsum in the Permian marls has been exposed and can be seen in the spectacular banks.

Although the rock at the far left of the cliff face looks 'new', this is due to mechanical quarrying. The brown earth deposits above the limestone are glacial drift deposited in the last Ice Age some 20,000 years ago, and are 255 million years younger than the limestone beneath!

Keep a look out for wrens. The limestone cliff face and undergrowth are an ideal feeding ground for one of Britain's smallest birds.

In the Cambrian period Britain lay close to the south pole. We moved slowly northwards and during the Permian Period, when the rocks of Quarry Moor were formed, Britain lay just north of the equator.

GEOLOGICAL TIME LINE mya : millions of years ago

Time of Magnesian Limestone rock formation

Period	Formation of Earth	Cambrian	Ordovician	Silurian	Devonian	Carboniferous	Permian	Triassic	Jurassic	Cretaceous	Tertiary	Quaternary
	4600 mya	544	510	439	409	363	290	245	208	146	65	2
Era	Precambrian	Palaeozoic						Mesozoic			Cainozoic	
		Lower			Upper							

Quarry Moor
local nature reserve

ENGLISH NATURE

Supported through the Defra Aggregates Levy Sustainability Fund

RIPON

YORKSHIRE FORWARD

Harrogate BOROUGH COUNCIL

defra

Designed by figurehead (01423) 887943. Illustrations by Stephen Huxley.