



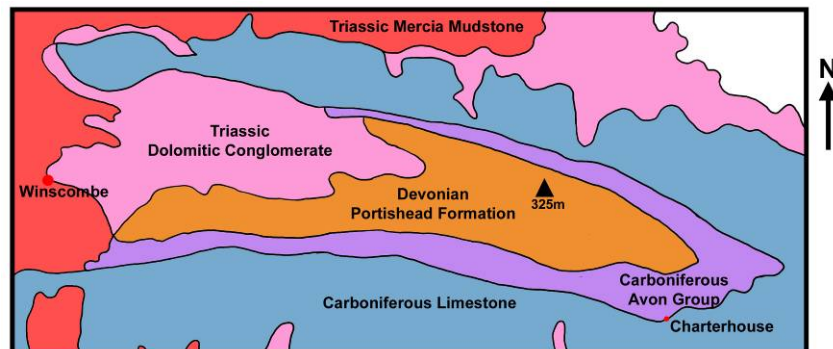
## Black Down Geology Fact Sheet

The Mendip Hills are principally composed of limestone and exhibit some of the most stunning karst, or limestone cave, scenery in the UK.

The Mendips were created over the course of millions of years by the deposition of sediments with some intervening phases of mountain building. Designated as an Area of Outstanding Natural Beauty the Western areas of the Mendips illustrates, at the surface, geology stretching from the Devonian to the Triassic, and also later activity from the Ice Ages. This geology shows that a number of different environmental conditions prevailed in this area in the past.

Black Down is the highest hill on the Mendips at 325m above sea level, and consists of a large area of Devonian sandstone surrounded by progressively younger Carboniferous rocks. These different types of rock have a different chemistry and therefore different structures, and influence what we see at the surface a great deal.

This simplified geological map shows the pattern of rocks outcropping in the Black Down area. Note the central core of Devonian rock, surrounded by rings of younger Carboniferous and Triassic deposits.



Simplified geological map of the Black Down area.  
Modified from Farrant, A.R. 2008

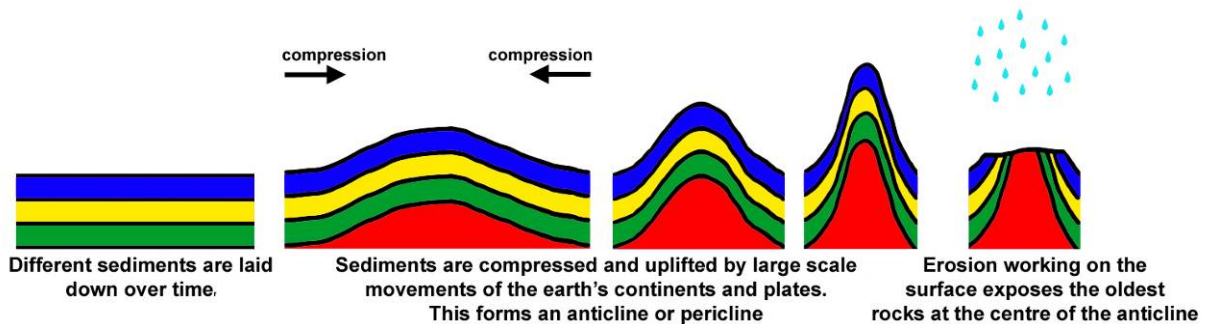
The Devonian rocks are part of the Portishead Formation, deposited as sediments on a large river delta around 385–359 million years ago when the climate was similar to modern-day savannahs. As the sea invaded the area limestone rock began to be deposited. First it was deposited in shallow muddy environments as the Avon Limestone Shale, full of mud and silt. This was followed by deeper water and an environment more similar to the modern-day Bahamas, leading to the deposition of a number of different limestone groups which are often full of marine fossils.

At the end of the Carboniferous there was a dramatic phase of mountain building. Two massive landmasses were colliding, and the south of England was at the junction of the two. The Mendip Hills were formed when the layers of rocks were compressed and folded up into a series of anticlines and periclinal folds. An anticline is an upfolding of layers of rock, and a pericline is an anticline which plunges at each end.

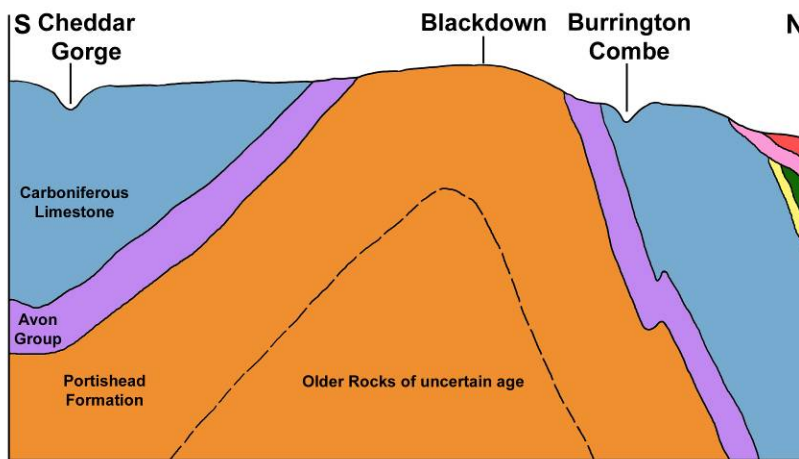
The mountain building of the end of the Carboniferous was followed by a phase of erosion, where much of the uplifted rock was eroded away, leaving something very similar to the hilly landscape we see today. The limestone rocks were much more easily eroded than the harder

Old Red Sandstone rocks at the centre of the pericline. This is why we are left with a central, highest, core of Devonian Portishead Formation, surrounded by rings of Carboniferous Limestone. The sandstone found here is impermeable and the ground is often wet and saturated. To the North and South of the highest point there is a greater depth of soil, the result of an ice-age wind blown deposition known as loess. This also results in distinct vegetation with heathland and heather on the thin peak soil, and bracken and grasses on the deeper loess soil.

The diagram below shows how the mountain building process would have taken place, followed by a diagram showing the structure of the Black Down pericline today.



### Processes that lead to the formation of an anticline.



**Cross section through the Mendips through the Blackdown area.  
Modified from Farrant, A.R. 2008**

### REFERENCES

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Farrant, A.R. 2008. A walkers' guide to the geology and landscape of western Mendip. Book and map at 1:25 000 scale. (Keyworth, Nottingham: British Geological Survey)

British Geological Survey's Mendips website:  
<http://www.bgs.ac.uk/mendips/geology/geology.html>