To look at the scenery
Cover Image: Malham Cove
Website: www.nationaltrail.co.uk
Telephone: 00 44 (0)113 246 9222
Email: pennineway@countryside.gov.uk
The Countryside Agency, Yorkshire and Humber Region, 4th Floor, Victoria Wharf, No.4 The Embankment, Sovereign Street, Leeds, LS1 4BA, UK.
For more information contact:
The Cheviot
815m

Norman Nicholson, Portrait of the Lakes, Faber 1963

There are three main bands of rock that make up the
Permian & Triassic
Pennines: Carboniferous Limestone, The Yoredale Series and Millstone Grit.

Namurian (Millstone Grit)*
Tournaisian and Visean (Carboniferous Limestone)*
Ludlow
Upper Old Red Sandstone
Wenlock
Silurian
Llandovery
Andesitic and basaltic lavas and tuffs
Basalt and spilite
Andesitic lava and tuff
Basalt, dolerite and camptonite*
Intrusive Igneous Rock
Granite*

Intrusions
Erosion

The Deposition
High Cup Nick
5

But not yet open
National Trail approved

This leaflet is intended to help walkers plan their walk along the Pennine Way National Trail. The profile map on the reverse side of this sheet shows how far and how much climb is involved in each section. It also gives an indication of how long each section will take to walk.

In England
Trails
6

From Kinder Scout to Cross Fell these grits form edges of exposure.
(Stunedge, Blackstone Edge) and sometimes top the hilltops (Cross Fell, Great Shunner Fell).

Take windproofs and fleece.
Ensure someone knows your plans.
Keep alert all day!

Interested?

The Deposition has published an official guide for the Pennine Way National Trail which has been written by local expert Tony Hopkins and comes in two parts – South ISBN 1854 106 724 and North ISBN 1854 108 514.

In contrast to all the steady deposition further south, further north in Northumberland there was a large volcano pouring out ash and lava into which the granite of the Cheviot itself was later intruded.

Intrusions

All deposits described above formed a level plateau. From this plateau the Pennines we see today were formed. First by... and scoured the valleys, and as they retreated, plastered the lower grounds with moraines and layers of clay and boulders.

Erosion

The Deposition is intended to help walkers on the Pennine Way National Trail a simple explanation of the rocks they are passing over, and to illustrate how the landscape you see.

The map to the left shows the geology of the area, and the text gives a brief description of how it happened.

Interesting points and tips:

- Look out for the "\textcolor{red}{\textbf{National Trails in England and Wales}}"
- Look at the secret ... the meaning "\textcolor{red}{\textbf{The Deposition}}"
- Look at the meaning "\textcolor{red}{\textbf{To look at the scenery}}"
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Once in a Lifetime
Crowden Beck

"To look at the scenery without trying to understand the rock is like listening to poetry in an unknown language. You hear the beauty, but you miss the meaning."

The Deposition

There are three main bands of rock that make up the Pennines: Carboniferous Limestone, The Yoredale Series and Millstone Grit.

**Carboniferous Limestone**

Some 400 million years ago the current location of the Pennine Way was covered by a shallow clear sea of a constant temperature at which corals grew. An coral reef developed that took the form of a large shelf reaching to about the depth of the sea. Above the limestone are the Yoredale Rocks consisting of beds of less pure limestone, shales and sandstones.

**Yoredale Series**

Above the limestone are the Yoredale Rocks consisting of beds of pure limestone, shales and sandstones.

**Millstone Grit**

Over time, the Yoredale Beds and the shelf of the Pennines were eroded away, leaving just the Millstone Grit behind. This is an area of gritstone that is part of the Old Red Sandstone.

**Intrusions**

Towards the end of the Carboniferous period a sheet of Dolerite was intruded into the strata over a wide area. This is called the Whin Sill, which is responsible for the high waterfalls at High Force and Cauldron Snout, the Craggy Craggs of High Cup Nick and the heights followed by Hadrian's Wall.

Erosion

All deposits described above formed a level plateau. From this plateau two great rivers, the Wear and the Tees, eroded from the higher ground to the north, bringing their debris with them to form the major river systems of England and the North Sea.
Once in a Lifetime
Crowden Beck

“T o look at the scenery without trying to understand the rock is like listening to poetry in an unknown language. You hear the beauty, but you miss the meaning”

Norman Nicholson, Portrait of the Lakes, Faber 1963

The Deposition

There are three main bands of rock that make up the Pennines Carboniferous Limestone. The Yoredale Series and Millstone Grit.

The youngest rocks you will encounter on the Pennine Way are in the Eden Valley. Here Permian and Triassic Strata abut against the Carboniferous Strata. These beds of New Red Sandstone accumulated in desert conditions. It is commonly seen in the building stone used to build the houses and farms of Dufton.

Towards the end of the Carboniferous period a sheet of Dolerite was intruded into the strata over a wide area. This is called the Whin Sill, which is responsible for the high waterfalls at High Force and Cauldron Snout, the Columnar Crags of High Cup Nick and the heights followed by Hadrian’s Wall.

Erosion

All deposits described above formed a level plateau. Firstly the plateau was eroded into the strata over a wide area. This is called the Whin Sill, which is responsible for the high waterfalls at High Force and Cauldron Snout, the Columnar Crags of High Cup Nick and the heights followed by Hadrian’s Wall.

To help you plan your walk, comprehensive public transport and accommodation leaflets are also available from www.nationaltrail.co.uk

This leaflet is intended to help walkers plan their walk along the Pennine Way National Trail. The map on the reverse side of this sheet shows how far and how much climb is involved in each section. It also gives an indication of how long each section will take to walk.

This side of the leaflet is intended to give walkers on the Pennine Way National Trail a simple explanation of the rocks they are passing over, and to illustrate how the landform you see is formed. The map to the left shows the geology of the area, and the text gives a brief description of how it happened.

Pennine Way
Profiles and Geology Map
National Trail

The Mountain Code
- Know how to use a map and compass.
- Know the weather signs and local forecast, plan within your capability.
- Know simple first aid and the symptoms of exposure.
- Take waterproofs and fleece.
- Ensure someone knows your plans. Keep alert all day!

Interested?
For more information contact:
The Cheviot
8
815m
Wooler
Kirk Yetholm
Yorkshire
The Pennine Way National Trail Officer,
The Countryside Agency, Yorkshire and Humber Region, 4th Floor, Victoria Wharf, No.4 The Embankment, Sovereign Street, Leeds, LS1 4BA, UK.
Website: www.nationaltrail.co.uk

Photography © McCoy Wynne and David Phillips.
Section 1
Edale to Crowden
16 miles (27.5 km) 911m ascent 6 hours walking

Section 2
Crowden to Standedge
11 miles (17.7 km) 773m ascent 4 1/4 hours walking

Section 3
Standedge to Hebden Bridge
15 miles (24.1 km) 464m ascent 5 hours walking

Section 4
Hebden Bridge to Ponden
10 3/4 miles (17.3 km) 692m ascent 4 hours walking

Section 5
Ponden to Thornton-in-Craven
11 1/2 miles (18.5 km) 646m ascent 4 hours walking

Section 6
Thornton-in-Craven to Malham
10 1/2 miles (16.9 km) 371m ascent 3 1/2 hours walking

Section 7
Malham to Horton-in-Ribblesdale
14 1/2 miles (22.9 km) 852m ascent 5 1/4 hours walking

Section 8
Horton-in-Ribblesdale to Hawes
13 3/4 miles (22.1 km) 560m ascent 4 3/4 hours walking

Section 9
Hawes to Keld
12 1/4 miles (19.7 km) 708m ascent 4 1/2 hours walking

Section 10
Keld to Bowes
12 1/2 miles (20.1 km) 369m ascent 3 1/2 hours walking

Section 11
Bowes to Forest-in-Teesdale
18 3/4 miles (30.2 km) 651m ascent 5 3/4 hours walking

Section 12
Forest-in-Teesdale to Dufton
13 1/2 miles (21.7 km) 461m ascent 4 1/2 hours walking

Section 13
Dufton to Alston
19 1/2 miles (31.4 km) 1069m ascent 7 1/4 hours walking

Section 14
Alston to Greenhead
16 1/2 miles (26.6 km) 577m ascent 5 1/2 hours walking

Section 15
Greenhead to Steel Rigg
6 1/2 miles (10.6 km) 416m ascent 5 1/4 hours walking

Section 16
Steel Rigg to Bellingham
14 3/4 miles (23.7 km) 504m ascent 5 hours walking

Section 17
Bellingham to Byrness
14 3/4 miles (23.7 km) 544m ascent 5 hours walking

Section 18
Byrness to Clennell Street
13 3/4 miles (22 km) 844m ascent 5 1/4 hours walking

Section 19
Clennell Street to Kirk Yetholm
11 1/4 miles (18 km) 776m ascent 5 1/4 hours walking

Section 20
Kirk Yetholm to Greenhead
16 1/2 miles (26.6 km) 577m ascent 5 1/2 hours walking