

Geology

Situated on the boundary between the Ordovician Skiddaw Group and the Borrowdale Volcanic Group, Derwentwater Independent Hostel is perfectly located for studying the oldest rocks in the Lake District. We have 500 million years of geological history on our doorstep!

The Skiddaw Group lies to the north of the hostel, while to the south you will see the craggier terrain of the Borrowdale Volcanic Group.

You will also be able to study evidence of former glacial activity in Borrowdale, mainly in the form of depositional features.

There are lots of old mines and quarries in Borrowdale and the adjoining valleys, and many Regionally Important Geological/Geomorphological Sites (RIGS).

- A very useful introduction to the geology of Cumbria and the surrounding area:
http://www.naturalengland.org.uk/ourwork/conservation/geodiversity/englands/counties/area_id7.aspx
- The Cumberland Geological Society: <http://www.cumberland-geol-soc.org.uk/>
- We have several useful Geology books in our library, including: *Lakeland Rocks and Landscape: a Field Guide* by The Cumberland Geological Society, and *The Rocks and Landscape of the Keswick Area* by Alan Smith. We also have books about the history of Honister Slate Mine, Borrowdale graphite, and Cumbrian coal mining.
- Local issues of geological relevance include underground nuclear waste disposal, treatment of water from the disused Force Crag Mine, and stability of the St Bees headland and adjacent coastline.
- The only published Geological Survey map of the area is sheet 54N 04W at the 1: 250 000 scale.
- OS map Outdoor Leisure Map 4: The English Lakes: North Western sheet will help you find features of interest.
- [Honister Slate Mine](#): a dramatic 6.5 mile drive from the hostel along the B5289. In addition to the museum and working slate mine, Honister provides a range of expertly guided tours. Honister is a really important part of the Lake District community and economy.
- [Threlkeld Quarry and Mining Museum](#) welcomes visits: a 7 mile drive from the hostel.
- [Force Crag Mine](#), now owned by the National Trust, was worked for zinc, lead and barytes from 1835 to 1991. It is located in Coledale, accessible from the village of Braithwaite (5 mile drive from the hostel). Subject to availability on specific dates, National Trust-led tours of the mine area can be arranged.

The Cumberland Geological Society, *Lakeland Rocks and Landscape: a Field Guide* (2000)

This field guide covers all of the main geological features of Cumbria, with maps for each of the 18 excursions. This is the list of excursions, in order of proximity to Derwentwater Independent Hostel:

1. *Landscape development near Keswick*, by John Boardman. Purpose: to examine the evidence for glacial and periglacial processes in the Keswick area.
2. *Glacial features at Rosthwaite in Borrowdale*, by Ken Bond. Purpose: to view the glacial features near Rosthwaite, with additional short excursions to view Skiddaw Group and BVG exposures.
3. *The Armbboth Dyke, Thirlmere*, by Morley Burton. Purpose: to trace the outcrop of the much-faulted Armbboth Dyke with its distinctive rock, so useful in showing the directions of ice movement.
4. *The Skiddaw Granite north of Threlkeld*, by Tom Shipp. Purpose: to examine the Skiddaw Granite exposure in Sinen Gill; to notice how the granite has thermally metamorphosed rocks of the Skiddaw Group; and to visit old lead and copper mine workings nearby.
5. *The Lower Palaeozoic rocks of the Buttermere Valley*, by Mervyn Dodd. Purpose: to examine Skiddaw Group sediments and their structures; and to appreciate the variety of Borrowdale Volcanic Group rocks and the effects of glaciation.
6. *The Carboniferous Limestone between Caldbeck and Uldale*, by Tom Shipp. Purpose: to examine part of the Carboniferous Limestone succession on the northern edge of the Lake District.
7. *Palaeozoic rocks of the Cross Fell district*, by Eric Skipsey. Purpose: to examine the Ordovician and Silurian rocks of the Cross Fell inlier, the Lower Carboniferous sediments and the Whin Sill of the Pennine scarp, mining remains in Great Rundale, Triassic sediments around Dufton, and glacial features.
8. *The Penrith Sandstone of the Vale of Eden*, by Jim Cockersole. Purpose: to study the dune and brockram facies of the Lower Permian Penrith Sandstone and their environments of deposition.
9. *Volcanic rocks of northern Wasdale*, by Mike Petterson. Purpose: to examine the rocks of the Lower Borrowdale Volcanic Group; and to distinguish lavas from rocks formed by explosive eruptions (air fall tuffs and ignimbrites) and epiclastic deposits (reworked and redeposited debris).
10. *Quaternary features north of the Kirkstone Pass*, by Richard Clark. Purpose: to examine Pleistocene and Holocene land forms and deposits north of the Kirkstone Pass, a main ice divide in the last glaciation.
11. *The Lower Carboniferous rocks of West Edenside*, by Alan Day. Purpose: to examine cyclothem in the Brigantian stage of the Lower Carboniferous.

12. *The Permo-Trias of St Bees Headland*, by Tom Shipp. Purpose: to examine the New Red Sandstone formations and their basal unconformity; to explore the variety of rocks in glacial deposits and beach materials; and to look at evidence of changes in sea level.
13. *The Windermere Group rocks around Tarn Hows*, by John Gunner. Purpose: to examine the lower part of the Windermere Group succession between the northern ends of Lakes Windermere and Coniston.
14. *The Windermere Group south of Torver*, by David Kelly. Purpose: to investigate a sequence of Upper Silurian rocks south of Torver; and to appreciate how glacial erosion of the different rocks (including a minor igneous intrusion) has affected the scenery.
15. *The Eskdale Granite*, by Brian Young. Purpose: to examine the Eskdale Granite, its contacts with Borrowdale Volcanic and Skiddaw Group rocks; and to look at examples of late stage alteration of the granite and of hematite mineralization.
16. *The Shap Granite*, by Eric Skipsey. Purpose: to examine the Shap granite and the associated metamorphism of surrounding rocks; to appreciate the unconformity at Shap Wells and how it helps to date the granite; and to look at folding in Silurian rocks.
17. *Lower Carboniferous rocks near Orton, east of Shap*, by Alan Day. Purpose: to trace the Carboniferous succession: from the continental rocks at the base, up to the limestones of a carbonate shelf; to look at the richly varied fossils; and to appreciate how geological processes have affected landscape development.
18. *The Carboniferous Limestones of Low Furness*, by David Kelly. Purpose: to investigate the Carboniferous Limestone sequence in Low Furness and its iron ores; and to appreciate how rock type and structure affect the landscape.

Four geological excursions in the Keswick area

These excursions are described in detail in *The Rocks and Landscape of the Keswick Area* by Alan Smith. They are all within 15km of Keswick. We have copies of these excursions in the hostel.

1. Eastern shore of Derwent Water (between DIH and Keswick): features of glacial deposition, and the difference between the Borrowdale Volcanic Group and the Skiddaw Group.
2. Bassenthwaite Lake (east and west sides): Skiddaw Group rocks
3. Lodore, Grange, and Borrowdale: Borrowdale Volcanic Group and 3 classic RIGS sites.
4. Upper Borrowdale (Rosthwaite and Stonethwaite): well exposed volcanic rocks, and moraines.

Sites and features of interest include:

- Kames and eskers between DIH and Keswick. These ridges consist of gravel and sand, deposited in the last phase of glaciation when the ice had ceased to move (creating ice stagnation topography).
- Broom Hill Point, an eroded remnant of a drumlin, made up of bouldery till, on the lake shore path between DIH and Keswick.
- Moraines and drumlins at the southern end of Borrowdale.
- Honister Slate Mine at the top of the Honister Pass, between Borrowdale and Buttermere. Parts of Honister are still mined for slate.
- The old slate quarry on the side of Castle Crag.
- The old green slate Quayfoot Quarry, adjacent to the Bowder Stone car park on the B5289.
- The spoil heaps of an old mid-nineteenth century lead mine at Brandlehow, on the west shore of Derwent Water. Grey, cubic galena, and grey-green orthopyrite lead minerals can be spotted here.
- The Carrock Fell mafic intrusion, the largest layered intrusion in England, north east of Keswick.
- The greisenised margins of the Skiddaw Granite and its aureole, renowned for its contact metamorphic mineral assemblage, north east of Keswick.
- Several different mineral sites, both mine dumps and in situ exposures, associated with the globally renowned Caldbeck Fells mining district north-west of Keswick.
- Graptolite-bearing rocks of the Skiddaw Group at Great Cockup. These provide evidence of their age of deposition and are important for global correlation of Ordovician stratigraphy.
- The summit of Skiddaw, important for its periglacial landforms.