

1 Hutton's Unconformity

This 3 km walk takes you to one of the most historically important geological outcrops in the world. The observations that James Hutton made on Arran were crucial to forming a modern understanding of geology and the age of the Earth.

Parking: [///learn.clauses.lordship](http://learn.clauses.lordship) **Bus:** 324 to Newton Road, Lochranza

1 Folded Dalradian schists - The Dalradian schists are the oldest rocks on Arran. They were formed as sediments on the ocean floor over 550 million years ago. These metamorphic rocks were shaped by intense heat and pressure deep within the Earth. On the shore here, you can see how much they have been folded. Imagine the pressures involved in deforming these solid rocks like toffee!



These rocks have been deformed and folded by tectonic processes deep in the Earth

2 Carboniferous sandstones - The rocks you have been walking over are grey Dalradian schists. Notice that the layers of rock are dipping steeply - almost vertically. Ahead of you, you can see layers of orange/brown Carboniferous sandstone, these are sloping gently towards the sea.

3 Hutton's Unconformity - James Hutton was an eighteenth century Scottish geologist who visited Arran in 1787. At that time it was thought that the Earth was around 6,000 years old. In Lochranza he noticed that the gently-sloping sandstones lay directly on top of the steeply-dipping schists. It is this contact between the two that is the famous 'unconformity'.

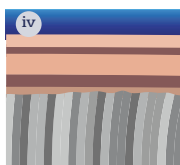
Hutton reasoned that such a structure must have taken millions of years to form. From his observations on Arran, Hutton concluded that the Earth must be unfathomably old; thus introducing the concept of 'deep time' to the scientific community.



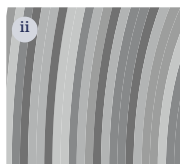
Hutton's Unconformity is the junction where Dalradian schist meet Carboniferous sandstone



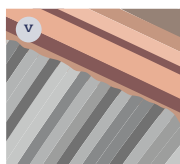
540 million years ago, sediment was deposited in an ocean and compacted to form sedimentary rock.



350 million years ago, this landscape was covered by a shallow sea. More layers of sedimentary rock formed on top.



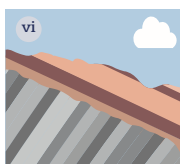
Collision of tectonic plates caused immense heat and pressure, which folded and tilted these rocks.



Once again, these rocks were tilted and uplifted to the Earth's surface.



As the landscape eroded away, these rocks were brought to the surface.



Erosion at the surface has shaped the outcrop into what it looks like today!

