

Rock Types Produce Distinctive Landscapes | Sample answer

Examine how different rock types produce distinctive landscapes, with reference to examples that you have studied.

Limestone is a sedimentary rock which had given rise to the distinct karst landscape of the limestone pavement in the Burren, Co. Clare. The limestone of the Burren was formed 350 million years ago when Ireland lay beneath a tropical sea 30 degrees south of the equator. A limestone pavement is a large area of bare limestone, where the soil cover has been removed over a long period time. The Burren is a landscape that covers an area of 360 km squared of exposed limestone where soil cover has been removed by deforestation and washed away by rivers. Limestone rock is formed in layers as generations of sea creatures are deposited on the seafloor where air and minerals were squashed out by later deposits and the weight of the sea. The sediments are then compressed by the calcium in the rock. The bedding planes that separate the strata and the joints within the rock allow it to be permeable as water runs through them rather than the rock itself. The limestone therefore is criss-crossed with grikes and clints as it is easily weathered chemically by carbonation. Carbonation is when rainwater absorbs carbon dioxide from the atmosphere forming a weak carbonic acid that reacts with the calcium carbonate within the rock to form soluble calcium bicarbonate that can be washed away by the rainwater. Grikes are deep cracks within the pavement that were once joints which have been widened overtime due to weathering. Some grikes have been widened to have a width of several centimetres and a depth of two metres. They contain enough soil to support plant growth in a sheltered environment. Clints are large slabs of limestone that lie between the grikes. They can be up to a few metres squared. Rainwater may run over clints to form little inlets on the edges called fluting.

Basalt rock forms a distinctive plateau landscape such as the Antrim plateau in County Antrim. A plateau is a flat-topped area of highground of basalt rock. The Antrim plateau began to form 65 million years ago when the American and Eurasian plate began to separate. Fissures in the earth crust allowed runny basic magma with a silica content of less than 55% emerge and spread out

quickly over a chalk surface. Each lava flow turned into the fine grained black basalt as it cooled quickly to sometimes have thickness of 40 metres. The lava flow occurred over 15 million years, between the time of each flow the basalt rock was weathered creating a red laterite soil. However, as the American and Eurasian plate continued to separate, the Atlantic ocean began to open up. The plateau was pushed further eastwards until all volcanic activity ceased. The Antrim plateau is famous for the Giants causeway and it's 60,000 hexagonal columns that were cooled slowly rising from the ocean bed.