

How different rock types produce distinctive landscapes - 2016 Q3B

Sedimentary: Limestone

Limestone is a sedimentary rock which can form a distinctive landscape called karst landscape. This can be seen in Ireland in the Burren, Co. Clare. Limestone formed in Ireland about 320 million years ago, when Ireland lay under a shallow sea, close to the equator. Fish fossils built up in layers and lithification occurred when calcium carbonate cemented the fossils together to form limestone.

A distinct surface feature of karst landscape is limestone pavement. This is a flat area of blocks of limestone which are separated by deep joints. In the Burren, limestone pavement was formed after glaciers removed the top soil, exposing the limestone. As limestone is porous and pervious, it is eroded easily by carbonation. Carbonation occurs when rainwater absorbs carbon dioxide which forms a carbonic acid, which reacts with the calcium carbonate in limestone. This reaction forms calcium bicarbonate, which is removed by water. The bedding planes and joints are widened as the acid runs through them, forming limestone pavement. The widening of the bedding planes and joints form clints and grikes on the surface of the limestone. Clints are the sections of limestone, and grikes are the gaps separating them. Karrens are formed when a small area of a clint is dissolved by carbonation. Fluting is formed when the karrens overflow and a channel is dissolved by carbonation.

Igneous: Basalt

Basalt is an igneous rock which can form a distinctive landscape such as the Antrim Derry Plateau in Ireland. The Antrim Derry Plateau formed 65 million years ago, when the North American and Eurasian plates separated. As the North American and Eurasian plates separated, lava flowed from the divergent boundary. The lava had a low viscosity and it spread out across a very large area of 4,000km². The lava cooled quickly, and the layers of basalt eventually created

the Antrim Derry Plateau. As the basalt cooled and contracted, it began to split into about 60,000 hexagonal columns. These are best known as the Giant's Causeway and attracts thousands of sightseers each year.