

SELF-GUIDED GEOLOGY: BLOODY BRIDGE RIVER, MOURNE

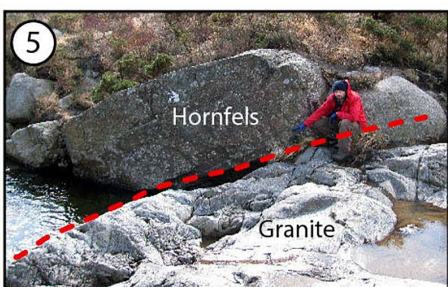
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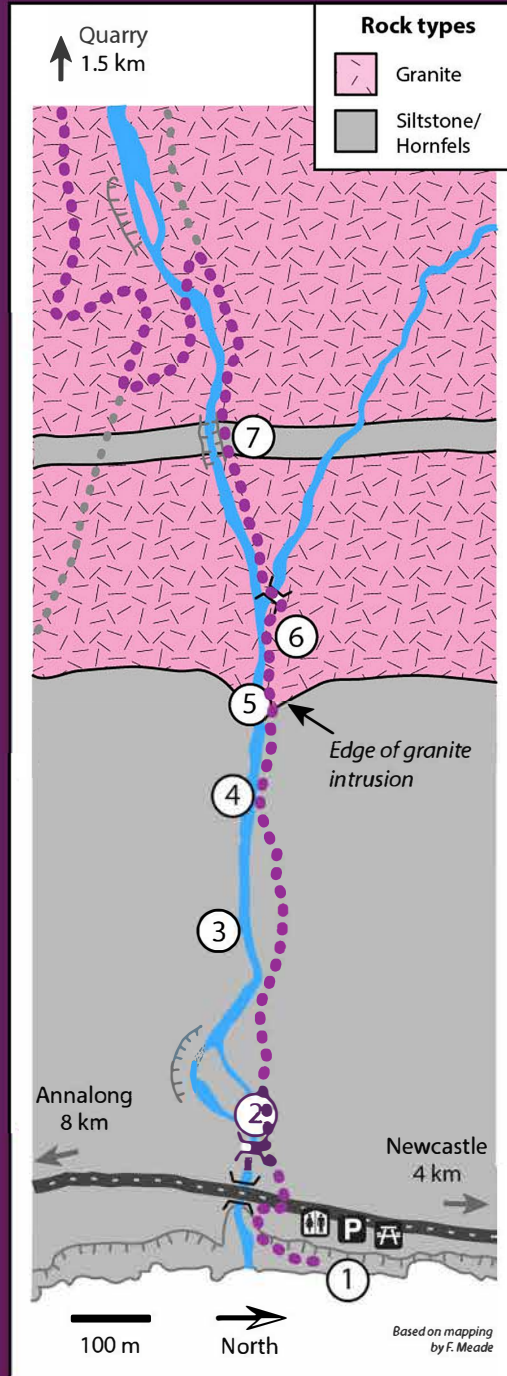
Over 400 million years ago, the rocks that form Ireland were on two different tectonic plates, separated by a large ocean called Iapetus. The cliffs below the Bloody Bridge car park are made of a fine grained sedimentary rock called "siltstone". These rocks were deposited on the floor of the Iapetus Ocean. When the forces of plate tectonics closed the ocean, the ocean floor rocks were heated and folded. The two halves of Ireland, once thousands of miles apart, were pushed together and these siltstone rocks mark the boundary zone, stretching from Co. Longford to Co. Down.



The Mourne granites were emplaced deep below the land surface 56 million years ago. 17,000 - 13,000 years ago Ireland was covered in ice and glacial erosion shaped the landscape we see today. Glacial sediments drape the landscape and are visible in the banks of the river. They are characterised by a jumbled mix of large boulders in a matrix of pebbles and sand.



The contact between dark hornfels and light granite is easily spotted in the river bed. This is the edge of a series of granite intrusions which extend for 15 km to the west. The granite closest to the contact cooled quickly to form small crystals. This is because the siltstone/hornfels would have been much cooler than the hot magma.



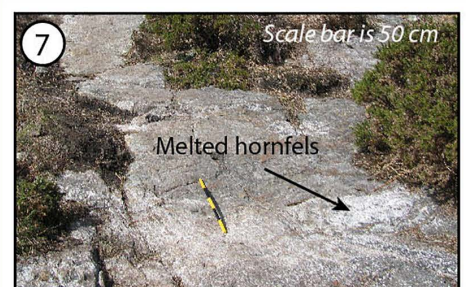
Away from the cool edges of the intrusion the magma stayed molten for longer, allowing the crystals to grow bigger. These crystals can be seen in flat polished slabs at the riverside. There are 3 main minerals in this granite: feldspar (milky white), quartz (clear and glassy) and biotite (black). Continue uphill for ~2 km to explore a large disused quarry where the granite was extracted for building stones.



View from the "Bloody Bridge". The folded siltstone forms all the lower slopes of this area. Siltstone is well exposed in the river bed and as blocks in the path. The rounded hills in the distance are formed of granite. Granite is a hard igneous rock, and erodes more slowly than siltstone. This is the reason we have the beautiful Mourne Mountains.



Molten granite is ~800°C. It heated the surrounding siltstone, baking it into a hard metamorphic rock called hornfels. Closer to the granite the heating effect gets more pronounced. Chemical differences in the composition of the original siltstone layers resulted in striped hornfels.



As you crest a steep section in the path, where the river flows through a gorge, the rocks become green and fine-grained. This is a thin (50 m) screen of hornfelsed siltstone that was trapped as the granite invaded the crust. This rock was heated so much that it actually started to melt. These melt zones appear white and wispy.

Compiled by Dr F.C. Meade with contributions from Prof V.R. Troll & Dr C.H. Emeleus.