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# THE WHIN SILL

*Alan Gill*

One of the many interesting geological features in the north of England is the Whin Sill. This is essentially a subterranean layer of igneous rock underlying much of Northumberland, north east Cumbria, along the Pennine escarpment and in Teesdale. Its area is estimated to be at least 5000 sq km. The maximum thickness recorded is 75m but the average is between 25m and 50m. In many places the intrusion separates into two or more layers divided by several hundred metres induced by joint and fault planes. There are dykes associated with the Whin Sill forming together one single petrographic province. It is possible that these were the conduits through which the magma flowed prior to solidification.

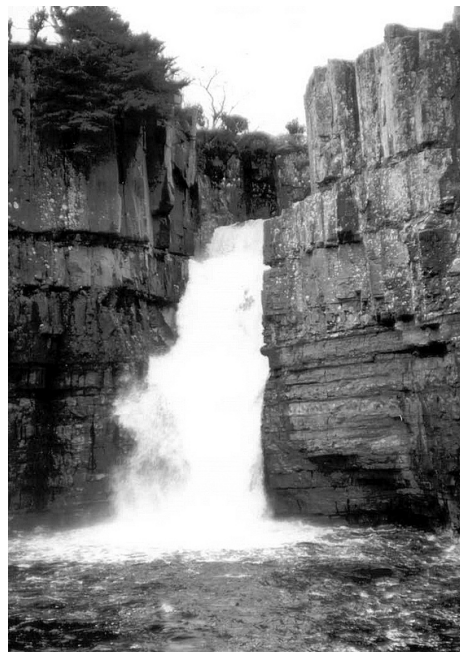
The proximity of the sill to the Carboniferous Limestone Series led some geologists to conclude that the sill originated as a contemporaneous lava flow. Sedgwick however advocated its intrusive origin as early as 1826, and was proved right later in 1870. It was the subject, of pioneer isotopic age determination by Arthur Holmes. The evidence suggests that the Whin Sill was intruded in late Carboniferous Times; an age of 295 +/- 6my has been computed.

There are many good outcrops; the sea cliffs of the Farne Islands - the Romans saw a good thing when they built their wall along the north facing escarpments. It provides sound foundations for both Bamburgh and Dunstanburgh castles; it forms waterfalls on the River Tees like Cauldron Snout (Fig 1) and High Force (Fig 2); and on the Pennines the impressive High Cup Nick (Fig 3); all worth a visit. The columnar jointing is well displayed.



*Fig 1: Cauldron Snout*

The rock itself is mainly fine to medium-grained quartz-dolerite, dark in colour. It is tough stuff and makes excellent road stone. You may well have driven on it.



*Fig 2: High Force on the River Tees showing the vertical structure of the Whin Sill resting on the horizontal Tynebottom Limestone.*



*Fig 3: High Cup Nick*



*Castle on Whin Sill*

***Photographs by Alan Gill***