

LOUTH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Barnavave Site F
Other names used for site	
IGH THEME	IGH6 Mineralogy
TOWNLAND(S)	Castletowncooley
NEAREST TOWN/VILLAGE	Carlingford
SIX INCH MAP NUMBER	8
ITM CO-ORDINATES	717630E 808654N
1:50,000 O.S. SHEET NUMBER	36 GSI BEDROCK 1:100,000 SHEET NO. 8/9

Outline Site Description

The site consists of a large crag on the summit of the unnamed hill that forms the southern end of the ridge extending south from Barnavave Hill.

Geological System/Age and Primary Rock Type

The outcrop consists of gabbro of the Palaeogene Carlingford Igneous Complex enclosing a lens of thermally metamorphosed Lower Carboniferous limestone.

Main Geological or Geomorphological Interest

The outcrop is one of a number in Carlingford where the first occurrence in Ireland of specific minerals was recognized. Nockolds described tilleyite ($\text{Ca}_5(\text{Si}_2\text{O}_7)\text{CO}_3)_2$), spurrite ($\text{Ca}_5(\text{SiO}_4)_2(\text{CO}_3)$), wollastonite (CaSiO_3) and subordinate melilite ($\text{Ca,Na}_2(\text{Fe,Mg,Al})(\text{AlSiO}_7)$) and idocrase or vesuvianite ($\text{Ca,Na}_{19}(\text{Al, Mg, Fe})_{13}(\text{B,Al,Fe})_5(\text{Si}_2\text{O}_7)\text{SiO}_4)_{10}(\text{OH,F,O})_{10}$) from this outcrop. Tilleyite, first described in 1933 from metamorphosed limestone in California, and spurrite had not previously been recognized in Irish rocks.

The descriptions in the literature are apparently based on examination of thin-section samples. In outcrop, the altered limestone comprises a small, 1x1m lens of cream-white saccharoidal rock in which diffuse pink-, green- and grey-coloured zones can be observed. Nockolds provides a detailed account of these high-temperature assemblages observed in thin section, as well as lower-temperature assemblages arising from retrograde alteration of the original minerals during cooling.

Site Importance – County Geological Site

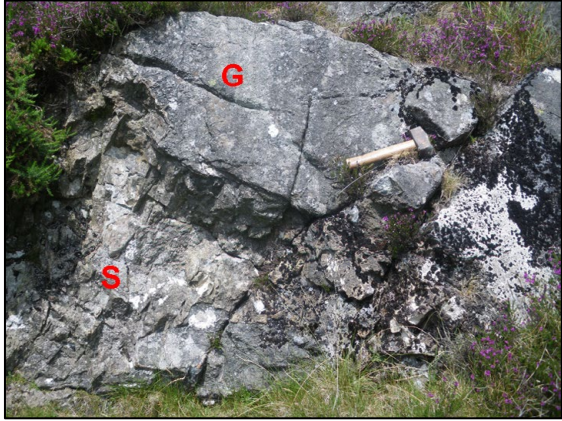
The site deserves recognition as the first recorded location in Ireland where tilleyite and spurrite were recognized. The two minerals were also recognized by Nockolds 300m north in an outcrop of limestone that was also thermally metamorphosed by intruding gabbro but this outcrop was not located during this audit. The two minerals have not been reported from thermally metamorphosed limestone elsewhere in the region.

Management/promotion issues

The site is on the summit at the southern end of the Barnavave ridge and is within the Carlingford Mountain SAC and proposed NHA. It can be reached only on foot. The area is wholly unspoiled and there are no obvious threats to the outcrop. As the minerals of interest are to be observed primarily in thin section, the site is likely to be of interest mainly to scientists, although interest from mineral collectors cannot be discounted.



The outcrop immediately south of the summit trig point (upper right), looking north.



General (left) and close-up (right) view of skarn body (S) enclosed by massive gabbro (G).



Sharp contact between massive, darker-coloured gabbro and paler, thinly bedded skarn. The minerals tilleyite and spurrite, described in thin sections of samples from this locality, are not visible to the naked eye in outcrop.

