



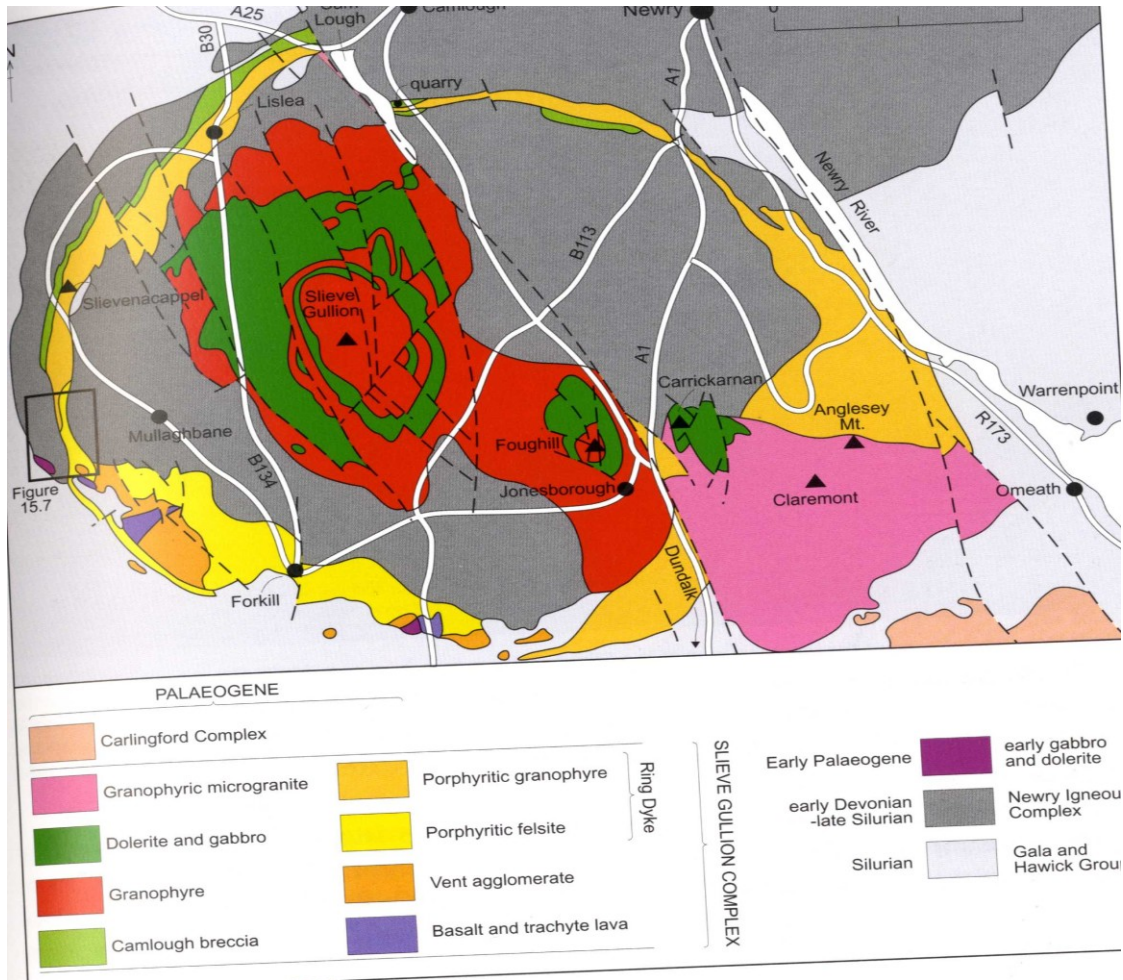
FIELD TRIP TO EXAMINE THE SHARED LANDSCAPE & ARCHAEOLOGICAL HERITAGE OF NORTH LOUTH/ MONAGHAN & SOUTH ARMAGH

The landscape is a frequently overlooked aspect of our shared heritage, but yet it informs our sense of place and belonging – the physical shape of the places we live, the familiar horizons of hills and valleys, our townlands and their descriptive place-names, not to mention the soils, streams, groundwater and natural resources which provide the materials to grow food, farm, quarry and build our homes – ultimately the essential things in life. Linked to the geological ‘building blocks’ of our physical environment are the shared cultural spaces which we inhabit....since archaeological time throughout history to the present, humans have made their imprint on the landscape through cutting and planting trees, tilling soils, shaping fields with stone walls and hedgerows, creating defensive boundaries and building places to live, worship and play. Thus our natural and cultural heritages are inextricably inter-twined and our landscape and archaeology must be viewed in that context.

The journey from North County Louth through Monaghan to Armagh passes through some of the most interesting geological terrain in Ireland. Natural passes in the mountains of Slieve Gullion and Cooley, carved out along pre-existing geological faults by glaciers in the great Ice Age almost 25,000 years ago, allowed ancient roads, modern motorways and railways to be built. These same passes, such as the Gap of the North (the Moyry Pass), were strategic links to ancient Ulster (*‘Uladh’*), providing north-south access as well as defensive positions against invading hordes. Many of these places provide the backdrop for some of the great Ulster Cycle of Irish mythology.

The uplands of North Louth and South Armagh are dominated by vistas of the **Slieve Gullion** volcanic-igneous complex, reflecting geological activity which was linked to much greater earth movements, associated with the early opening-up of the north Atlantic Ocean, when the American and European plates began to move away from each other.

Slieve Gullion (Photo 1) represents the ‘root’ zone of a deeply eroded volcanic caldera that intruded older country rocks (aged 420-480 million years) about 58-60 million years ago. It formed when explosive magma broke through the surface to create the volcano, while some of the magma did not reach the surface, but cooled to form granites. Around the edges of the caldera, volcanic eruptions and intrusions occurred in a circular pattern, forming the encircling hills of the “Ring of Gullion” (Photo 2). At about the same time, but slightly earlier, the **Cooley Mountains** were formed from magmas erupting as a mix of volcanic and granitic rocks. Across Carlingford Lough, in the similarly aged **Mourne Mountains**, the magma did not break the surface and thus we see those mountains formed by different pulses of granites, younger from east to west, with no evidence of volcanic explosive activity. In this Mourne-Cooley-Gullion complex, ‘lightening’ indeed struck twice, as an earlier continental collision resulted in the emplacement of the **Newry Granodiorite** (and Slieve Croob) about 420 million years ago from molten magma rising due to the extreme heat and pressures generated by the crustal collision (see Map overleaf).



Geological Map of the Slieve Gullion Complex (*Geology of Northern Ireland, GSNI, Mitchell, 2004*)

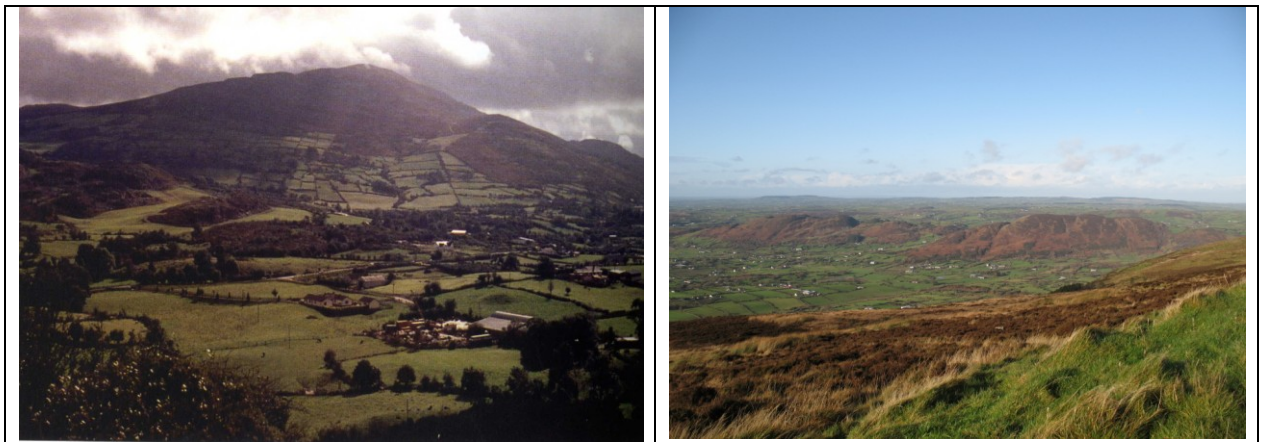


Photo 1 (left): Slieve Gullion - collapsed caldera at centre of the Volcanic Complex

Photo 2 (right): Ring of Gullion – volcanic rim encircling Slieve Gullion

There is some dispute as to how these igneous rocks were formed: i.e. how do you get these huge volumes of molten magma up to the surface of the earth, from tens of kilometres down in the mantle? Geological mapping allows understanding of the relative ages and relationships of the different aged rocks and presents models of emplacement.

How do huge volumes of magma move from deep in the earth up to the surface?

An older geological theory (Richie, 1932) argues that the magma in the Mourne-Cooley-Gullion complex was intruded in pressurised pulses, rising along steep, bell-shaped, fault structures known as 'ring dykes' from the warm centre of the earth to the cooler crust. Theoretically, each pulse rose and subsumed the early (cooler, denser) pulse and pushed it downwards in the centre of the ring, causing collapse and the creation of a caldera – much like if you push a cork into a bottle of wine, the liquid moves up and out along the outside of the cork. Around the edges of the caldera, vent eruptions may occur, as seen in the southern part of the Ring of Gullion. This theory has held for almost 80 years. However, recent research (Stevenson et al. 2008) suggests that the observed geological relationships cannot sustain this idea, and that in fact an early volcanic caldera was later intruded by a sheet of fine-grained granite, which cooled and was subsequently intruded and domed by more magma pulses as low lying sheets, exploiting pre-existing low-angle structures in the rocks. Slieve Gullion and the Ring of Gullion would thus be a 'domed sheet' versus a ring-dyke, exposed in its current form through erosion rather than injection along circular faults.....to the average person this is not significant, but among geologists the debate is not exhausted in an effort to establish the truth of the earth's formational history.

Moving along in geological time to view the lower-lying landscape, we can observe that most of the countryside is blanketed by soils, drumlins and small lakes, relatively recent deposits. The last Ice Age ended about 13,000 years ago in Ireland, but made a profound impact on our landscape, when the advances of ice sheets in different (warm-cool) climatic phases over c. 150,000 years created drumlins ('*drom-l-in*' - little ridges) as they advanced, their 'noses' pointing in the direction of ice travel. However, the last pulse of ice in northern part of the island created the great blanket of drumlins known as the 'The Drumlin Belt', stretching from Clew Bay in Mayo to the Ards Peninsula in Down. Elsewhere, the ice created eskers, '*eiscir*' or underground rivers, at the base of the ice sheets where pressure was greatest and local melting took place, seen now as long sinuous gravel ridges across the midlands, remnants of 'fossil' river traces. With global warming, the ice finally began to melt c. 25,000 years ago, albeit with minor re-advances during cold spells, leaving behind a complex set of overprinting landscape features. Drumlins impeded drainage of the meltwaters, creating a patchwork of small lakes and poorly drained soils, long associated with the 'stony clay soils' of Patrick Kavanagh's Monaghan poetry. An aerial view today of Lower Lough Erne shows the interference patterns of these drumlins and lakes beautifully.

In mythological terms, the Iron Age (250BC – 400AD) epic tale, *An Táin Bó Cuailnge* (the Cattle Raid of Cooley), tells that Queen Maeve's armies left Roscommon to capture the Brown Bull of Cooley and advanced through Longford towards Lough Sheelin in Cavan – at that point the armies turned south-eastwards (reputedly because Cúchulainn thwarted their direct entry to Ulster) and eventually entered Louth along the north bank of the River Boyne, before advancing northwards along the coast to Cooley. What is interesting to consider is that the drumlin-lake belt would have been difficult terrain for horses, foot-soldiers and carriages in the Iron Age – thus, these people were able to read

the landscape but what Queen Maeve could not have known is that the Ice Age forced her to take the long way around!

In archaeological terms, this region is one of the most interesting in Ireland, as it marked the ancient boundary between the territories of Uladh (Ulster) and variably Mí (Meath), Laighean (Leinster) and Connacht. This is interpreted to be marked by an extensive earthen bank which extended from Down to Monaghan to Leitrim-Fermanagh, known colloquially as The Dorsey, the Black Pig's Dyke and other names, all associated with a rich oral tradition of storytelling and sharing heritage!

Roche Castle (stop number 1):

An Anglo-Norman castle that marks the most northerly stronghold of the Pale. It is said to have been built by Lady Rodhesia de Verdun in 1236 and that its design may have been based on Beeston Castle in Cheshire.

Roche Castle is one of the best preserved Anglo-Norman stone castle in Ireland.



Annaghmare Court Tomb (stop number 2):

Annaghmare comes from the gaelic *Eanach Mór* which means the big marsh. The court tomb was built by early farming communities over 6,000 years ago.

This tomb is also locally known as the 'Black Castle'. It has been the site of many local ghost sightings!



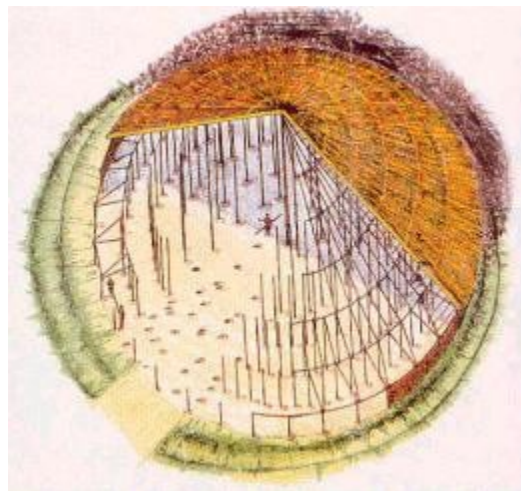


The Dorsey (on our way to Navan Fort):

We will pass near the Dorsey on our way to *Emain Macha* (Navan Fort). The Dorsey or *Na Doirse*, the gateways, is an extensive double earth bank and ditch rampart, locally known as ‘the walls’, about 1.6km. It is said to have been a fortified frontier for the kingdom of Ulster when it was at its strongest around 100BC and it could have controlled access to *Emain Macha* along an ancient route. It extends westwards in various remnant forms, known as the ‘Black Pig’s Dyke’ and other colloquial names through Monaghan to Fermanagh-Leitrim.

Emain Macha or Navan Fort (stop number 3):

One of the most famous archaeological sites in Ireland, it is said to have been the chief residence of the kings of Ulster. It is a hilltop enclosure that has seen occupational activity since the Neolithic period throughout. It was only in about 100BC that a massive circular structure was built.



Cam Lough

Cam Lough is a classic glacially scoured ribbon lake, where a glacier moved along the valley, which was weakened by a pre-existing northwest trending geological fault.

It was enlarged to support the industrial expansion of Newry in the nineteenth century, linked to the opening of the Great Northern Railway and the Newry Ship Canal, to provide water for the Bessbrook linen mills.

Slieve Gullion Passage tomb

(positioned above the car park):

Slieve Gullion is the mountain of the steep slope, *Sliabh gCullin*. On its top is a passage tomb, similar in form plan as Newgrange, and known as the 'Callaigh Beara's' or old hag's house.

It is the highest passage tomb in Ireland located at 573m above sea level.





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