Some aspects of the Geology of Mayo, western Ireland, September 2018

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References: *Geology & Scenery of Ireland* J.B. Whittow Pelican 1975; *Some aspects of the Geology of Mayo, western Ireland*: John Graham Geological Survey of Ireland, 1:100,000 Scale Bedrock Geology Map Series, Sheet 6 & 11

Co. Mayo has great geological diversity, with rocks ranging from the Lewisian gneisses of Eris, through a complex variety of lower Palaeozoic's, to the Carboniferous sediments of Clew Bay. The topography is equally diverse ranging from the quartzite, and grit mountains of the western seaboard (Croagh Patrick) to the limestone planes of north Mayo and the spectacular swarm of drumlins in Clew Bay.

The lower Palaeozoic geology of South Mayo occupies a prominent role in the application of plate tectonics to ancient orogens. The geology in this area of western Ireland is important because it preserves the Laurentian cover (Dalradian) in North Mayo, ophiolite remnants, an accretionary complex in the Clew Bay area, and arc volcanic rocks and their associated forearc basin in South Mayo.

Courtesy Google Earth

Westport, meaning "stone fort of the beeves", historically anglicised as Cahernamart) is at the south-east corner of Clew Bay, an inlet of the Atlantic Ocean on the west coast of Ireland.

The design for the town was commissioned in the 1780s by John Browne of the nearby stately home. He cleared the original village of Cahernamart, that had 700 inhabitants, to make way for his gardens at Westport House.

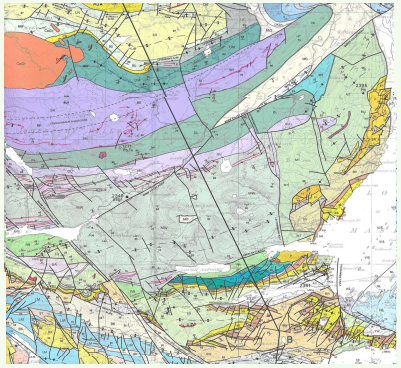
The current town centre was originally designed by James Wyatt in 1780. In the Georgian town centre, stone bridges link the tree-lined promenade on the banks of the Carrowbeg River.

Storm Ali, Achill Island

National memorial to victims of famine, Murrisk

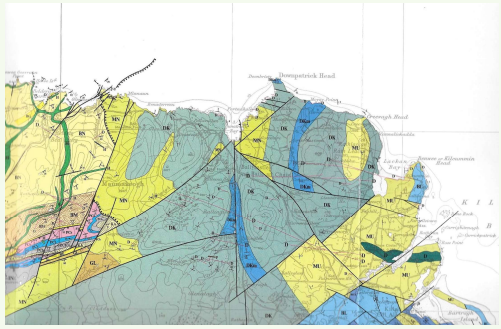
Day 1 Lower Palaeozoic geology of the South Mayo Trough.

- Early Ordivician Lough Nafooey Volcanics – an evolving oceanic island arc – pillow lavas
- Silurian succession of the Killary Harbour – Joyce Country area – a classic rapidly subsiding basin
- Post-Grampian coarse grained detritus in the early-mid Ordovician of the South Mayo Trough – Rosroe and Derryveeny Formations – coarse sands with *Skolithos* evident
- Intermediate to acid volcanics and associated sediments of the mid-Ordovician Tourmakeady Volcanic succession
- Tertiary dolerite sill and viewing point of regional geology and topography on return route to Westport
- Stratigraphy in a late shear zone (Bohaun Shear Zone) on the north-west of the Partry Mountains

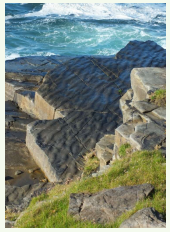


Pillow lavas, Lough Nafooey

Examining Rosroe Formation, Bohaun Shear Zone



Downpatrick Head, Carboniferous clastics



Mullaghmore sandstones, Kilcummin Head

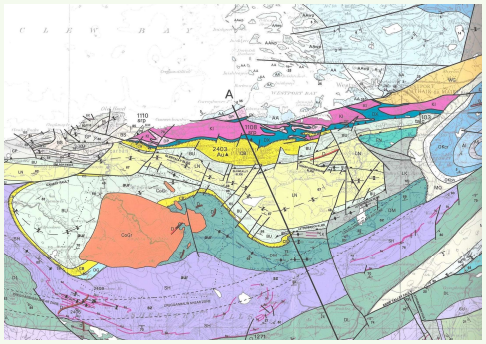
Day 2 Focused on the Carboniferous North Mayo which rests unconformably on the Dalradian succession in North Mayo.

- West side of Bunatrahir Bay – excellent and easily accessible section through the basal Carboniferous sediments – desiccated mud rocks, Gilgae structures,
- Downpatrick Head – spectacular cliff sections mainly for viewing lateral accretion structures, evident in the lower stack.
- Ceide Fields - the most extensive Stone Age monument (c.6000 years old) in the world - field systems, dwelling areas and Megalithic tombs covered under a natural blanket bog
- Cliff section at Ceide – Tabular limestones of the Moyny Limestone Formation
- Kilcummin Head – Mullaghmore Sandstone Formation- tidally influenced fluvial and shallow shelf deposits, abundant *Zoophycos* trace fossils in the Ballina Limestone Formation

Day 3 Northern limb of the South Mayo Syncline.

Examined Ordovician turbiditic successions passing up into fan deltas; Major faults of the Clew Bay region at Lecanvey Quay and the lower part of the Croagh Patrick path and finishing on the Quaternary glacial sediments of the Clew Bay drumlins.

- Clew Bay complex comprises of a series of low grade metasediments and higher grade metamorphosed basic and ultra basic rocks (serpentinites)
- The Clew Bay complex is overlain unconformably by the resistant Silurian quartzites which
- Examined cliff sections through drumlins and ice scratched boulders

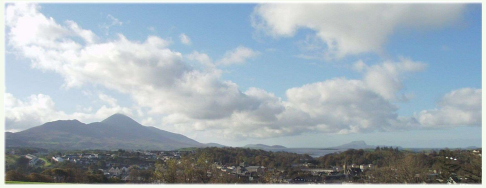


Drumlin swarm, Clew Bay

Ice-scratched boulder, Lecanvey

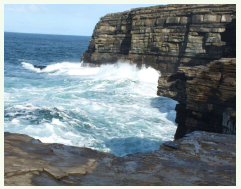
Post trip debrief...

Team photo Chris Green



Westport Town (foreground) and Croagh Patrick (Silurian quartzite)

Trace fossil assemblage, Kilcummin Head



Stacked sandstones, Kilcummin Head

Serpentinite agglomerate, Lecanvey

Killadangan Formation, Dalradian, Lecanvey