

ARMAGH

AREA OF COUNTY: 1,254 square kilometres or 484 square miles

COUNTY TOWN: Armagh

OTHER TOWNS: Bessbrook, Craigavon, Crossmaglen, Keady, Lurgan, Newtown Hamilton, Portadown

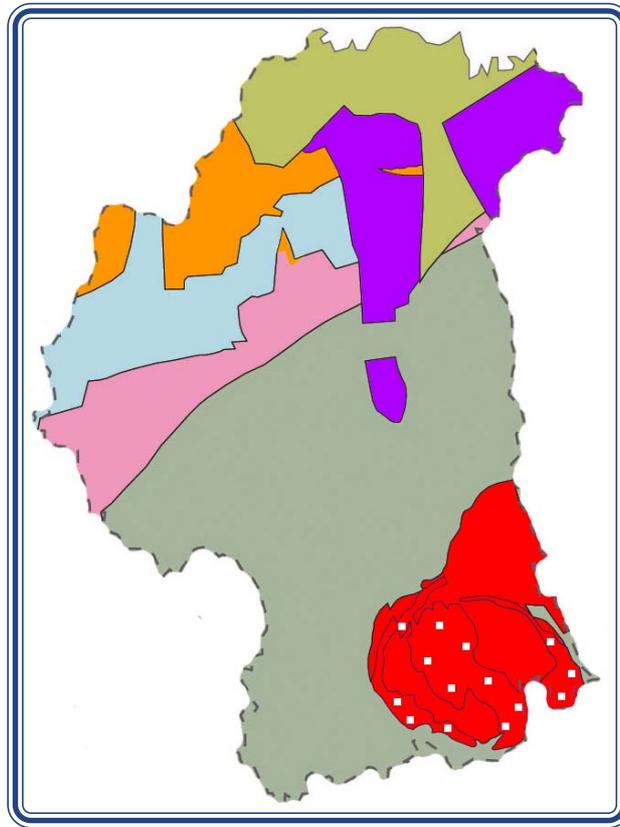
GEOLOGY HIGHLIGHTS: Carboniferous fossil sharks, Slieve Gullion volcanic rocks, Permian 'Brockram', Lough Neagh clay

AGE OF ROCKS: Ordovician-Silurian; Carboniferous-Triassic; Paleogene



Slieve Gullion

The spectacular ring dyke of Slieve Gullion, as seen from the central summit.



Geological Map of County Armagh

Pink: Ordovician; **Grey:** Ordovician & Silurian; **Solid Red:** Devonian Granite; **Light blue:** Lower Carboniferous limestone; **Orange:** Permian breccia and Triassic; **Purple:** Paleogene basalt; **Olive green:** Paleogene Lough Neagh clays; **Flecked Red:** Paleogene and older Granite and Gabbro.

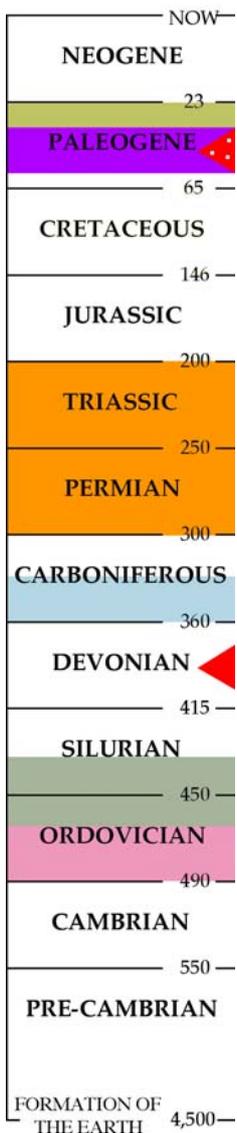
Geological history

The oldest rocks in County Armagh are Ordovician and were deposited 490 to 450 million years ago [Ma] in an ocean that divided Ireland in two. As this closed further deep-water sediments were dumped into the ocean and these make up the rocks that stretch between Longford and Down (grey on the map). Subsequently in the Devonian (400 Ma) when the crust was unstable, granites and other pale igneous rocks were injected into these older rocks. These now form part of the upland districts in the southeast of the county and towards Newry.

By the Carboniferous the whole county was drowned beneath a shallow sea in which marine life was abundant and diverse. In the limestones that were once quarried around Armagh city many fossils can be found. These include brachiopods, gastropod snails, bryozoans, corals, and significantly shark teeth. Sharks were major predators in these oceans but today the only trace



Fossil shark teeth (left) and the gastropod (snail) *Straparollus* from the Lower Carboniferous limestone near Armagh city.



we have of them is their teeth. This is because their skeleton is made up of the soft material cartilage and this does not get preserved, whereas the teeth which are made of the harder material calcium phosphate does.

Lying above the Carboniferous limestones around the city of Armagh is a deposit of red sand and mud full of angular pieces of the limestone. It formed as a mountain scree in a desert environment during the Permian, around 280 million years ago. Above this fossil scree are reddish sandstones, also deposited in a desert environment during the Permian and Triassic. There is a small patch of chalk near Loughgall, and this was formed of tiny organisms called coccoliths that lived in an ocean that covered much of Ireland around 80 Ma.

The opening of the northern Atlantic Ocean was associated with major volcanic activity around 60 Ma. Flood basalts poured out of fissures in the crust and created the Antrim Plateau and the Giants Causeway. In Armagh a tongue of basalt extends southwards from close to Portadown. Volcanic activity also affected the older igneous rocks which came under stress. Lines of weakness developed called faults and younger material was injected in a series of circular dykes (vertical sheets of igneous material) that form the geologically fascinating mountain of Slieve Gullion.

Geological timescale showing age of rocks in Armagh.

Petrified wood from Lough Neagh



The Lough Neagh clays were deposited 28 Ma over several counties in a fresh water lake that is larger than the present lake. These sediments have been dated accurately using various fossil plants sieved out of the clays. Of most interest are samples of petrified wood (pictured left) which are

moderately common. The annual growth rings in the hardened timbers can still be seen in many cases.

Decorative stone from Armagh

The Armagh Limestone is pale brown and could be polished and it was used as a decorative stone in many churches, public buildings and museums. Permian breccia, a pinkish rock full of chips of pale limestone, was used to build many of the older buildings in the city of Armagh. Today several quarries exploit Carboniferous limestone or Silurian greywackes for roadstone and building aggregate.



Angular fragments of Carboniferous limestone in a matrix of red mud and sand, deposited as a scree in Permian times, and used as a building stone around Armagh city.

Map adapted with permission from Geological Survey of Ireland 1:1,000,000 map 2003. Image credits: Mike Simms 1 & 4 (bottom); Patrick Wyse Jackson 4 (top); Ulster Museum 3 (left and right).