

# Plugs, minor igneous intrusions, Palaeogene, Northern Ireland

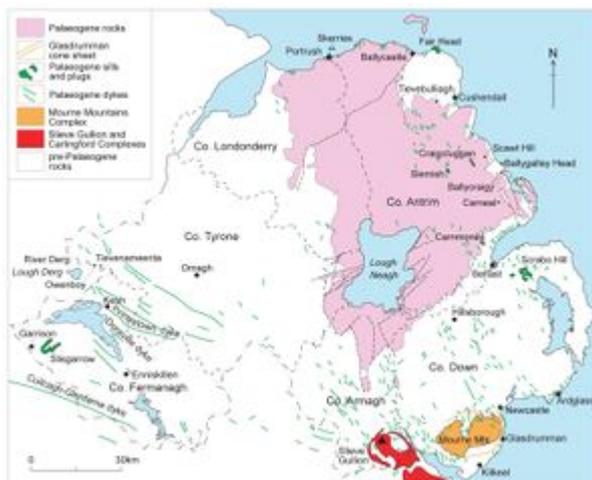
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## Plugs



Distribution of Palaeogene minor intrusions in Northern Ireland. (P947872)



Scawt Hill [D 337 091] on the eastern edge of the Antrim Plateau. Cretaceous chalk with flint nodules were hornfelsed by dolerite magma producing a calcsilicate mineral assemblage. 3.75 km WNW of Ballygalley, Co. Antrim. (P948040)

The Antrim Lava Group is cut by dolerite plugs that in places form prominent landmarks rising above the surface of the Antrim Plateau. At least thirty of these intrusions are recognised and vary in diameter from 50m to 1km with a circular outline or are elongate in a NNW-SSE direction, parallel to the main dyke swarm. They consist mainly of olivine dolerite with local variations due to compositional zoning. This is particularly evident at Slemish [D 222 054], a 1km long elliptical multiple plug that intrudes the Upper Basalt Formation ([P947872](#)). Slemish is the largest volcanic vent in Ireland <sup>[1]</sup> and consists of at least three separate magma pulses, the latest cutting through the

two earlier pulses that form the lower part of the hill. The two earliest pulses contain platy cognate xenoliths representing fragments of the surface crust of the lava lake in the vent that were disrupted by convection currents and sank into the magma pool <sup>[2]</sup>.

Tievebulliagh [D 193 268] near Cushendall, is an inclined, oval-shaped olivine dolerite plug with a marginal facies of olivine-rich picritic dolerite. This plug is notable for the presence of a slumped block of lateritised basalt of the Interbasaltic Formation. This has been metamorphosed to form porcellanite, an extremely resistant hornfels that was used by Neolithic people to manufacture axe heads ([see Quaternary article](#)).

Many of the plugs in Co. Antrim have contact metamorphosed the rocks into which they were intruded. At Scawt Hill ([P948040](#)), Carneal [J 389 959] and Ballycraigy [D 387 045] the Cretaceous chalk and flint nodules were hornfelsed by the dolerite magma producing calcsilicate mineral assemblage. Indeed, Scawt Hill is the type locality for minerals such as scawtite, larnite, hydrocalumite and portlandite (34–36). Flint nodules, around which many of these minerals developed, show a progressive marginal metasomatism to larnite-spurrite rock with a core of wollastonite and xonotolite. At the margins of the intrusion, assimilation of lime by the olivine dolerite has produced a lining on the conduit wall of black pyroxenite and titanaugite rocks with plagioclase or nepheline or melilite. At Carneal, south of Larne, P-T measurements indicate that metamorphism occurred at extremely high temperatures (1050–1100°C) and low pressure (c. 200 bars). In contrast other large dolerite plugs such as Ballygalley Head [D 383 078] produced very little alteration in the Cretaceous chalk country rock. Carneal, like Carnmoney near Belfast [J 333 825], is associated with agglomerate wedges, apparent relics of tuff-filled vents which were later filled with magma.

## References

- ↑ Geological Survey of Northern Ireland 2001. Ballymena, Northern Ireland Sheet 20. Solid and Drift Geology. 1:50 000. (Keyworth, Nottingham: British Geological Survey).
- ↑ Preston, J. 1963. The dolerite plug at Slemish, Co Antrim. *Liverpool and Manchester Geological Journal*, 3, 301–14.

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