

Granitic vein complexes, Younger Caledonian igneous rocks, Northern Highlands of Scotland

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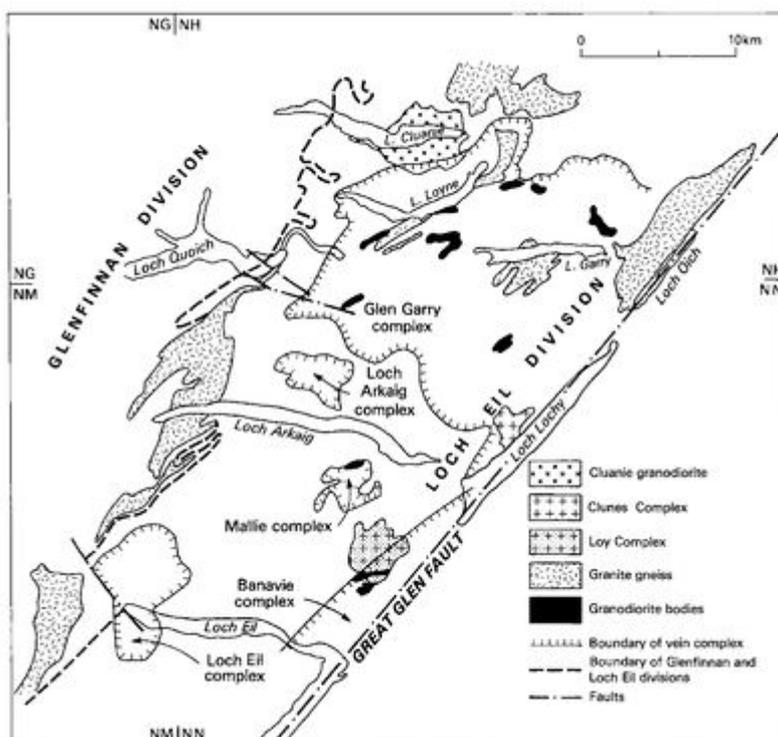
Johnstone, G S and Mykura, W. 1989. British regional geology: Northern Highlands of Scotland. Fourth edition. Keyworth, Nottingham: British Geological Survey.

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Granitic vein complexes, introduction



The vein complexes of the south-west part of the Northern Highlands. P915483.

Vein complexes or stockworks have been described in connection with the 'Regional Pegmatites' developed within the area of the migmatite complexes (pp.90-91). All of these are pegmatitic trondhjemite veins which were clearly derived from the migmatites which they traverse, although some of the later veins cut across the migmatite banding and the foliation of the host rock. In the

southwest part of the Northern Highlands, mainly south of Glen Moriston and entirely within the Loch Eil Division, innumerable veins and sheets are found; these range from quartz diorite to leucogranite in composition, and from granitic to aplitic and pegmatitic in texture. They are clearly not directly related to the rocks which they cut, and appear to have been intruded from a remote magmatic source. Although widespread throughout the Northern Highlands (north of Glen Moriston their occurrence is not recorded in detail) there are areas where they form up to 30% or more of the total rock (Fettes and MacDonald, 1978) and the amount of igneous material they represent is enormous. The outer limits of these vein complexes are difficult to define and the mapped boundaries are highly subjective. The complexes so far delimited are shown on [P915483](#), and described below.

The Loch Eil, Loch Arkaig and Mallie complexes

These consist of a suite of granite, aplite and the pegmatite veins. In all three rock-types the margins of the complexes are diffuse and the density of veining is very variable (ranging up to 30% of any one section). It is probable that the complexes are major concentrations within a more regionally developed belt of granite-pegmatites. The veins are individually sharply defined, but form a ramifying network without any obvious preferred orientation. Although large bodies do occur, the veins seldom exceed 2 m in width. There is no consistent cross-cutting relationship between the aplites, pegmatites and granites. Although the veins are massive and not recrystallised they are consistently cut by the foliated members of the Microdiorite Suite.

The Banavie Complex

These consist of a suite of potassic veins and subordinate amounts of pegmatite and aplopegmatite. The limit of the granite veins is fairly sharply defined (as shown on [P915483](#)) but the limit of pegmatites is more diffuse, and it is probable that they relate to the general pegmatite veining of the Loch Eil and Loch Arkaig complexes. This view is supported by the fact that the pegmatites are always cut by the microdiorites, whereas several microdiorite veins are cut by the granite. The term 'Banavie Complex' is therefore better restricted to the later granite veins; the earlier pegmatite veins should be regarded as part of the regional swarm. The granite veins are sharply defined, cutting across country rock; they generally range up to 1 m in width, although larger bodies are found. There is, in general, no preferred orientation, the veins forming ramifying networks. In places they form up to 50% of the total rock. Some of the large granite bodies cutting the Glen Loy Complex do, however, have a vague NE alignment. The Banavie Complex has been tentatively correlated with the late phase of the Strontian Granite (Sabine, 1963).

The Glen Garry Vein Complex

This complex differs from those described above in consisting largely of granodiorite. It appears to be younger than them in that it cuts most members of the Microdiorite Suite, although some granite veins are cut by the late felsic porphyrites. The complex is about 300 km² in extent, the limit of veining being relatively well defined. It is made up of veins and sheets ranging from a few centimetres in width to bodies several hundred of metres in extent. The density of veining is very variable, ranging up to intense ramifying networks which locally make up 60% of the total rock. The composition of the veins ranges from quartz-diorite to leucogranite, the larger bodies tending to be tonalite or granodiorite. Some of the granitic veins, cut by later granodiorite, may represent part of the diffuse granite veining of which the Loch Eil, Loch Arkaig and Mallie complexes are concentrations. Members of the Glen Garry Complex cut foliated and non-foliated members of the Microdiorite Suite.

Fettes and Macdonald (1978) consider that the variation in the composition of the veins of the Glen Garry Vein Complex results from the fractionation of a quartz diorite magma, but they point to chemical difficulties if it is assumed that the vein complex derived from either a Moine or a Lewisian parent.

[Selected bibliography](#)

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