
Macgregor's excursion guide to the geology of Arran

Third Edition

Revised and edited by J. G. Macdonald and A. Herriot with contributions By B. C. King

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(Front cover)

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Readers are reminded that the routes described in this Guide are not necessarily rights of way. The interests of the local landowners and residents should be respected at all times. Much of the moorland in the northern half of the island is used for game shooting. Recorded telephone information about the stalking programme for any day is available by calling the Hill Phone on (01770) 302363.

Further information on this and other matters regarding accommodation, transport or facilities may be obtained from the Tourist Information Office, The Pier, Brodick, KA27, Tel. (01770) 302140.

Transport information is also available from: Western Buses, Brodick Ferry Terminal, Isle of Arran, KA27 Tel. (01770) 302000.

Caledonian Macbrayne, Ferry Terminal, Gourock, PA19 1QP Tel. (01475) 650100.

Postbus Service, Brodick Sorting Office, Tel. (01770) 302507.

The Geological Society of Glasgow March 1998

Cover photograph by J. G. MacDonald

(Front cover) View towards Dougrie from Tormore Shore. Boulder of pitchstone on left foreground, outcrops of Permian sandstone on right. The mountain in the distance on the left is Beinn Bharrain (2345 feet), on the western side of the Northern Granite.

Foreword

Arran, that lovely island which dominates the broad estuary of the Firth of Clyde, has long been a favourite resort of the holidaymaker, drawn to it by its diversity of scenery and the grandeur of its northern peaks. To the geologist it has been for many years a place of pilgrimage, offering as it does within a comparatively small area a wide variety of rock formations and many striking, and indeed classic, illustrations of geological succession and structure.

The geology of the island has gathered round it over the years a considerable literature. This excursion guide has been designed to serve as an introduction to the subject, and it is hoped that it will prove of use to students of geology as well

as of interest to those who find a perennial attraction in the scenic charm of the island.

The death of Dr. Murray Macgregor occurred in January 1966, shortly after the publication of the first edition of this guide. A short biography and list of other publications of this eminent geologist can be found in the "Proceedings of the Geological Society of Glasgow", session 108 (1967), pp. 17–24.

Foreword to the 3rd Edition

Arran continues to hold a fascination for geologists, both amateur and professional, but over the years since this guide was first published several important developments have taken place in basic understanding of geological principals and in our knowledge of the Arran rocks. Also the activities of the Forestry Commission have altered the physical access in some areas.

In this first major revision of Macgregor's Guide the opportunity has been taken to incorporate a number of changes which reflect these developments; at the same time measurements have been modified to take account of metrication and many of the figures have been re-drawn. Throughout, however, an effort has been made to preserve as much as possible of the original text so that the third edition can still be substantially thought of as the work of Dr. Macgregor.

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The limit of the high ground coincides closely with the edge of the granite, and the mountains show abundant evidence of severe glaciation. The foothills are composed of Dalradian (Glenshant Hill) and Lower Old Red Sandstone rocks, while the foreground is mainly of Permian sandstones and breccias, on which portions of the dissected 300m (thousand-foot) platform can clearly be seen. Photo, A. Herriot

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Macgregor's excursion guide
to the

GEOLOGY OF ARRAN



Edited and revised by

J.G. MacDonald & A. Herriot

Front cover

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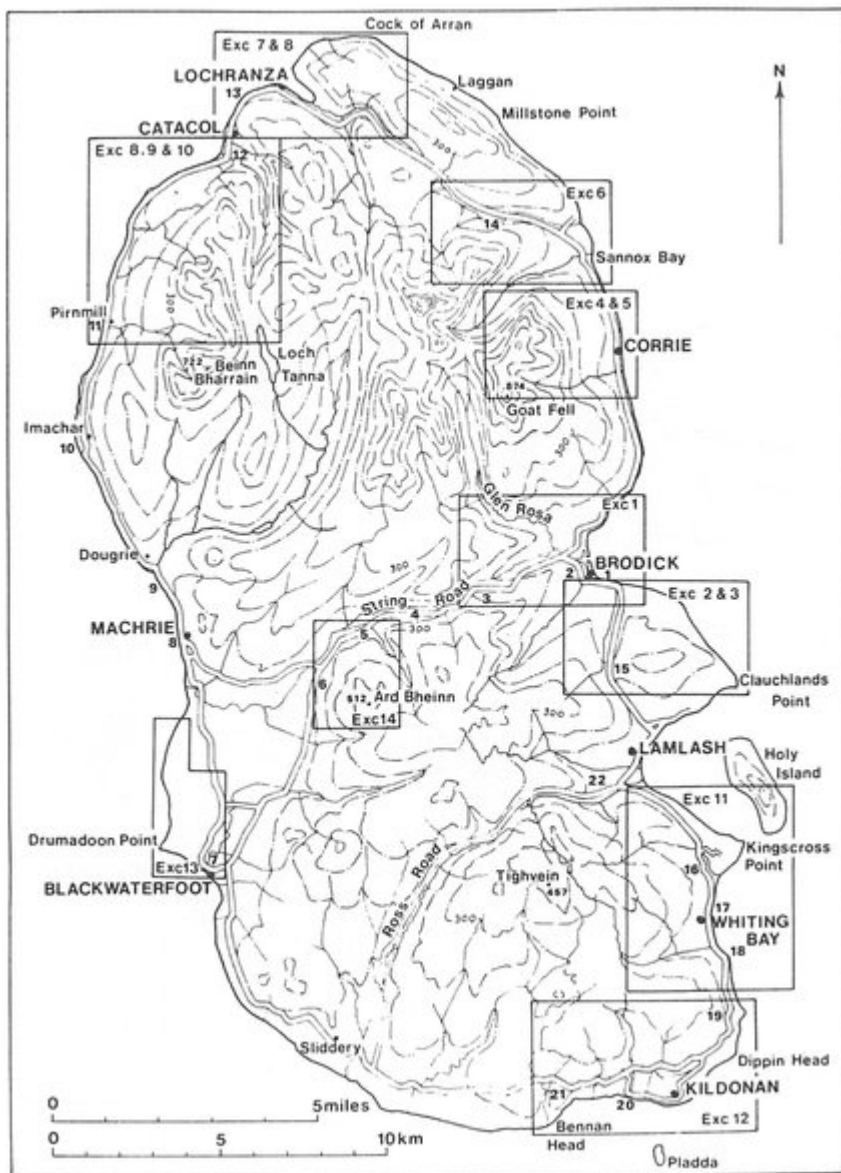
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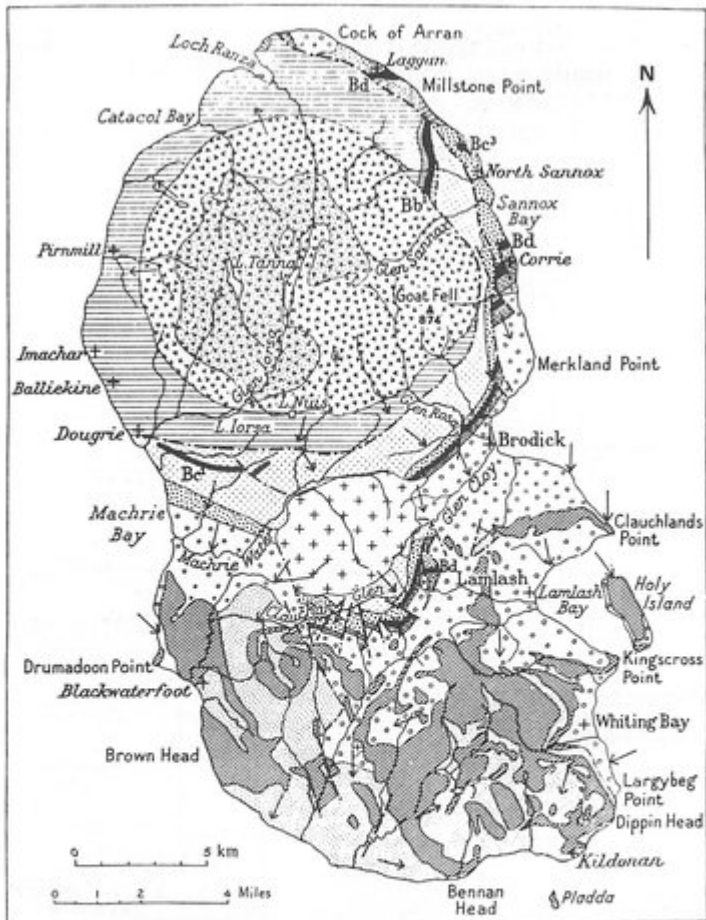
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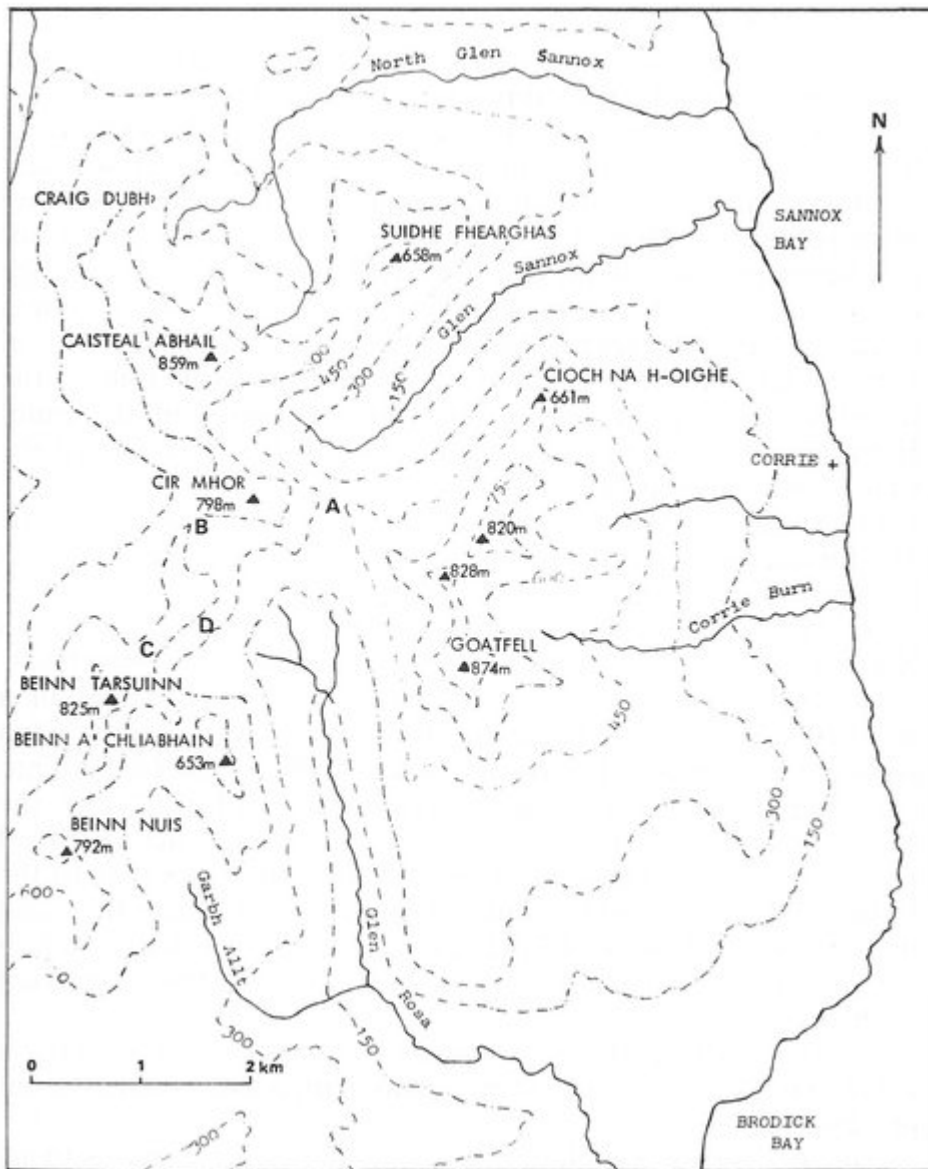
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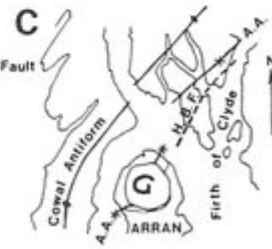
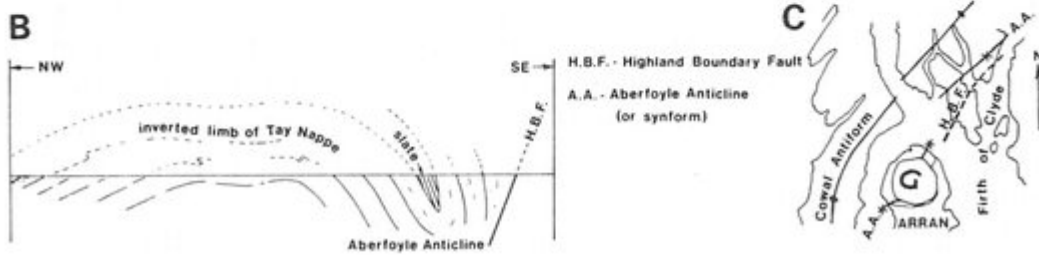
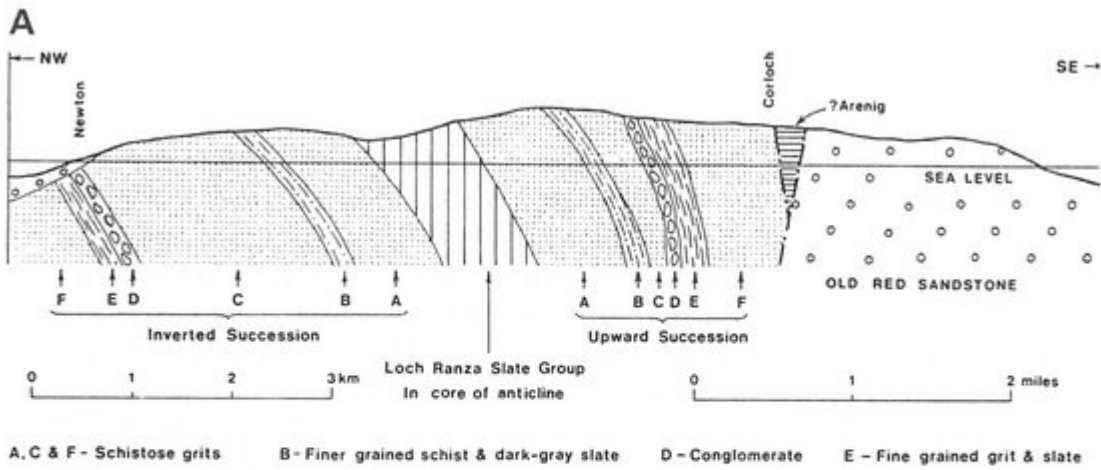
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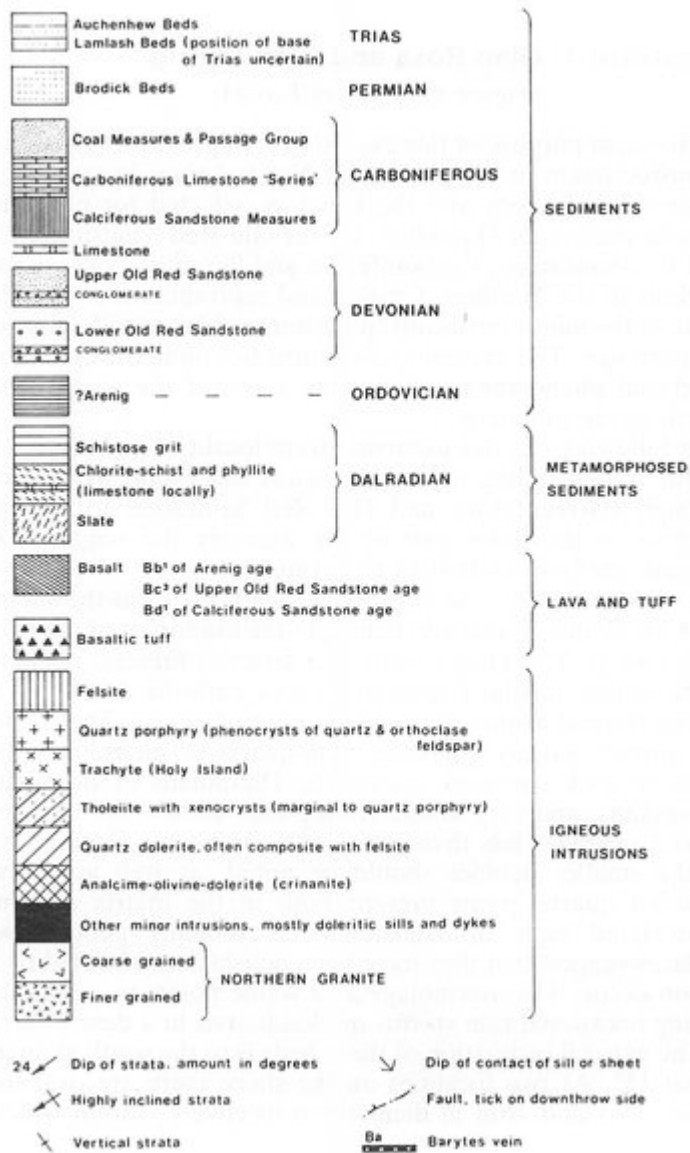
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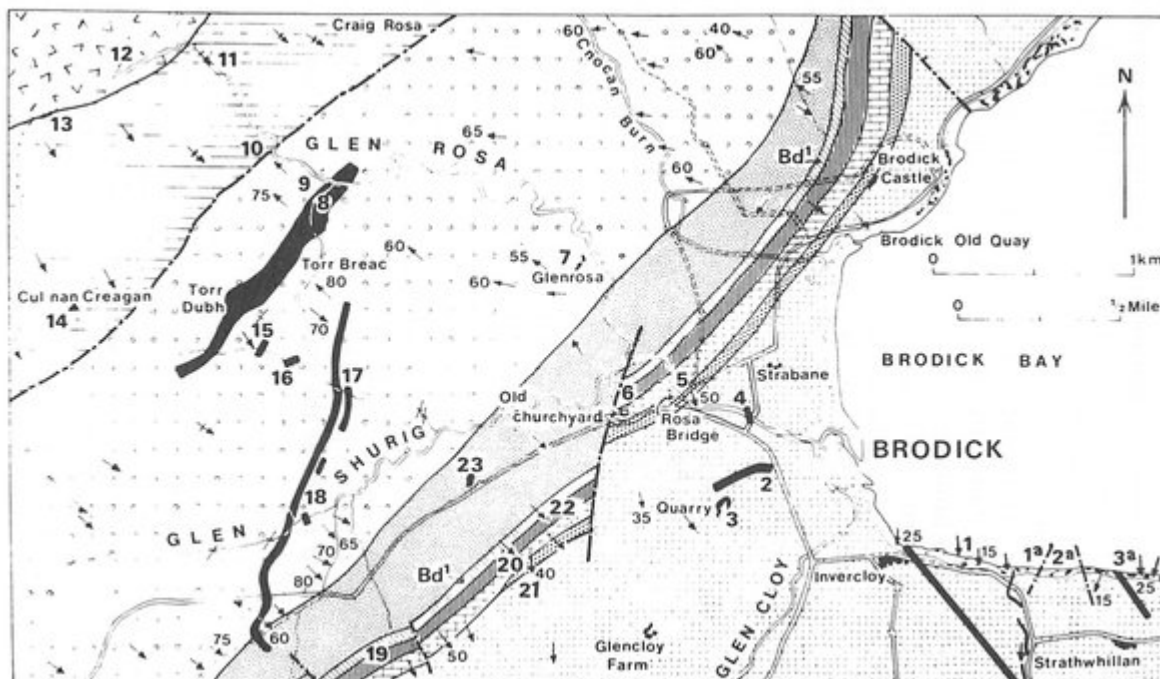
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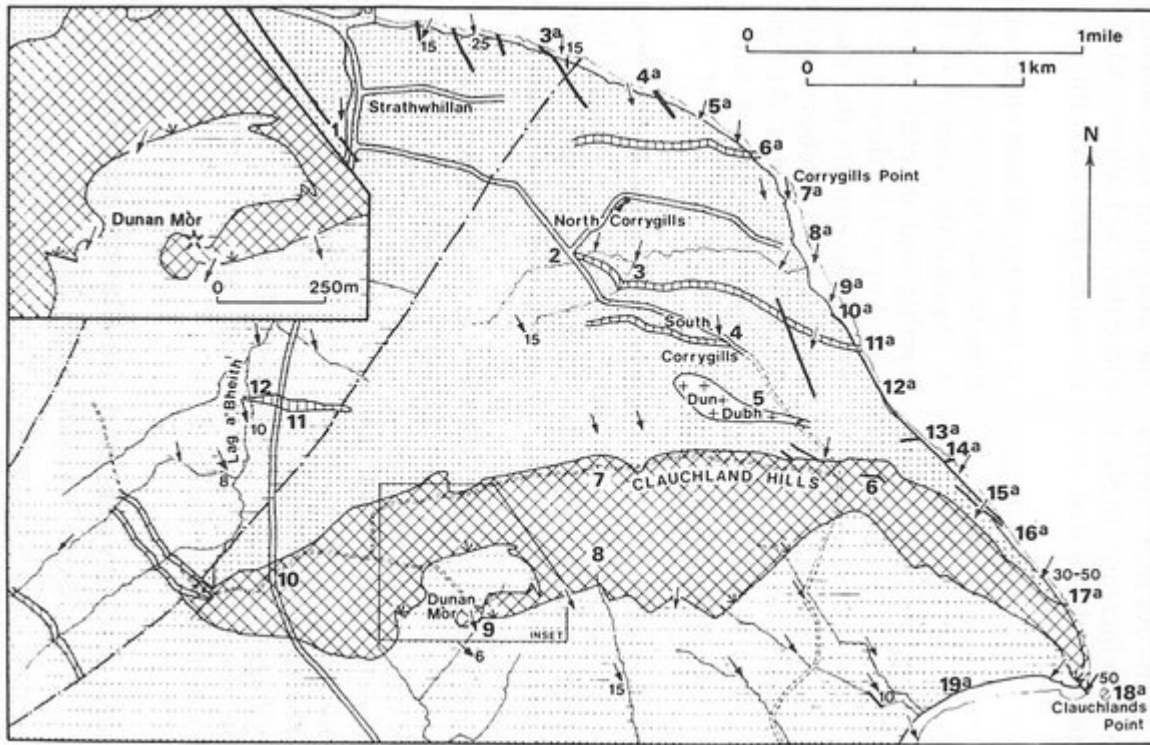
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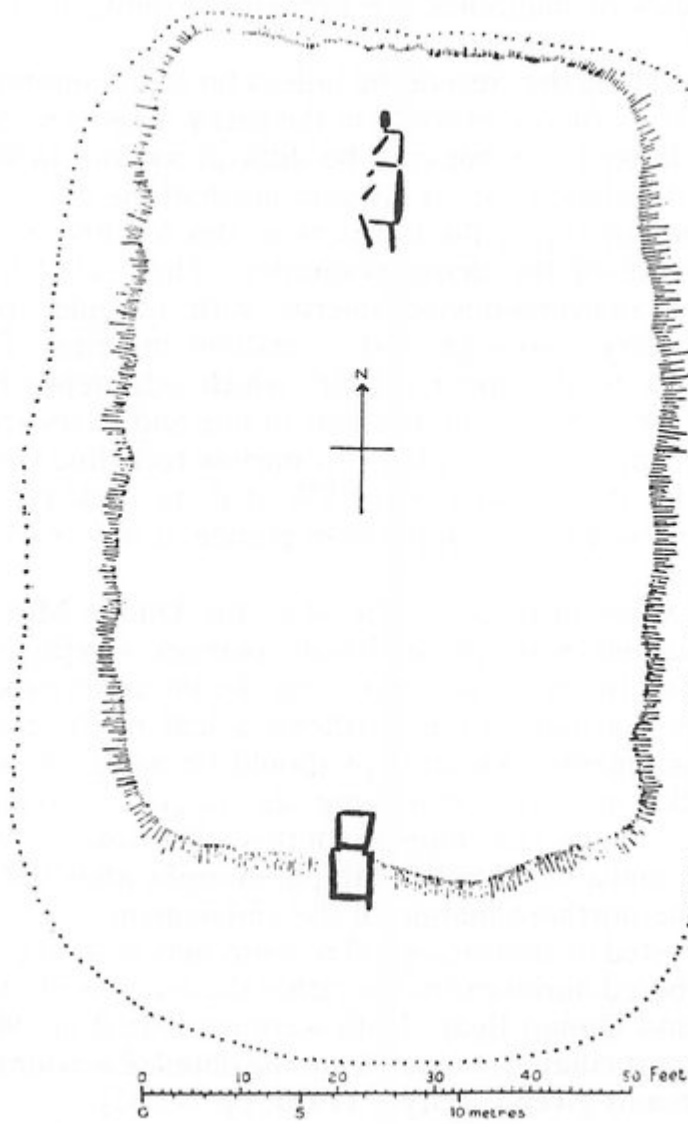
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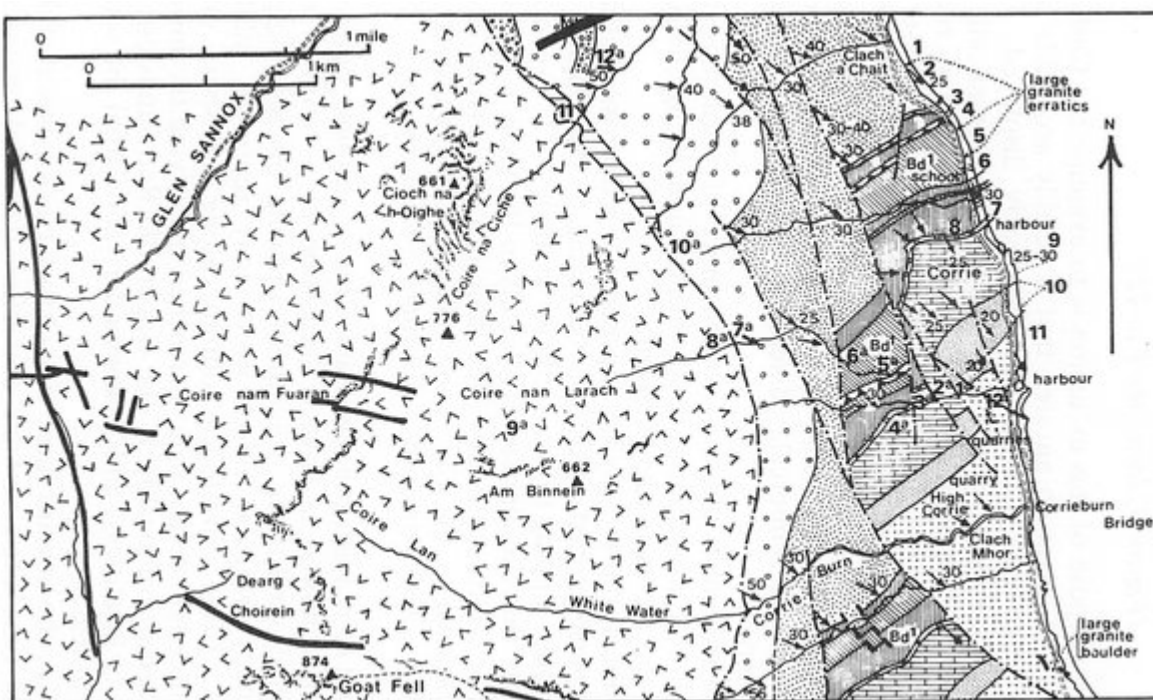
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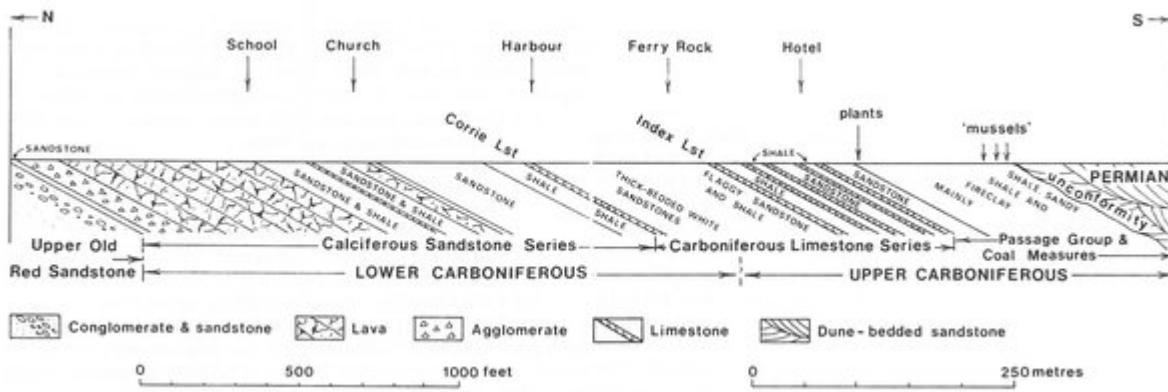
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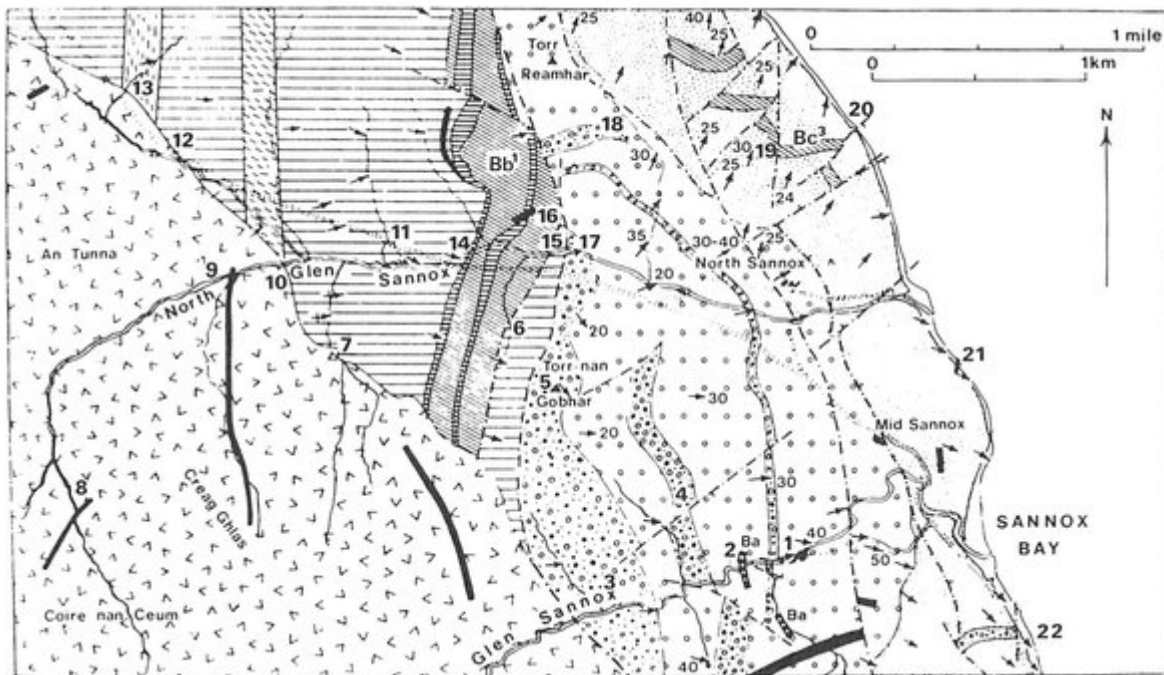
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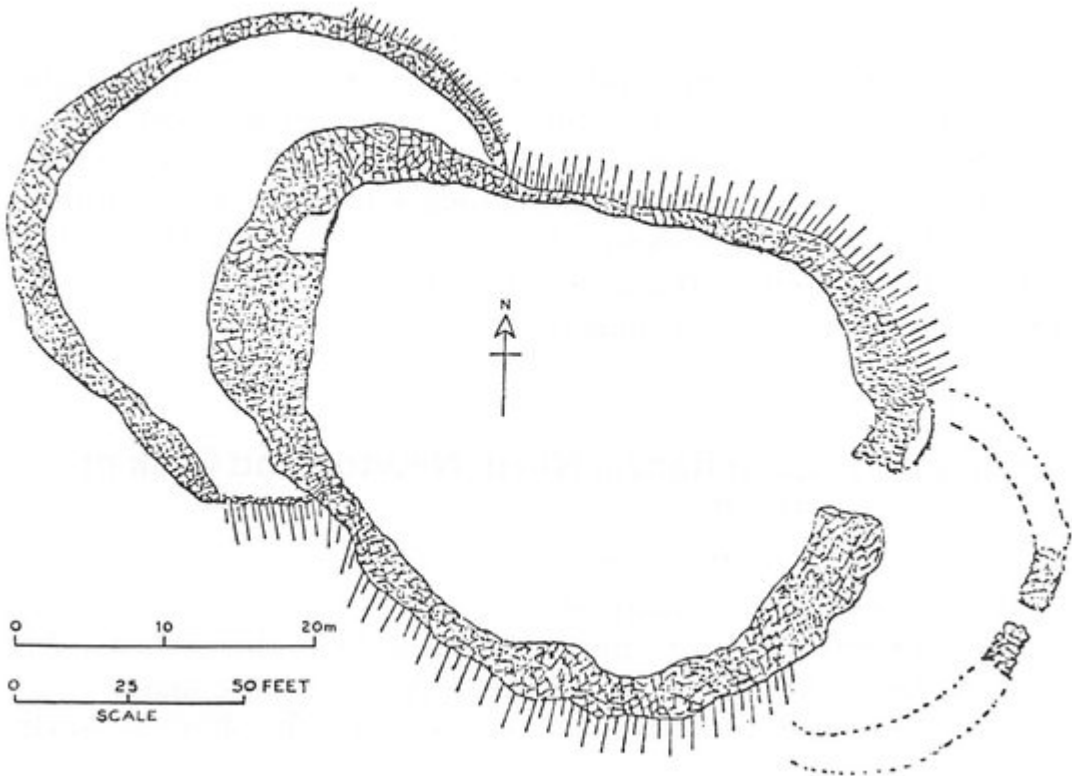
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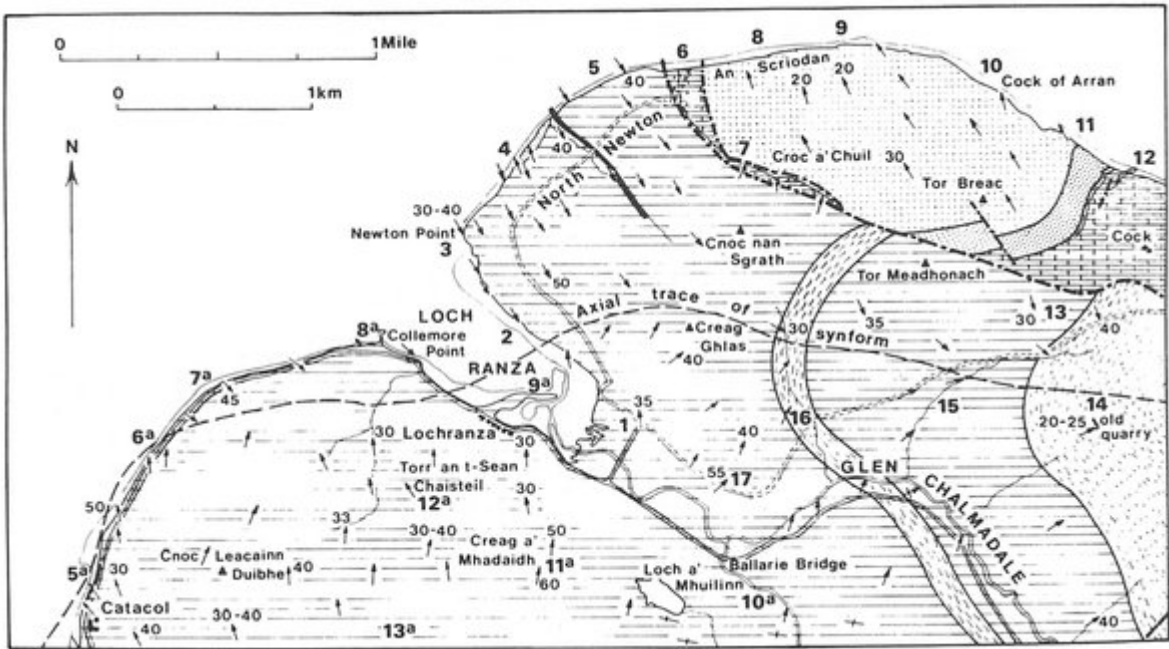
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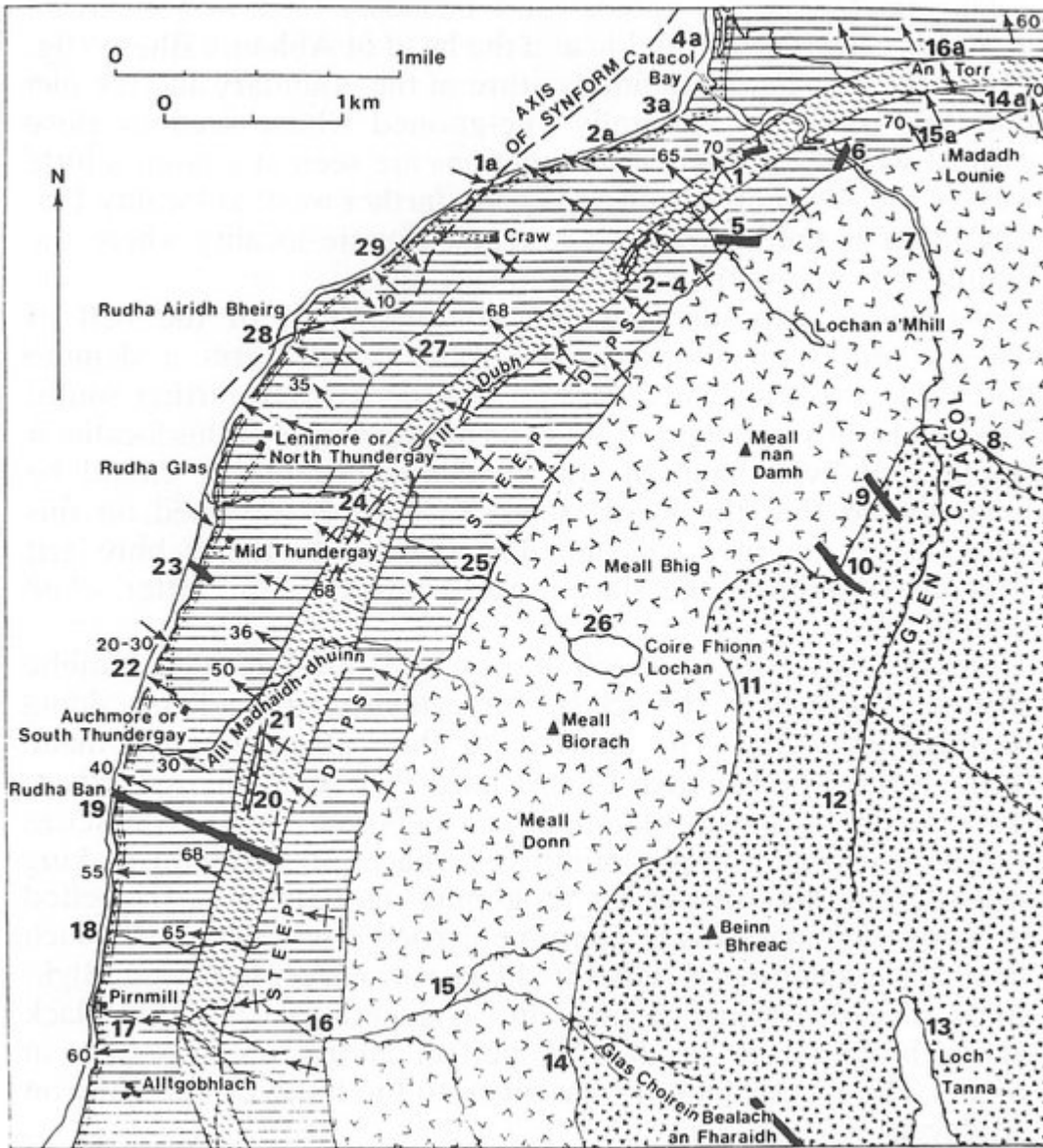
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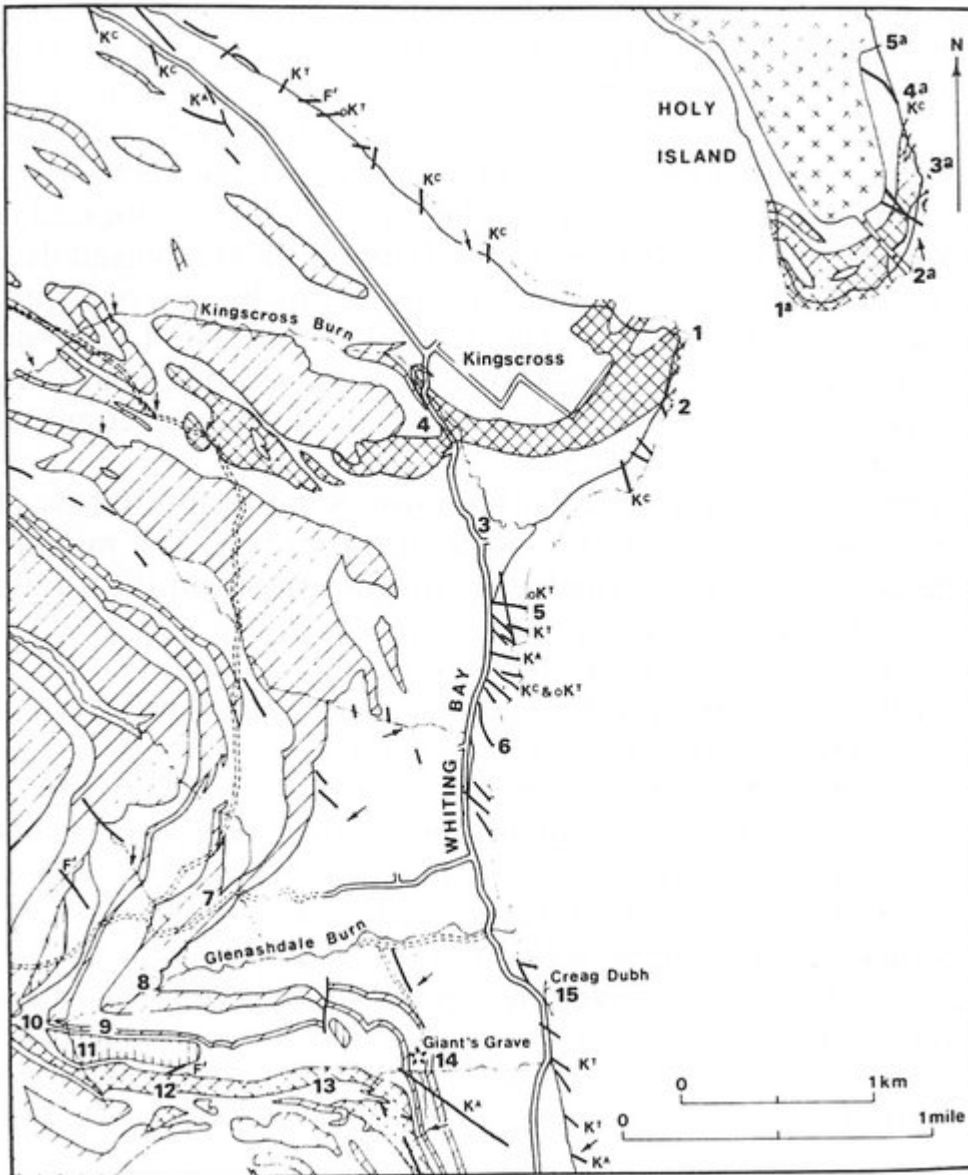
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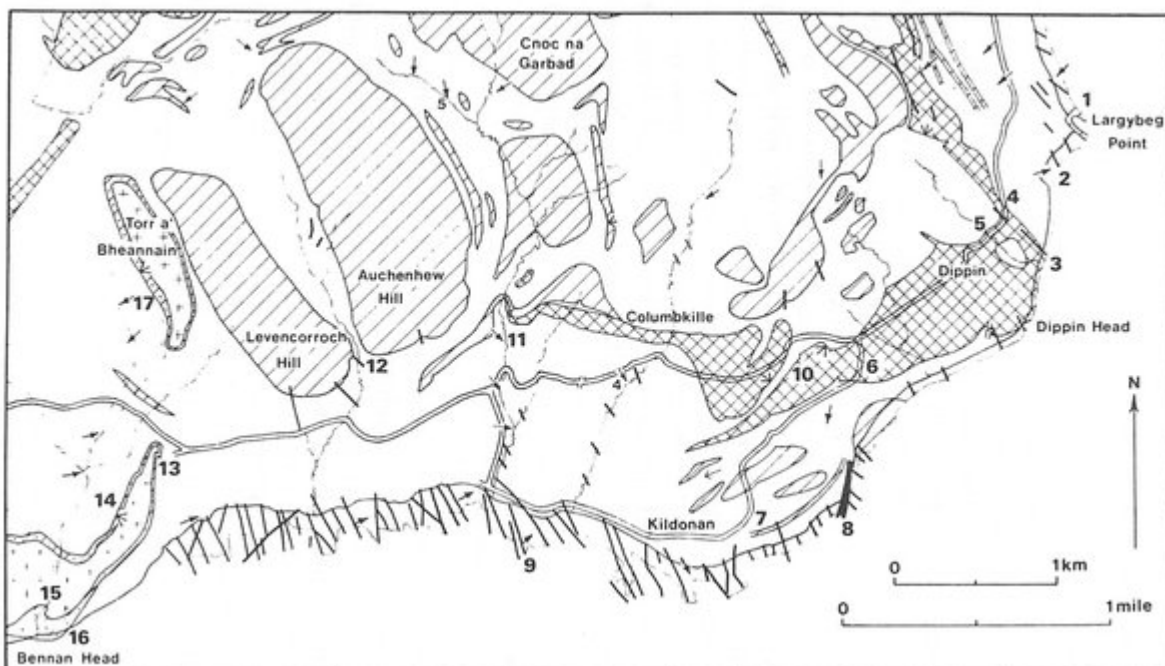
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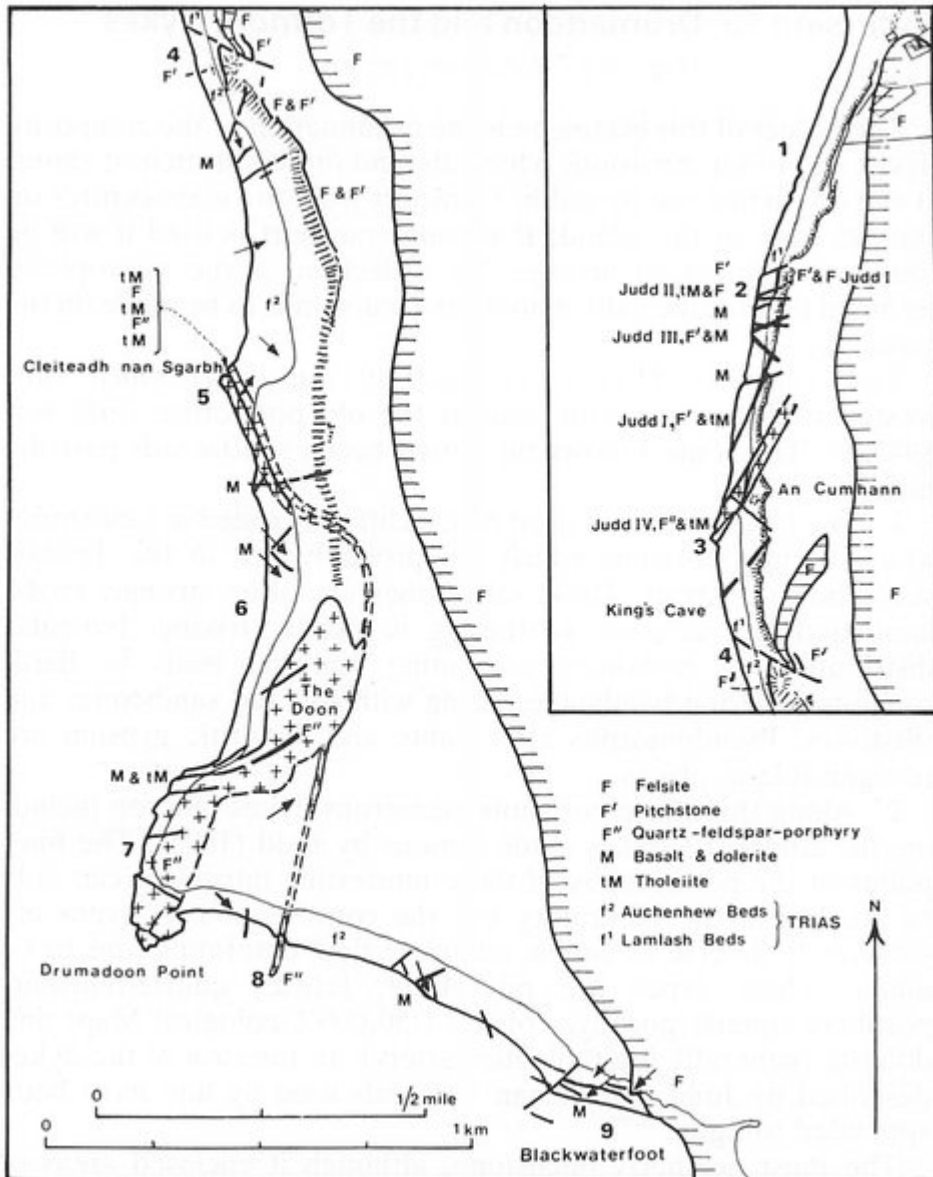
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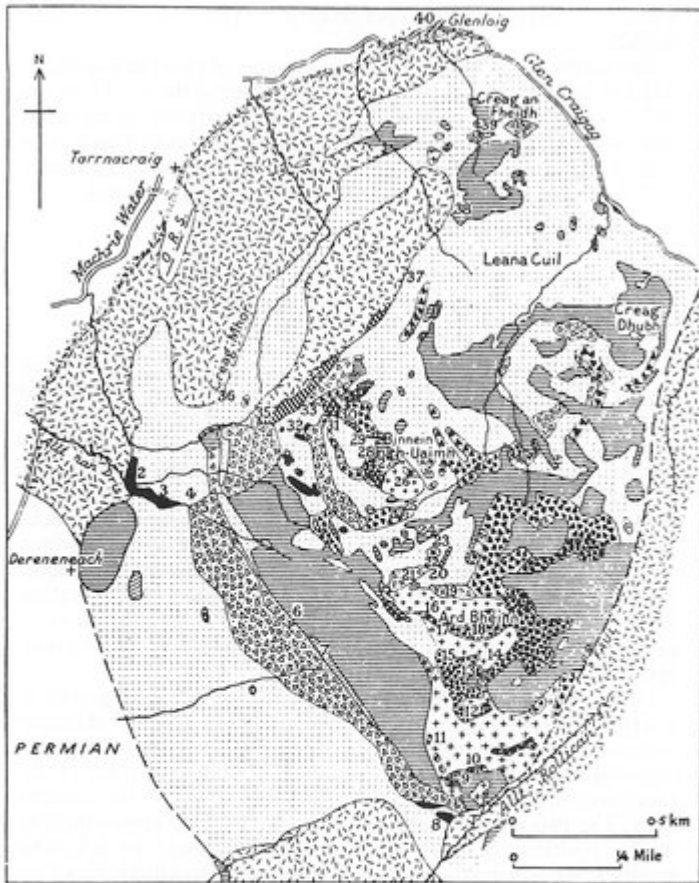
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








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|  FELSITE |  BASALTIC AGGLOMERATE |
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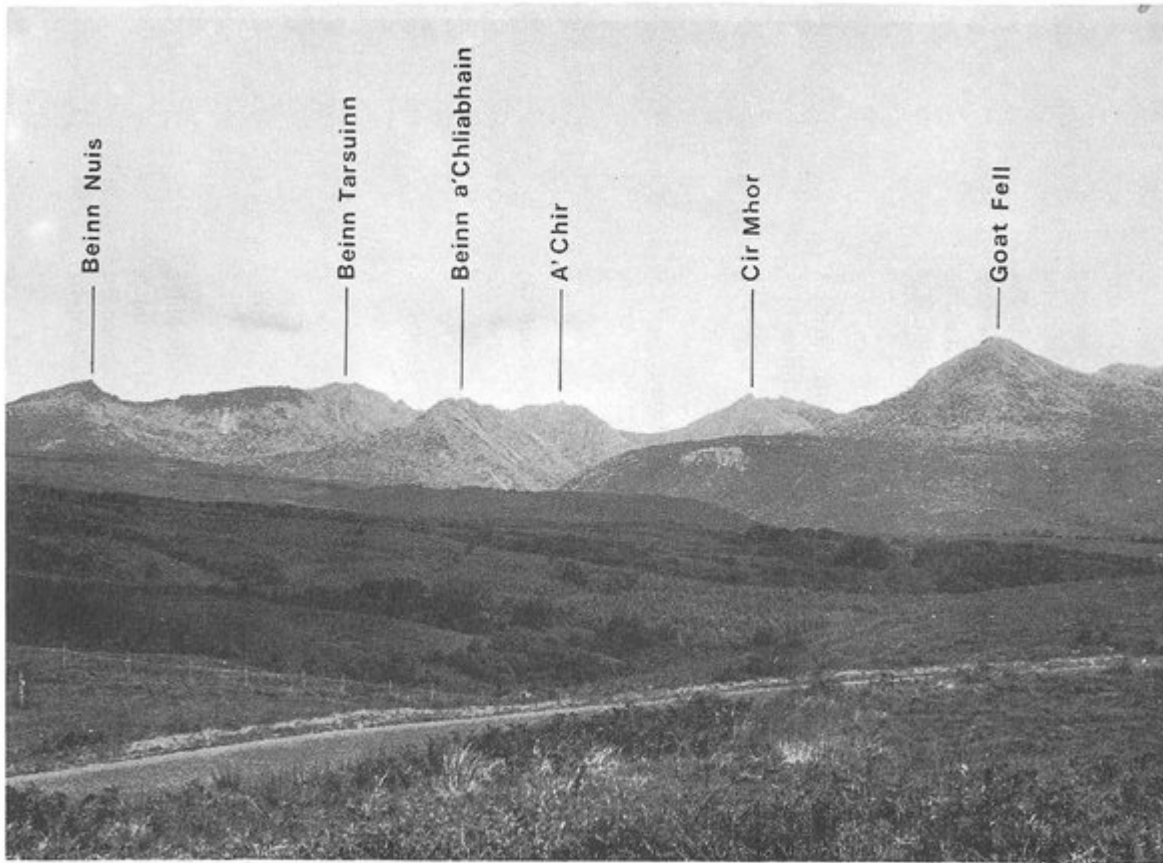


PLATE I. The Northern Granite Mountains. (*For explanation, see page 8*)

(Plate 1) The Northern Granite Mountains. (For explanation, see page 8)

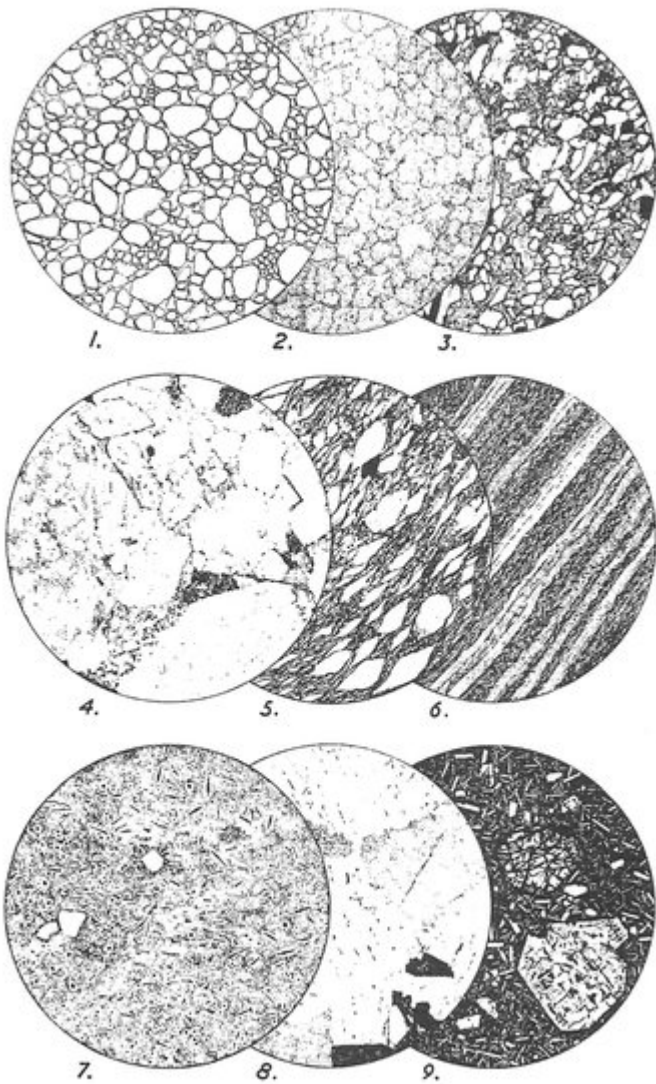


PLATE II. Micro-sections of some typical Arran rocks.

(Plate 2) Micro-sections of some typical Arran rocks. Fig. 1. Permian sandstone, old quarries at Corrie. x12. Grains of quartz, felspar and quartzite, the surfaces of which have been rounded by wind abrasion ("millet seed" grains), are coated and cemented loosely by limonite. Fig. 2. Lower Carboniferous Sandstone, south side of String Road, 915m SW of Brodick Church. x13. Angular grains of quartz (dusty with fluid inclusions) and of decomposed felspar and siliceous rock are loosely cemented by clay. Fig. 3. Lower Old Red Sandstone, shore cliff, 800m S of Dougrie. x 11.5. Angular and unsorted grains of quartz (clear), decomposed felspar (grey) fragments of mudstone, igneous rocks and oxidized iron ore are compactly cemented by the fine-grained waste of similar material. Fig. 4. Pebbly grit, Dalradian, near SE end of Creag Ghlas Laggen, North Arran. x 10.5. Fig. 5. Cleaved grit, Dalradian, shore 69m ESE of Loch Ranza pier. x9-5. The rock has been sheared. Quartz and quartzite pebbles have been deformed and ground away until their long axes lie parallel to the schistosity which is strongly developed by parallel orientation of the chlorite and muscovite flakes of the matrix. Fig. 6. Slate, Dalradian, old quarries on hillside 2.4km E of head of Loch Ranza. x 13. The paler and darker bands represent more silty and more clayey alternations of the original strata. Within the paler bands the effect of shearing can be seen in the development of a lenticular schistosity on a microscopic scale. Fig. 7. Pitchstone dyke, Schoolhouse, Brodick. x12. Small euhedral crystals of quartz lie in a matrix of rock-glass from which numerous crystallites of pyroxene have grown. In other parts the rock contains euhedral prisms of zoned plagioclase and pyroxene which are not shown in this figure. Fig. 8. Granite, Glen Rosa. x12. The rock is composed of oligoclase (showing straight cleavage lines), orthoclase (turbid), quartz (clear, with tiny inclusions and cracks), and biotite (dark, with straight close cleavage). A small prism of zircon lies on the left side of the topmost biotite. Fig. 9. Olivine basalt lava, Lower Carboniferous, Corrie shore opposite schoolhouse. x10.5. Euhedral phenocrysts of purplish augite (bottom right) and olivine serpentinized along cracks (centre) lie in a matrix composed mainly of plagioclase laths, augite grains, and iron ore granules.