
Chapter 11 Various dolerites and gabbros

Introduction

Such dolerite and gabbro-masses of Mull as are lettered eD on sheets 43, 44, and 51 are covered by the present chapter, with the exception of the Loch Uisg Gabbro (chapter 20) and two small intrusions outside the loch Bà Felsite at Coille na Sròine and Sròn nam Boc (Chapter 33). It will not be possible to refer to every occurrence, or to give a connected account of what is, after all, a heterogenous assemblage. The sequel is divided under two headings *Field-Relations* and *Petrology*, and, throughout, geographical classification is adopted for the sake of ready reference. All except two of the districts selected fall within Sheet 44.

There is good reason to believe that some of the intrusions considered here are of the same age as some of the lavas dealt with in preceding chapters. This is particularly true in regard to the small- and big-felspar dolerites shown in (Figure 22). E.B.B.

Field-relations

Dolerite-plugs, 'S Airde Beinn and Loch Frisa (Sheet 51)

One of the most interesting features of the north end of Mull is the volcanic plug which forms the hill of 'S Airde Beinn, about 3 miles west-south-west of Tobermory. Good illustrated descriptions have already been given by Prof. Judd (p. 46) and Sir Archibald Geikie. From the hills south of Loch Meadhoin, the plug is seen as a large knob of rock protruding with more or less vertical walls out of the surrounding almost flat lava-flows. What immediately strikes the eye from this point of view is the fact that the knob contains a central depression, the site of a picturesque lochan. There is little wonder that this hollow is often wrongly interpreted as the crater of an extinct volcano. If one approaches the hill from the northeast, the intrusive nature of the mass is well demonstrated by the fact that the edges of several flows of basalt are seen to terminate abruptly against the vertical wall of the plug.

Let us now examine this intrusive mass in detail. It is found to run north-north-west, with a maximum length and breadth of 950 and 430 yds. respectively. Except for a short distance at the south-eastern corner, where the overflow-stream from the loch emerges, it has an almost vertical wall of complex nature. On examination, the material which forms the outer edge of this wall is seen to consist of a fine-grained hard splintery rock, which in places shows good amygdaloidal structure. Under the microscope, this outer portion proves to be the same type of basalt as that of the surrounding lava-flows, only in an altered condition due to its having been baked by the intrusion of the volcanic plug. No abrupt junction can be seen between this altered basalt and the dolerite of the plug; in fact, the one passes almost insensibly into the other. Apparently the temperature of the molten dolerite in the plug was sufficient to melt up the edge of the adjoining basalt-lava, with a consequent local mingling of material from the two sources. The dolerite, followed in from its edge towards the loch, is seen to become gradually coarser in grain for a certain distance, and then to retain an almost uniform texture throughout.

The origin of the central loch now demands our attention. No rock except dolerite is exposed near its margin, and this dolerite is not different in composition from that 20 yds. or so away from the edge of the loch; nor are any fragments of ashy material exposed along the shore. The only visible reason for the presence of the loch is the occurrence of a north-north-west line of fracture, which can be traced for miles across the country, and is well seen, in a cleft, on the northern face of the hill. At the south-east end, the stream from the loch emerges through an opening along the same line of fracture, so that in all probability the hollow of the loch has been eroded in a belt of shattered dolerite determined by faulting.

A mile and a half north-north-west from 'S Airde Beinn, and on the south side of the road leading from Tobermory to Glengorm Castle, a small plug forms a prominent crag known as Cnoc a' Chrocaire. It is only about 100 yds. in diameter, and is cut by a thin dyke and an irregular sheet of fine-grained dolerite.

In the other direction, a mile and a half south-south-east of 'S Airde Beinn, there are two more small plugs of dolerite outcropping above Loch Frisa. The more southerly is interesting as showing good almost horizontal columns. It is a medium to coarse-grained dolerite. G.V.W.

Dolerite-plugs, Dùn Mòr, Ulva Ferry (Sheet 43)

Two small dolerite-plugs occur a mile east of Ulva Ferry. The larger of them constitutes Dùn Mòr, a very conspicuous landmark contrasting strongly with the terraced lavas of the neighbourhood. The dolerite of Dùn Mòr is fairly coarse. That it is a plug is clear from its appearance as a whole, but no satisfactory junctions are exposed in confirmation of this interpretation. In fact, on its western side, a part of the dolerite can be seen at one point (under a little 2-ft. basalt-sill, which cuts it) resting with an unchilled base upon basalt-slag, just as if it were a lava. A combination of intrusive and superficial characteristics is, of course, a common feature in vent-intrusions.

E.B.B.

Dolerites and gabbros of Ben More (Sheet 44)

On Ben More, a few small masses of early dolerite, or gabbro, are lettered eD on the one-inch Map. They are generally of more or less sheet-like form, but are much thicker and more laccolithic than the later sheets of the neighbourhood lettered D on the Map and described later on in Chapter 26.

Gabbro of Beinn nan Lus (Sheet 44)

There is little to be said about the two small outcrops of gabbro mapped on Beinn nan Lus, beyond the fact that the rock is of early date as compared with the Beinn a' Ghràig Granophyre (Chapter 27) with which it is in contact.

Beinn na Duatharach and other gabbros and dolerites within North-West Caldera (Plate 5 and Sheet 44)

There are several groups of gabbro and dolerite outcrops within the North-West Caldera outlined on (Plate 5) (p. 165). On the north-east side, the more important masses occur at A' Bhog-àiridh and Beinn na Duath-arach; and on the south-east side, on Bith-bheinn and west of Clachaig Cottage. All these masses have suffered conspicuous alteration, and in the majority of cases are cut at one point or another by the Glen Cannel Granophyre of Chapter 31. W.B.W.

Dolerites and gabbros, Coire Mòr, Maol Uachdarach and Beinn Talaidh (Sheet 44)

A considerable mass of coarse dolerite or fine gabbro, cut to ribbons by Late Basic Cone-Sheets (Chapter 28) reaches in a south-east direction from Coire na Lice Duibhe along the top of Coire Mòr into Beinn a' Mheadhoin. It is of finer texture than the neighbouring Corra-bheinn Gabbro.

What may be part of the same mass of dolerite reappears along the summit of Maol Uachdarach where it is locally broken up to yield agglomerate. Its exposures show it cut by Late Basic Cone-Sheets running east and west, and by ring-dykes (Chapter 29) running north and south. The dolerite gives rise to little crags and thus greatly assists in the mapping of the ring-dykes. J.E.R.

On the one-inch Map, Sheet 44, a marginal line is inserted including within its scope the summit of Beinn Talaidh, and bounding, an area where lenticles of dolerite are found between the prevalent cone-sheets of the mountain. The fullest exposures are on Maol nam Fiadh, where the dolerite, though sometimes strikingly vesicular, shows a chilled contact against neighbouring porphyritic lavas ((Figure 53), p. 312).

An outcrop of gabbro, two-thirds of a mile north-west of Beinn Talaidh summit, is a black and white gabbro like much of the Beinn Bheag mass (Chapter 22), of which very likely it is an isolated part.

Separated from Beinn Talaidh by the pass connecting Glen Forsa with Glen More, one may note two strips of dolerite on the slopes of Beinn Bhearnach, one mile west-south-west of the summit of Sgùrr Dearg. The more north-easterly band is

a dark rock that may fairly be classed as fine gabbro. It is interesting because in clear exposures it may be seen breaking up to yield neck-agglomerate.

Small-Felspar Dolerites between Allt nan Clàr and Sgùrr Dearg (Sheet 44)

A group of dolerites characterized by small felspar-phenocrysts will now be considered (Figure 22). They correspond in character, and probably in age, with neighbouring lavas of Central Type (Chapter 9). Their field-relations show that they are sometimes sills, and sometimes plugs.

A large outcrop occurs in Allt nan Clàr. It is intensely cut up by cone-sheets as shown on Sheet 44, and it is of coarse crystallization so that it is not easy to separate it from the Beinn Bheag Gabbro ((Figure 37), p. 244).

More interesting are smaller outcrops on the north-east slope of Beinn Bheag. The small-felspar dolerite occurs here as massive sills intruded into fine Tertiary sediments (p. 66). The dolerite and sediment are broken up as they approach vent-agglomerate exposed on their north-east side.

A large mass of small-felspar dolerite runs roughly parallel with Abhuinn an t-Stratha Bhain. It is chiefly noteworthy as having yielded blocks constituting a very prominent median moraine in Glen Forsa.

Several small occurrences may be noted in the gneiss north of Sgùrr Dearg. They are so baked and crushed that it is certain they are of an earlier date than the neck-agglomerate of the Sgùrr Dearg vents (Chapter 16).

Big-felspar gabbros and dolerites between Sgùrr Dearg and Loch Spelve (Sheet 44)

Continuing the same line as the small-felspar dolerites just described, comes an equally definite suite of big-felspar gabbro and dolerite intrusions (Figure 22). They correspond in character, and probably in age, with the big-felspar basalt-flows found near the top of the lava-pile in the Coire Mòr Syncline close at hand (p. 121). They occur both as sills and plugs.

The more conspicuous masses of big-felspar gabbro are closely associated with the Moine gneiss of Sgùrr Dearg ((Figure 30), p. 204), and are themselves so terribly crushed, that it is necessary to state the evidence for the Tertiary age of the suite. It is as follows:

Mesozoic sediments sometimes intervene between the gneiss and the gabbro even where these two occur close together; a tongue of the gabbro—or dolerite—clearly chills against Tertiary lavas on Beinn Bheag ((Figure 30) and (Figure 35), pp. 204, 237) minor masses occur well out in the lava-area—two of them at An Eiligeir intruded with chilled margins into a larger plug of non-porphyrific dolerite; and finally, as already stated, finer-grained, but otherwise identical, rocks are found as characteristic members of the Tertiary lava-sequence.

The evidence for a relatively early date of intrusion is afforded by the crushing and alteration shown by the outcrops at Sgùrr Dearg, and also by the fact that the rocks of these outcrops are clearly older than the vent-agglomerates of the neighbourhood. This last point will be dealt with in detail in Chapter 16. Here it may be added that, along with the Sgùrr Dearg agglomerates, the big-felspar intrusions are cut into lenticles by early Basic Cone-Sheets (bl. of one-inch Map).

In its more important exposures, the Sgùrr Dearg Gabbro behaves as a sill intruded into the Mesozoic rocks ((Figure 35), p. 237). In other cases, the rock seems to occupy small necks.

If it is correct to refer the Sgùrr Dearg Big-Felspar Suite of gabbros and dolerites to the period that produced the big-felspar basalt-lavas of the Coire Mòr Syncline (p. 121), then of course it follows that the non-porphyrific dolerite forming the main part of the An Eiligeir Plug must also correspond in date to lavas that are still preserved to us in Mull. E.B.B.

Petrology

Dolerite plug of 'S Àirde Beinn

The rock forming this mass ([S18064](#)) [NM 4717 5393] is a remarkably fresh dolerite composed of olivine, augite, labradorite, and magnetite. The olivine is either fresh or partly converted into bright-yellow iddingsite. It is a moderately abundant constituent, builds fairly large irregular individuals, and appears to be in part of earlier and in part of later generation than the feldspars. The feldspar is a zoned basic labradorite that occurs in somewhat small stumpy crystals, two or three times as long as they are broad, and is ophitically enclosed by large crystals of slightly titaniferous augite. A second generation of augite of acicular habit, and in close association with minute crystals of magnetite, occurs in a chloritized residuum that fills all interspaces between the feldspars not already occupied by the earlier ophitic augite.

This rock, in its feldspathic nature and in the mode of occurrence of the augite, has points that connect it genetically with some of the pillow-lavas of the Central Region (Chapter 9). Specimens illustrating its metamorphic action on the basalt-lavas with which it is in contact are easy to obtain ([S18065](#)) [NM 4700 5366], ([S19268](#)) [NM 4713 5416], and they show that the dolerite has produced more or less complete granulitization of the older rocks. In a compact basalt ([S18065](#)) [NM 4700 5366], much granulitic augite has been formed, biotite has been produced around iron-ores, and there has been thorough recrystallization of the feldspar-microlites.

In another specimen, amygdaloidal basalt ([S19268](#)) [NM 4713 5416], the granulitization is equally well-marked, and lime-zeolites that occupied the vesicular cavities have, in all cases, been converted into feldspar of corresponding composition.

Dolerites and gabbros of Ben More

An interesting rock from a point 530 yds. north-west of Ben More summit is a coarse olivine-dolerite ([S17145](#)) [NM 5215 3352] allied to the Big-Feldspar Dolerites subsequently described (p. 164). It is noteworthy for the rich colour of its large ophitic titaniferous augite-crystals. The augite is a pale-plum colour and has crystallized from a magma rich in titanium in close association with large crystals and plates of titanomagnetite and ilmenite. It is usually fringed by a narrow zone of green hornblende, a mineral which also enters into the composition of the pseudomorphs after olivine. The feldspar is labradorite and occurs as large, occasionally well-formed, crystals.

Gabbro of Beinn nan Lug

The more westerly mass ([S17983](#)) [NM 5887 3918] is an olivine-gabbro. It is composed of yellowish brown augite in coarse ophitic relation to labradorite feldspar that is zoned with oligoclase and strung with albite. The feldspar appears to have separated in two stages, first as relatively small crystals of more basic composition often entirely surrounded by augite, and later as less basic crystals of larger size on which the augite, with its early feldspar-inclusions, is only marginally moulded. The olivine is represented by somewhat ill-defined pseudomorphs in serpentine, the peripheral portions of which, and to a less extent the interior, have been converted into green fibrous hornblende. Occasionally better-formed pseudomorphs are entirely enclosed by augite.

The more easterly outcrop ([S14702](#)) [NM 5988 4049], ([S14703](#)) [NM 5952 4044], ([S14704](#)) [NM 5946 4047] is, similarly, a coarsely ophitic olivine-dolerite or gabbro. Original augite has been largely converted into fibrous green hornblende and the labradorite albitized. This rock has come within the metamorphosing influence of the later Beinn a' Ghràig Granophyre. The augite where it shows most change ([S14704](#)) [NM 5946 4047] has given rise to fibrous hornblende and magnetite. A fine-textured vein, probably a crush, traverses the slide, and shows the effects of metamorphism more markedly, for it has been transformed into a mass of small fibrous and ragged crystals of pale pyroxene. In addition, a calcareous patch, the original nature of which is obscure, has given rise to a fine-grained aggregate of pale brownish garnet and leek-green pyroxene, surrounded by an indefinite zone of diopside. The assemblage of minerals and their mode of occurrence is similar to that observed in certain metamorphosed amygdales encountered in the lavas of An Gearna and elsewhere (p. 152).

Beinn na Duatharach Gabbro of the North-West Caldera

(Anal. II.; (Table 6), p. 24).

This mass is represented by the analysed rock ([S14846](#)) [NM 5959 3684], p. 24) and other specimens. It is a moderately fine-grained gabbro that originally contained olivine and has a fairly coarse ophitic structure developed between diallagic or normal augite and large plate-like crystals of zoned labradorite. The feldspars are strongly zoned and much twinned, pericline lamellation being a striking feature. Emenite passing into leucoxene is the only note-worthy accessory.

The rock locally shows signs of crushing, disruption ([S14565](#)) [NM 6016 3685], ([S14566](#)) [NM 6017 3683], and widespread chloritization.

Contact-alteration, probably by the Glen Cannel granophyre, has affected the rock subsequently to its crushing to a variable degree. Serpentine, that formerly was present both as pseudomorphs after olivine, and as interstitial growths between the feldspars, has, in the lower grade of metamorphism, yielded epidote, chlorite, and hornblende ([S14707](#)) [NM 6033 3622]. In the more intensely altered rocks, the olivine's decomposition-products have been transformed into a fine-grained aggregate along with red-brown biotite, green hornblende and recrystallized magnetite ([S14846](#)) [NM 5959 3684]; while crushed augite has been granulitized ([S14706](#)) [NM 5957 3681].

The chemical relationship of the Gabbro to the Porphyritic Central Lavas of Mull and the Cuillin Gabbro of Skye is discussed in Chapter 1. (p. 24).

Bìth-bheinn dolerite within the North-West Caldera

A mass on the northern face of Bìth-bheinn ([S17131](#)) [NM 5822 3500] differs from those described above in its obvious relationship to the quartz-dolerites and tholeiites of Talaidh Type (Chapter 28). It is a moderately fine-grained rock and consists of a hypidiomorphic to stoutly columnar augite in association with abundant magnetite and somewhat elongated crystals of labradorite. The feldspar is turbid with decomposition-products and has suffered considerable albitization. In more acid fine-grained patches, all the recognizable feldspar is albite, while augite is represented by secondary hornblende.

Dolerites West of Clachaig within the North-West Caldera

A small mass ([S15568](#)) [NM 5636 3599] at the head of the stream to the south-west of Clachaig is of a somewhat unusual type in that it has a strongly developed microporphyritic character. Its larger constituents are augite and labradorite: the former is usually turbid with finely divided magnetite, and is ophitically intergrown with its companion which occurs as more or less isolated crystals strongly zoned with oligoclase and perthite. These larger constituents are enveloped by an acid matrix of fine texture, which has produced some disruption of the more coarsely crystalline portions of the rock, and consolidated as a mixture of perthite, micropegmatite and free quartz, the last-named in well-defined clear patches. Apatite is abundant throughout the rock as fairly large crystals but shows an abnormal concentration in the acid matrix. It would appear that we are here dealing with a gabbro that has been acidified by the incorporation of granophyric matter such as is discussed later in connexion with rocks of hybrid character (Chapter 33). The rock exhibits evidence of contact-alteration by the Glen-Cannel Granophyre, more particularly in the acid matrix, where finely divided iron-ore has recrystallized, while abundant minute scales of biotite and fibres of green hornblende have formed at the expense of chlorite.

A larger mass, west of Clachaig ([S17125](#)) [NM 5621 3690], presents characters that ally it to the Talaidh Type of intrusion and is best described as a quartz-dolerite. It consists of a hypidiomorphic slightly titaniferous augite that occasionally shows traces of salitic lamellation; elongated, once-twinned, crystals of zoned labradorite; fairly abundant iron-ore; and a fine-grained chloritized matrix of more acid character. The matrix shows signs of contact-alteration in the development of a fibrous secondary hornblende.

Small-feldspar dolerites of (Figure 22)

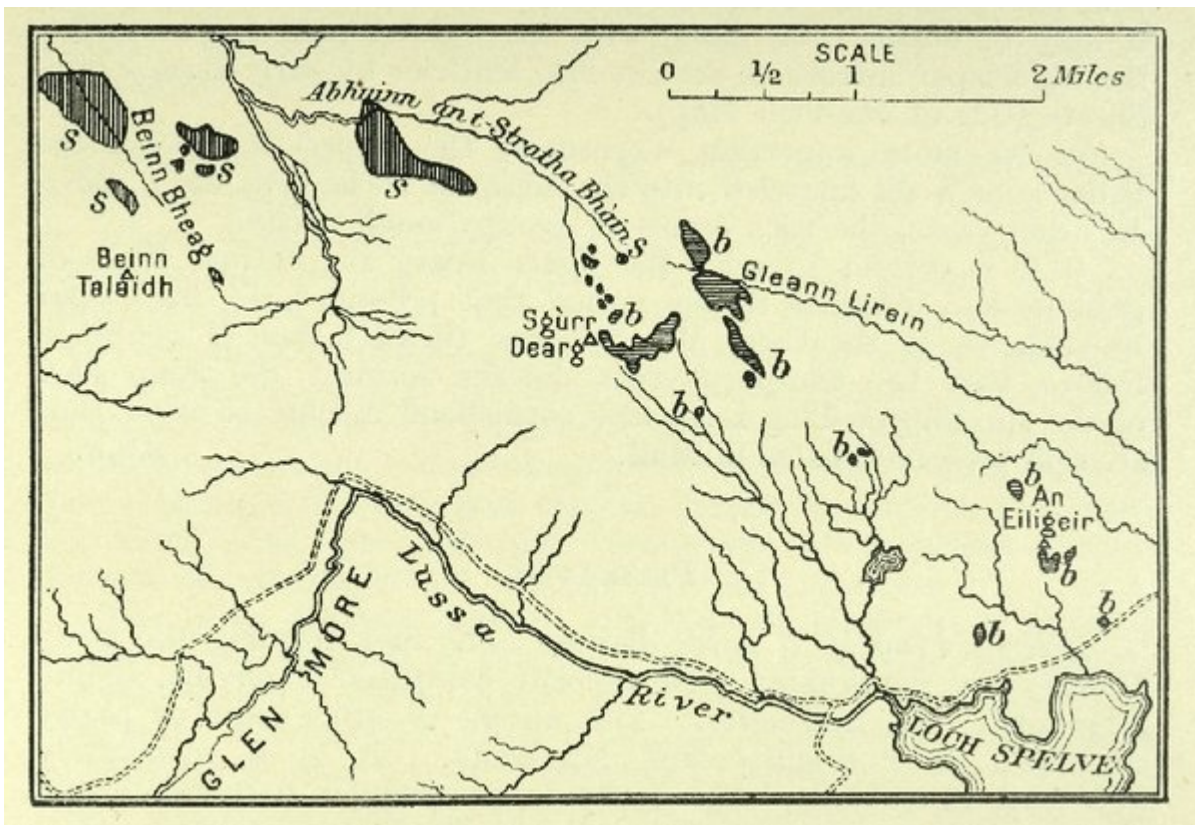
This 'small-felspar' group of rocks is chiefly remarkable for reproducing, in some cases, the petrographical peculiarities of the porphyritic pillow-lavas of the central region (p. 150). As exemplified by the interior of an intrusion to the north-west of Sgùrr Dearg ([S16472](#)) [NM 6557 3545], these rocks show a closely packed assemblage of moderately well-formed crystals of zoned and partially albitized bytownite-labradorite, in a variolitic matrix composed of long narrow crystals of a titaniferous augite, finely divided iron-ore, a little plagioclase and a chloritized residuum (Figure 23). In the chilled margins of these rocks ([S18652](#)) [NM 6340 3561], the porphyritic crystals are of an identical character, but the matrix has solidified as an aphanitic mass, no doubt originally glass, in which all crystalline structure is suppressed.

Coarser representatives of the same group are genuine ophitic dolerites. An example from Allt nan Clàr ([S14356](#)) [NM 6218 3634] is composed essentially of equal proportions of labradorite and augite in ophitic relationship. Occasionally the augite shows a distinct lilac tinge due to the presence of titanium. The rock contains a little enstatite associated with the augite, and also large plates of ilmenite ([S18654](#)) [NM 6220 3629].

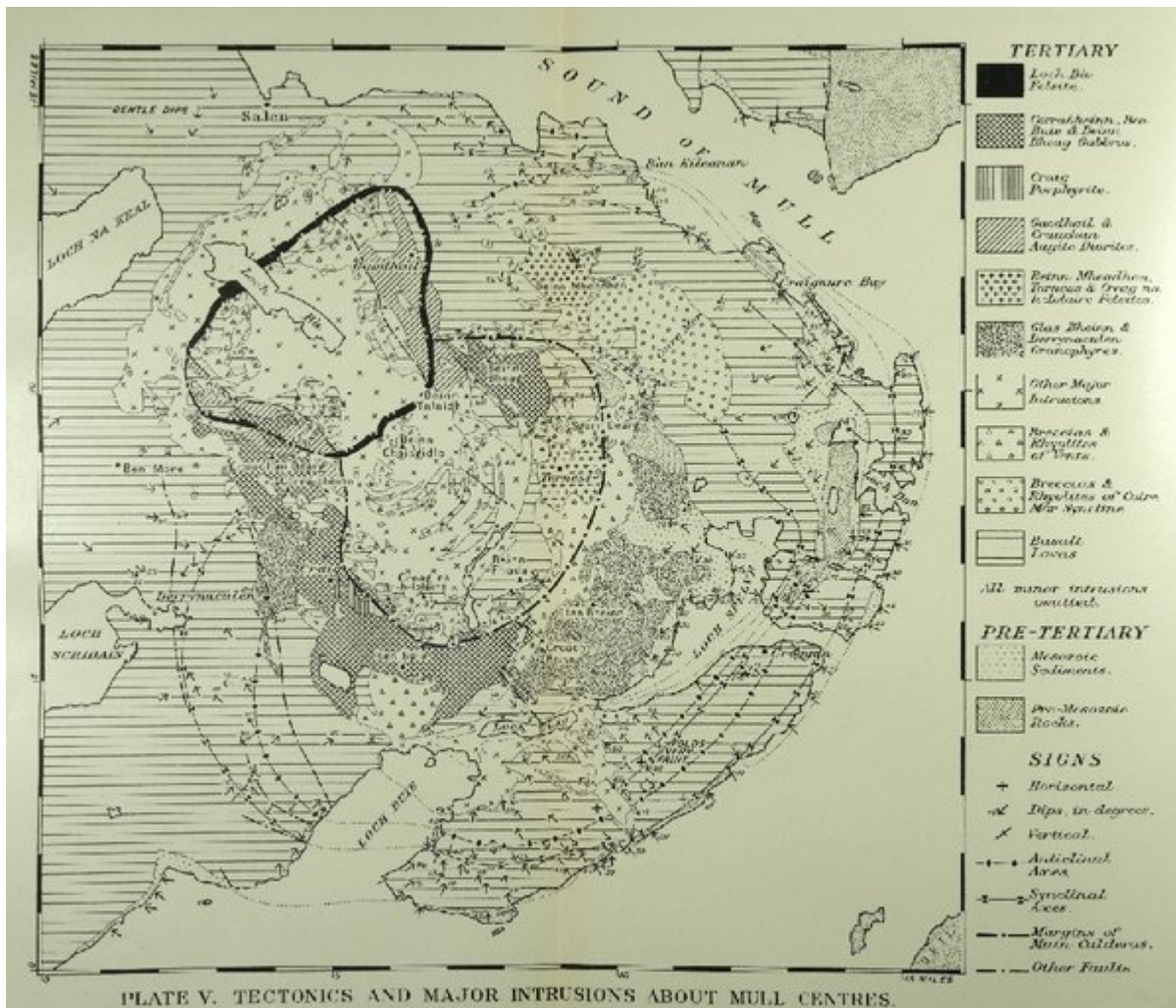
A small mass on Cruach Choireadail ([S17199](#)) [NM 5924 3056], not included in (Figure 22), is mainly of the coarsely ophitic dolerite type described above; but, locally, it shows a tendency to develop a variolitic structure.

Big-felspar dolerites and gabbros of (Figure 22)

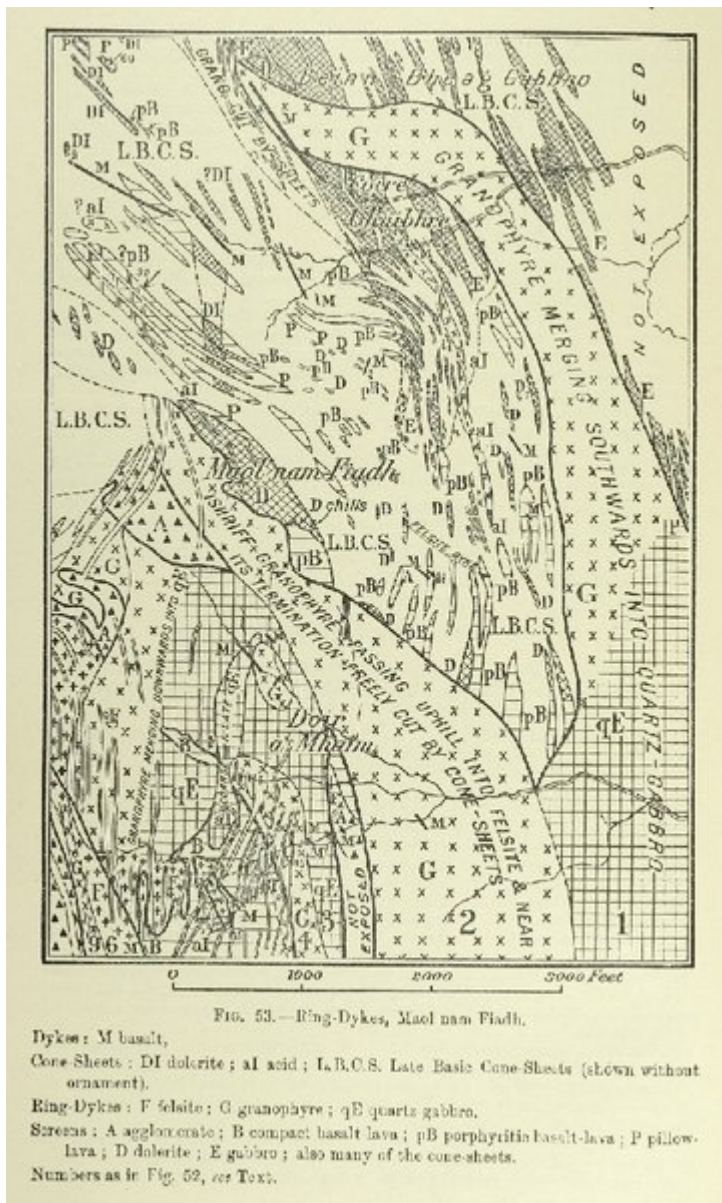
The distribution of these rocks is shown in (Figure 22). As represented by the intrusion one-third of a mile east of the summit of Sgùrr Dearg ([S16006](#)) [NM 6685 3384], they are coarsely crystalline rocks that the microscope shows to be composed of large crystals of zoned and partially albitized labradorite, ophitic slightly titaniferous augite, and indefinite serpentinous pseudomorphs after olivine. The partly albitized felspar frequently contain secondary epidote; the augite has developed patches and fringes of uralitic hornblende; and a fibrous hornblende is often present in the serpentinous areas that represent original olivine. H.H.T.



(Figure 22) Map of Big-Felspar Dolerites b, and Small Felspar Dolerites s, Sgùrr Dearg District.



(Plate 5) Map showing calderas, major intrusions, and folds



(Figure 53) Ring-Dykes, Maol nam. Fiadh. Dykes: M basalt, Cone-Sheets: DI dolerite; al acid; L.B.C.S. Late Basic Cone-Sheets (shown without ornament). Ring-Dykes: F felsite; G granophyre; qE quartz-gabbro. Screens: A agglomerate; B compact basalt-lava; pB porphyritic basalt-lava; P pillow-lava; D dolerite; E gabbro; also many of the cone-sheets. Numbers as in Figure 52, see Text.

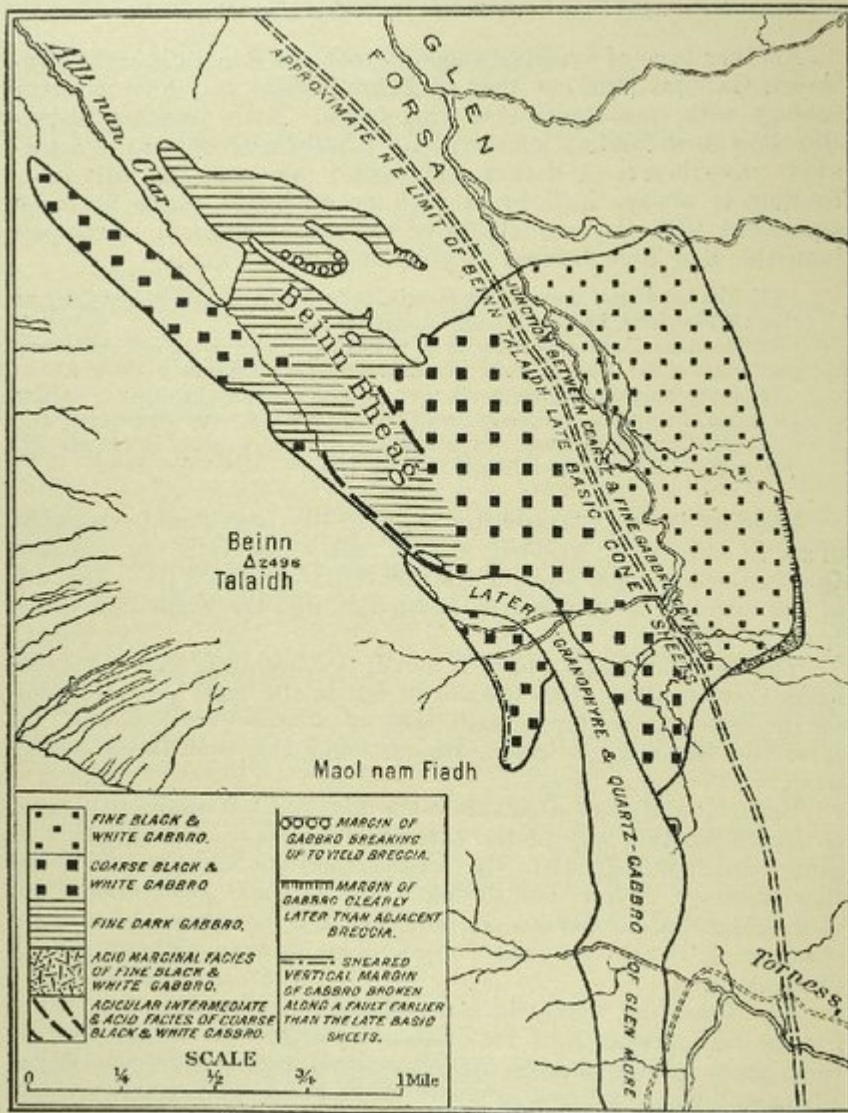
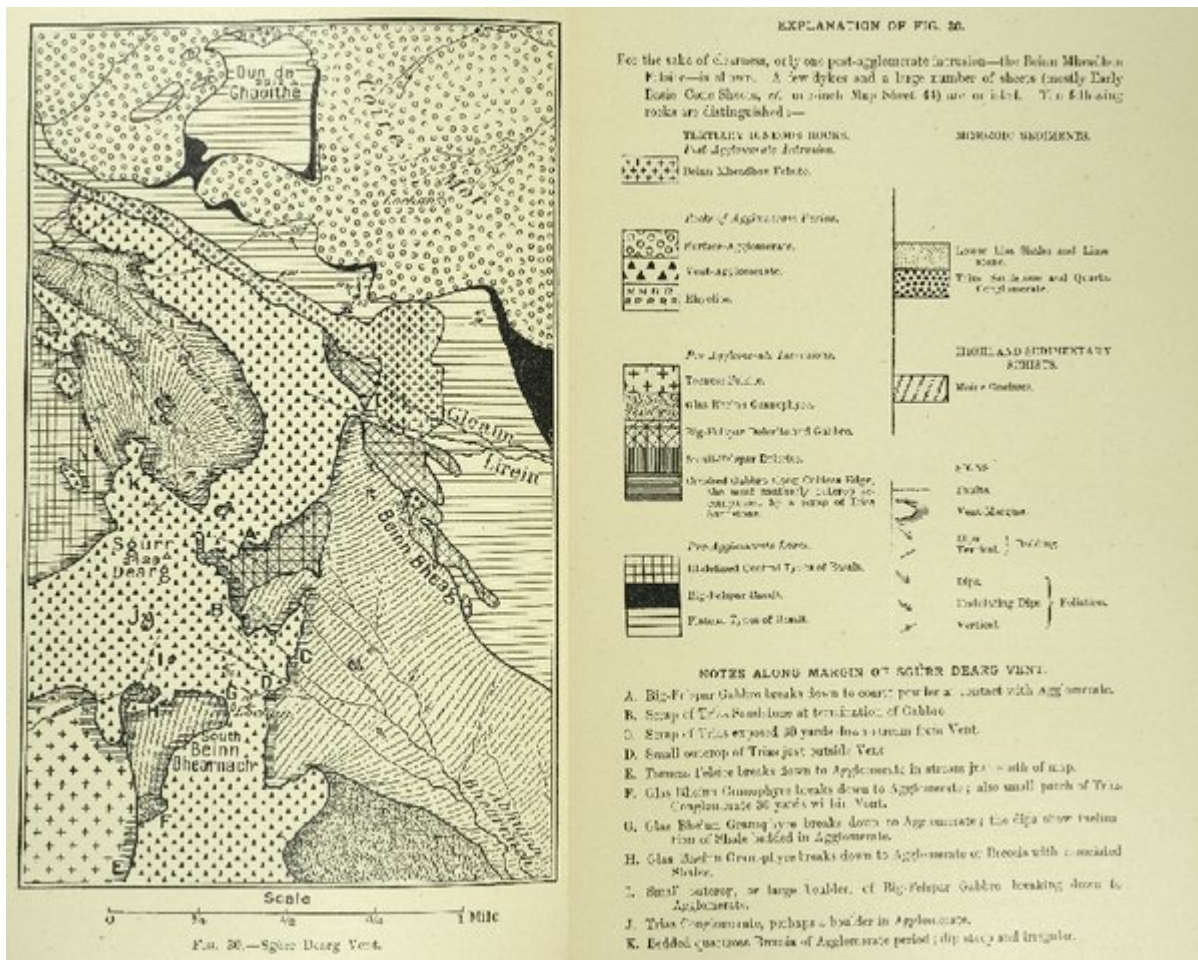


FIG. 37.—Map of Beinn Bheag Gabbro.

(Figure 37) Map of Beinn Bheag Gabbro.



(Figure 30) Sgùrr Dearg Vent. Explanation of Figure 30. For the sake of clearness, only one post-agglomerate intrusion—the Beinn Mheadhon Felsite—is shown. A few dykes and a large number of sheets (mostly Early Basic Cone-Sheets, cf. one-inch Map Sheet 44) are omitted. Notes along margin of Sgùrr Dearg vent: A. Big-Felspar Gabbro breaks down to coarse powder at contact with Agglomerate. B. Scrap of Trias Sandstone at termination of Gabbro. C. Scrap of Trias exposed 30 yards down-stream from Vent. D. Small outcrop of Trias just outside Vent. E. Torness Felsite breaks down to Agglomerate in stream just south of map. F. Glas Bheinn Granophyre breaks down to Agglomerate; also small patch of Trias Conglomerate 30 yards within Vent. G. Glas Bheinn Granophyre breaks down to Agglomerate; the dips show inclination of Shale bedded in Agglomerate. H. Glas Bheinn Granophyre breaks down to Agglomerate or Breccia with associated Shales. I. Small outcrop, or large boulder, of Big-Felspar Gabbro breaking down to Agglomerate. J. Trias Conglomerate, perhaps a boulder in Agglomerate. K. Bedded quartzose Breccia of Agglomerate period; dip steep and irregular.

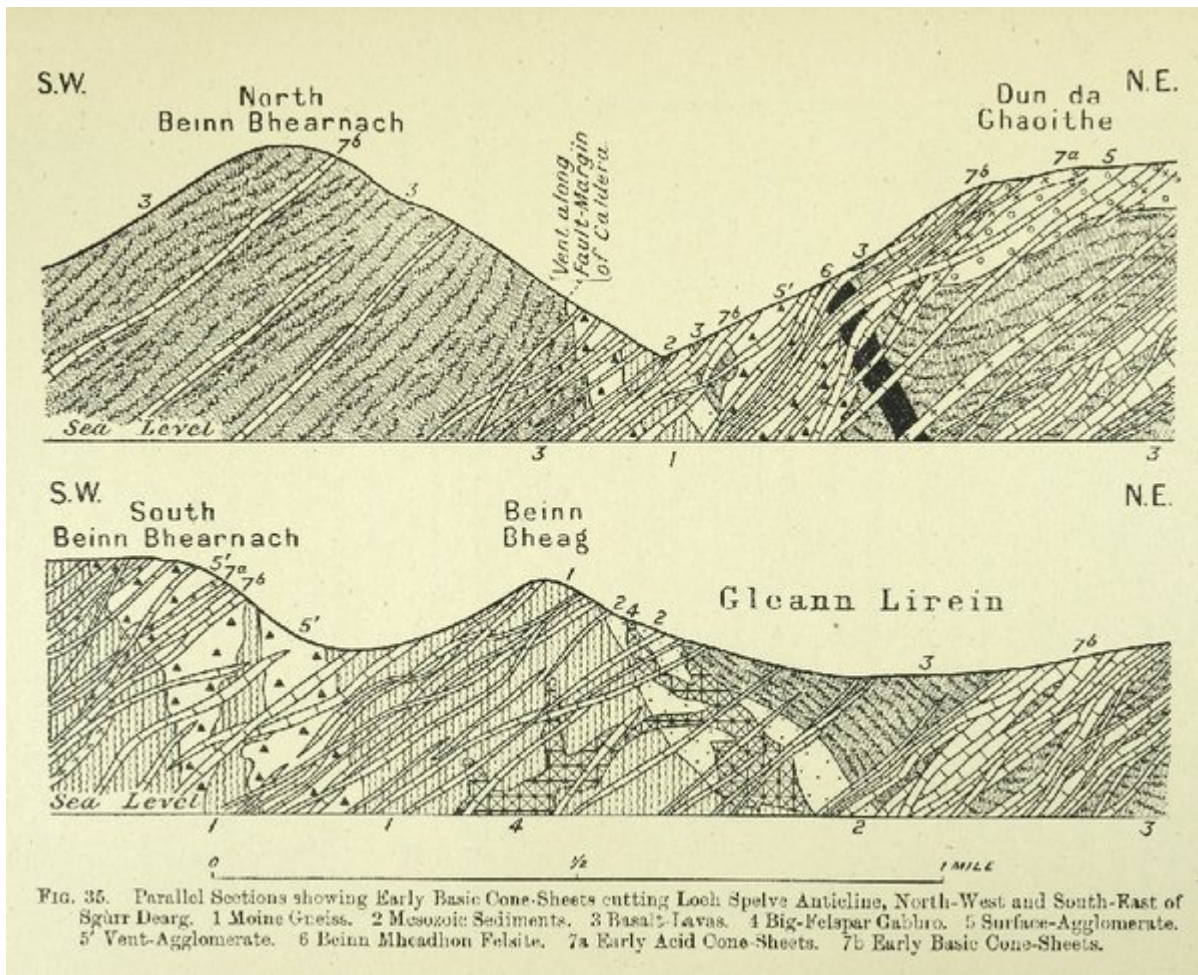


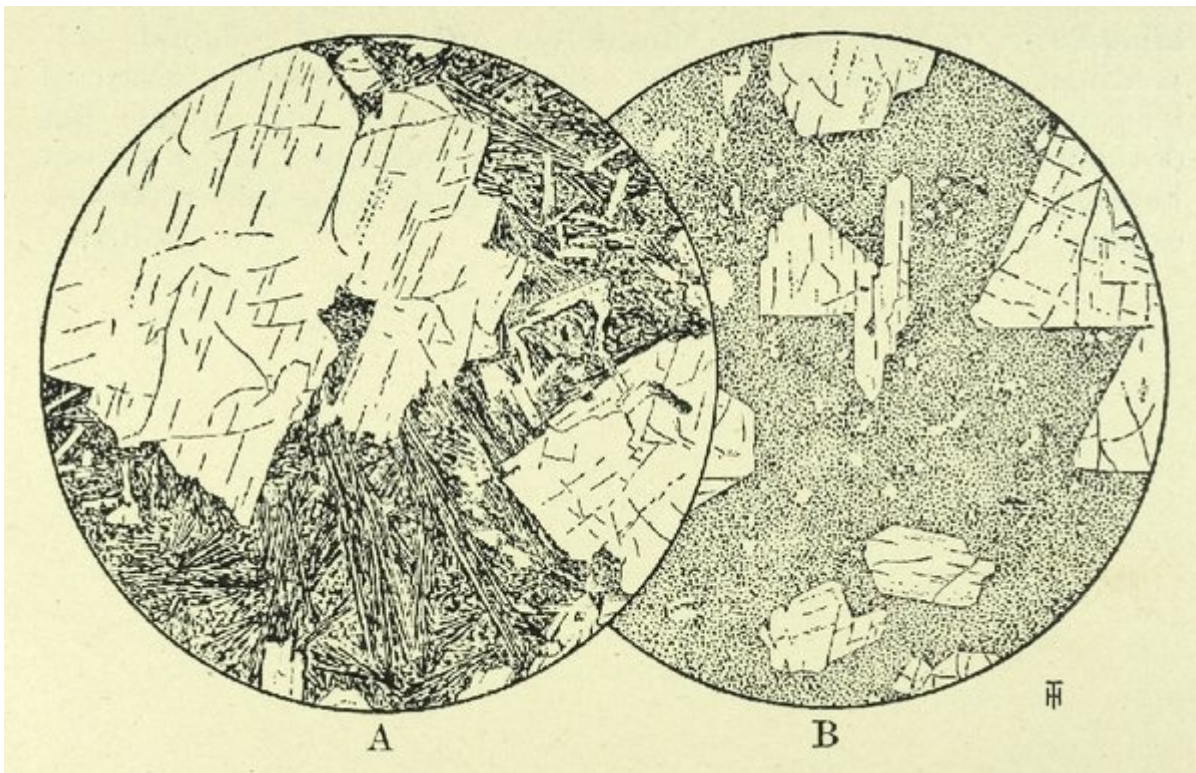
FIG. 35. Parallel Sections showing Early Basic Cone-Sheets cutting Loch Spelve Anticline, North-West and South-East of Sgùrr Dearg. 1 Moine Gneiss. 2 Mesozoic Sediments. 3 Basalt-Lavas. 4 Big-Felspar Gabbro. 5 Surface-Agglomerate. 5' Vent-Agglomerate. 6 Beinn Mheadhon Felsite. 7a Early Acid Cone-Sheets. 7b Early Basic Cone-Sheets.

(Figure 35) Parallel Sections showing Early Basic Cone-Sheets cutting Loch Spelve Anticline, North-West and South-East of Sgùrr Dearg. 1 Moine Gneiss. 2 Mesozoic Sediments. 3 Basalt-Lavas. 4 Big-Felspar Gabbro. 5 Surface-Agglomerate. 5' Vent-Agglomerate. 6 Beinn Mheadhon Felsite. 7a Early Acid Cone-Sheets. 7b Early Basic Cone-Sheets.

TABLE VI.—PORPHYRITIC CENTRAL MAGMA-TYPE OF FIG. 3.

	Dolerite		Gabbro			Basalt			
	I.	A	B	II.	III.	IV.	V.		
SiO ₂	45.54	46.39	47.28	48.34	47.24	47.49	48.51	SiO ₂	
TiO ₂	1.06	0.26	0.28	0.95	1.46	0.93	1.46	TiO ₂	
Al ₂ O ₃	23.39	26.34	21.11	20.10	18.55	21.46	19.44	Al ₂ O ₃	
Cr ₂ O ₃	...	tr.	...	...	...	...	...	Cr ₂ O ₃
Fe ₂ O ₃	1.98	2.02	3.52	1.97	6.02	1.72	5.66	Fe ₂ O ₃	
FeO	6.98	3.15	3.91	6.62	4.06	4.80	4.00	FeO	
MnO	0.27	0.14	0.15	0.32	0.31	0.15	0.23	MnO	
(Co,Ni)O	...	...	...	nt. fd.	0.05	0.04	0.04	(Co,Ni)O
MgO	4.60	4.82	8.06	5.49	5.24	4.59	5.12	MgO	
CaO	11.82	15.29	13.42	13.16	11.72	13.24	12.03	CaO	
BaO	...	...	...	0.10	nt. fd.	nt. fd.	nt. fd.	BaO
Na ₂ O	2.50	1.63	1.52	1.66	2.42	2.17	2.53	Na ₂ O	
K ₂ O	0.44	0.20	0.29	0.98	0.15	0.42	0.25	K ₂ O	
Li ₂ O	...	...	...	nt. fd.	nt. fd.	nt. fd.	nt. fd.	Li ₂ O
H ₂ O + 105°	0.72	0.48	0.53	0.44	2.24	2.54	0.48	H ₂ O + 105°	
H ₂ O at 105°	0.62	0.10	0.13	0.02	0.21	0.17	0.04	H ₂ O at 105°	
P ₂ O ₅	0.13	tr.	tr.	0.04	0.26	0.43	0.16	P ₂ O ₅	
CO ₂	...	...	...	0.11	0.19	0.08	0.09	CO ₂
FeS ₂	...	...	...	nt. fd.	nt. fd.	nt. fd.	nt. fd.	FeS ₂
	100.05	100.82	100.20	100.30	100.12	100.23	100.04		
Spec. grav.	2.85	2.85	2.90	2.93	2.85	2.82	2.93		

(Table 6) Porphyritic Central Magma-Type of Figure 3



(Figure 23) Basaltic facies of Small Felspar Dolerite intrusions, N.W. of Sgùrr Dearg. A. [(S16472) [NM 6557 3545]] x 17. Interior of an intrusion, showing porphyritic crystals of albitized labradorite bytownite in a variolitic matrix composed of narrow crystals of titaniferous augite, finely-divided iron-ore, a little plagioclase, and a chloritized residuum. (Compare

with Figure 21B, p. 151) B [(S18652) [NM 6340 3561]] x 17. Chilled edge of a sheet, showing porphyritic feldspars of identical character but having an aphanitic matrix in which all structure is suppressed and which presumably consolidated as glass. (Compare with Figure 21 C, p. 151)