Figures, plates and tables

Figures

labradorite. B. [(S20865) [NM 4194 3832]] x 28. Segregation-vein in basalt-lava of Plateau Type. Titaniferous augite in large crystals that exhibit hour-glass structure and are zoned with aegerine-augite; partially analcitized labradorite; and conspicuous ilmenite. The residuum consists of microlithic alkali-felspar, aegerine-augite, and chlorite.

(Figure 20) Map showing zeolite-localities (dotted) and granophyre (crossed). Quoted from Trans. Roy. Soc. Edin., vol. li., 1915, p. 3.

(Figure 21) A -C Pillow-Lava, Cruach Choireadail. D Beinn Fhada. A. (S17184) [NM 5932 2982] x 17. Interior of Pillow. Moderately coarse doleritic rock with the augite and felspar in ophitic relationship. B. (S17185) [NM 5940 3000] x 17. Exterior of Pillow. The felspar occurs in two generations as porphyritic crystals of bytownite-anorthite, and as slender laths, which, with elongated crystals of augite, impart a variolitic structure to the matrix (compare with (Figure 23a, p. 163). C. (S17186) [NM 5924 3011] x 17. Chilled Margin of Pillow. Porphyritic basic plagioclase, near anorthite in composition, in a fine-textured matrix. The ground-mass is composed of small, elongated crystals of felspar, augite and iron-ore, with a chloritized residuum probably representing glass (compare with Fig 23A, p. 163). D. (S18039) [NM 6437 2936] x 17. Beinn Fhada. Portion of the exterior of a pillow showing the characteristic invasion of vesicular cavities by mesostatic residual material which has subsequently frothed up *in situ.*

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

(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 felspars 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)

(Figure 24) Map of Cnoc na Faoilinn, Loch Spelve.

(Figure 25). Serial sections across Eastern Mull drawn to true scale. Rocks, Tertiary: bl = Basic Cone-Sheets al = Acid Cone-Sheets D = Dolerite Sill fB = Big Felspar Basalt Lavas B = Non-porphyritic Basalt Lavas. Mesozoic: h^5 = Ceitomanian Greensand g^5 = Interior Oolite $g^{3,2,1}$ = Upper, Middle.& Lower Lias f = Trias. Pre-Mesozoic: Bc^1=Basalt Lavas of Old Red Sandstone; Sch=Schists. Structures: L.S.A.=Loch Spelve Anticline. L.D.A.=Loch Don Anticline. C.A. =Craignure Anticline M.T. =Marginal Tilt.

(Figure 26) Inninmore Fault, seen from South across the Sound of Mull.

(Figure 27) [(S15991) [NM 5463 2063]] ×20. Alkali-Syenite of Gamnach Mhòr, Carsaig Bay: aegirine and aegirine-augite, alkali-hornblende (centre), magnetite, and colourless soda-orthoclase, with a yellow chloritized residuum.

(Figure 28) A [(S15756) [NM 5497 5027]] ×15. Phonolitic Trachyte of Ardnacross (Rudh' an t-Sean-Chaisteil). Slightly elongated prisms of alkali-felspar, small plates of biotite, and a little magnetite, in a chloritized base. The rock contains a small amount of analcite-pseudomorphs suggestive of nepheline. B [(S14335) [NM 5615 4341] [NM 5615 4341]] ×15. Trachyte of Bràigh a' Choire Mhòir. Small prisms of alkali-felspar arranged with some parallelism in a dark base largely composed of a green alkali-pyroxene and chlorite. C. [(S18477) [NM 5237 2031]] ×15. Bostonite of Rudh' a' Chromain. Prisms of alkali-felspar, often arranged in sheaf-like or radiate aggregates, in a dark-green chloritic base that contains some calcite and quartz.

(Figure 29) Distribution of gneiss-fragments in Mull Agglomerates.

(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.

(Figure 31) Map and section of Bheinn Mheadhon Felsite.

(Figure 32) A [(S14740) [NM 6158 3703]] ×17. Augite-diorite of Gaodhail mass (Tomslèibhe). Large columnar crystals of augite intimately associated with magnetite. Tabular crystals of oligoclase-andesine irregularly fringed with turbid alkali-felspar. Interstices frequently occupied by quartzo-felspathic matter in micrographic relationship. B [(S14811) [NM 6061 3813]] ×17. Augite-diorite of more acid character from the Gaodhill River, showing signs of interaction between its basic and acid components. The rock consists of partially resorbed ophitic augite and oligoclase in a micrographic matrix of quartz and turbid alkali-felspar. The oligoclase is fringed with perthitic orthoclase.

(Figure 33) Craignurite and Allied Granophyre. A. [(S16802) [NM 6903 3752]] ×15. Normal Craignurite from Allt an Dubh-choire. The structure is highly characteristic. The rock consists of a network of narrow elongated crystals of augite and skeleton-crystals of oligoclase and andesine enclosing a fine-textured acid devitrified ground-mass. B. [(S16800) [NM 6857 3750]] ×15. Basic variety of Craignurite from Allt an Dubh-choire. This rock shows a coarser type of crystallization and differs from the normal type in the greater basicity of its felspar and in a diminution in the amount of acid matrix. The usual acicular type of crystallization is preserved. C. [(S16803) [NM 7167 3731]] x 15. Granophyre allied to Craignurite from Craignure shore. This rock contains the usual elongated crystals of augite and occasional small felspars of the craignurites. It differs, however, in its preponderance of acid matrix in the form of microperthitic and micrognanophyric areas.

(Figure 34) Section showing Loch Uisg Granophyre cutting folded lavas.

(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.

(Figure 36) Early Basic Cone-Sheets of Beinn Chreagach Bheag and Beinn Chreagach Mhòr probably displaced at Loch Bà Felsite.

(Figure 37) Map of Beinn Bheag Gabbro.

(Figure 38) Section across Ben Buie. 1. Basalt-Lavas with pillow-structure. 2. Vent-Agglomerate of Early Paroxism. 3. Early Acid Cone-Sheets. 4. Pre-Ben-Buie Early Basic Cone-Sheets. 5. Ben Buie Gabbro. 6. Vent-Agglomerate of Post-Ben-Buie Date. 7. Post-Ben-Buie Early Basic Cone-Sheets and Late Basic Cone-Sheets.

(Figure 39) A. [(S18452) [NM 5763 2998]] ×20. Allivalite of the Ben Buie Complex. Hypidiomorphic olivine in a matrix of basic plagioclase felspar that approximates to anorthite in composition. B. [(S16531) [NM 5660 3233]] ×20. Band of picotite in an olivine-rich allivalite of the Ben Buie Complex.

(Figure 40) The Ben Buie Eucrite and its varieties. A. [(S16711) [NM 5811 2665]] ×15. Basic variety showing large crystals of olivine in association with ophitic augite. The colourless component, is a zoned felspar with the average composition of bytownite. B [(S17903) [NM 5908 2972]] ×15. Gabbro. Coarse olivine-free rock composed of diallagic augite, basic labradorite and iron-ore. C. [(S16720) [NM 5893 2613]]. Olivine-free coarse ophitic dolerite. The augite in this case is devoid of schiller-structures.

(Figure 41) Craig Porphyrite. A. [(S16525) [NM 5851 2874]] ×17. Porphyrite, showing the normal development of porphyritic crystals of rhombic pyroxene, augite, and labradorite, with accessory magnetite, in a subordinate fine grained felspathic matrix. B. [(S16523) [NM 5820 3012]] ×17. Porphyrite of variable type, showing clots of relatively basic material similar to that figured in A, with a greatly increased amount of fine-grained acid matrix that has the characters of a soda-granophyre.

(Figure 42) Map of South-West Mull, showing distribution of Sills and Sheets other than Cone-Sheets.

(Figure 43) Map of some of the occurrences of Pitchstone in Loch Scridain district. Quoted from *Quart. Journ. Geol. Soc., vol. lxai.,* 1916, p. 206.

(Figure 44) Sheath and-Core Structure as exhibited in the Sheet numbered 1 in Figure 43, p. 261. The shaded areas represent pitchstone. The height of the crag is about 5 feet. Quoted from *Quart. Journ. Geol. Soc., vol.* lxxi, 1916, p. 211.

(Figure 45) Section at Rudh' a' Chromain across xenolithic composite sheet, showing external chilled margins against sandstone (SST) and bostonite (BOST). Quoted with minor alterations from *Quart. Journ. Geol. Soc., vol.* lxxviii, 1922, p. 234.

(Figure 46) Aluminous Xenoliths. A. [(S16612) [NM 522 203] [NM 522 203]] ×15. Large idiomorphic crystals of sapphire with associated greenish. brown spinel, enclosed by coarsely crystalline anorthite, with a little residual brown glass. B. [(S18493) [NM 5342 2220]] ×15. Idiomorphic crystals of rose-pink spinel, and a large crystal of cordierite in a matrix of oligoclase felspar, an opaque spinellid and residual glass. C. [(S18001A)] ×15. The section shows a large irregular crystal of cordierite (centre) studded with brown spinel, also idiomorphic highly pleochroic rose-pink sillimanite (right and left) enclosed in a semi-opaque glassy matrix.

(Figure 47) Leidleites. A from glassy centre and B from stony margin of sheet numbered 2 in Figure 43, p. 261. A. [(S17243) [NM 5018 2359]1×20. Narrow laths and skeletal growths of plagioclase, and blades of augite (and some hypersthene) in a matrix of brown glass. B. [(S17244) [NM 5018 2359]] ×20. Laths of plagioclase, and elongated crystals of augite (and some hypersthene), in a matrix of felspar-microliths, augite-granules, and interstitial glass. There is an approach to the intersertal structure of the tholeiites. Quoted from *Quart, Journ. Geol. Soc.,* vol. lxxi., 1916, p. 208.

(Figure 48) Inninmorites. A and B from localities 5 and 4 respectively in Figure 43, p. 261. A. [(S15990) [NM 5176 2404]] ×20. Small Phenocrysts of basic plagioclase and rounded crystals of uniaxial augite in a ground-mass of augite- and felspar-microliths, with interstitial glass. B. [(S15989) [NM 5077 2552]] ×20. Small phenocrysts of basic plagioclase and uniaxial augite in a matrix of brown glass. The glass is variable in colour, and locally almost opaque. Quoted from *Quart. Journ. Geol. Soc., vol.* lxxi., 1916, p. 208.

(Figure 49) Late Basic Cone-Sheets (Inclined Sheets) exposed in Gaodhail River. Chilled edges only shown where observed. Gaps not drawn to scale and figures given refer to horizontal distances measured in feet. Quoted with slight alteration from *Summary of Progress for* 1910, p. 36.

(Figure 50) The Talaidh Type of Late Basic Cone-Sheets. A. [(S14867) [NM 5354 2242]] x 17. Quartz-doleiite. The section shows columnar augite associated with titaniferous magnetite, a colourless moderately basic and albitized plagioclase, and a mesostasis of alkali-felspar and quartz. B. [(S14810) [NM 6060 3814]] x 17. Quartz-dolerite. Mineralogically similar to the above, but with a highly characteristic cervicorn development of its augite (p. 303).

(Figure 51) Variolite-Sheets of Cruachan Dearg. A. [(S16553) [NM 5686 3321]] x 17. Radiating and branching prisms of augite traversed transversely by short rods of magnetite, and set in a colourless devitrified matrix of indefinite felspathic material in which are small definite areas of clear quartz. B. [(S16557) [NM 5682 3313]]. Augite with attendant magnetite, and accompanied by elongated crystals of felspar, giving rise to a sub-spherulitic variolitic structure. The section shows two definite centres of radiation.

(Figure 52) Ring Dykes, Allt Melach.

(Figure 53) Ring-Dykes, Maol nam. Fiadh. Dykes: M basalt, Cone-Sheets: DI dolerite; aI 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.

(Figure 54) Map showing Density-Stratification in differentiated Ring-Dyke, Cruach Choireadail, Glen More (Locality 1). The extreme products exposed are olivine-bearing quartz-gabbro and granophyre.

(Figure 55) Graph showing relation of Specific Gravity to Altitude in gravitationally differentiated Ring-Dyke, Cruach Choireadail, Glen More.

(Figure 56) The Glen More Differentiated Ring-Dyke. A. [(S17636) [NM 5968 2968]] ×15. Lower Basic Portion. Quartz-gabbro. The rock is composed of labradorite, ophitic augite and large plates of ilmenite, with a variable amount of finely crystalline acid mesostasis (top). Where in contact with the acid residuum, the augite shows signs of resorption. Movement of the mass after partial consolidation has frequently resulted in the bending and breaking of crystals—note the curved cleavage-traces in the large crystal of augite.Fig. 56 B. [(S17632) [NM 5965 3014]] ×15. Intermediate Portion. The figure shows a rock in which there is an increased proportion of acid mesostatic matter with characteristic acicular crystallization of its components. It has developed columnar crystals of augite (top) with their usual association of magnetite, and it encloses small patches of more doleritic material (bottom) which show signs of resorption and of being out of equilibrium with their surroundings. C. [(S17626) [NM 5952 3042]] x 15. Higher Acid Portion. Acicular type of crystallization is a characteristic feature. The rock is composed of elongated crystals of greenish hornblende, pseudomorphous after augite, in a feathery base of alkali-felspar and quartz, frequently in micrographic relationship to each other.

(Figure 57) A. [(S14844) [NM 6003 3457]] ×17. Granophyre of Glen Cannel. Green pleochroic augite (aegerine-augite) associated with magnetite, perthitic orthoclase and quartz in a somewhat coarse micrographic matrix. B. [2146] x 17. Granophyre of Beinn a' Ghràig. Green pleochroic aegerine-augite with magnetite, in a moderately coarse matrix of quartz and turbid alkali-felspar in micrographic intergrowth.

(Figure 58) Loch Bà Felsitic Ring-Dyke along Fault. C1 and C2 show two chief centres of ring-dykes and cone-sheets. Quoted from *Summary of Progress for* 1914, p. 86.

(Figure 59) A. [(S14841) [NM 5427 3847]] ×17. Knock Granophyre. Brownish-green augite and crystals of oligoclase edged with perthite, enveloped in a typically granophyric matrix of which the structure is emphasized by the turbidity of the alkali-felspar. B. [(S14825) [NM 5551 3738]]×17. Felsite of Loch Bà. Rhyolitic type with well-developed fluxion-structure. The phenocrysts are of yellowish augite and albite. Areas devoid of banding have suffered a more pronounced devitrification.

(Figure 60) Tertiary Dykes of the South-West Highlands.

(Figure 61) Agglomerate-Vents along multiple dyke (basalt and rhyolite) south-west from head of Loch Feochan (after B. N. Peach, R. G. Symes, and H. Kynaston).

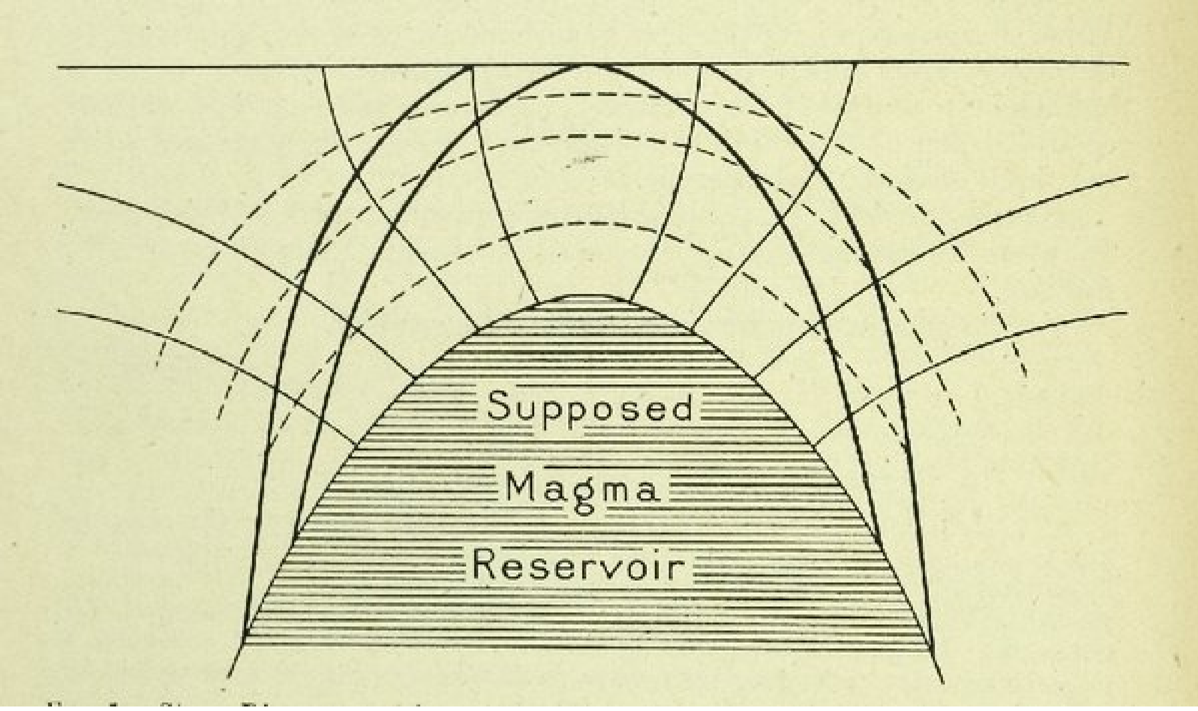
(Figure 62) Tholeiites. A. [(S16807) [NM 5601 4705]] ×17. Tholeiite of Salen Type. Composed of augite, labradorite-felspar, subordinate olivine and iron-ore, and a variable quantity of residual glass. B. [(S16809) [NM 5592 4755]] x 90. Tholeiite of Brunton Type. Augite, labradorite, magnetite and glass. The well-marked intersertal structure, produced by the arrangement of the crystalline elements with regard to the glassy base, is a constant and characteristic feature.

(Figure 63) Camptonite-Dykes. A. [(S13744) [NM 8468 4270]] ×17. Camptonite from Lismore, showing moderately large crystals of augite and olivine in a matrix of well-formed elongated, crystals of hornblende, labradorite, and magnetite, in a base of turbid orthoclase and analcite. B. [(S15788) [NM 7843 4466] ×17. Camptonite from Morven. The phenocrysts are mainly olivine. Augite is a less prominent constituent than in A; otherwise the rocks are similar.

(Figure 64) Map showing Superficial Deposits and. Glaciation of Central Mull within limits indicated by note at left hand top corner of one-inch Map, Sheet 44.

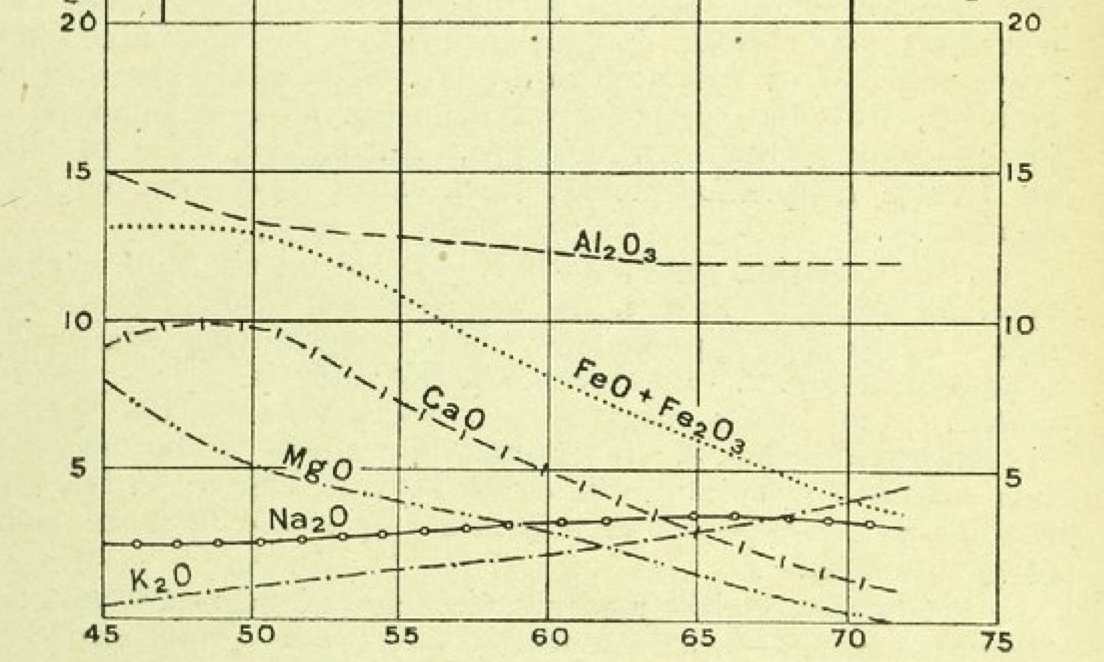
Plates

Tables

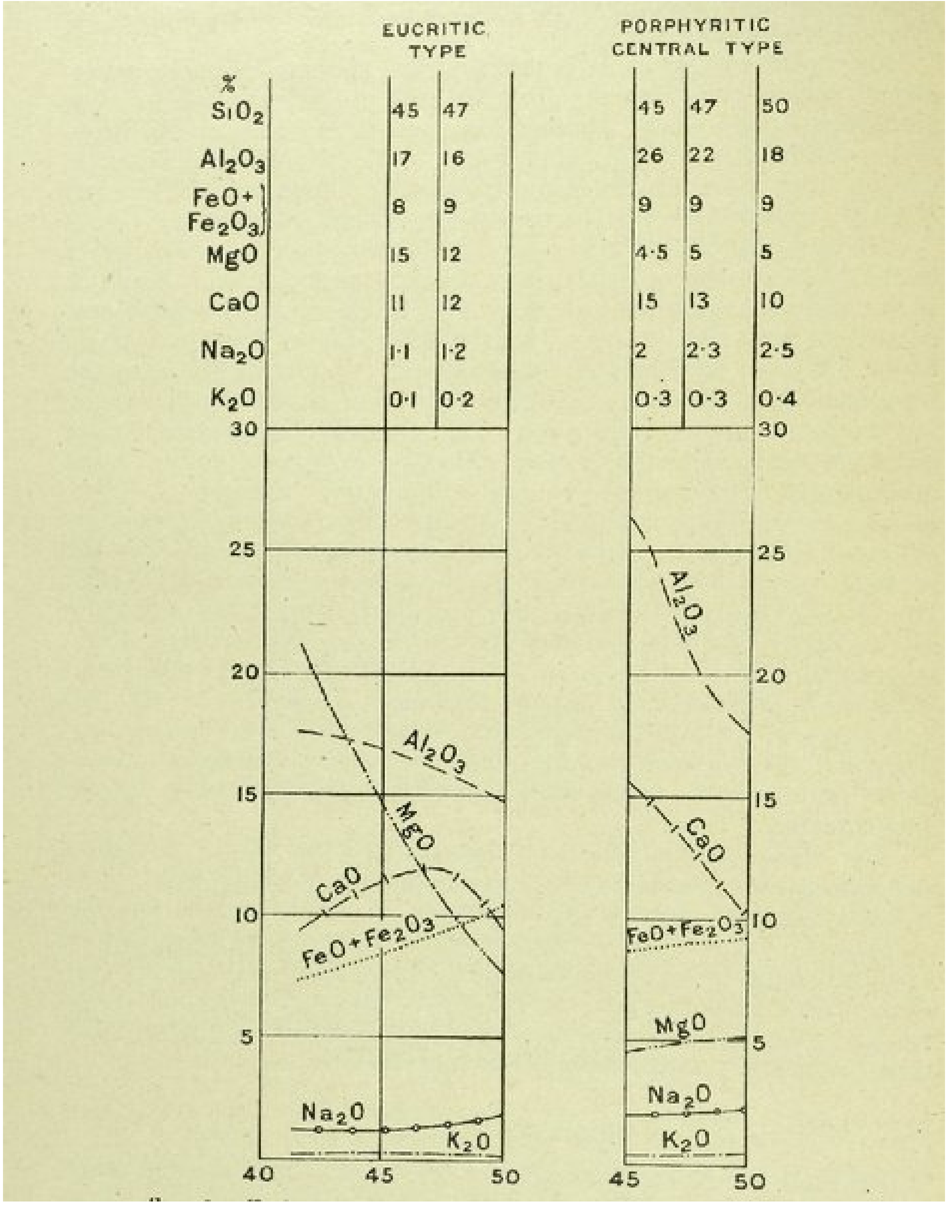


(Figure 1) Stress-diagram to show supposed mode of formation of cone-sheets and ring-dykes. For explanation of lines, see text.

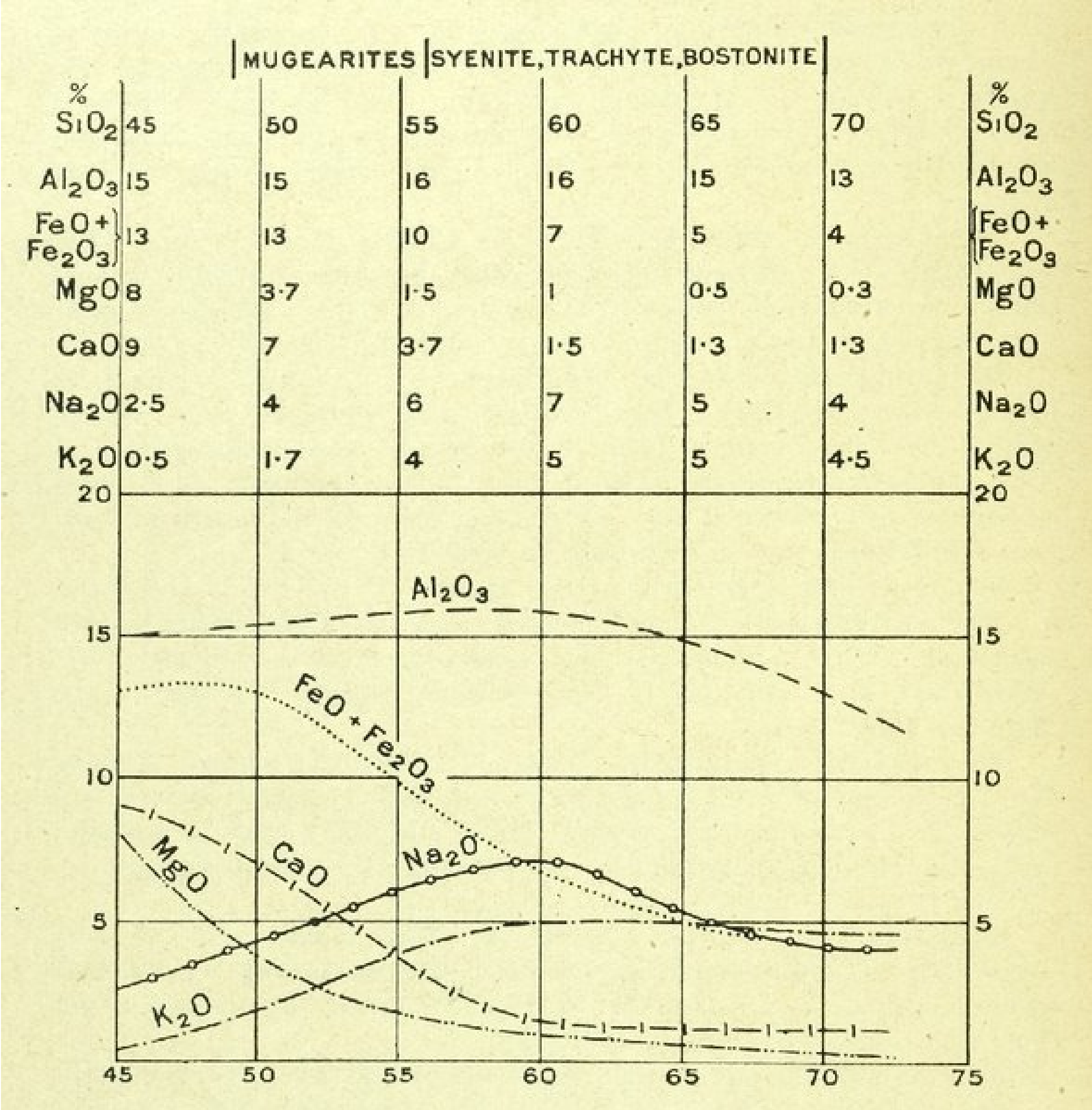
%	PLATEAU TYPE	NON-PORPHYRITIC CENTRAL TYPE		INTERMEDIATE & SUB-ACID TYPES			ACID TYPE	%
SiO_2	45	47	50	55	60	65	70	SiO_2
Al_2O_3	15	14	13	13	13	12	12	Al_2O_3
$FeO + Fe_2O_3$	13	13	13	11	8	6	4	$FeO + Fe_2O_3$
MgO	8	6·5	5	4	3	1·7	0·3	MgO
CaO	9	10	10	7	5	3	1·5	CaO
Na_2O	2·5	2·6	2·8	3	3·3	3·5	3·3	Na_2O
K_2O	0·5	0·7	1·2	1·7	2·2	3	4	K_2O



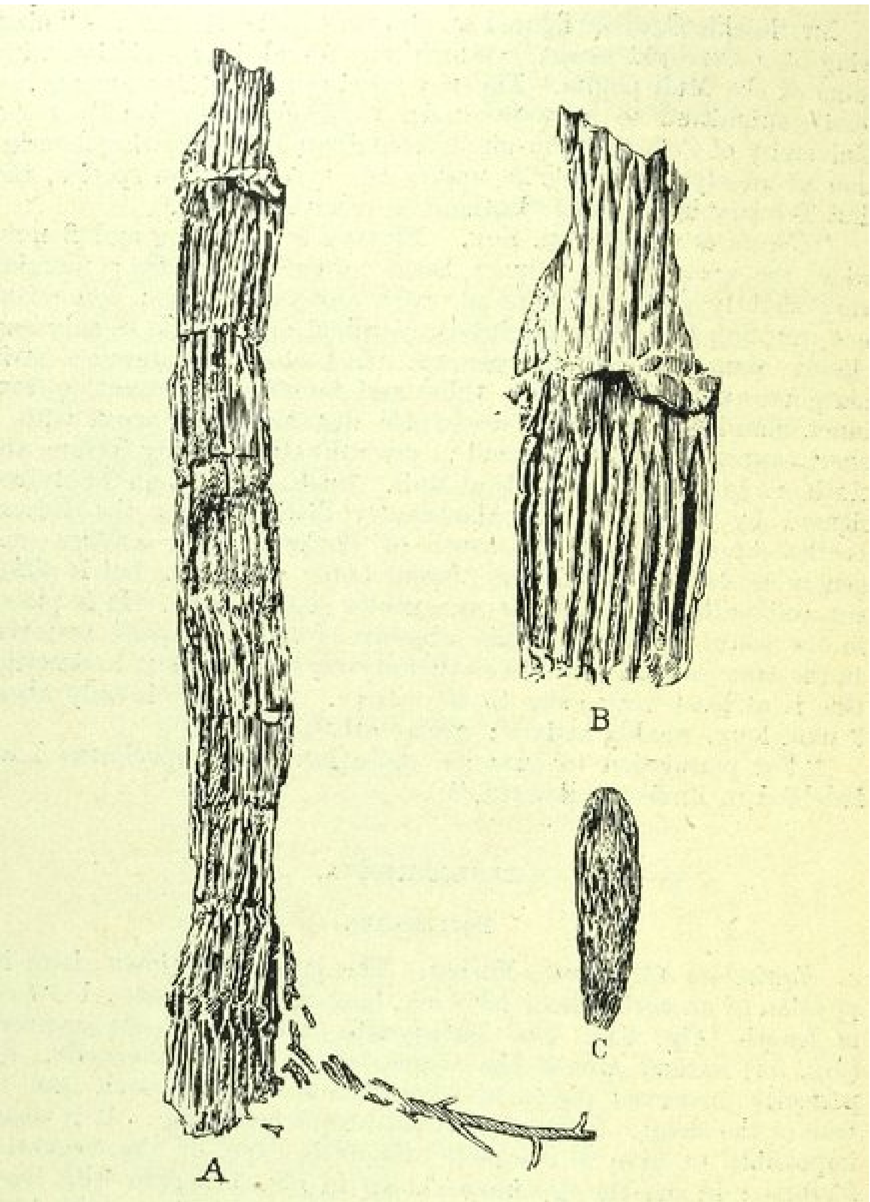
(Figure 2) Variation-diagram: Normal Mull Magma-Series.



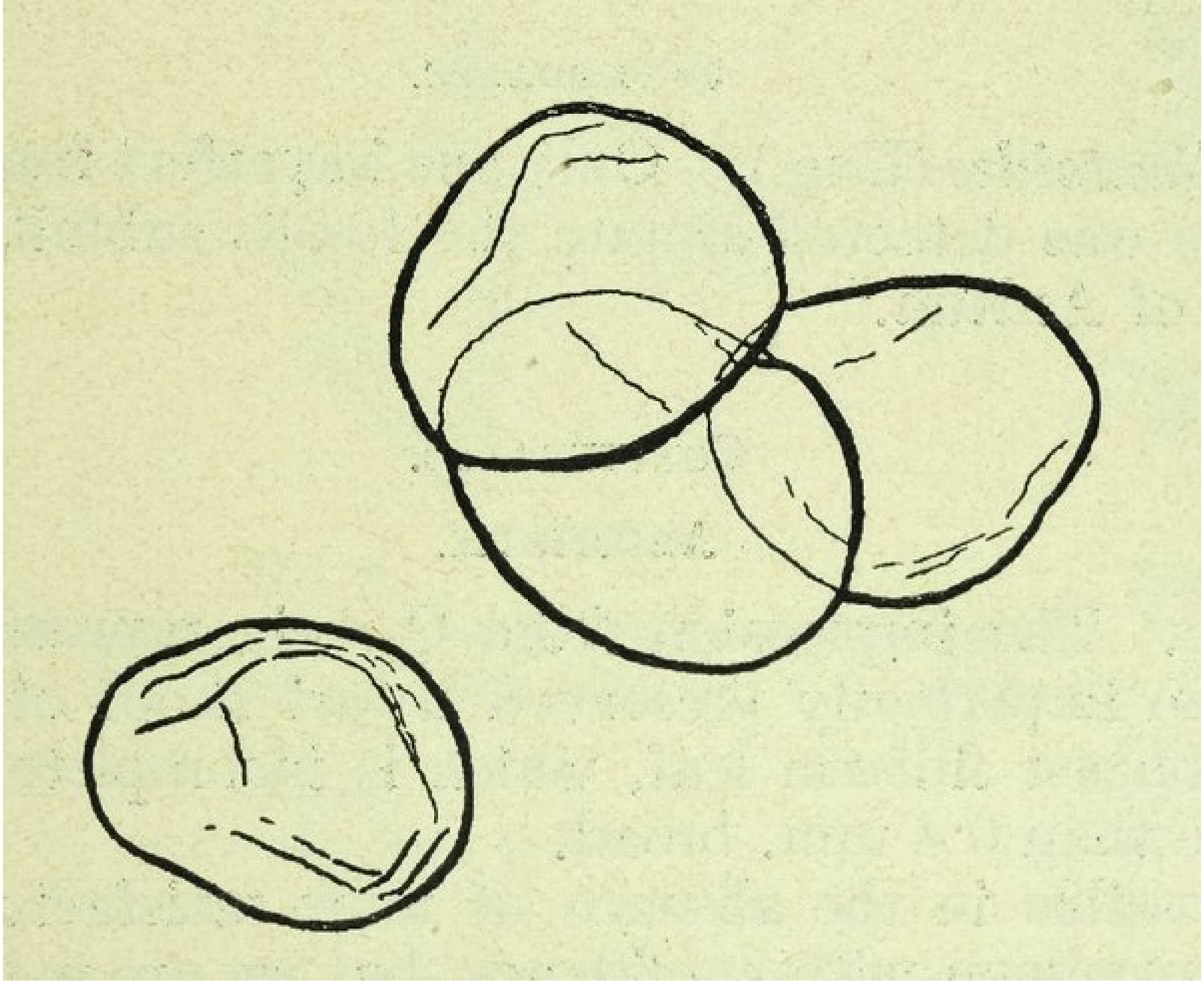
(Figure 3) Variation-diagrams: Allivalite-Euerite Magma-Series; and Porphyritic Central Magma-Type.



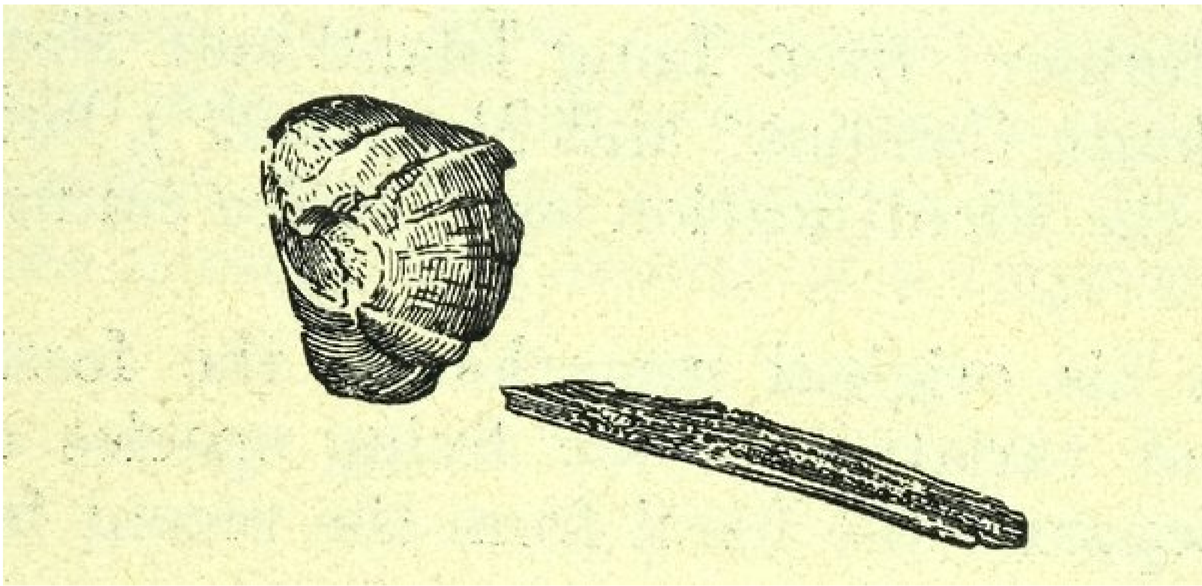
(Figure 4) Variation-diagram: Mull Alkaline Magma-Series.



(Figure 5) Equisetum Campbelli Forbes. A. Nat. size. [T. 2905E]. B . Leaf-sheaths. x 2 [T. 2905E].C. Unexpanded shoot. Nat. size. [T. 2887 E.].



(Figure 6) Equisetum sp. Nat. size. [2900 E.].



(Figure 7) Onoclea hebridica (Forbes). Spores. x 384. [British Mus. V. 14848A.].

FIG. 8.
Pinites sp.
Nat. size.
[T. 2067 D.].

(Figure 8) Pinites sp. Nat. size. [T. 2067 D.].

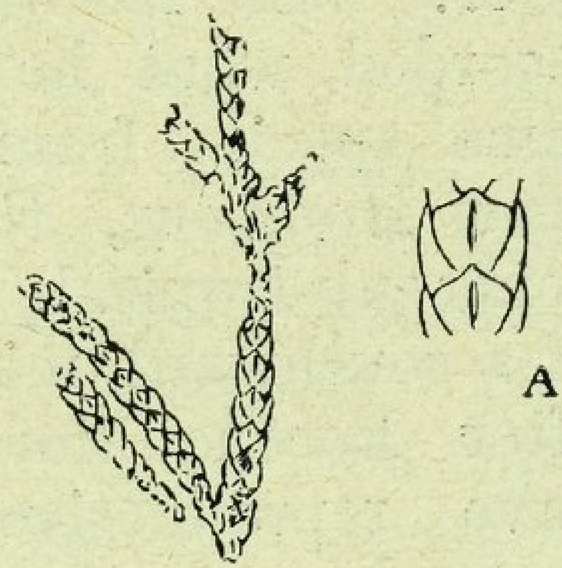


FIG. 9.
Cupressites MacHenryi Bail.
Nat. size. [T. 2063 D.].
FIG. 9A.
Leaves.
×3. [T. 2063 D.].

(Figure 9) Cupressites MacHenryi Bail. Nat. size. [T. 2063 D.]. Figure 9A. Leaves. x 3. [T. 2063 D.].

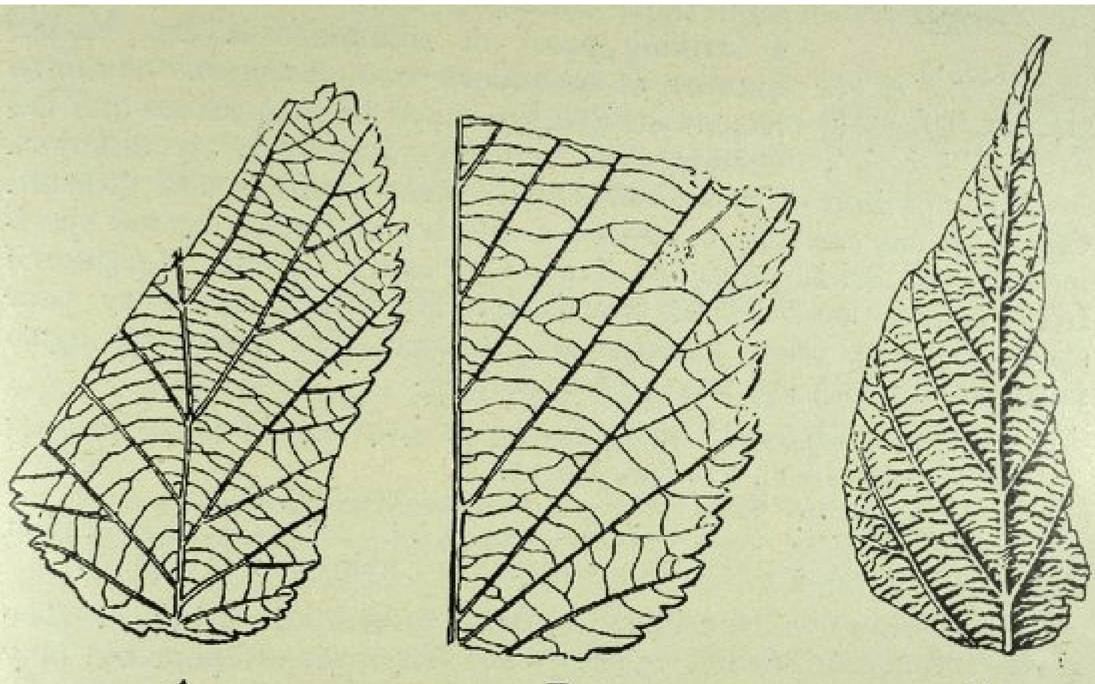
FIG. 10.
Sequoiites (?) *Langsdorfi* (Brong.).
Nat. size. [T. 2058 D.].
FIG. 10A.
Base of leaf.
×3. [T. 2058 D.].

(Figure 10) Sequoiites (?) Langsdorfi (Brong.). Nat. size. [T. 2058 D.]. Figure 10A. Base of leaf. x 3. [T. 2058 D.]

FIG. 11.

Pagiophyllum Sternbergi
(Goepp.).
Nat. size. [T. 2910 E.].

(Figure 11) Pagiophyllum Sternbergi (Goepp). Nat. size. [T. 2910 E.].



A B C

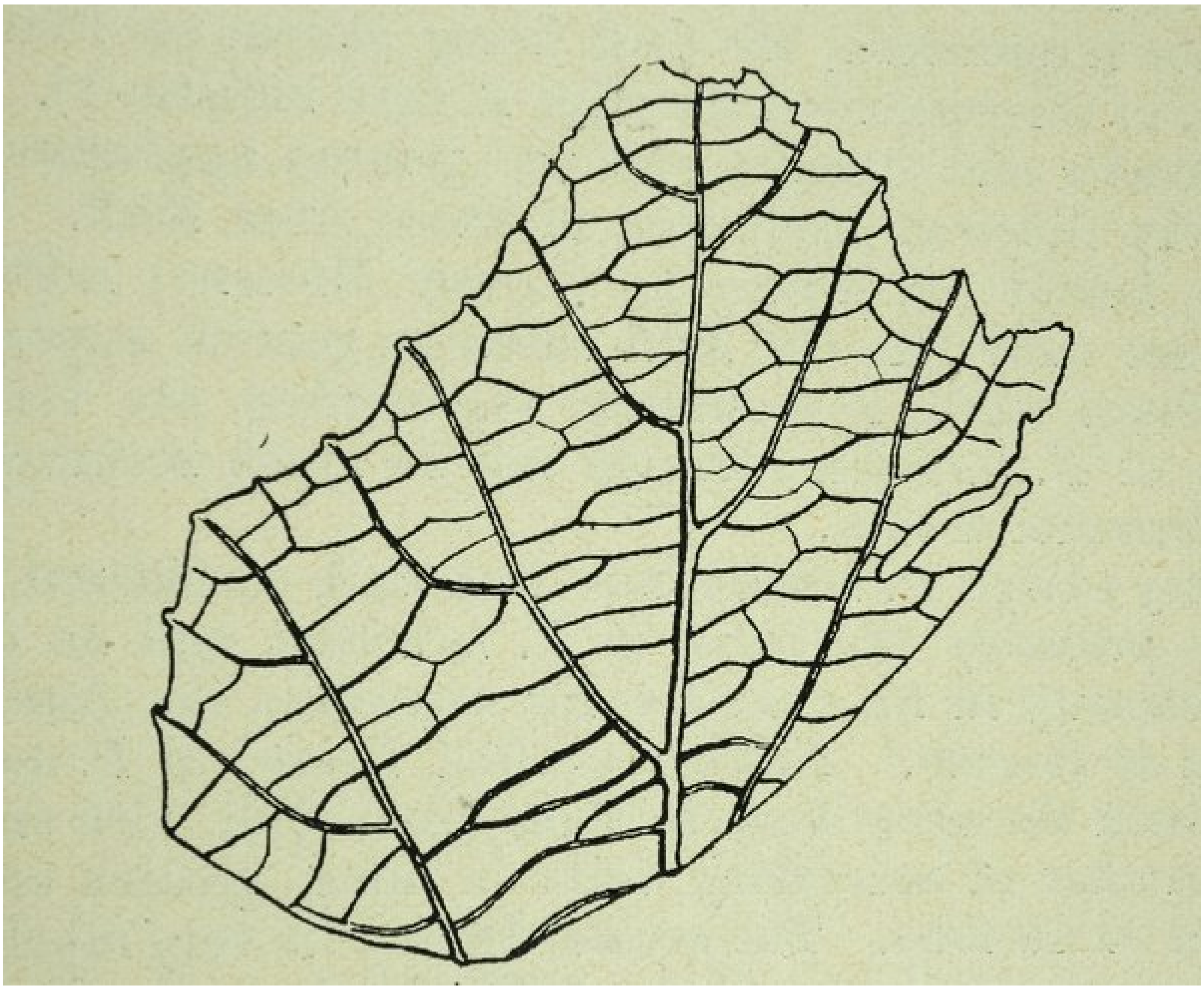
FIG. 12.—*Corylites hebridica* sp. nov. Nat. size. [T. 2968 E, T. 2996 E, T. 2997 E.].

(Figure 12) Corylites hebridica sp. nov. Nat. size. [T. 2968 E, T. 2996 E, T. 2997 E.].

FIG. 13.

(?) Nut split open. ×1½. [T. 2938 E.].

(Figure 13) (?) Nut split open 1½. [T.2938 E].



(Figure 14) Platanus hebridica (Forbes). Nat. size. [T. 3022 E.]

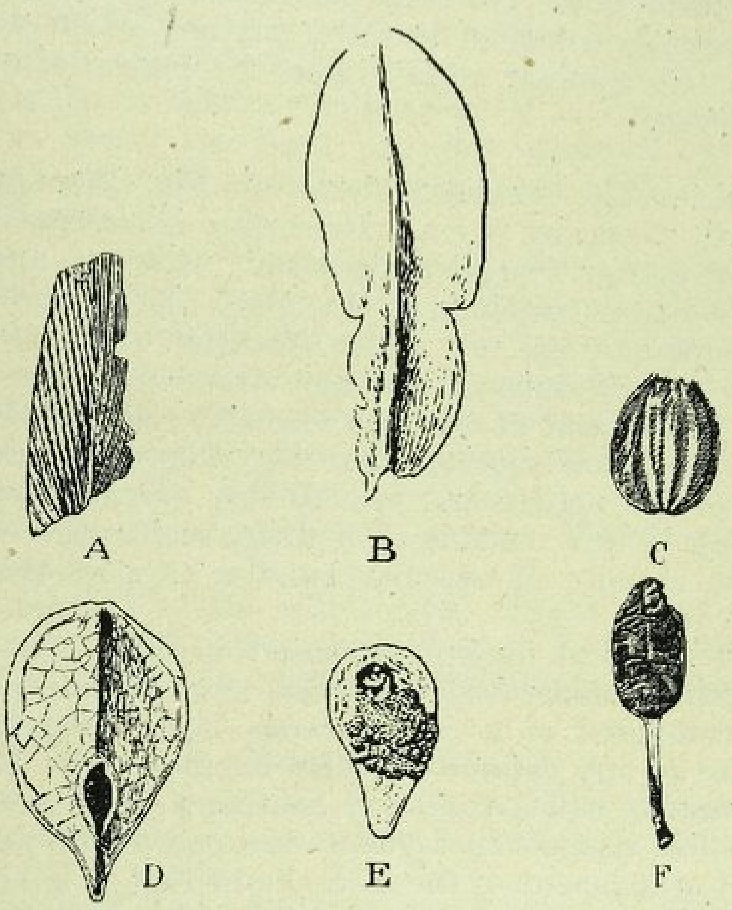
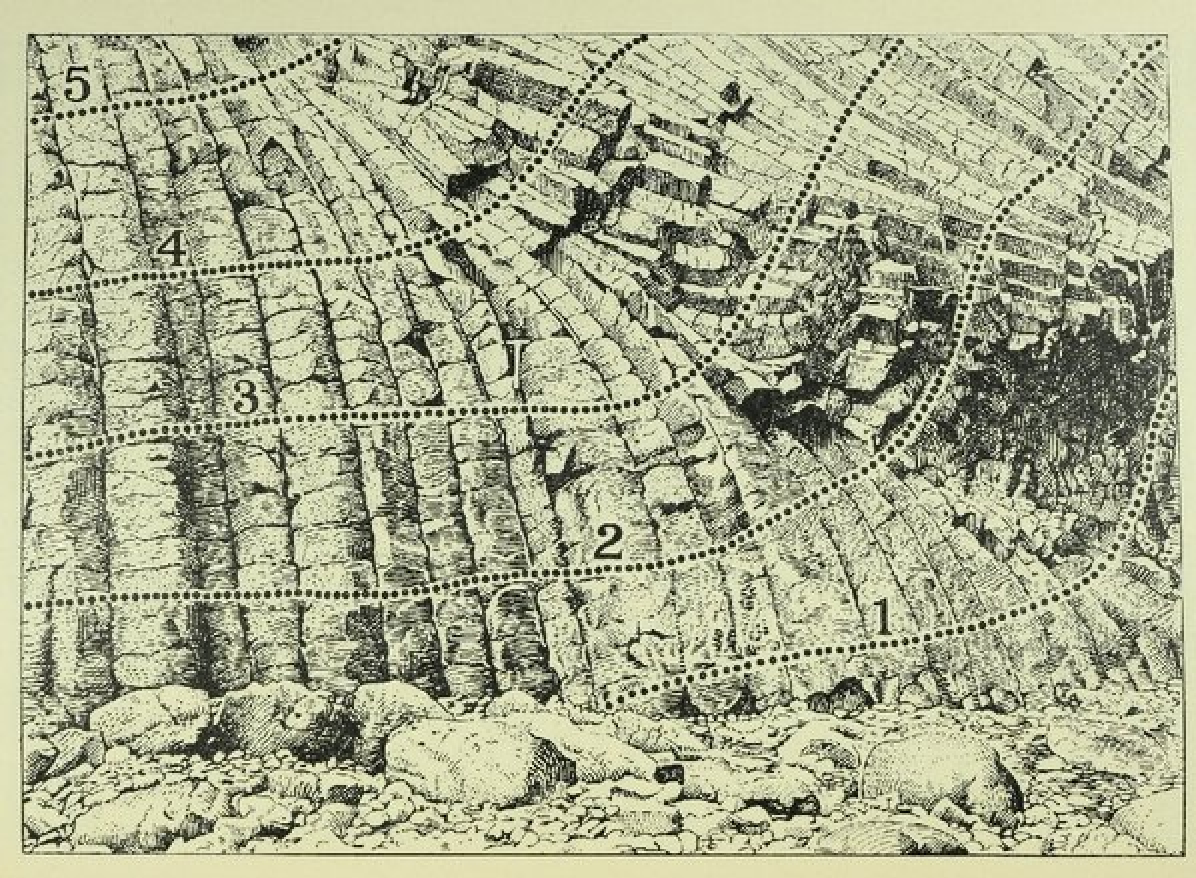


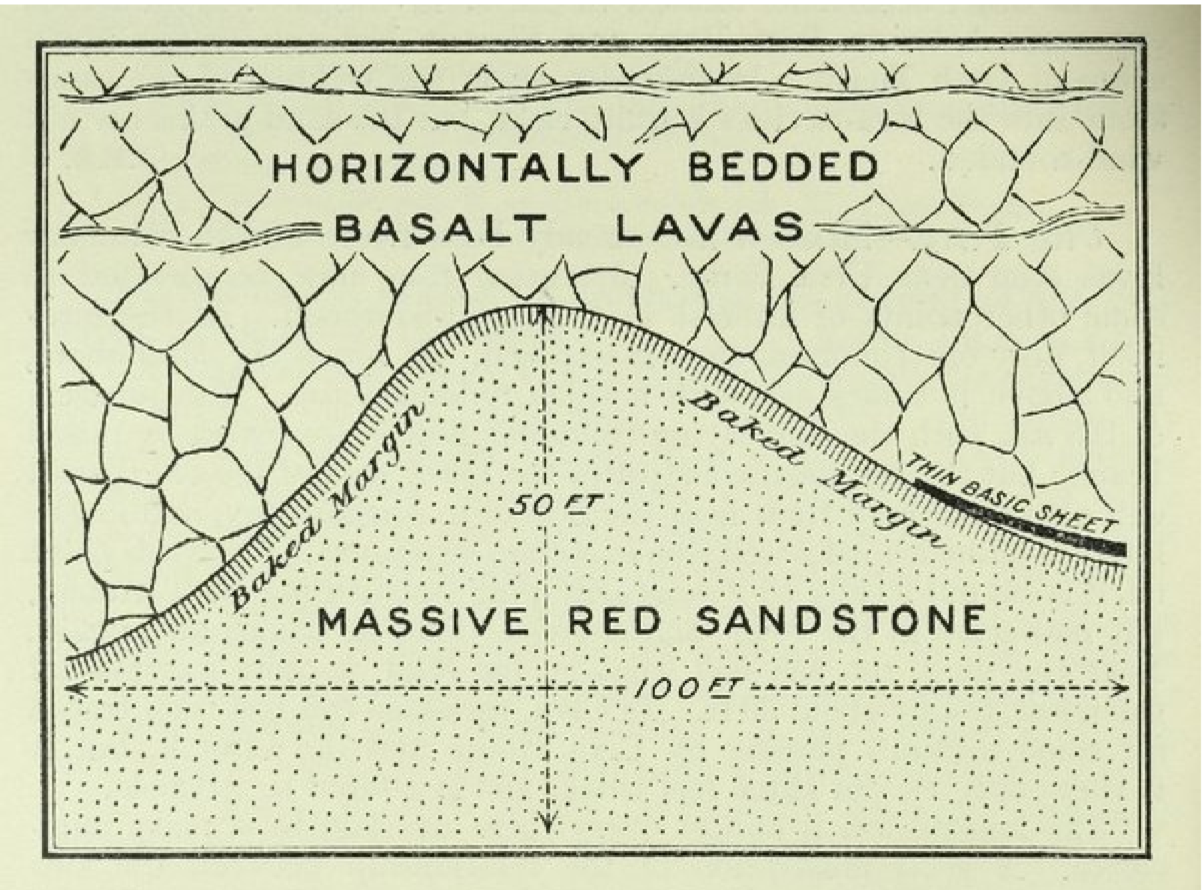
FIG. 15.—*Plantæ Incertæ Sedis.*

Specimen A. Part of a Lamina. × 1½. [T. 2055 D.].
Specimen B. Nat. size. [T. 2068 D.]
Specimen C. × 2. [T. 2893 E.].
Specimen D. × 3. [T. 2895 E.].
Specimen E. × 6. [T. 2045 D.].
Specimen F. Nat. size. [T. 2945 E.].

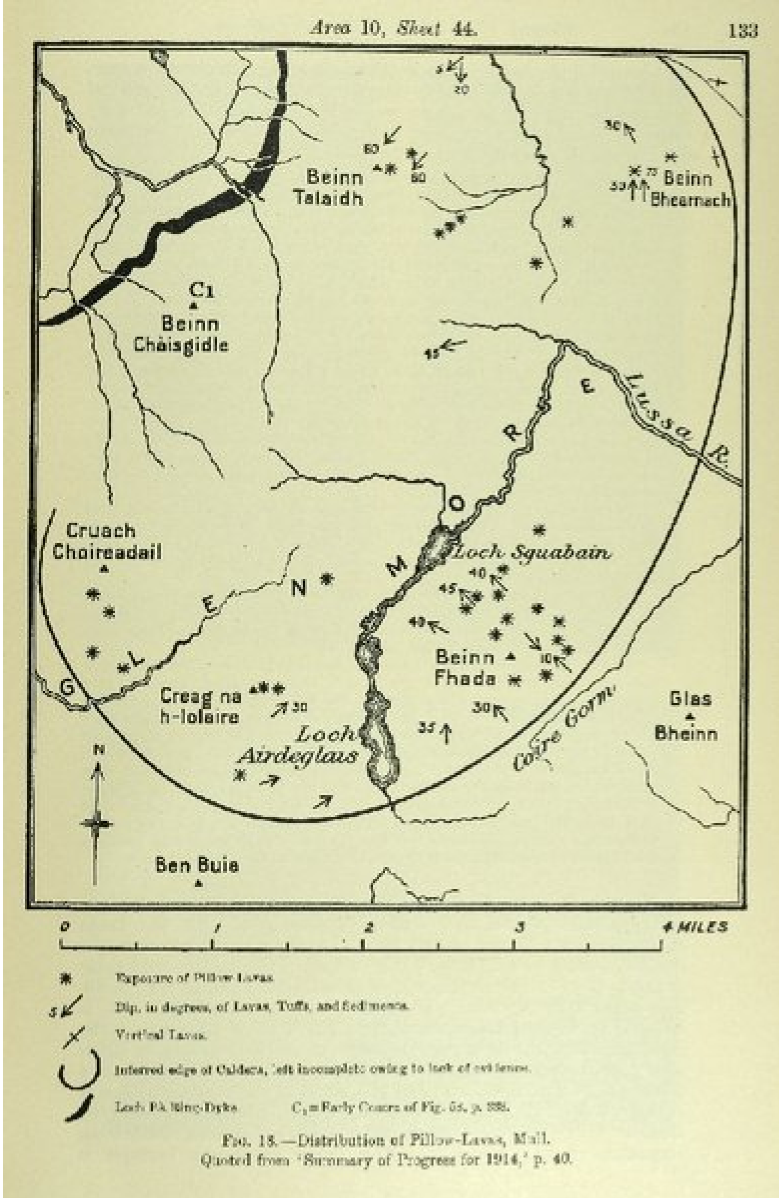
(Figure 15) Plantae Incertae Sedis. Specimen A. Part of a Lamina. x 1½ [T. 2055 D.]. Specimen B. Nat. size. [T. 2068 D.] Specimen C. x 2. [T. 2893 E.]. Specimen D. x 3. [T. 2895 E.]. Specimen E. x 6. [T. 2045 D.]. Specimen F. Nat. size. [T. 2945 E.].



(Figure 16) Columnar Jointing, North of Landing Stage, Staffa. The dotted lines, 1 to 5, indicate inferred successive positions of the critical isotherm, at right angles to which the columns have developed. (Modern beach-gravel shown at bottom of sketch)



(Figure 17) Tertiary Lavas overlying a Knob of Sandstone at Bloody Bay. Quoted from Summary of Progress for 1920, p. 37.



(Figure 18) Distribution of Pillow-Lavas, Mull. Quoted from Summary of Progress for 1914, p. 40.

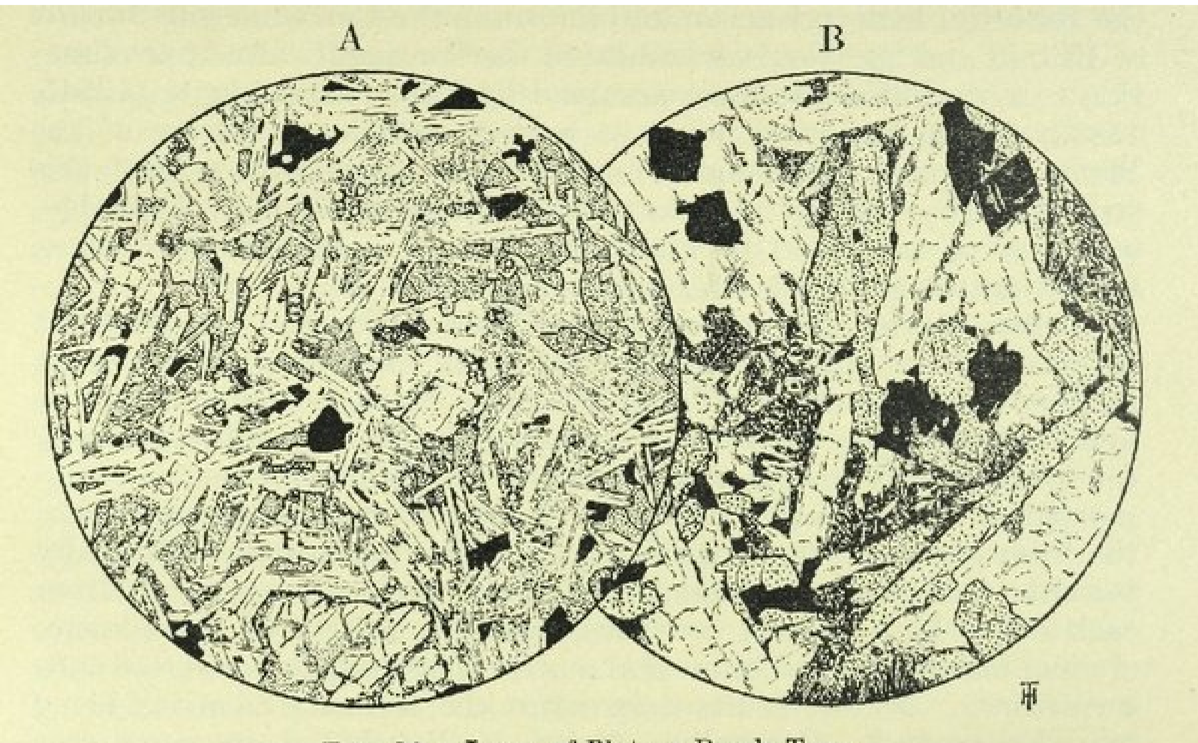
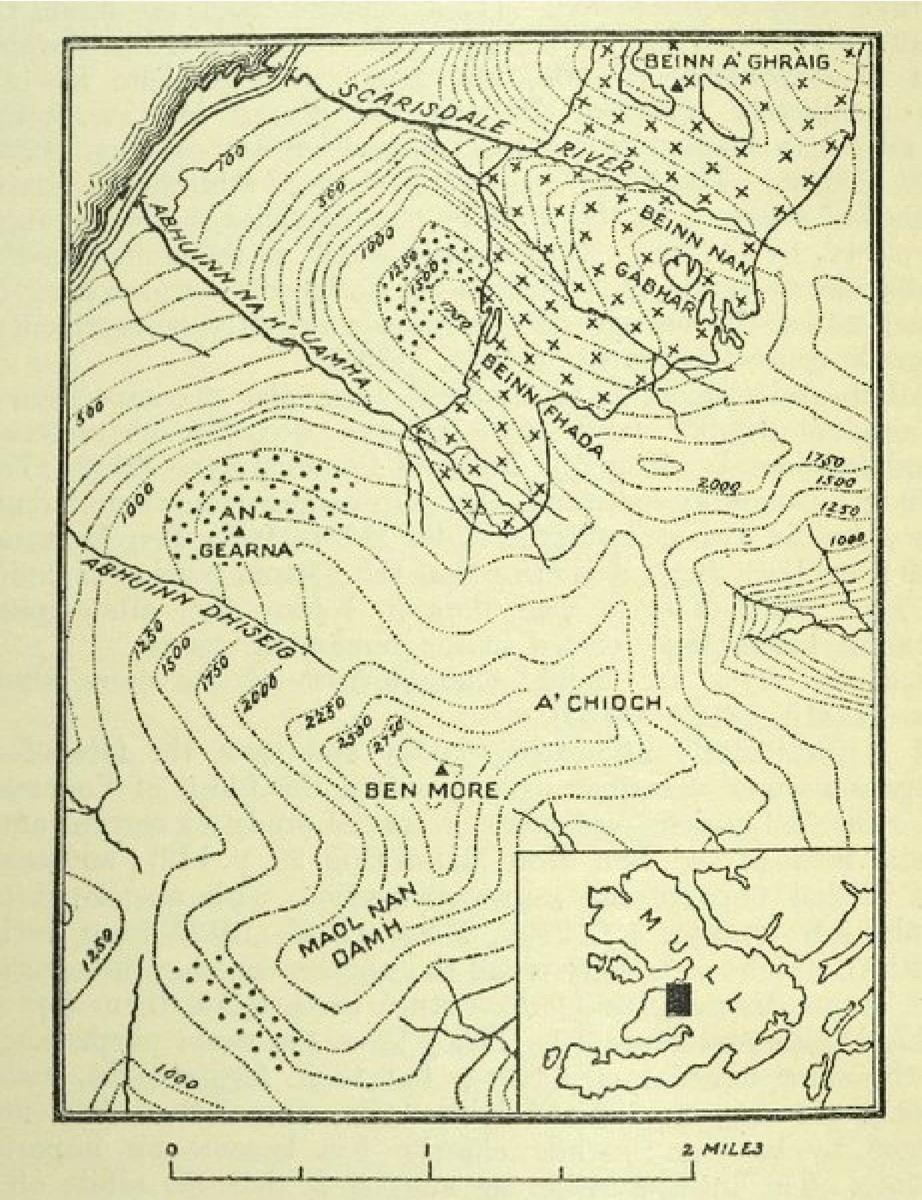
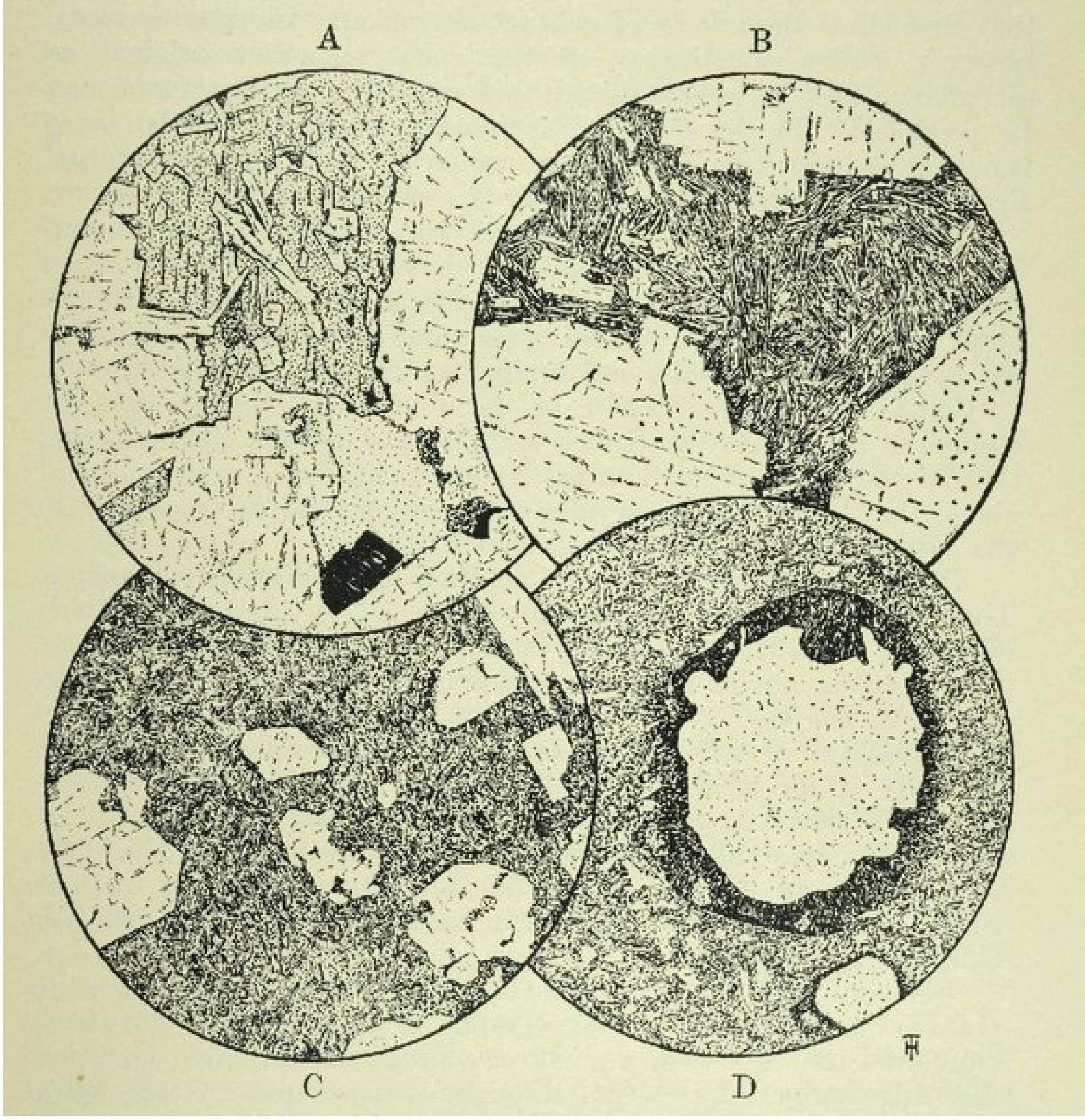


FIG. 19.—Lavas of Plateau Basalt Type.

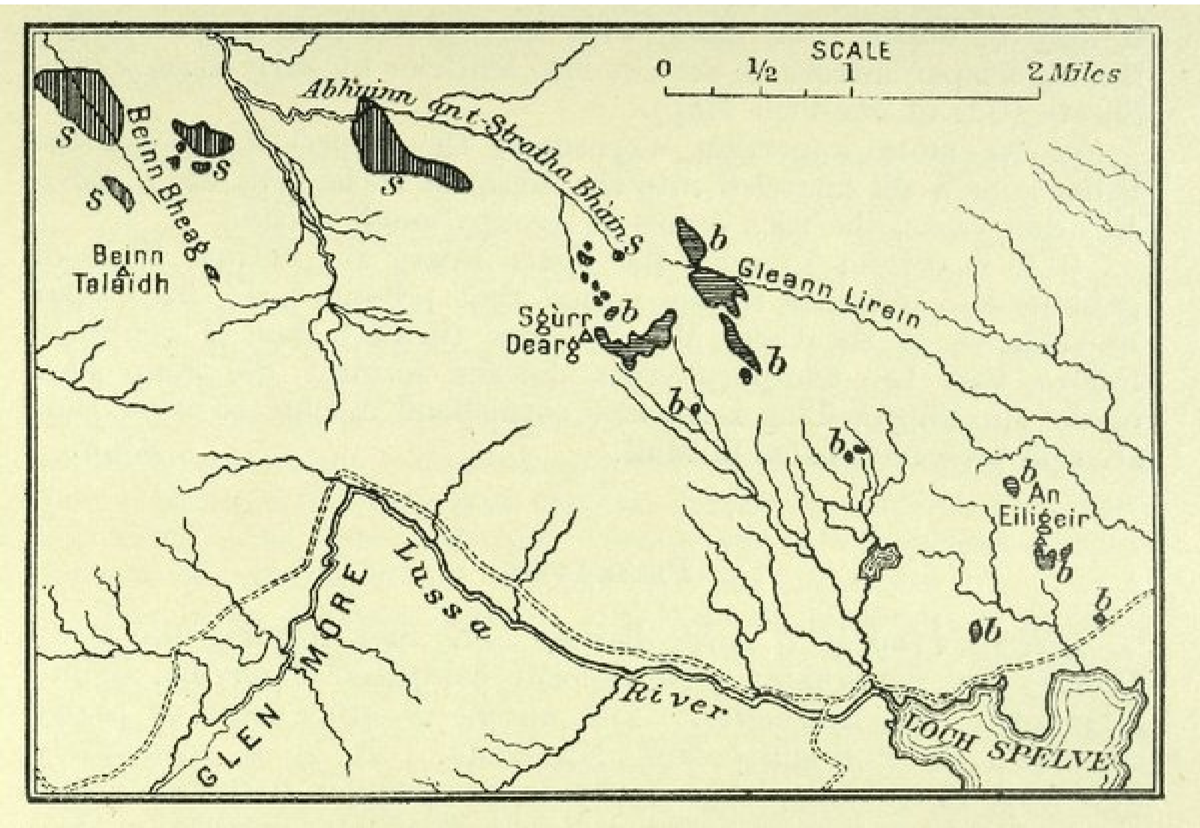
(Figure 19) Lavas of Plateau Basalt Type. A. [(S15686) [NM 6482 4254]] x 17. Porphyritic Olivine-basalt. The olivine is practically unaltered and occurs as porphyritic crystals (centre and bottom). The augite is titaniferous, having a lilac tinge, and is subophitic in its development with respect to the felspar. The felspar occurs as narrow elongated crystals of labradorite. B. [(S20865) [NM 4194 3832]] x 28. Segregation-vein in basalt-lava of Plateau Type. Titaniferous augite in large crystals that exhibit hour-glass structure and are zoned with aegerine-augite; partially analcitized labradorite; and conspicuous ilmenite. The residuum consists of microlithic alkali-felspar, aegerine-augite, and chlorite.



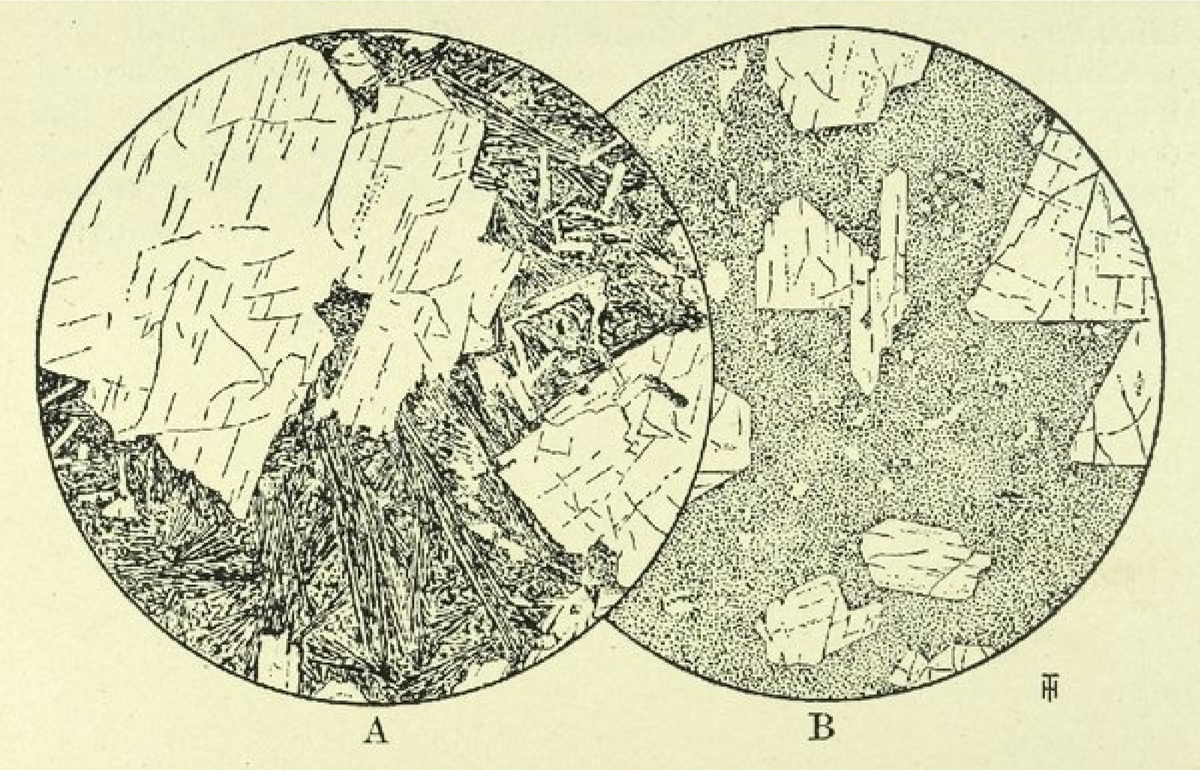
(Figure 20) Map showing zeolite-localities (dotted) and granophyre (crossed). Quoted from Trans. Roy. Soc. Edin., vol. li., 1915, p. 3.



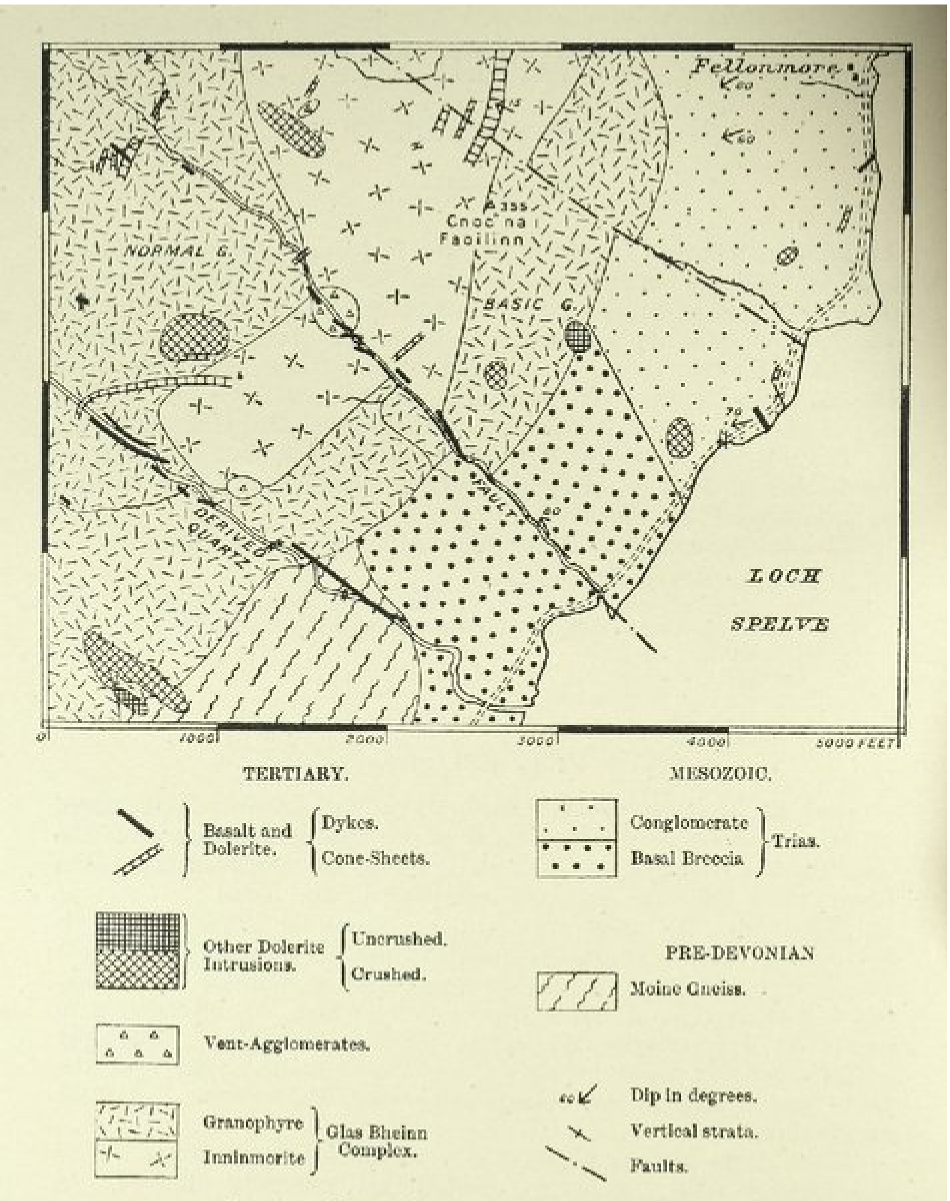
(Figure 21) A -C Pillow-Lava, Cruach Choireadail. D Beinn Fhada. A. (S17184) [NM 5932 2982] x 17. Interior of Pillow. Moderately coarse doleritic rock with the augite and felspar in ophitic relationship. B. (S17185) [NM 5940 3000] x 17. Exterior of Pillow. The felspar occurs in two generations as porphyritic crystals of bytownite-anorthite, and as slender laths, which, with elongated crystals of augite, impart a variolitic structure to the matrix (compare with (Figure 23a, p. 163). C. (S17186) [NM 5924 3011] x 17. Chilled Margin of Pillow. Porphyritic basic plagioclase, near anorthite in composition, in a fine-textured matrix. The ground-mass is composed of small, elongated crystals of felspar, augite and iron-ore, with a chloritized residuum probably representing glass (compare with Fig 23A, p. 163). D. (S18039) [NM 6437 2936] x 17. Beinn Fhada. Portion of the exterior of a pillow showing the characteristic invasion of vesicular cavities by mesostatic residual material which has subsequently frothed up in situ.



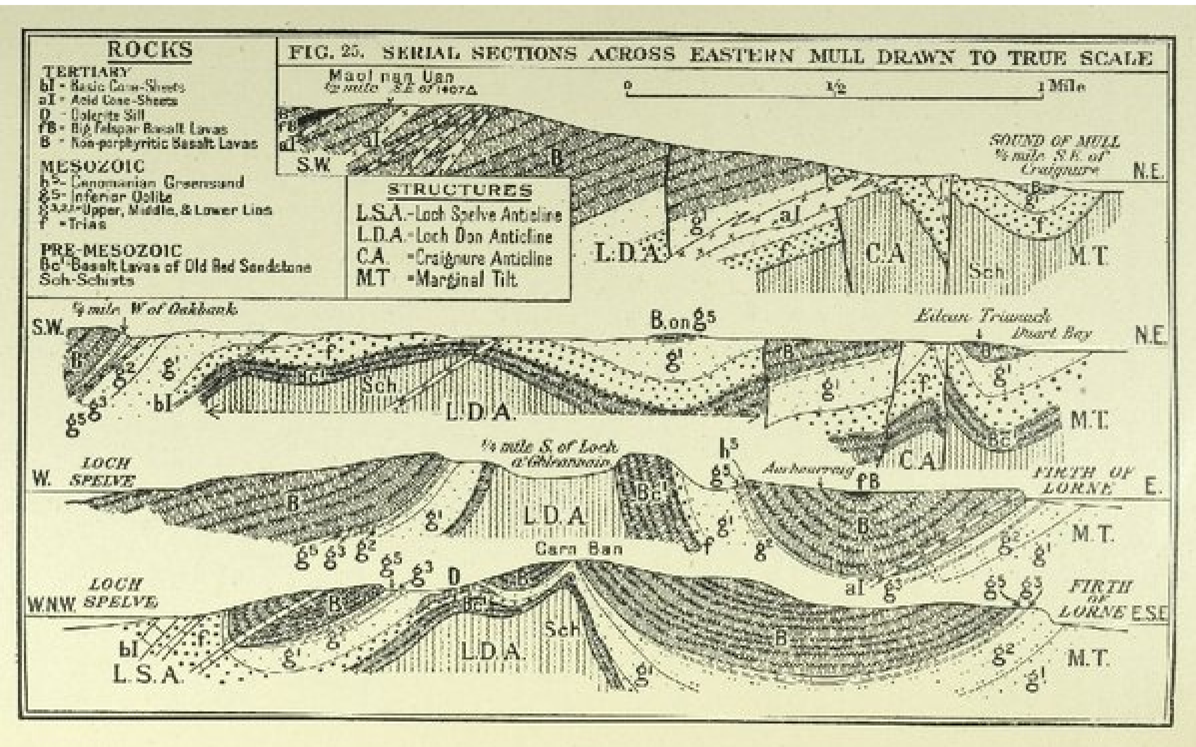
(Figure 22) Map of Big-Felspar Dolerites b,and Small Felspar Dolerites s, Sgùrr Dearg District.



(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 felspars 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)



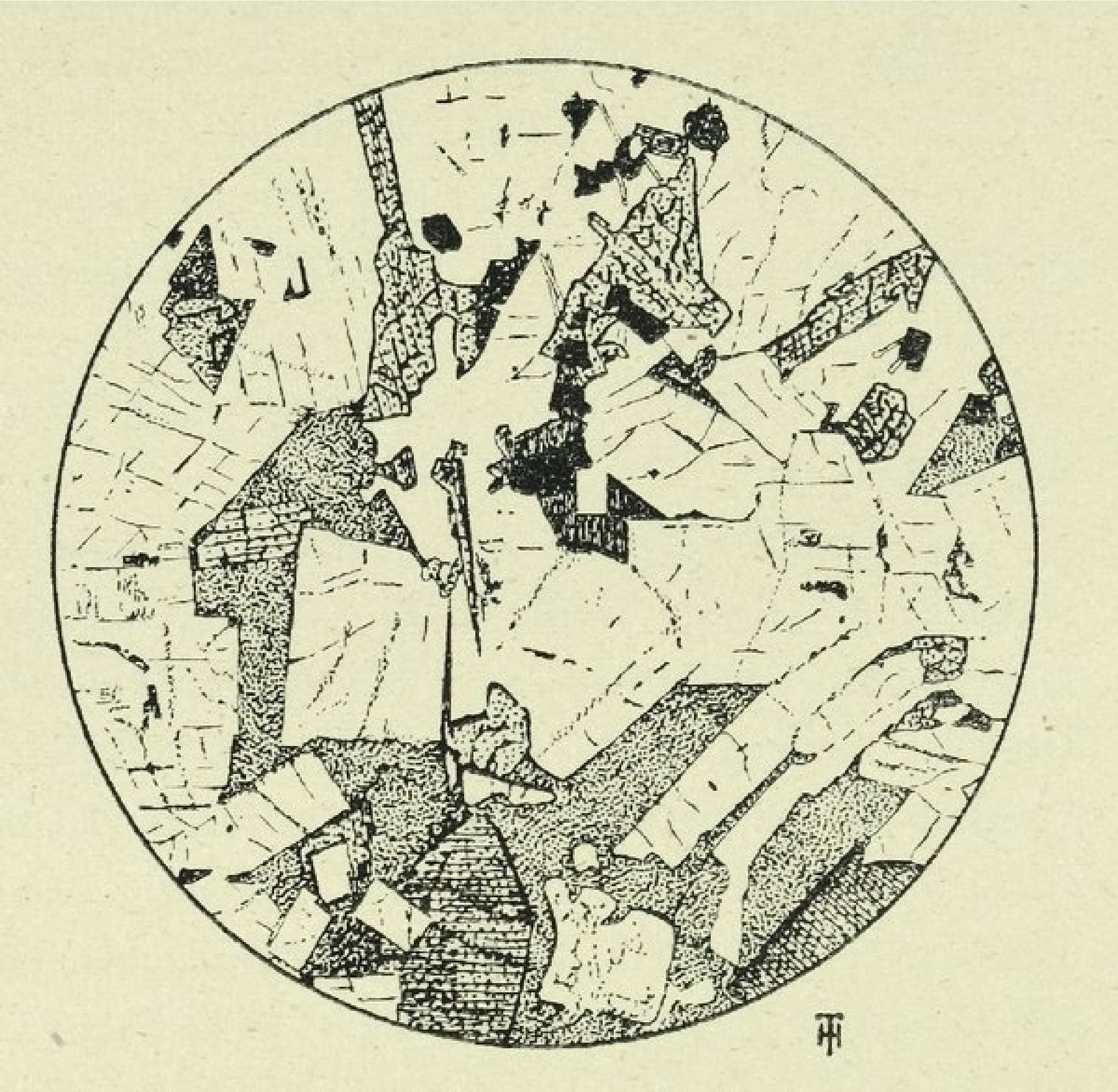
(Figure 24) Map of Cnoc na Faoilinn, Loch Spelve.



(Figure 25). Serial sections across Eastern Mull drawn to true scale. Rocks, Tertiary: bI = Basic Cone-Sheets aI = Acid Cone-Sheets D = Dolerite Sill fB = Big Felspar Basalt Lavas B = Non-porphyritic Basalt Lavas. Mesozoic: h^5 = Ceitomanian Greensand g^5 = Interior Oolite $g^{3,2,1}$ = Upper, Middle.& Lower Lias f = Trias. Pre-Mesozoic: Bc^1=Basalt Lavas of Old Red Sandstone; Sch=Schists. Structures: L.S.A.=Loch Spelve Anticline. L.D.A.=Loch Don Anticline. C.A. =Craignure Anticline M.T. =Marginal Tilt.

FIG. 26.—Inninmore Fault, seen from South across the Sound of Mull.

(Figure 26) Inninmore Fault, seen from South across the Sound of Mull.



(Figure 27) [[(S15991)](#) [NM 5463 2063]] ×20. Alkali-Syenite of Gamnach Mhòr, Carsaig Bay: aegirine and aegirine-augite, alkali-hornblende (centre), magnetite, and colourless soda-orthoclase, with a yellow chloritized residuum.

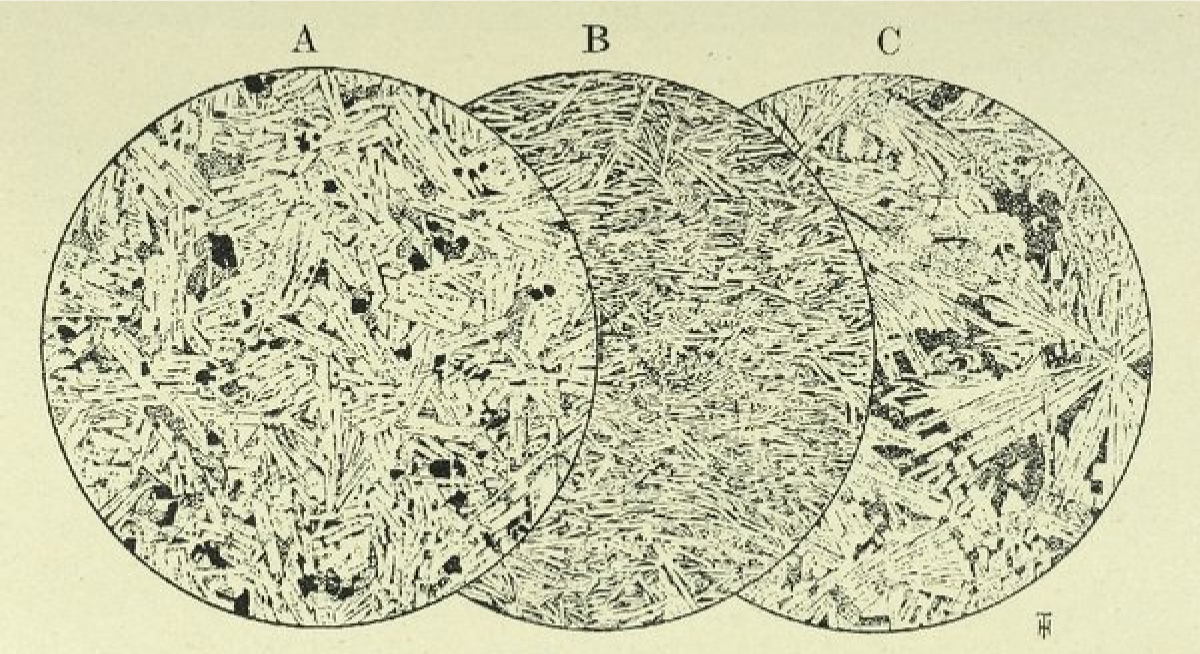
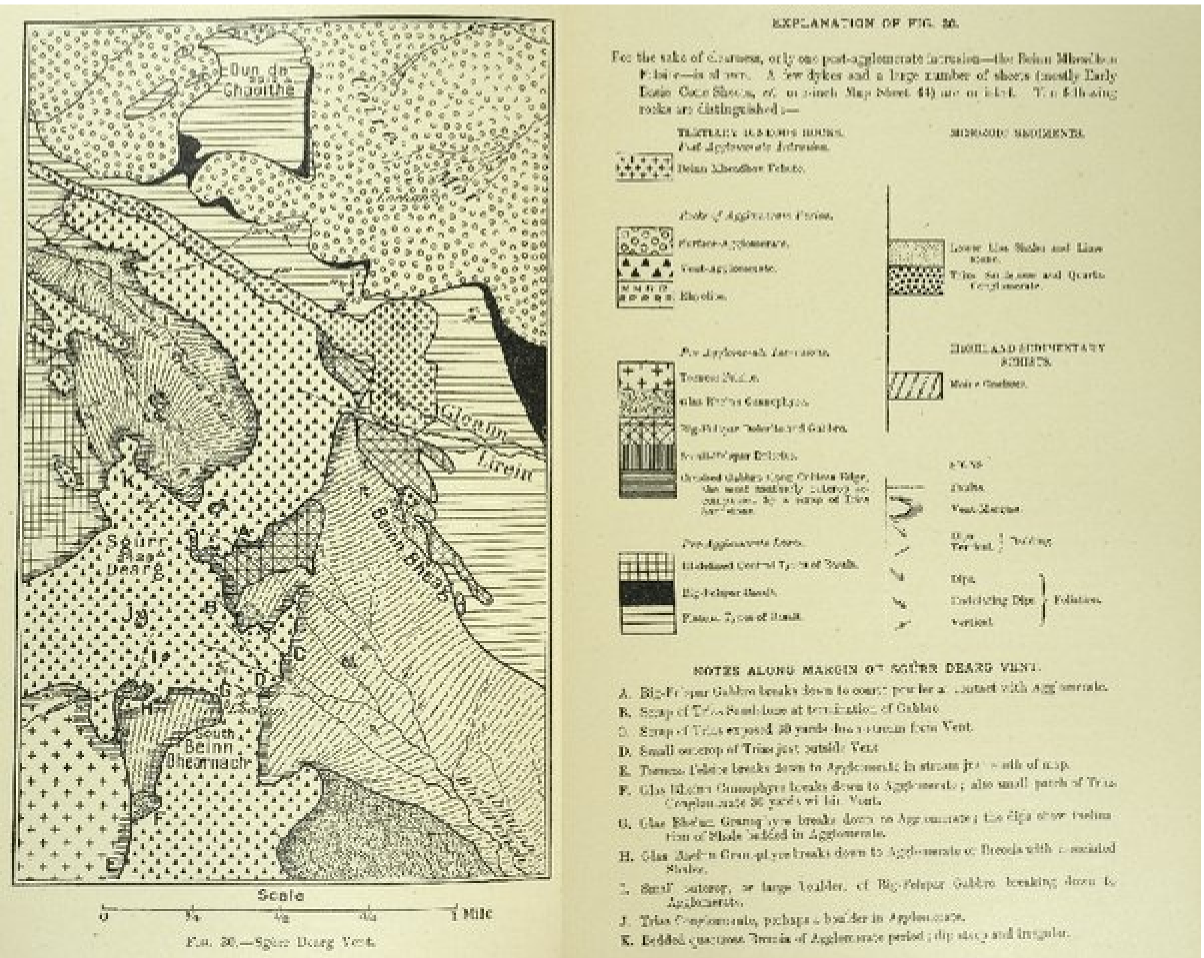


Fig. 28.

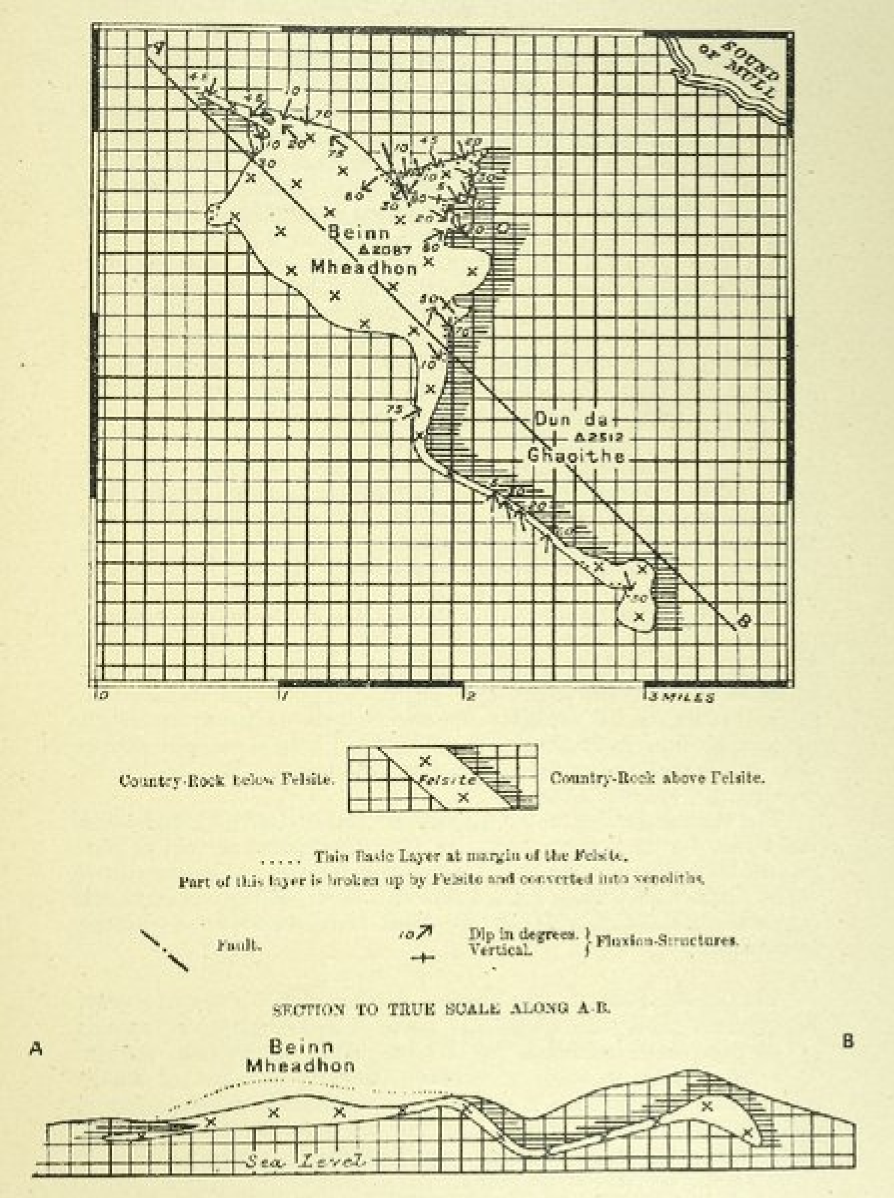
(Figure 28) A [[(S15756)](#) [NM 5497 5027]] ×15. Phonolitic Trachyte of Ardnacross (Rudh' an t-Sean-Chaisteil). Slightly elongated prisms of alkali-felspar, small plates of biotite, and a little magnetite, in a chloritized base. The rock contains a small amount of analcite-pseudomorphs suggestive of nepheline. B [[(S14335)](#) [NM 5615 4341] [NM 5615 4341]] ×15. Trachyte of Bràigh a' Choire Mhòir. Small prisms of alkali-felspar arranged with some parallelism in a dark base largely composed of a green alkali-pyroxene and chlorite. C. [[(S18477)](#) [NM 5237 2031]] ×15. Bostonite of Rudh' a' Chromain. Prisms of alkali-felspar, often arranged in sheaf-like or radiate aggregates, in a dark-green chloritic base that contains some calcite and quartz.

Fig. 29.—Distribution of Gneiss-Fragments in Mull Agglomerates.

(Figure 29) Distribution of gneiss-fragments in Mull Agglomerates.



(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.



(Figure 31) Map and section of Bheinn Mheadhon Felsite.

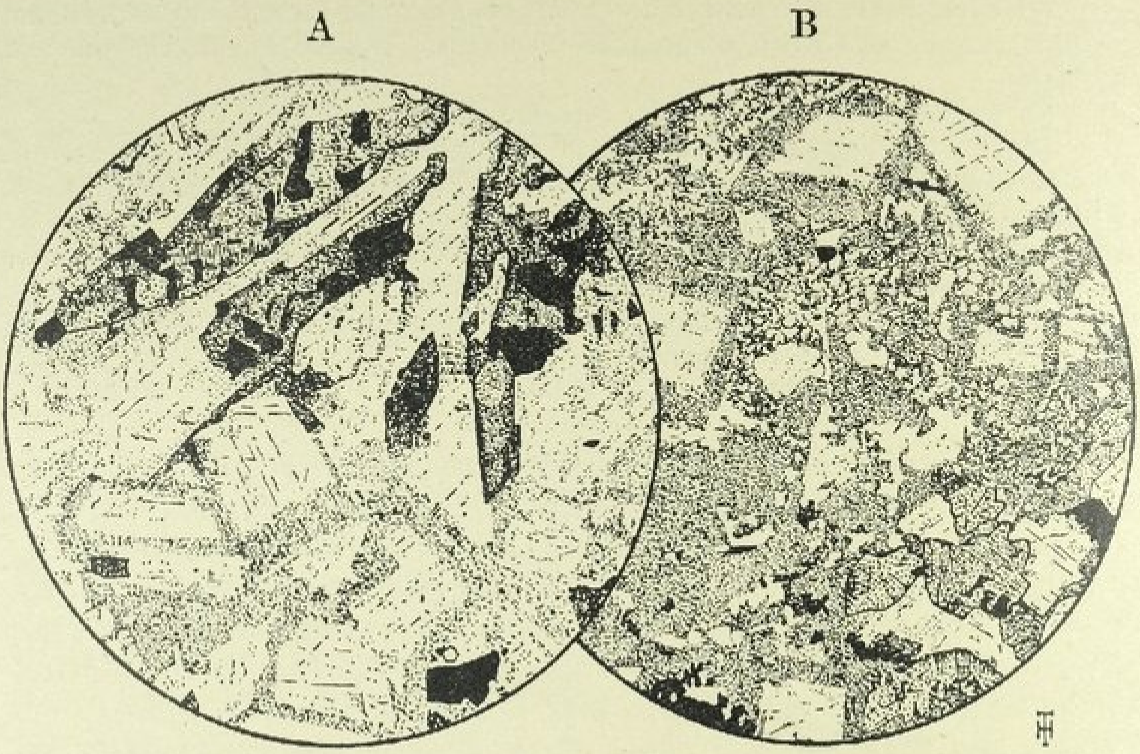
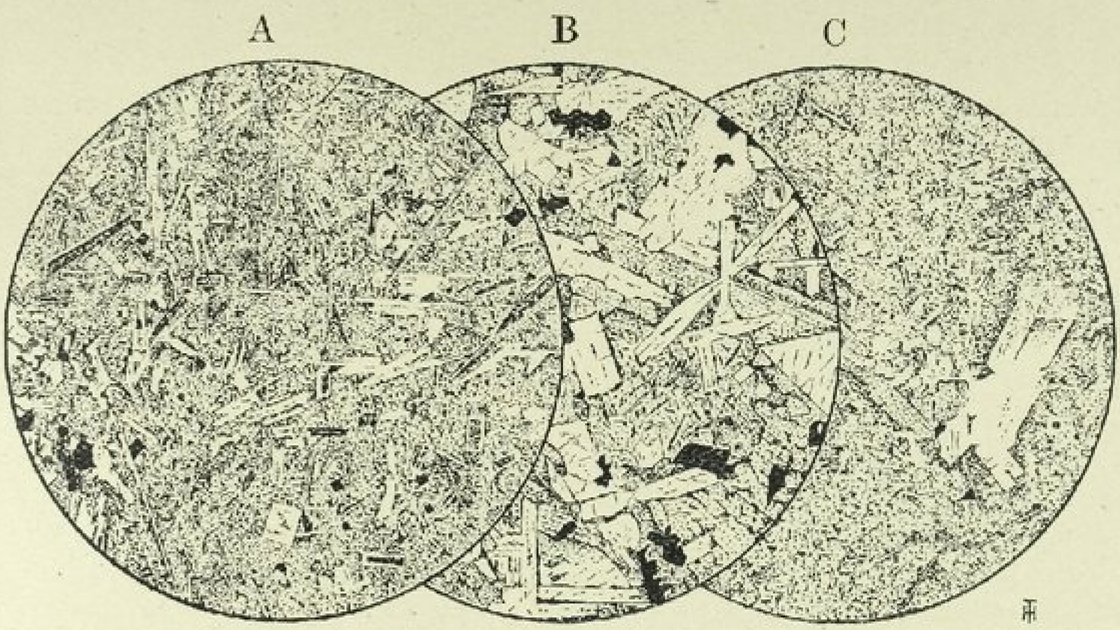
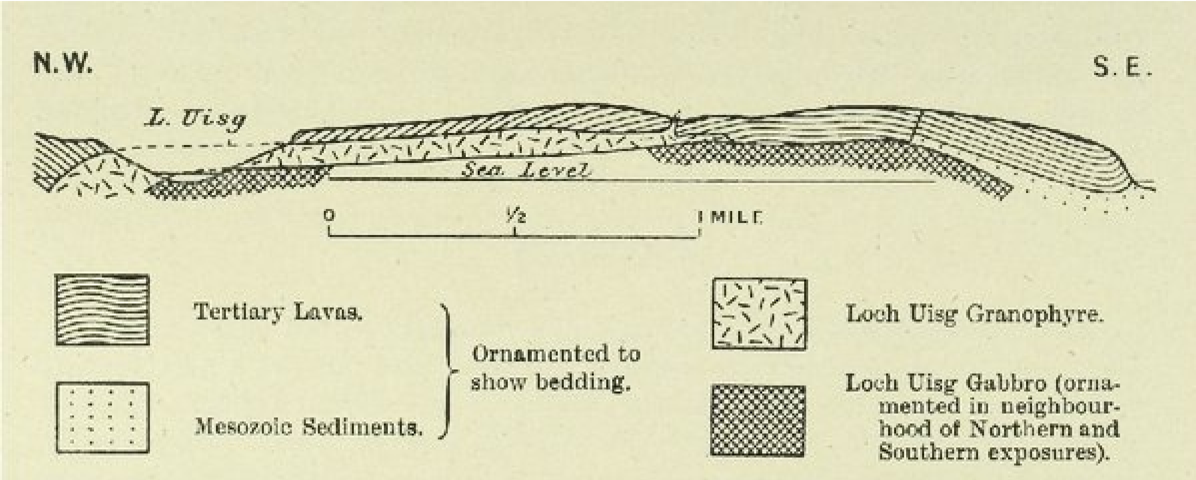


FIG. 32.

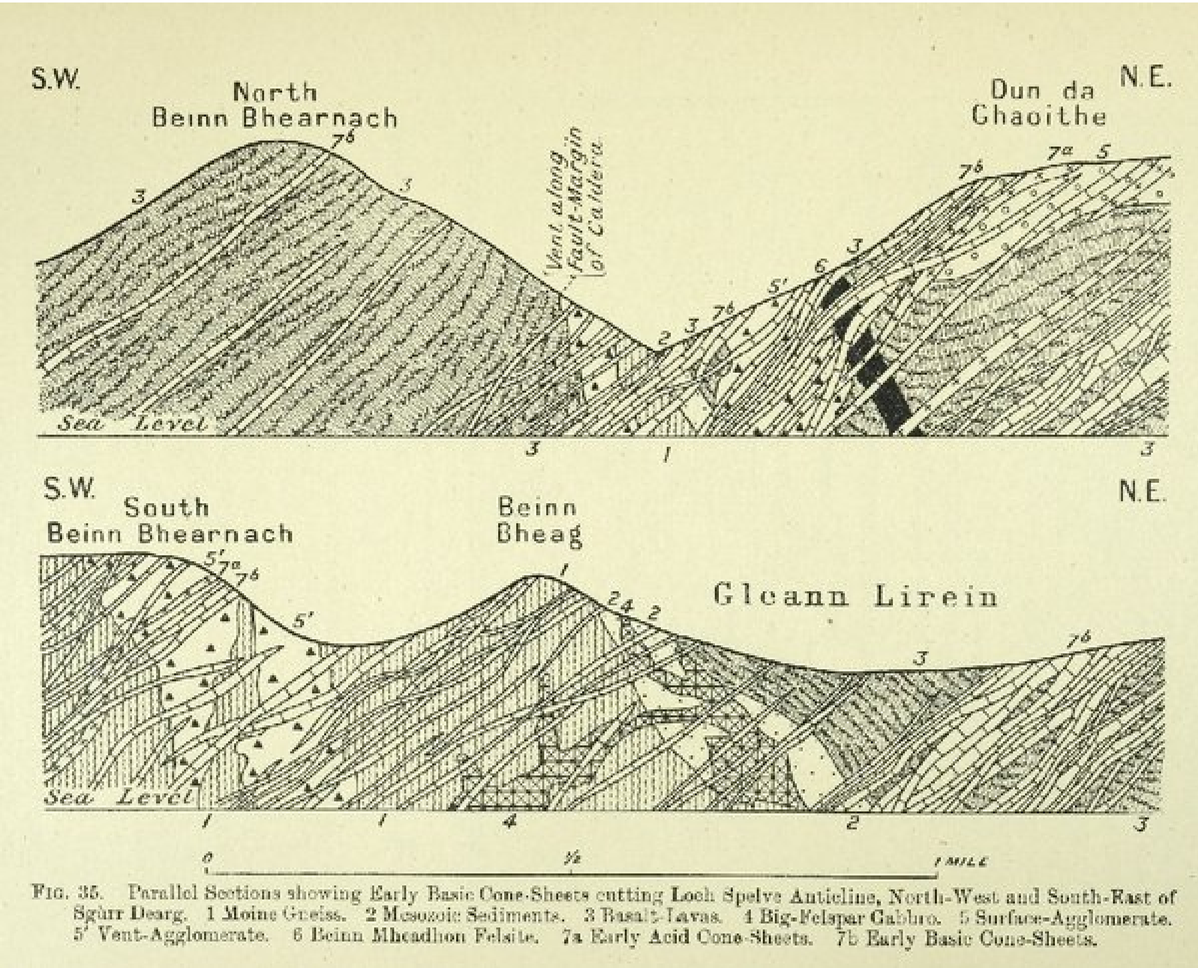
(Figure 32) A [(S14740) [NM 6158 3703]] ×17. Augite-diorite of Gaodhail mass (Tomslèibhe). Large columnar crystals of augite intimately associated with magnetite. Tabular crystals of oligoclase-andesine irregularly fringed with turbid alkali-felspar. Interstices frequently occupied by quartzo-felspathic matter in micrographic relationship. B [(S14811) [NM 6061 3813]] ×17. Augite-diorite of more acid character from the Gaodhill River, showing signs of interaction between its basic and acid components. The rock consists of partially resorbed ophitic augite and oligoclase in a micrographic matrix of quartz and turbid alkali-felspar. The oligoclase is fringed with perthitic orthoclase.



(Figure 33) Craignurite and Allied Granophyre. A. [(S16802) [NM 6903 3752]] ×15. Normal Craignurite from Allt an Dubh-choire. The structure is highly characteristic. The rock consists of a network of narrow elongated crystals of augite and skeleton-crystals of oligoclase and andesine enclosing a fine-textured acid devitrified ground-mass. B. [(S16800) [NM 6857 3750]] ×15. Basic variety of Craignurite from Allt an Dubh-choire. This rock shows a coarser type of crystallization and differs from the normal type in the greater basicity of its felspar and in a diminution in the amount of acid matrix. The usual acicular type of crystallization is preserved. C. [(S16803) [NM 7167 3731]] x 15. Granophyre allied *to Craignurite from Craignure shore. This rock contains the usual elongated crystals of augite and occasional small felspars of the craignurites. It differs, however, in its preponderance of acid matrix in the form of microperthitic and micrograpnophyric areas.*



(Figure 34) Section showing Loch Uisg Granophyre cutting folded lavas.



(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.

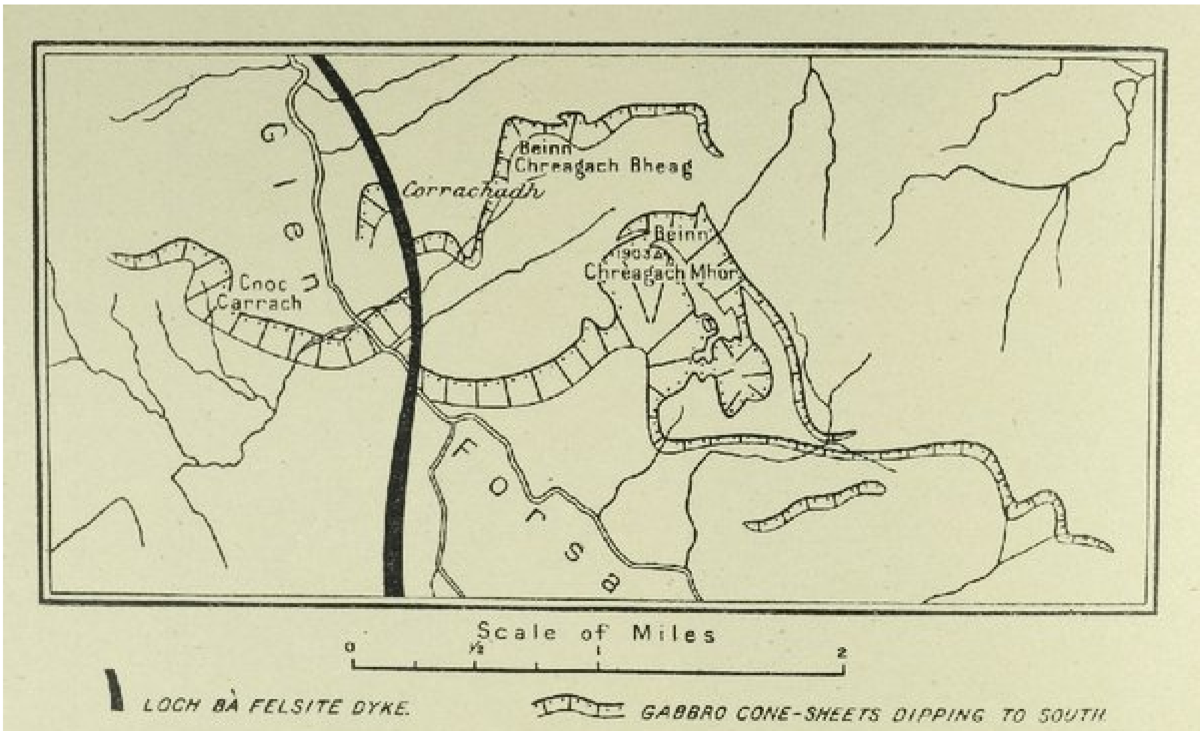


FIG. 36.

(Figure 36) Early Basic Cone-Sheets of Beinn Chreagach Bheag and Beinn Chreagach Mhòr probably displaced at Loch Bà Felsite.

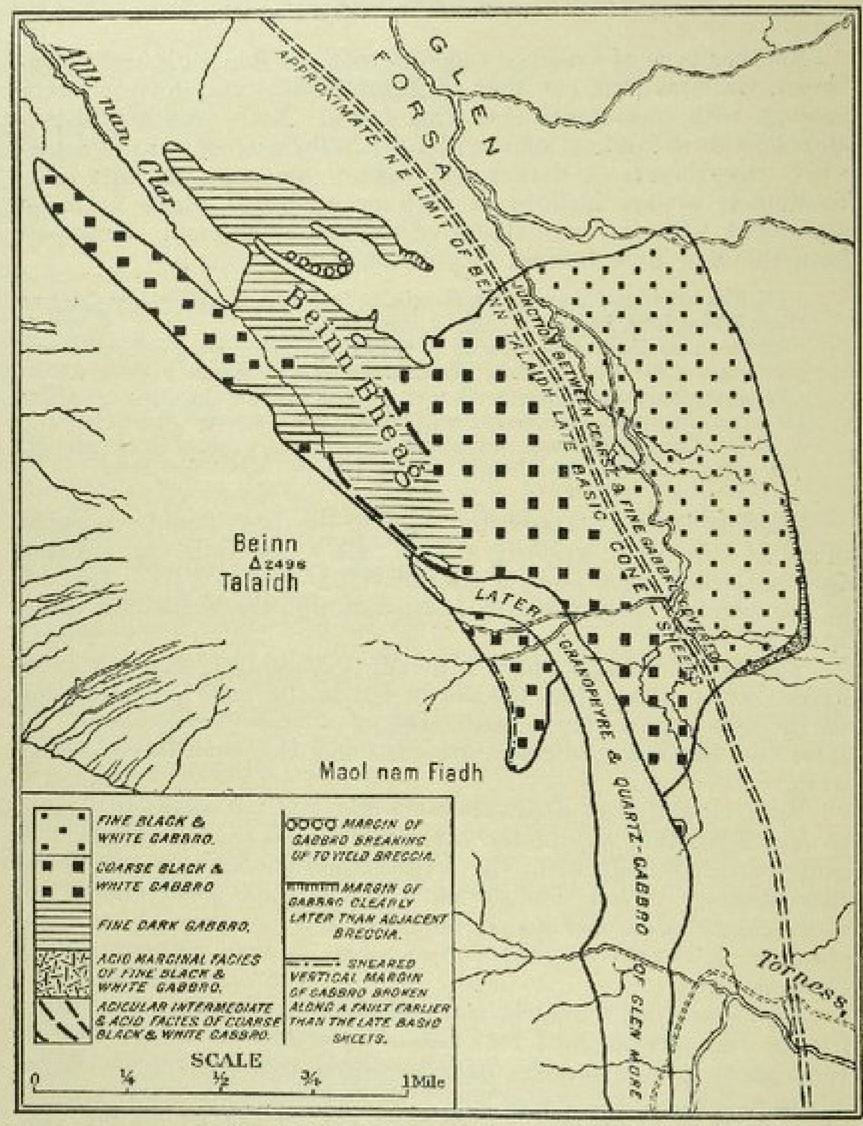


Fig. 37.—Map of Beinn Bheag Gabbro.

(Figure 37) Map of Beinn Bheag Gabbro.

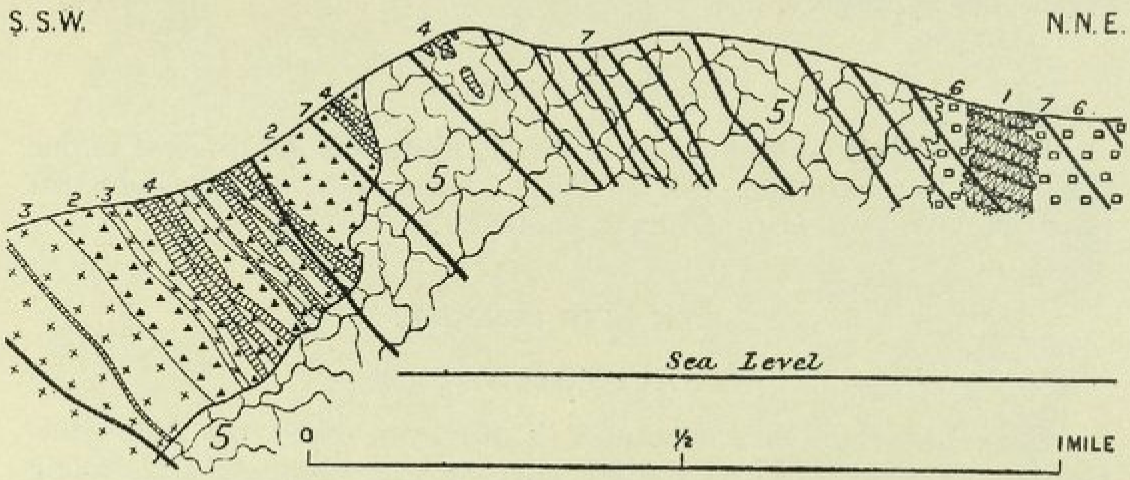


Fig. 38.—Section across Ben Buie.

1. Basalt-Lavas with pillow-structure. 2. Vent-Agglomerate of Early Paroxism. 3. Early Acid Cone-Sheets. 4. Pre-Ben-Buie Early Basic Cone-Sheets. 5. Ben Buie Gabbro. 6. Vent-Agglomerate of Post-Ben-Buie Date. 7. Post-Ben-Buie Early Basic Cone-Sheets and Late Basic Cone-Sheets.

(Figure 38) Section across Ben Buie. 1. Basalt-Lavas with pillow-structure. 2. Vent-Agglomerate of Early Paroxism. 3. Early Acid Cone-Sheets. 4. Pre-Ben-Buie Early Basic Cone-Sheets. 5. Ben Buie Gabbro. 6. Vent-Agglomerate of Post-Ben-Buie Date. 7. Post-Ben-Buie Early Basic Cone-Sheets and Late Basic Cone-Sheets.

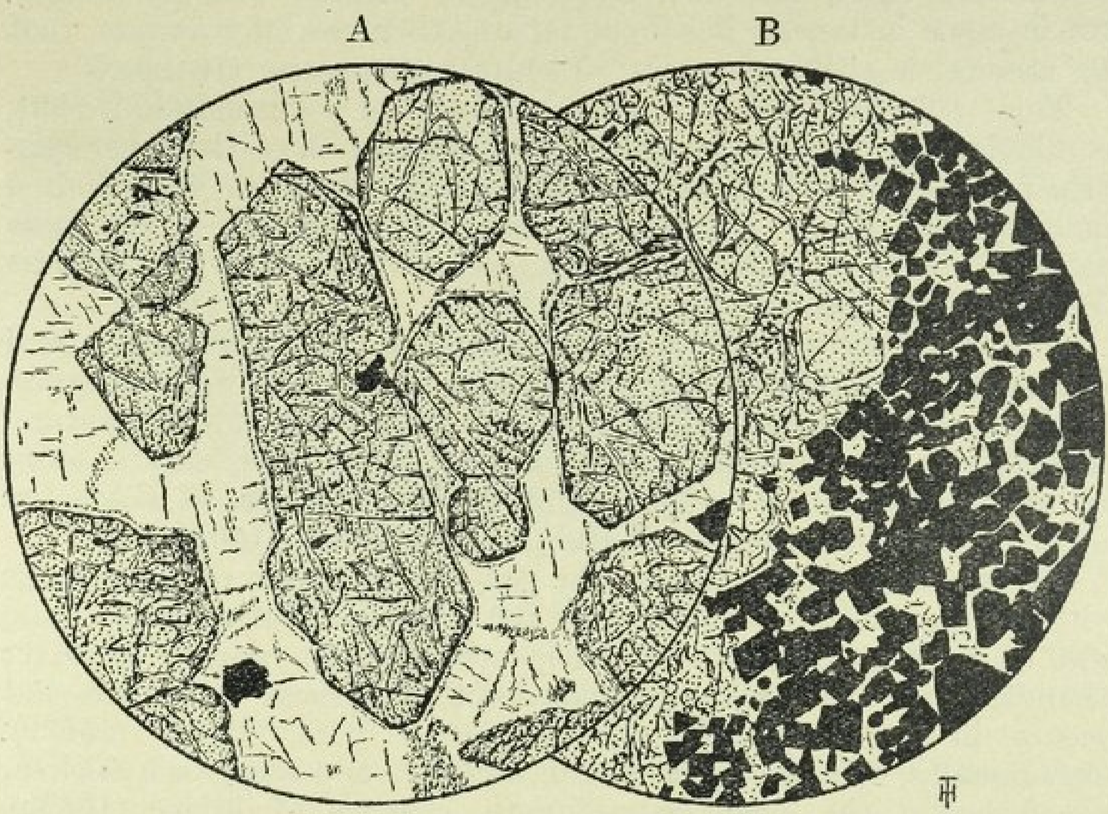


FIG. 39.

(Figure 39) A. [(S18452) [NM 5763 2998]] ×20. Allivalite of the Ben Buie Complex. Hypidiomorphic olivine in a matrix of basic plagioclase felspar that approximates to anorthite in composition. B. [(S16531) [NM 5660 3233]] ×20. Band of picotite in an olivine-rich allivalite of the Ben Buie Complex.

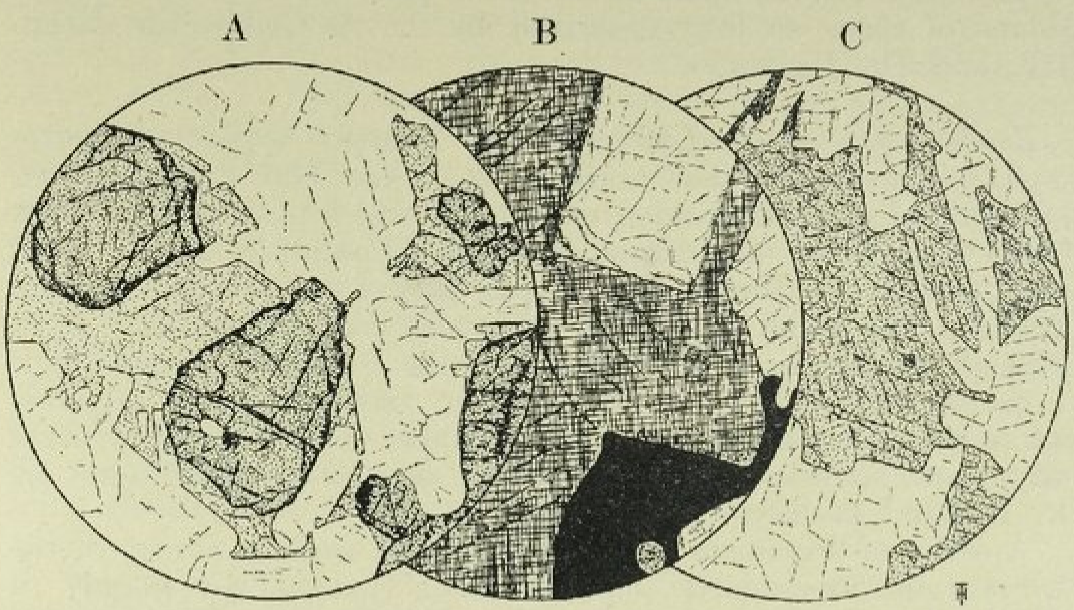


FIG. 40.—The Ben Buie Eucrite and its Varieties.

(Figure 40) The Ben Buie Eucrite and its varieties. A. [(S16711) [NM 5811 2665]] ×15. Basic variety showing large crystals of olivine in association with ophitic augite. The colourless component, is a zoned felspar with the average composition of bytownite. B [(S17903) [NM 5908 2972]] ×15. Gabbro. Coarse olivine-free rock composed of diallagic

augite, basic labradorite and iron-ore. C. [(S16720) [NM 5893 2613]]. Olivine-free coarse ophitic dolerite. The augite in this case is devoid of schiller-structures.

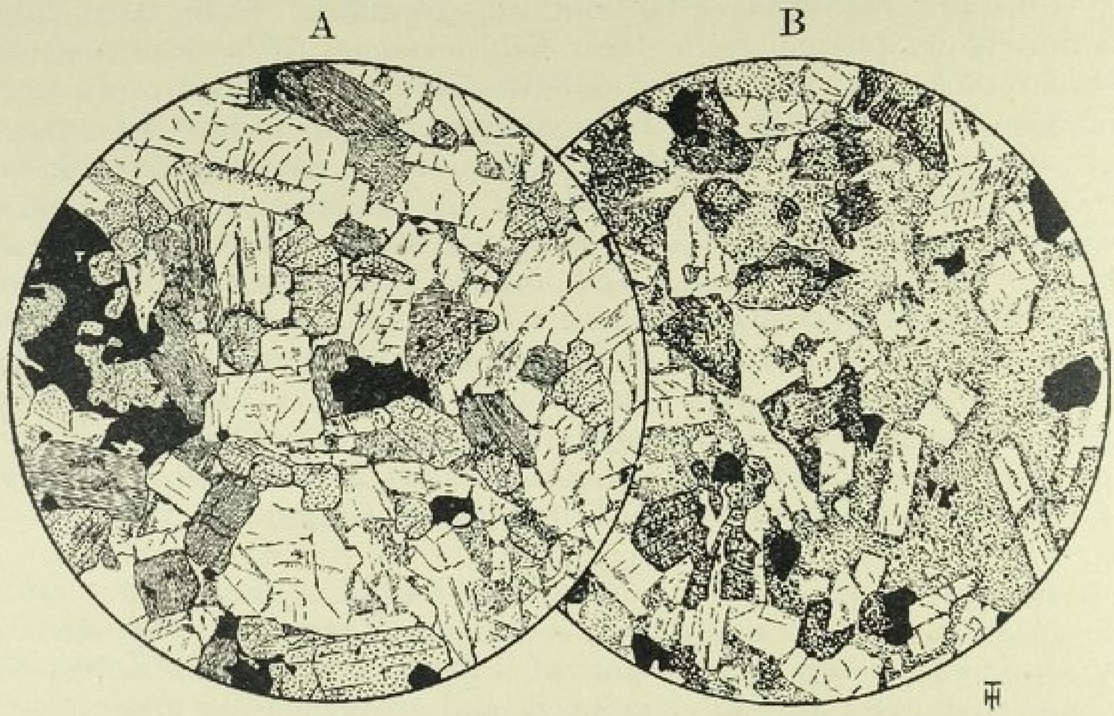
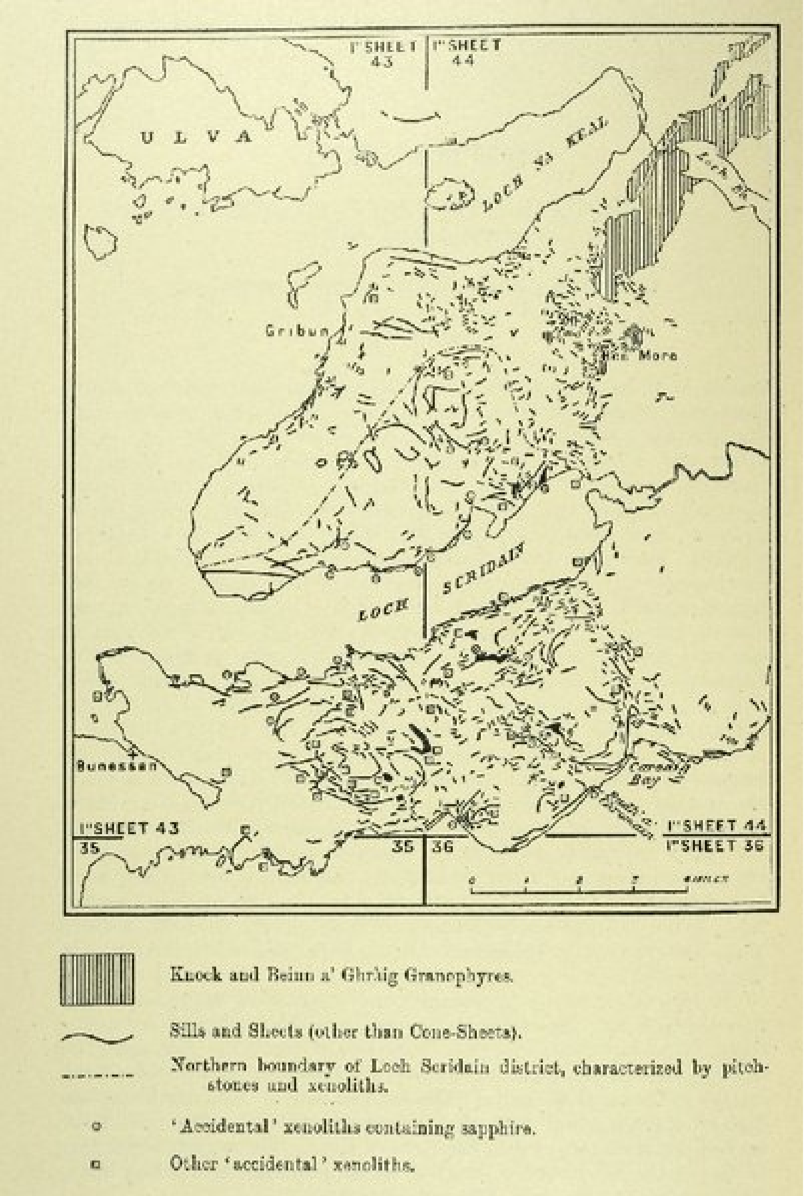


FIG. 41.—Craig Porphyrite.

(Figure 41) Craig Porphyrite. A. [(S16525) [NM 5851 2874]] ×17. Porphyrite, showing the normal development of porphyritic crystals of rhombic pyroxene, augite, and labradorite, with accessory magnetite, in a subordinate fine grained felspathic matrix. B. [(S16523) [NM 5820 3012]] ×17. Porphyrite of variable type, showing clots of relatively basic material similar to that figured in A, with a greatly increased amount of fine-grained acid matrix that has the characters of a soda-granophyre.



(Figure 42) Map of South-West Mull, showing distribution of Sills and Sheets other than Cone-Sheets.

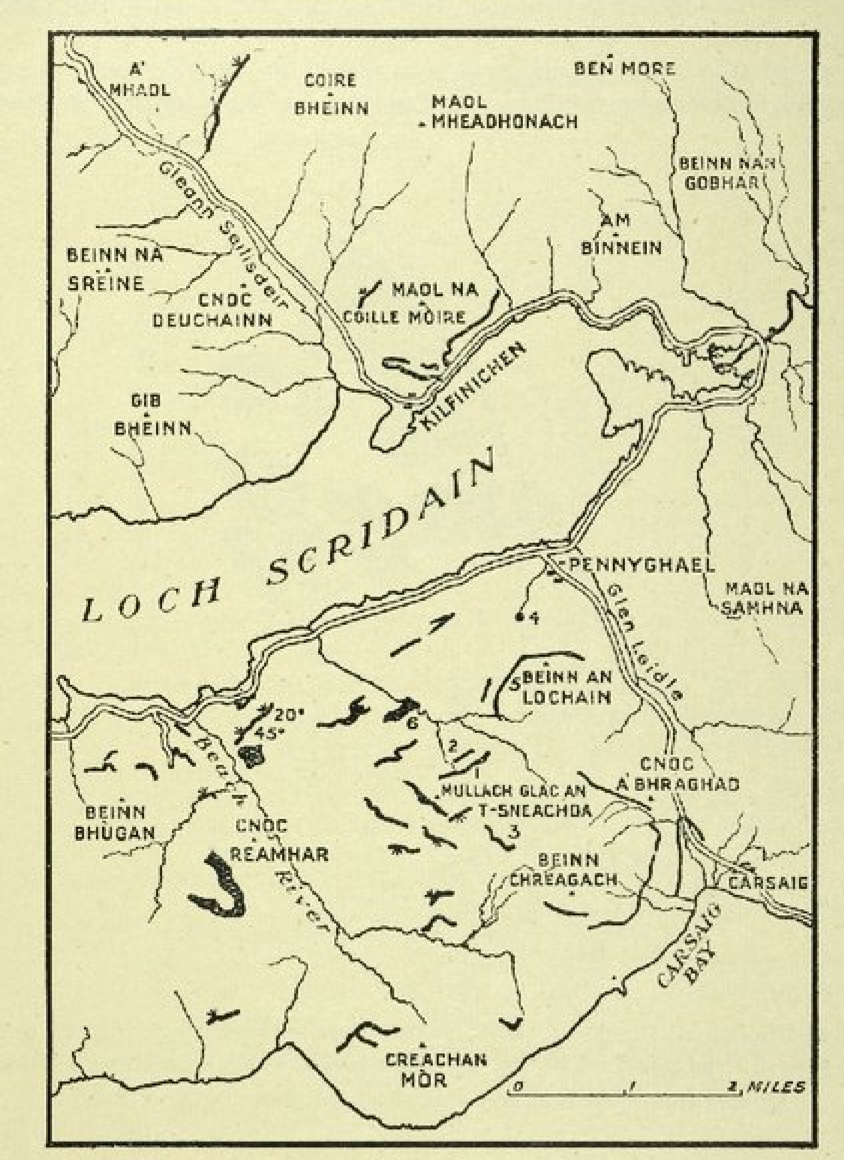


Fig. 43.

(Figure 43) Map of some of the occurrences of Pitchstone in Loch Scridain district. Quoted from Quart. Journ. Geol. Soc., vol. lxai., 1916, p. 206.

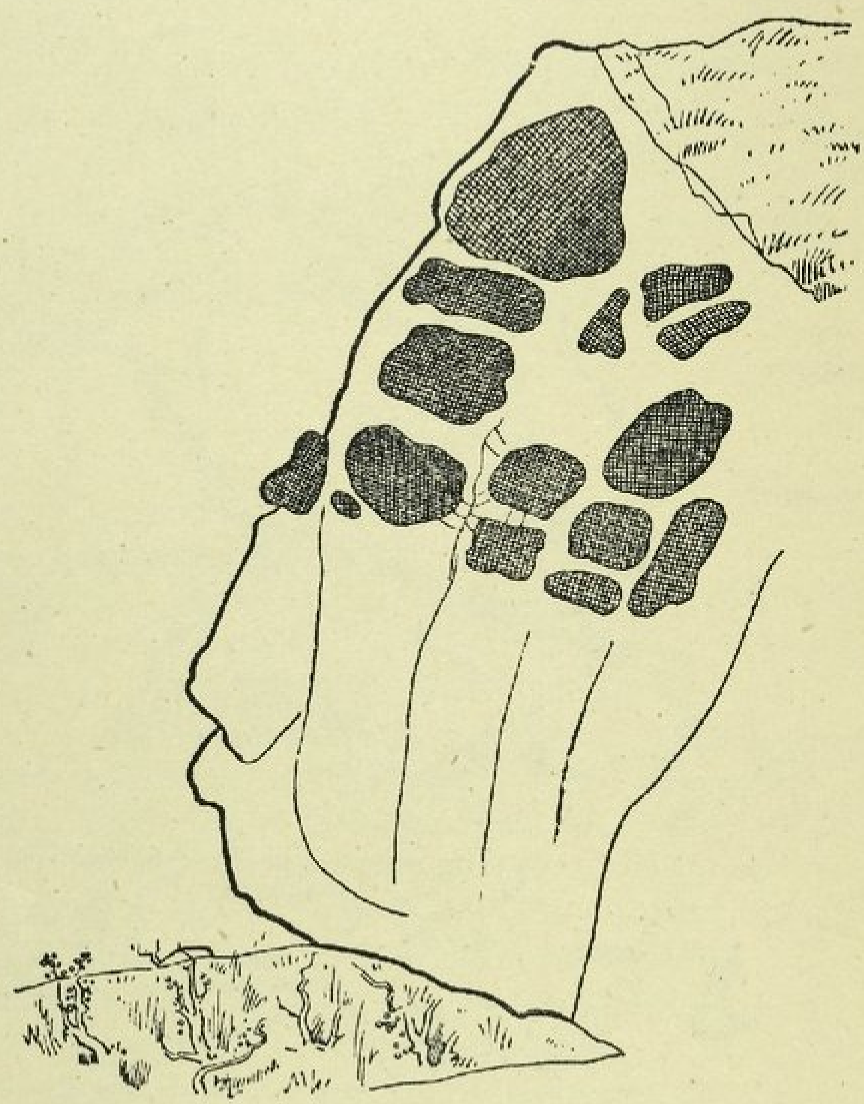


FIG. 44.

(Figure 44) Sheath and-Core Structure as exhibited in the Sheet numbered 1 in Figure 43, p. 261. The shaded areas represent pitchstone. The height of the crag is about 5 feet. Quoted from Quart. Journ. Geol. Soc., vol. lxxi, 1916, p. 211.

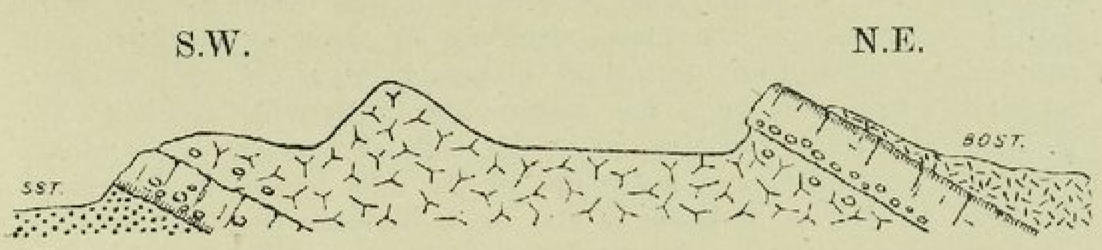


FIG. 45.

(Figure 45) Section at Rudh' a' Chromain across xenolithic composite sheet, showing external chilled margins against sandstone (SST) and bostonite (BOST). Quoted with minor alterations from Quart. Journ. Geol. Soc., vol. lxxviii, 1922, p. 234.

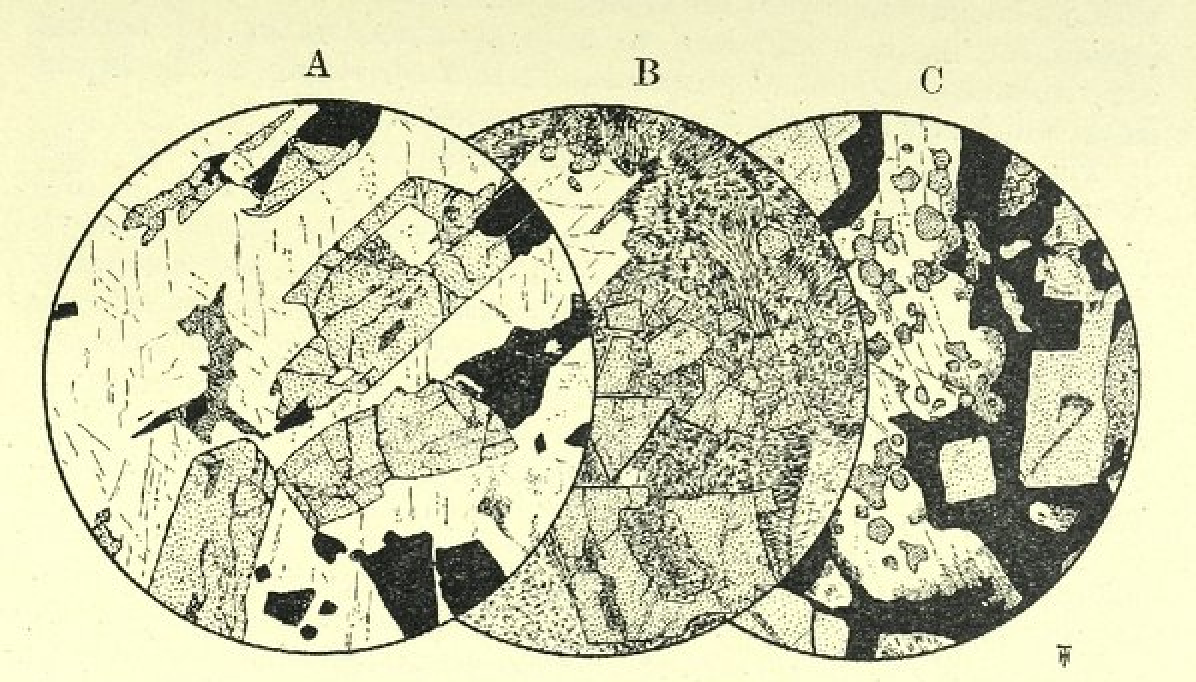


Fig. 46.—Aluminous Xenoliths.

(Figure 46) Aluminous Xenoliths. A. [(S16612) [NM 522 203] [NM 522 203]] ×15. Large idiomorphic crystals of sapphire with associated greenish. brown spinel, enclosed by coarsely crystalline anorthite, with a little residual brown glass. B. [(S18493) [NM 5342 2220]] ×15. Idiomorphic crystals of rose-pink spinel, and a large crystal of cordierite in a matrix of oligoclase felspar, an opaque spinellid and residual glass. C. [(S18001A)] ×15. The section shows a large irregular crystal of cordierite (centre) studded with brown spinel, also idiomorphic highly pleochroic rose-pink sillimanite (right and left) enclosed in a semi-opaque glassy matrix.

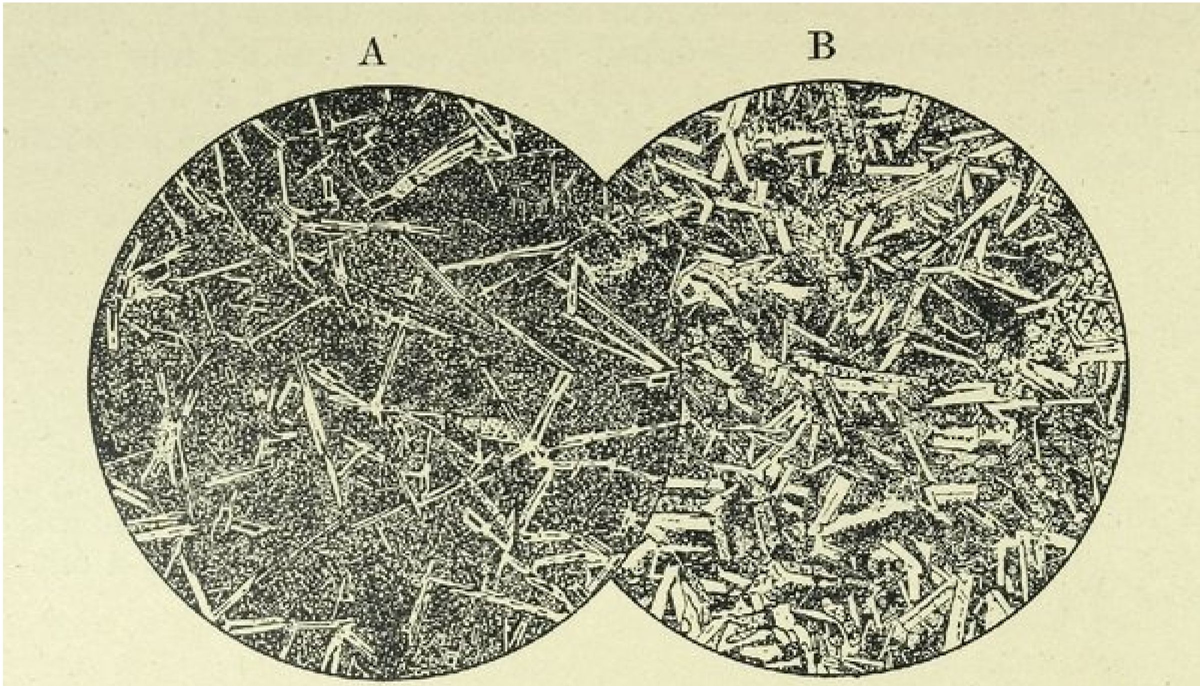
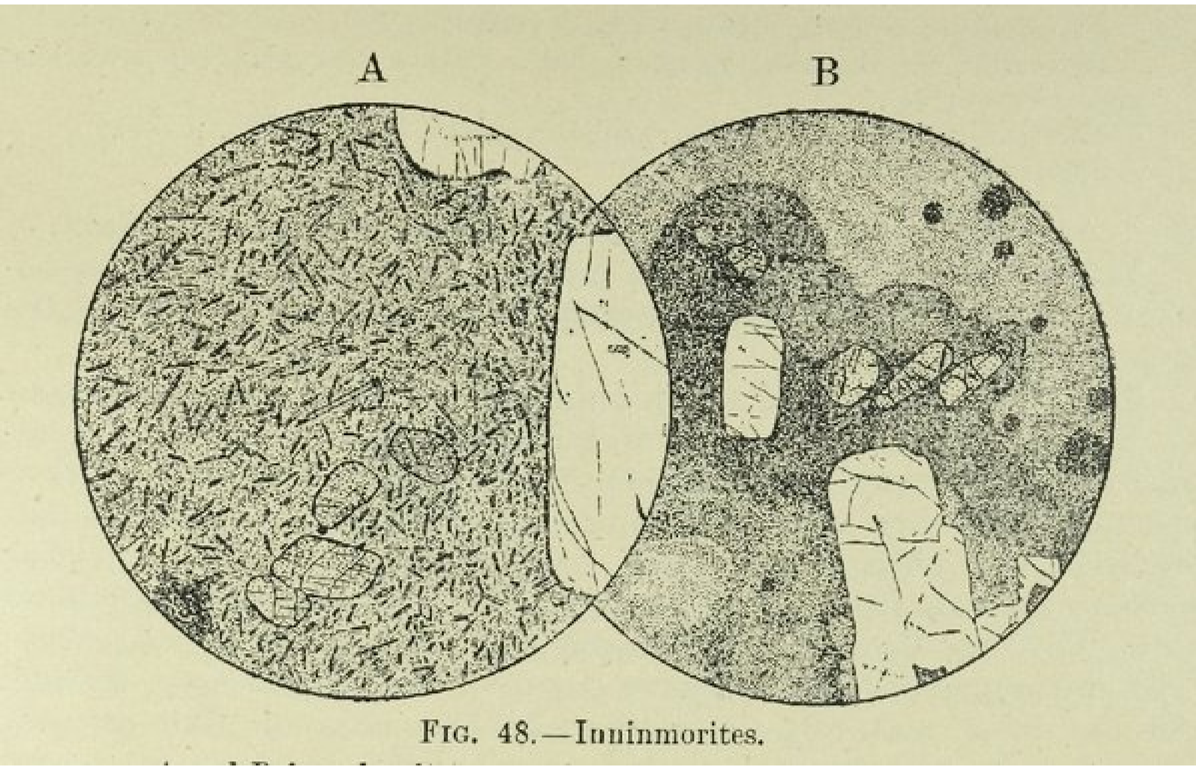
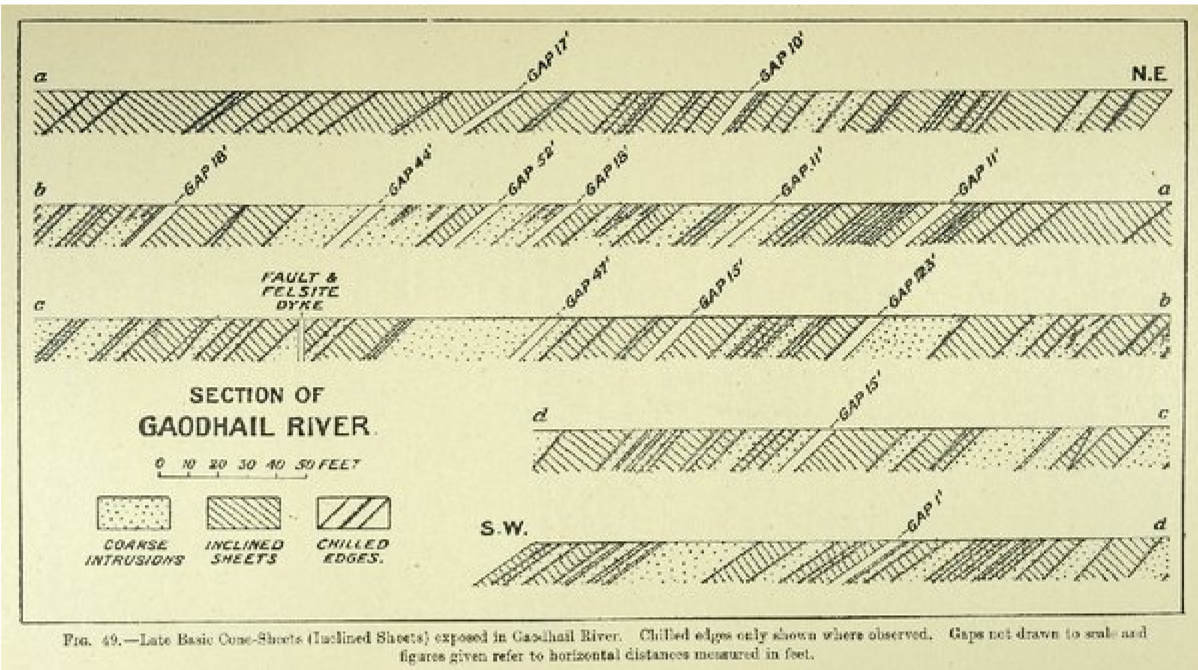


Fig. 47.—Leidleites. A from glassy centre and B from stony margin of sheet numbered 2 in Fig. 43, p. 261.

(Figure 47) Leidleites. A from glassy centre and B from stony margin of sheet numbered 2 in Figure 43, p. 261. A. [(S17243) [NM 5018 2359]1×20. Narrow laths and skeletal growths of plagioclase, and blades of augite (and some hypersthene) in a matrix of brown glass. B. [(S17244) [NM 5018 2359]] ×20. Laths of plagioclase, and elongated crystals of augite (and some hypersthene), in a matrix of felspar-microliths, augite-granules, and interstitial glass. There is an approach to the intersertal structure of the tholeiites. Quoted from Quart, Journ. Geol. Soc., vol. lxxi., 1916, p. 208.



(Figure 48) Inninmorites. A and B from localities 5 and 4 respectively in Figure 43, p. 261. A. [(S15990) [NM 5176 2404]] ×20. Small Phenocrysts of basic plagioclase and rounded crystals of uniaxial augite in a ground-mass of augite- and felspar-microliths, with interstitial glass. B. [(S15989) [NM 5077 2552]] ×20. Small phenocrysts of basic plagioclase and uniaxial augite in a matrix of brown glass. The glass is variable in colour, and locally almost opaque. Quoted from Quart. Journ. Geol. Soc., vol. lxxi., 1916, p. 208.



(Figure 49) Late Basic Cone-Sheets (Inclined Sheets) exposed in Gaodhail River. Chilled edges only shown where observed. Gaps not drawn to scale and figures given refer to horizontal distances measured in feet. Quoted with slight alteration from Summary of Progress for 1910, p. 36.

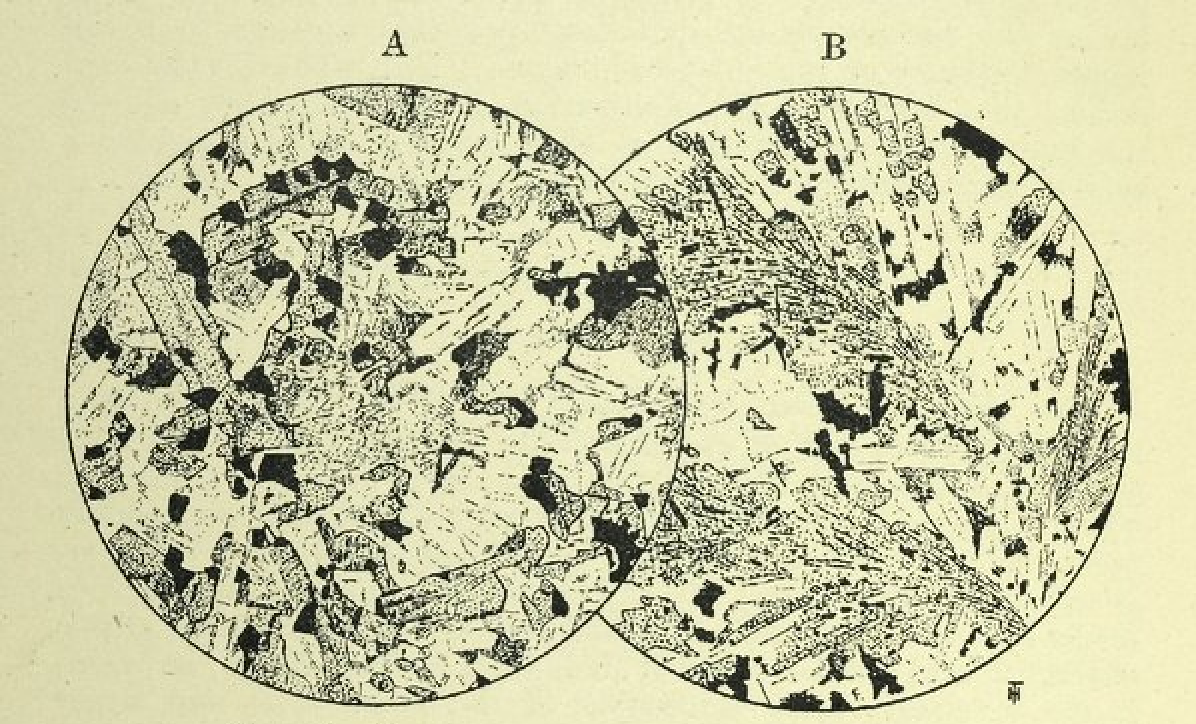


FIG. 50.—The Talaidh Type of Late Basic Cone-Sheets.

(Figure 50) The Talaidh Type of Late Basic Cone-Sheets. A. [(S14867) [NM 5354 2242]] x 17. Quartz-doleiite. The section shows columnar augite associated with titaniferous magnetite, a colourless moderately basic and albitized plagioclase, and a mesostasis of alkali-felspar and quartz. B. [(S14810) [NM 6060 3814]] x 17. Quartz-dolerite. Mineralogically similar to the above, but with a highly characteristic cervicorn development of its augite (p. 303).

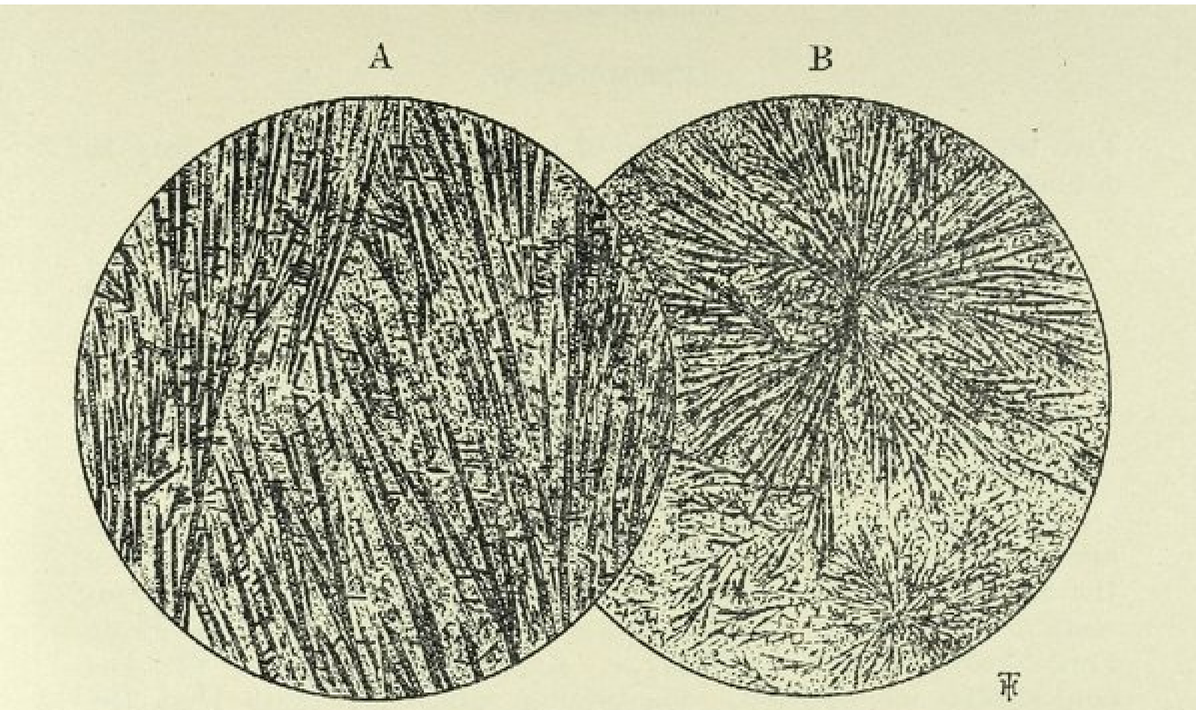
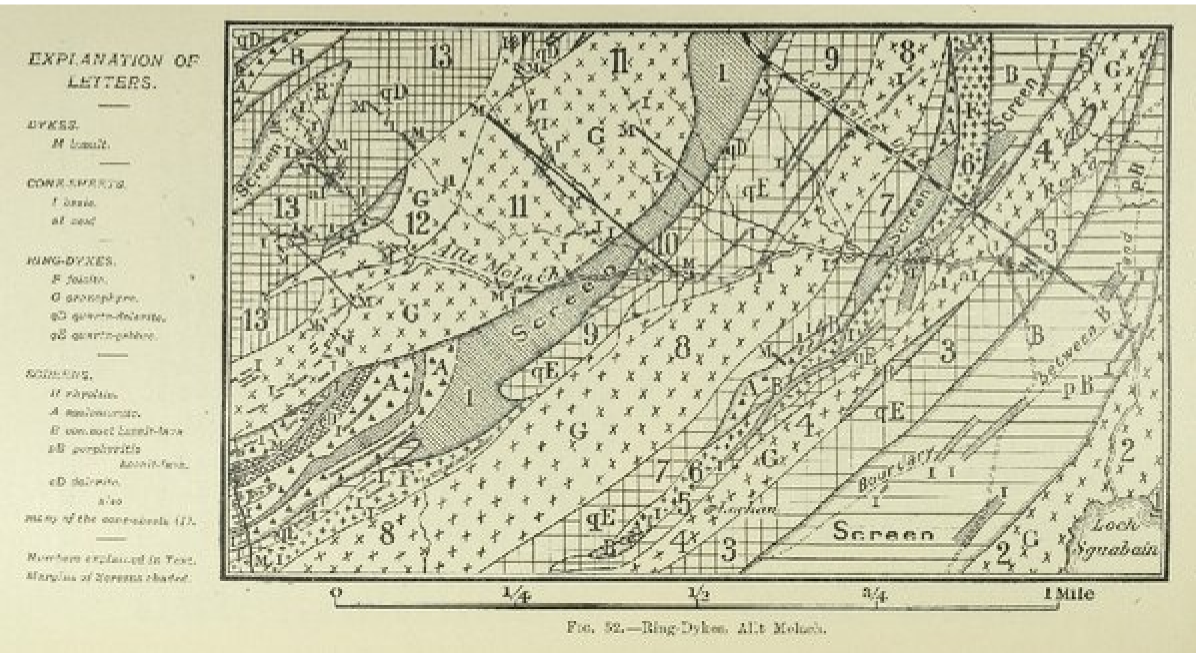
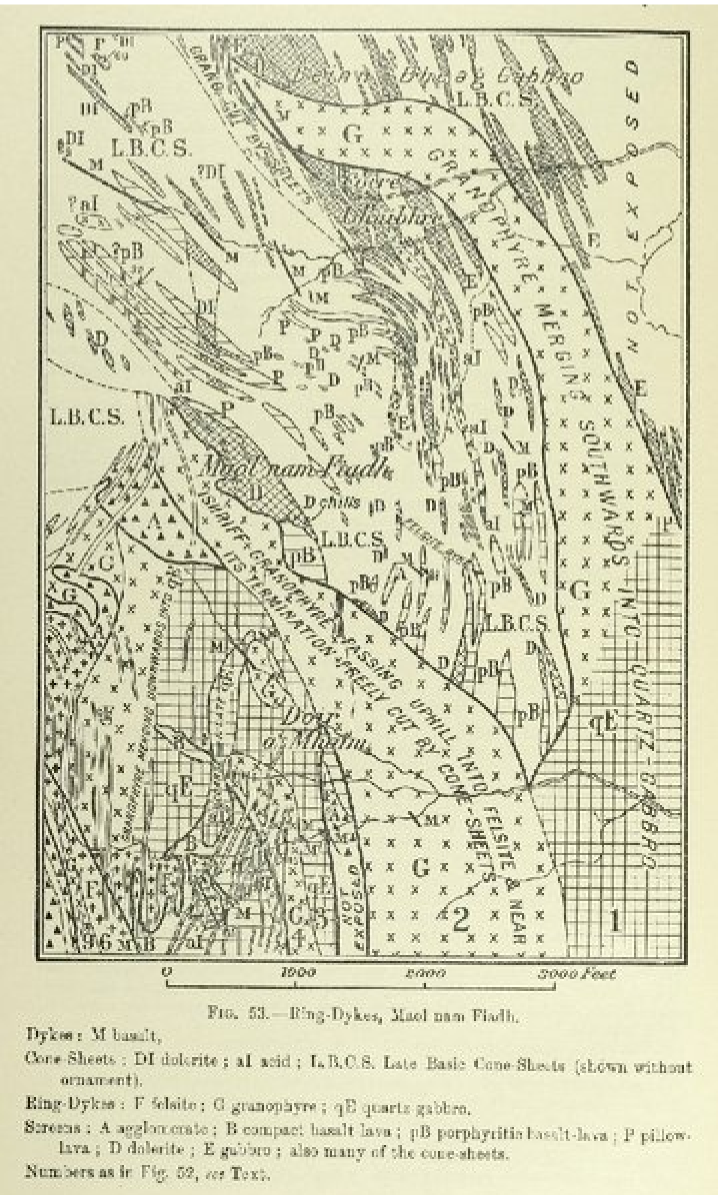


FIG. 51.—Variolite-Sheets of Cruachan Dearg.

(Figure 51) Variolite-Sheets of Cruachan Dearg. A. [(S16553) [NM 5686 3321]] x 17. Radiating and branching prisms of augite traversed transversely by short rods of magnetite, and set in a colourless devitrified matrix of indefinite felspathic material in which are small definite areas of clear quartz. B. [(S16557) [NM 5682 3313]]. Augite with attendant magnetite, and accompanied by elongated crystals of felspar, giving rise to a sub-spherulitic variolitic structure. The section shows two definite centres of radiation.



(Figure 52) Ring Dykes, Allt Melach.



(Figure 53) Ring-Dykes, Maol nam. Fiadh. Dykes: M basalt, Cone-Sheets: DI dolerite; aI 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.

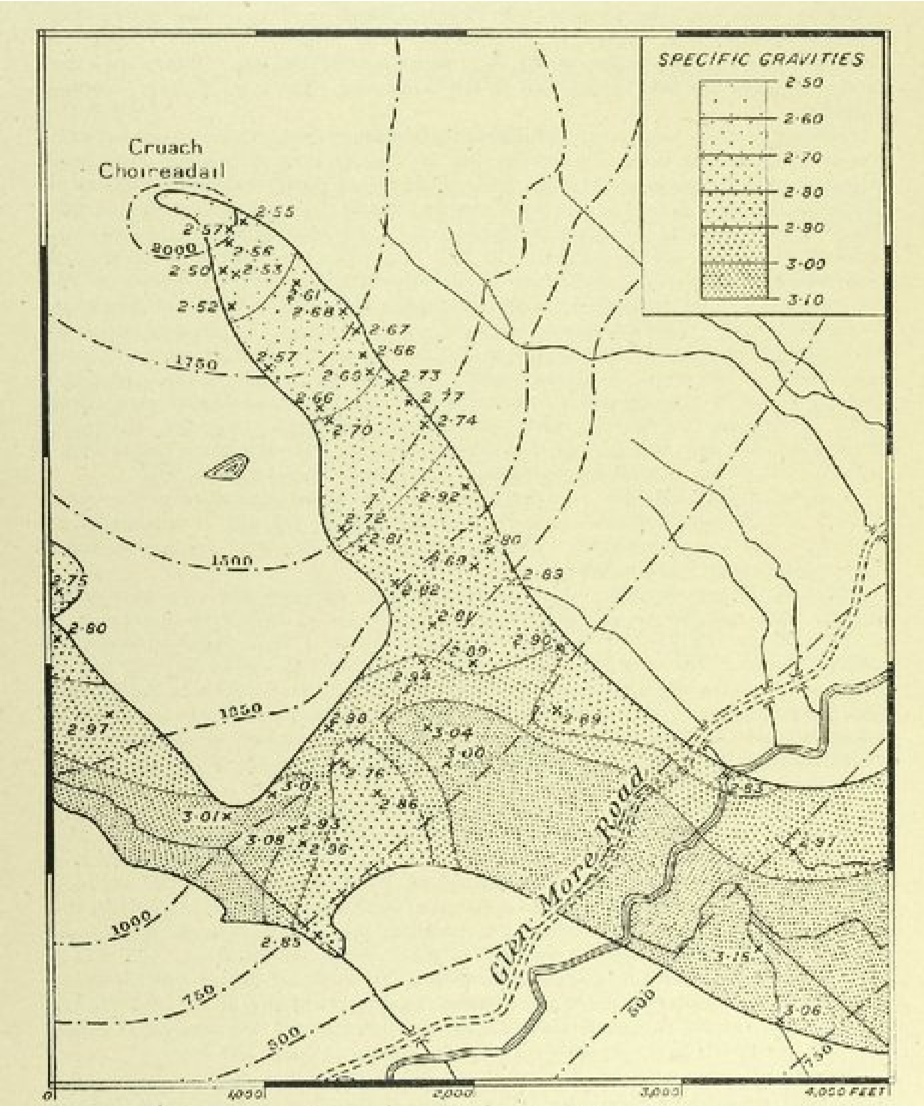


FIG. 54.—Map showing Density-Stratification in differentiated Ring-Dyke, Cruach Choireadail, Glen More (Locality 1). The extreme products exposed are olivine-bearing quartz-gabbro and granophyre.

(Figure 54) Map showing Density-Stratification in differentiated Ring-Dyke, Cruach Choireadail, Glen More (Locality 1). The extreme products exposed are olivine-bearing quartz-gabbro and granophyre.

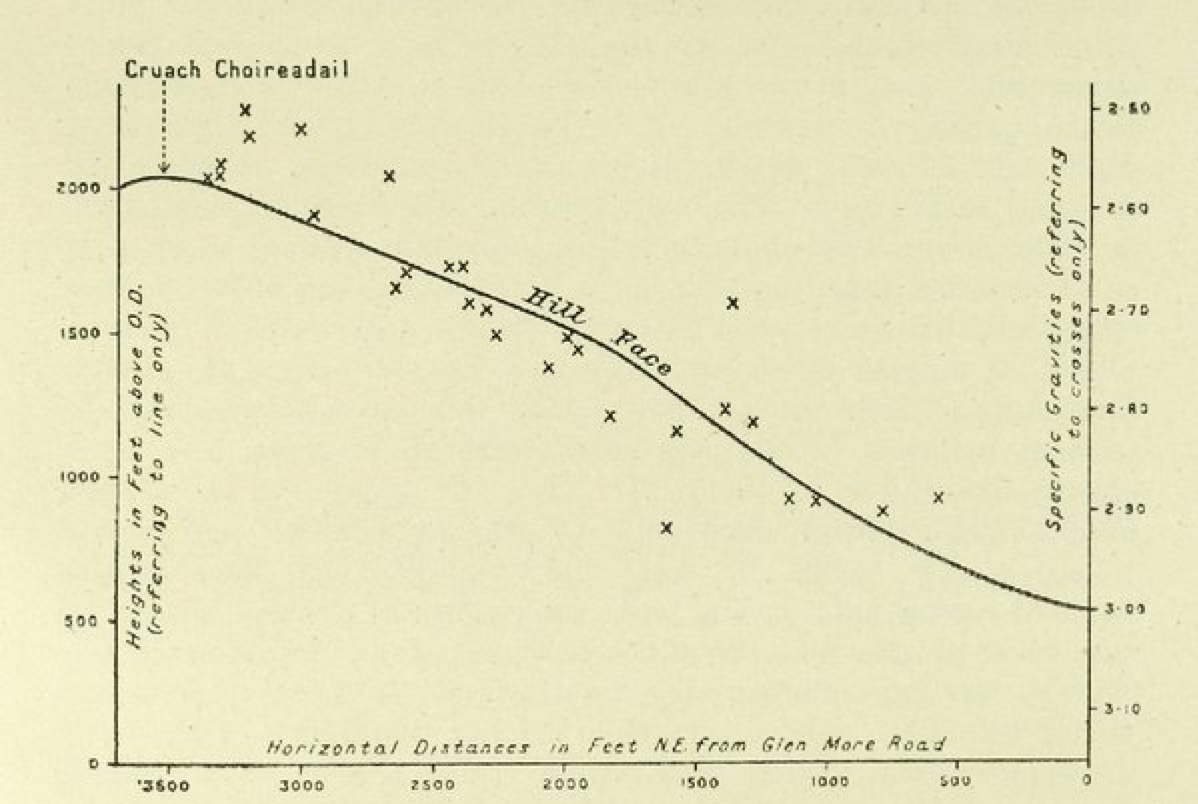


Fig. 55.

(Figure 55) Graph showing relation of Specific Gravity to Altitude in gravitationally differentiated Ring-Dyke, Cruach Choireadail, Glen More.

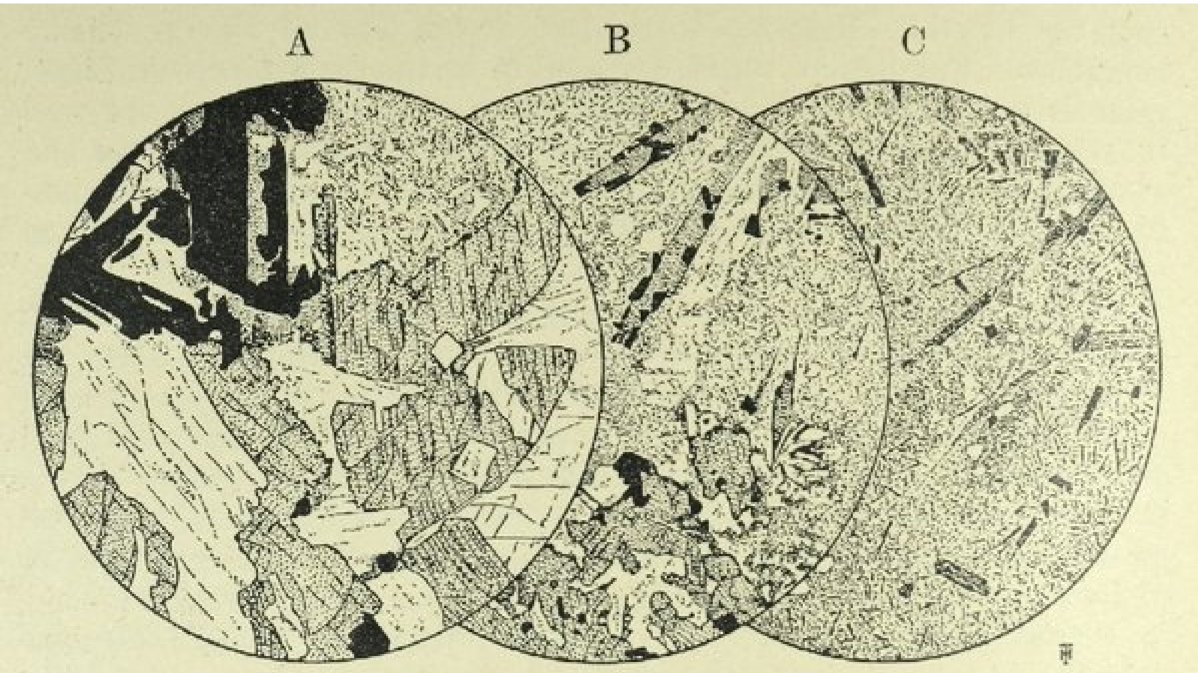


Fig. 56.—The Glen More Differentiated Ring-Dyke.

(Figure 56) The Glen More Differentiated Ring-Dyke. A. [(S17636) [NM 5968 2968]] ×15. Lower Basic Portion. Quartz-gabbro. The rock is composed of labradorite, ophitic augite and large plates of ilmenite, with a variable amount of finely crystalline acid mesostasis (top). Where in contact with the acid residuum, the augite shows signs of resorption. Movement of the mass after partial consolidation has frequently resulted in the bending and breaking of crystals—note the curved cleavage-traces in the large crystal of augite.Fig. 56 B. [(S17632) [NM 5965 3014]] ×15. Intermediate Portion. The figure shows a rock in which there is an increased proportion of acid mesostatic matter with characteristic acicular crystallization of its components. It has developed columnar crystals of augite (top) with their usual association of magnetite, and it encloses small patches of more doleritic material (bottom) which show signs of resorption and of being

out of equilibrium with their surroundings. C. [(S17626) [NM 5952 3042]] x 15. Higher Acid Portion. Acicular type of crystallization is a characteristic feature. The rock is composed of elongated crystals of greenish hornblende, pseudomorphous after augite, in a feathery base of alkali-felspar and quartz, frequently in micrographic relationship to each other.

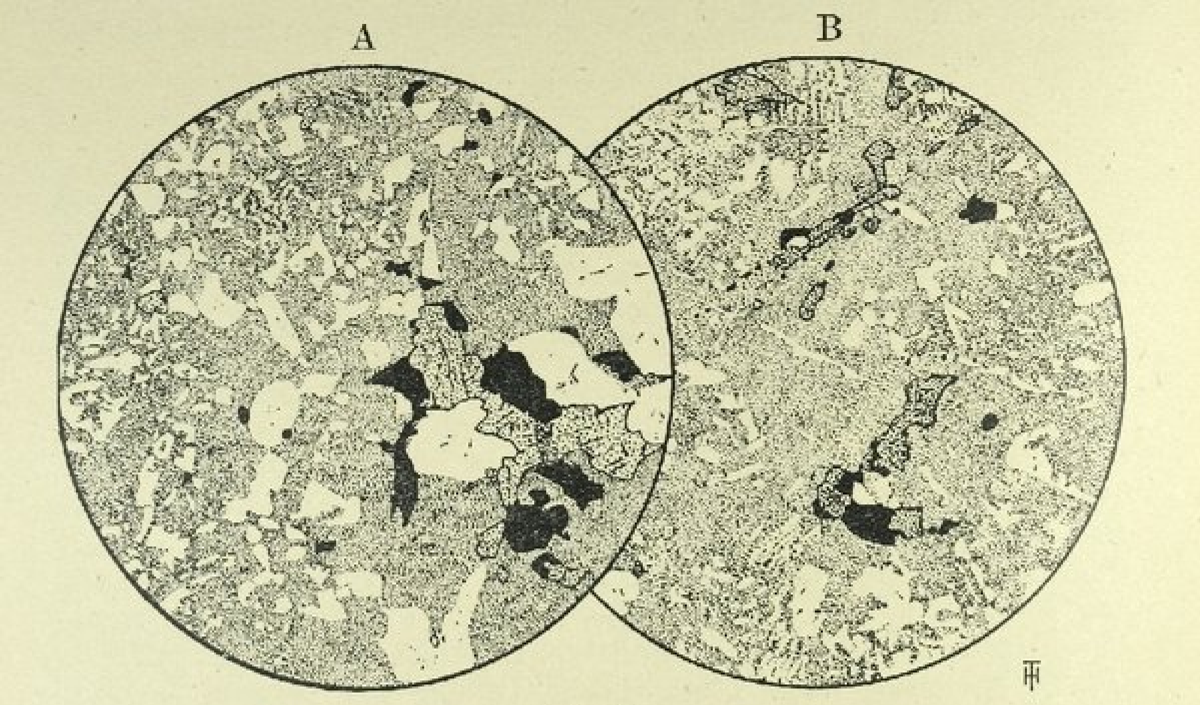


Fig. 57.

(Figure 57) A. [(S14844) [NM 6003 3457]] ×17. Granophyre of Glen Cannel. Green pleochroic augite (aegerine-augite) associated with magnetite, perthitic orthoclase and quartz in a somewhat coarse micrographic matrix. B. [2146] x 17. Granophyre of Beinn a' Ghràig. Green pleochroic aegerine-augite with magnetite, in a moderately coarse matrix of quartz and turbid alkali-felspar in micrographic intergrowth.

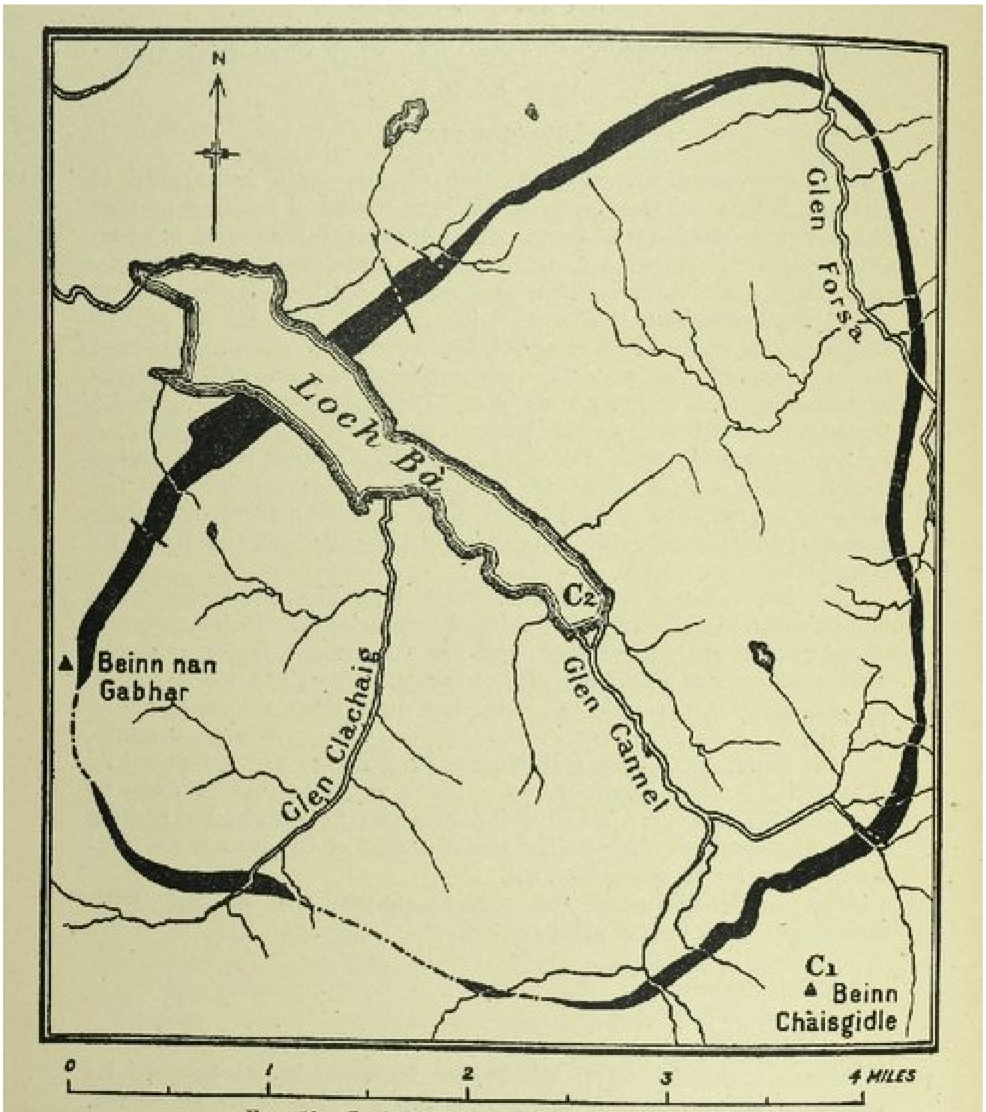


Fig. 58.—Loch Bà Felsitic Ring-Dyke along Fault.
C_1 and C_2 show two chief centres of ring-dykes and cone-sheets.
Quoted from *Summary of Progress for* 1914, p. 36.

(Figure 58) Loch Bà Felsitic Ring-Dyke along Fault. C1 and C2 show two chief centres of ring-dykes and cone-sheets. Quoted from Summary of Progress for 1914, p. 86.

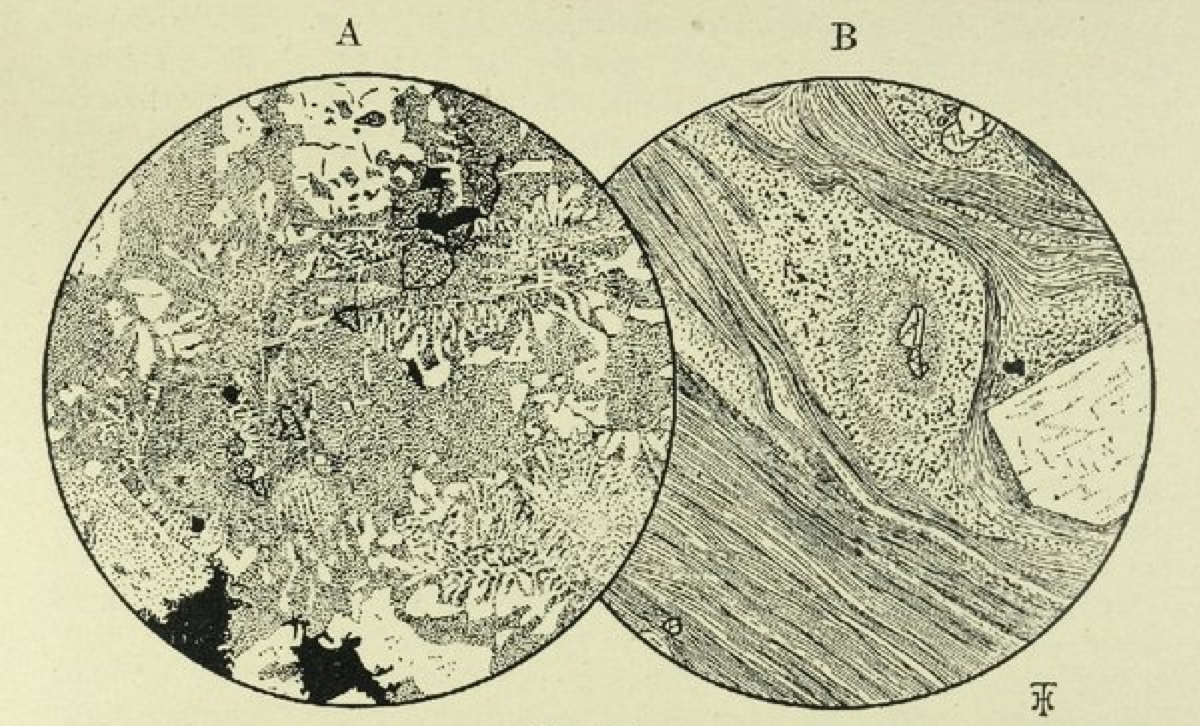


Fig. 59.

(Figure 59) A. [(S14841) [NM 5427 3847]] ×17. Knock Granophyre. Brownish-green augite and crystals of oligoclase edged with perthite, enveloped in a typically granophyric matrix of which the structure is emphasized by the turbidity of the alkali-felspar. B. [(S14825) [NM 5551 3738]]×17. Felsite of Loch Bà. Rhyolitic type with well-developed fluxion-structure. The phenocrysts are of yellowish augite and albite. Areas devoid of banding have suffered a more pronounced devitrification.

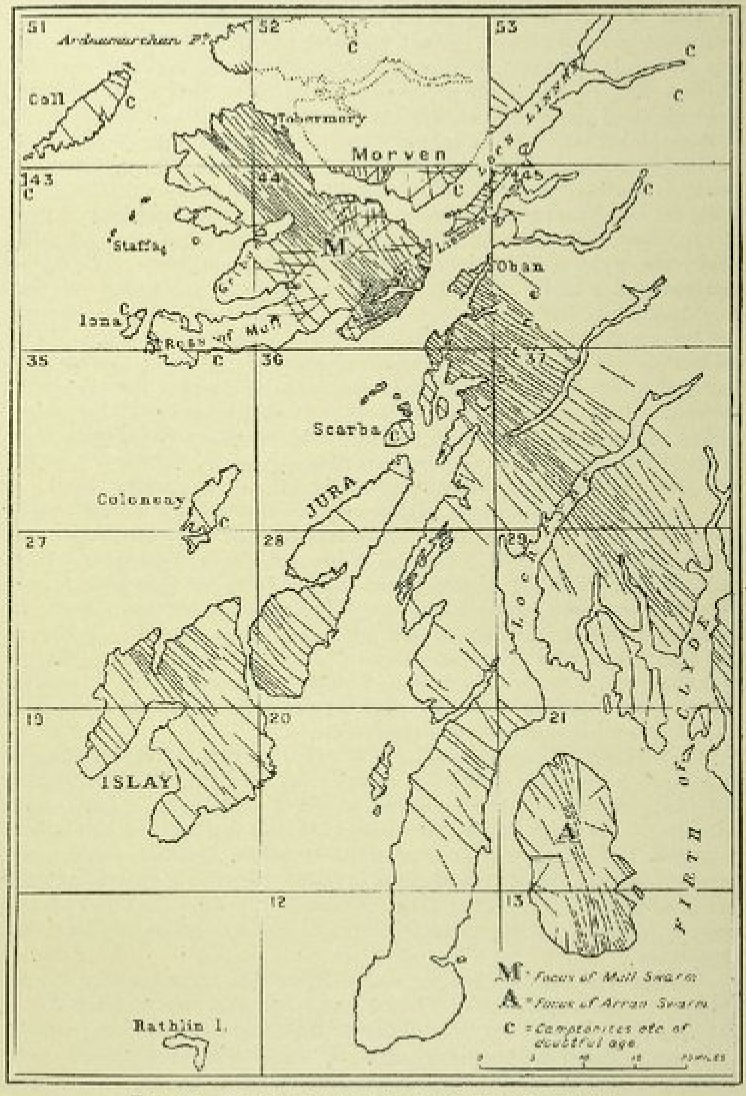


Fig. 60.—Tertiary Dykes of the South-West Highlands.
Only about one dyke in every ten or fifteen is shown. The mainland portion of Sheet 52 of the one-inch Map of Scotland has still to be surveyed.

(Figure 60) Tertiary Dykes of the South-West Highlands.

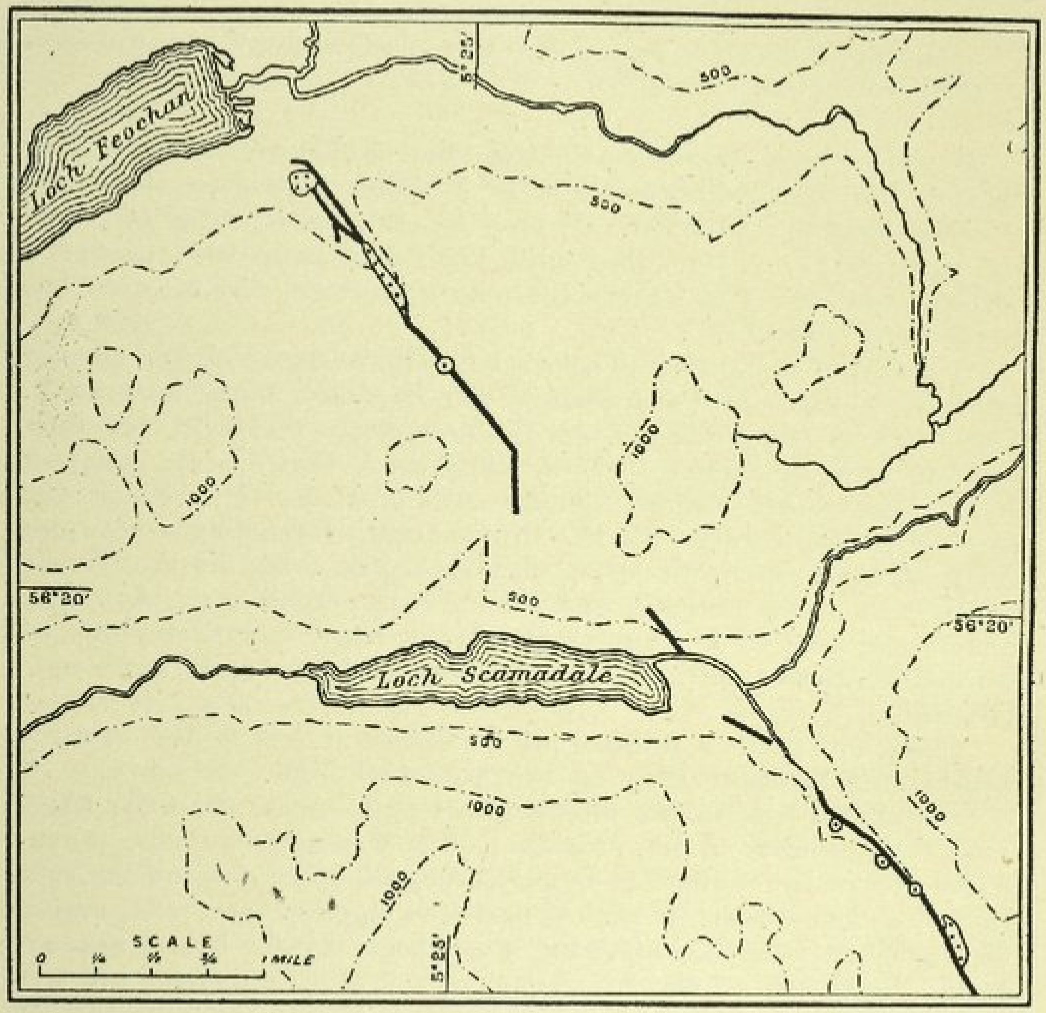


FIG. 61.

Agglomerate-Vents along multiple dyke (basalt and rhyolite) south-west from head of Loch Feochan (after B. N. Peach, R. G. Symes, and H. Kynaston).

(Figure 61) Agglomerate-Vents along multiple dyke (basalt and rhyolite) south-west from head of Loch Feochan (after B. N. Peach, R. G. Symes, and H. Kynaston).

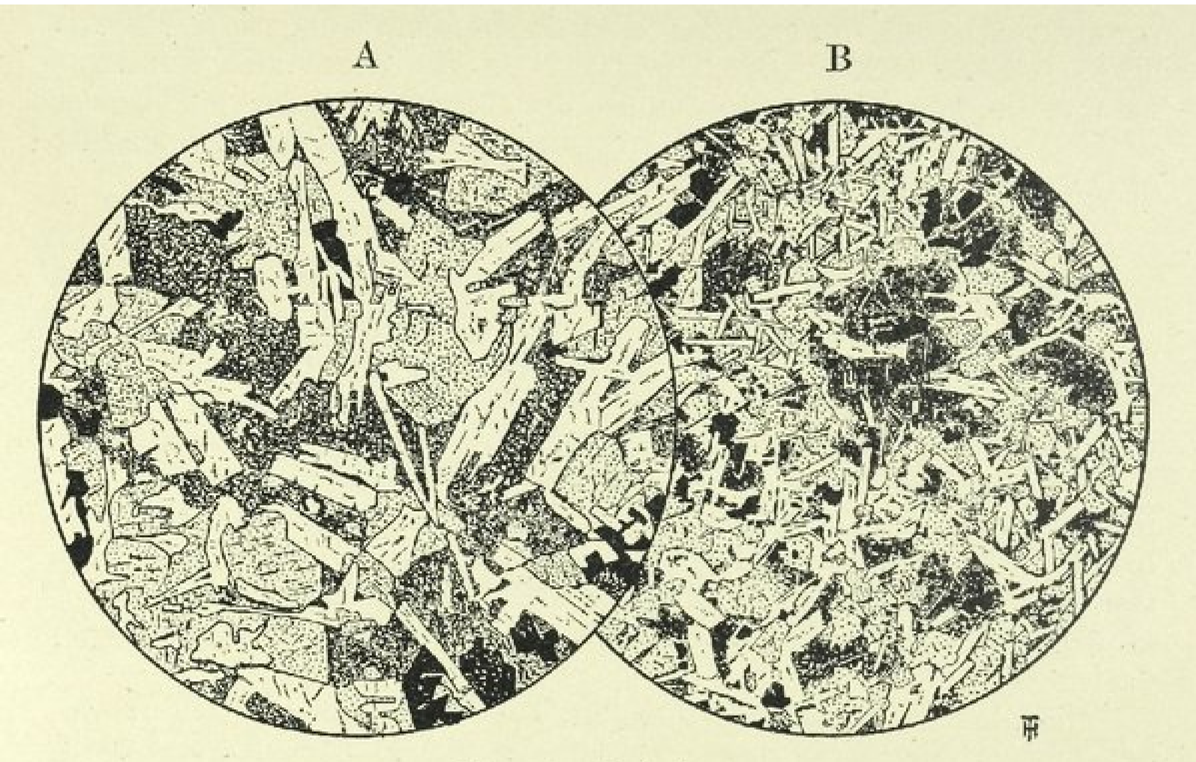


FIG. 62.—Tholeiites.

(Figure 62) Tholeiites. A. [(S16807) [NM 5601 4705]] ×17. Tholeiite of Salen Type. Composed of augite, labradorite-felspar, subordinate olivine and iron-ore, and a variable quantity of residual glass. B. [(S16809) [NM 5592 4755]] x 90. Tholeiite of Brunton Type. Augite, labradorite, magnetite and glass. The well-marked intersertal structure, produced by the arrangement of the crystalline elements with regard to the glassy base, is a constant and characteristic feature.

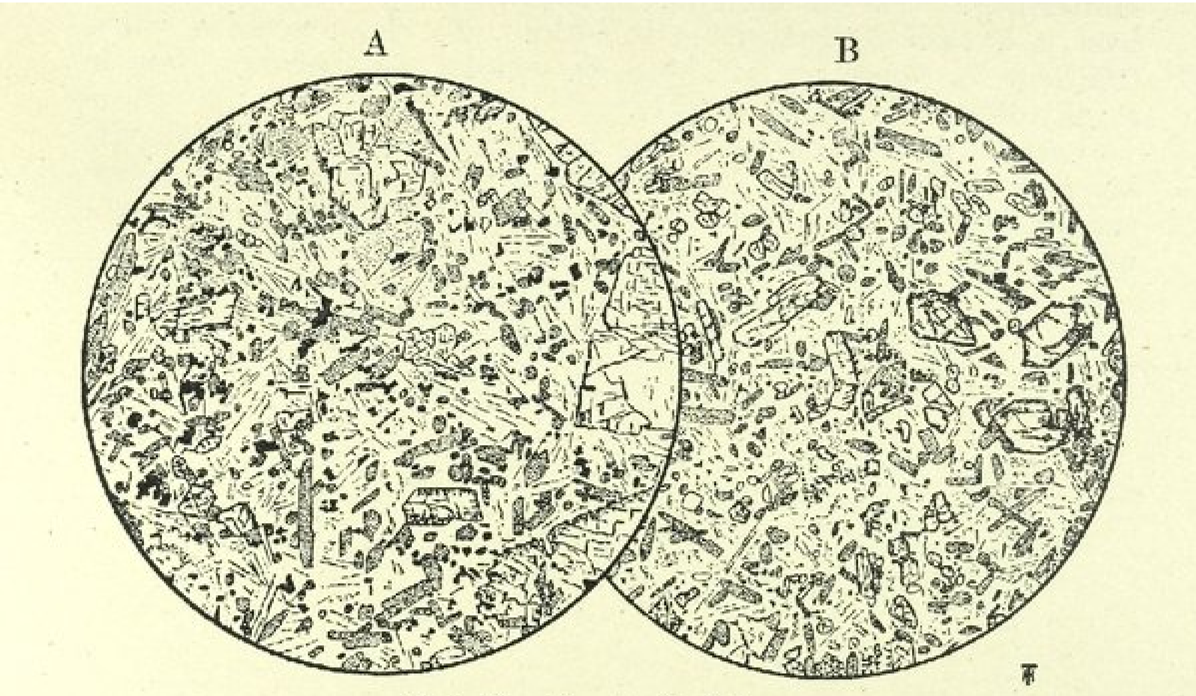


FIG. 63.—Camptonite-Dykes.

(Figure 63) Camptonite-Dykes. A. [(S13744) [NM 8468 4270]] ×17. Camptonite from Lismore, showing moderately large crystals of augite and olivine in a matrix of well-formed elongated, crystals of hornblende, labradorite, and magnetite, in a base of turbid orthoclase and analcite. B. [(S15788) [NM 7843 4466] ×17. Camptonite from Morven. The phenocrysts are mainly olivine. Augite is a less prominent constituent than in A; otherwise the rocks are similar.

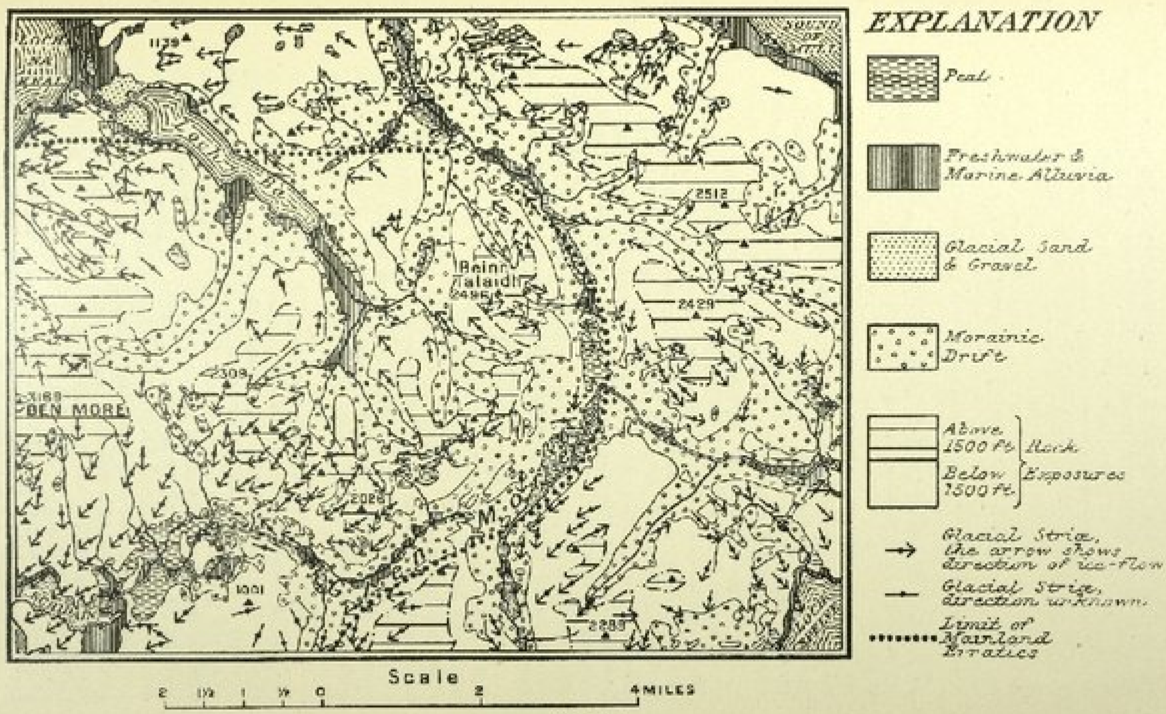


Fig. 64.

Map showing Superficial Deposits and Glaciation of Central Mull within limits indicated by note at left hand top corner of one-inch Map, Sheet 44.

(Figure 64) Map showing Superficial Deposits and. Glaciation of Central Mull within limits indicated by note at left hand top corner of one-inch Map, Sheet 44.

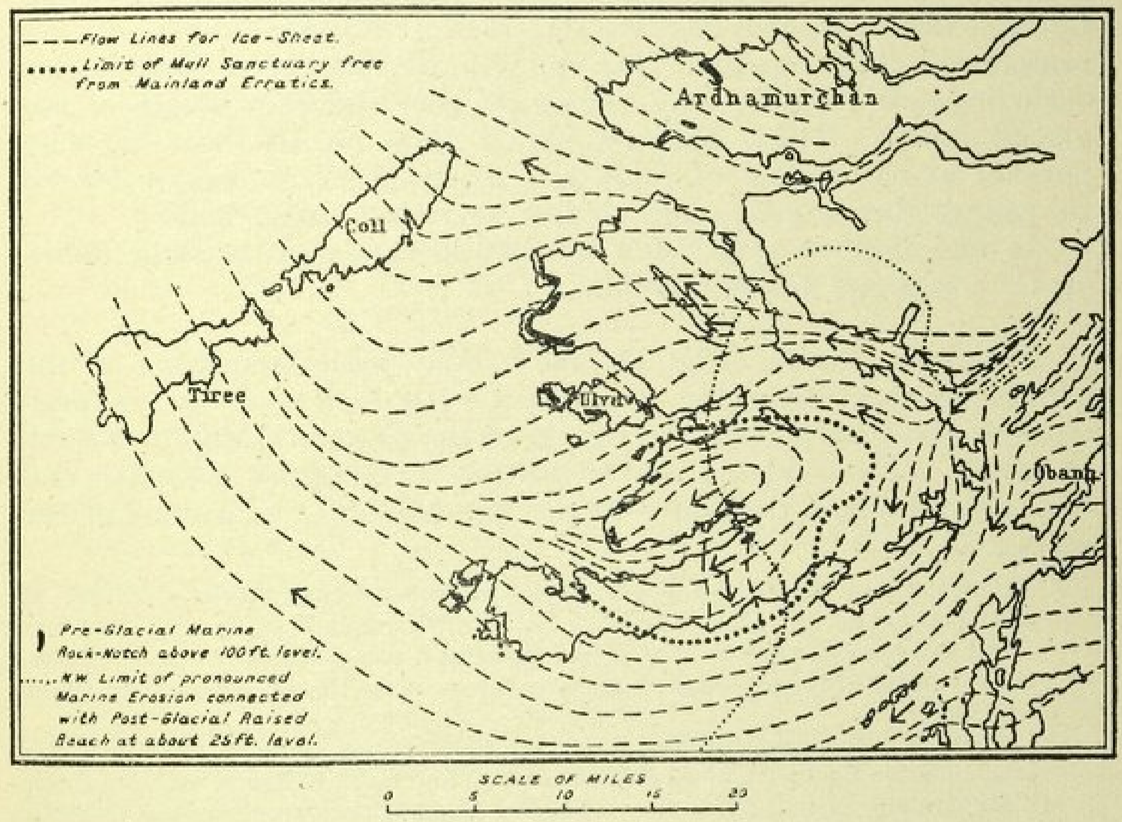


Fig. 65.

(Figure 65) General Glaciation of District, and some Raised-Beach phenomena.

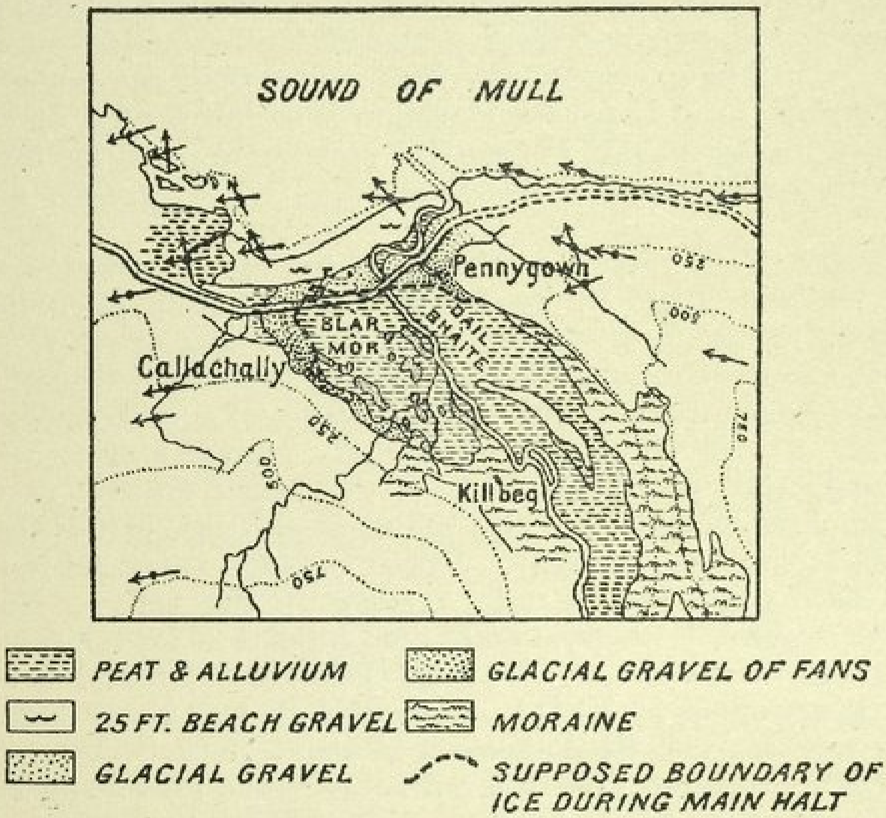
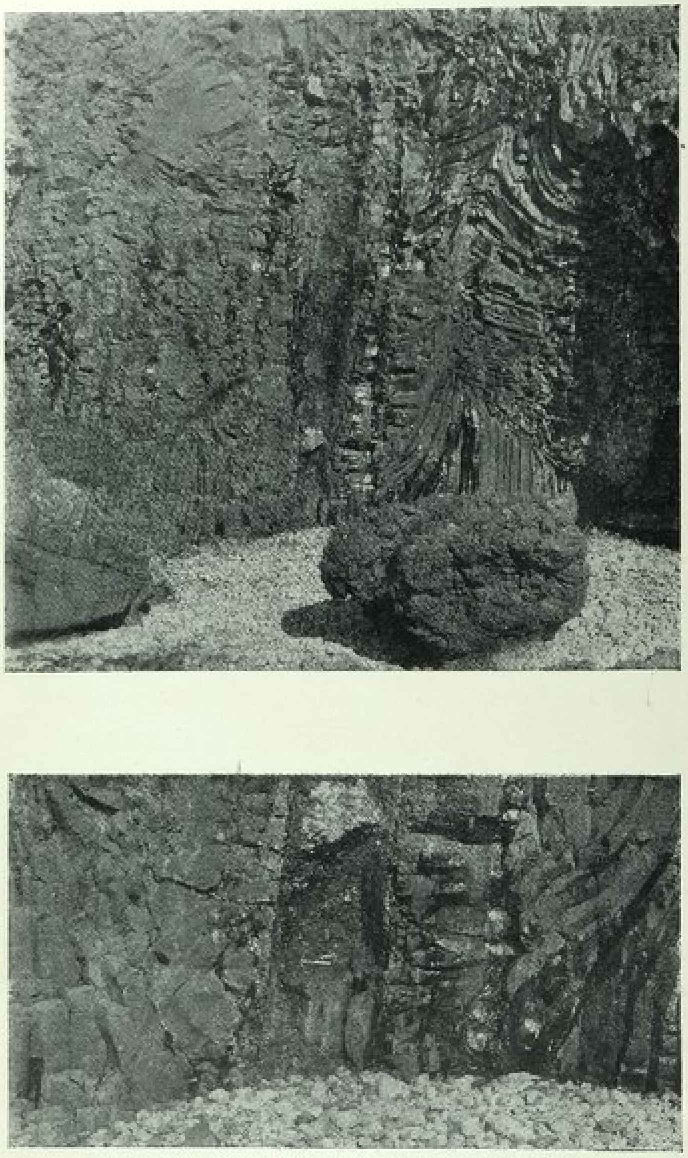


FIG. 66.

Sketch-map of the lower part of Glen Forsa, showing the eskers, gravel-fans and moraines of the local glaciation, as well as striæ of the general and local glaciations.

Quoted from *Summary of Progress for* 1909, p. 37.

(Figure 66) Sketch-map of the lower part of Glen Forsa, showing the eskers, gravel-fans and moraines of the local glaciation, as well as striae of the general and local glaciations. Quoted from Summary of Progress for 1909, p. 37.



COLUMNAR BASALT-LAVA.

ASH.

PLATE I.—Macculloch's Tree submerged in Lava (p. 111).

(Plate 1)Macculloch's Tree, Burgh—Frontispiece.

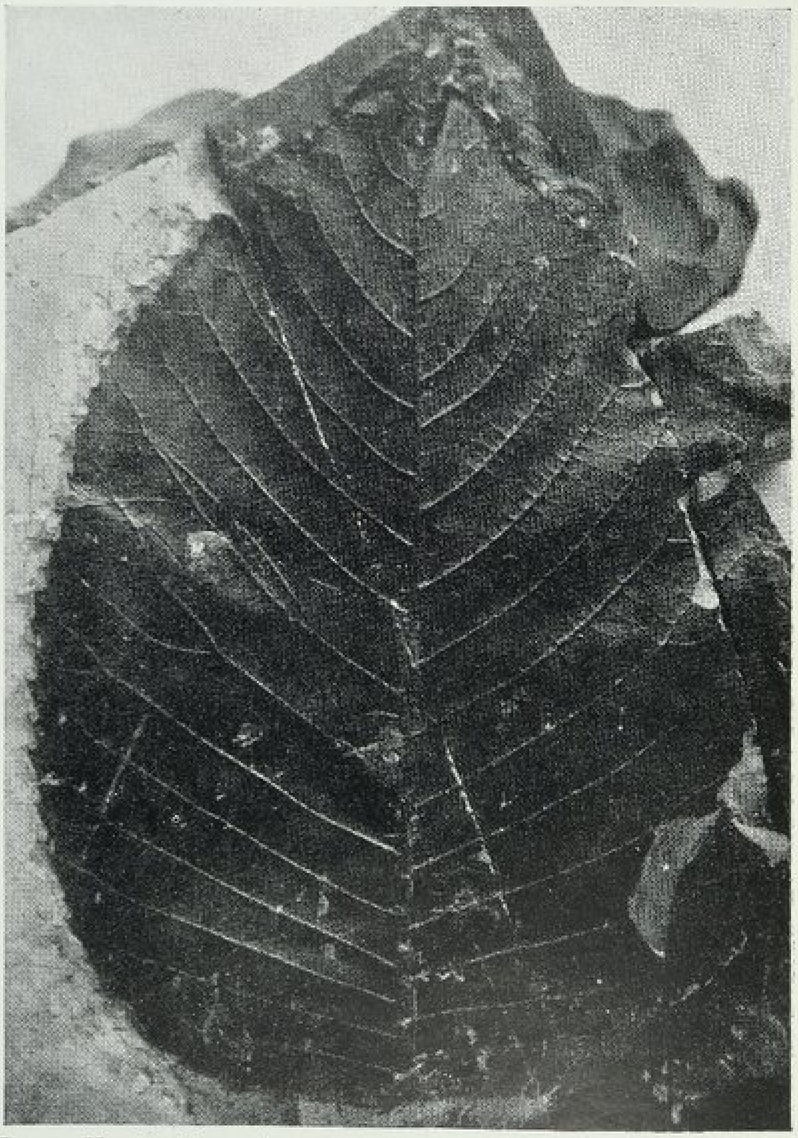


PLATE II. *Phyllites ardtunensis* sp. nov. [illegible] Nat. size. [British Museum.]

(Plate 2) Phyllites ardtunensis sp. nov.,

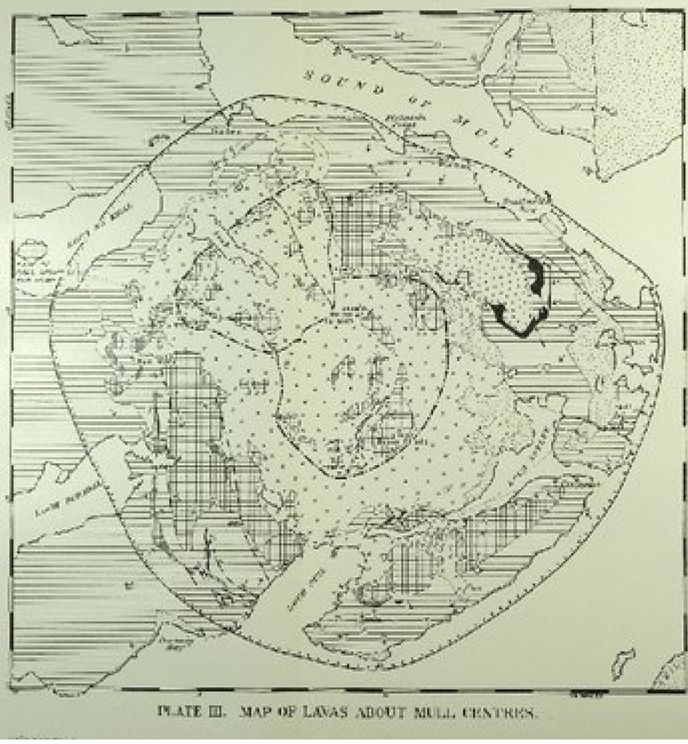
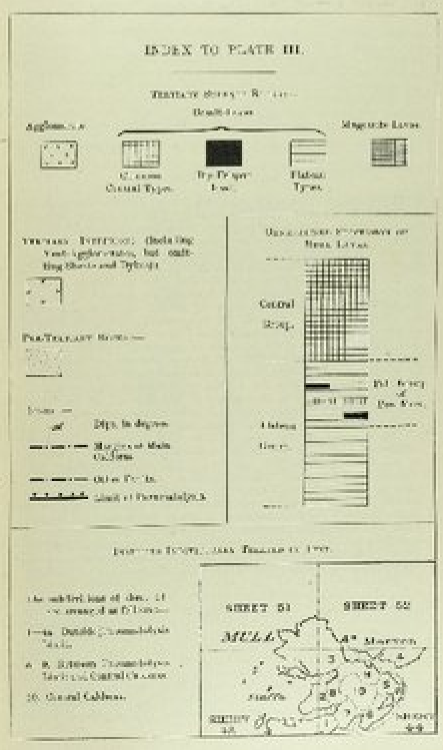


PLATE III. MAP OF LAVAS ABOUT MULL CENTRES.



(Plate 3) Map showing the distribution of lava-types and the limit of pneumatolysis

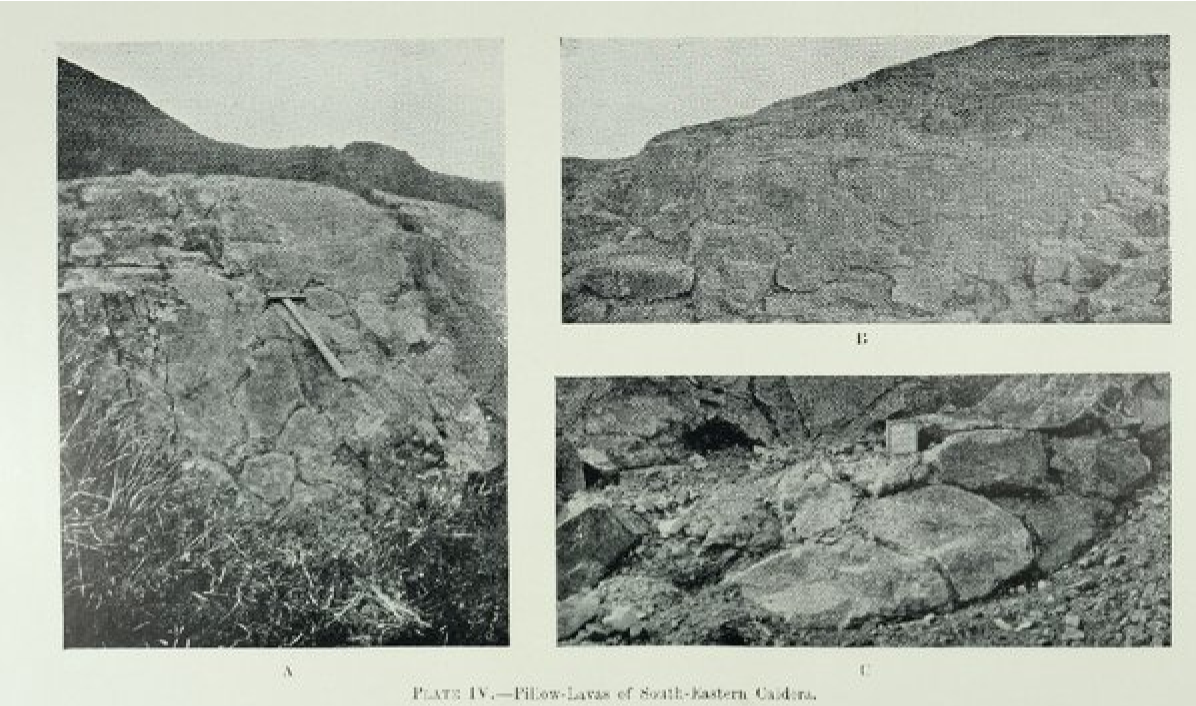


PLATE IV.—Pillow-Lavas of South-Eastern Caldera.

(Plate 4) Pillow-lavas of central Mull

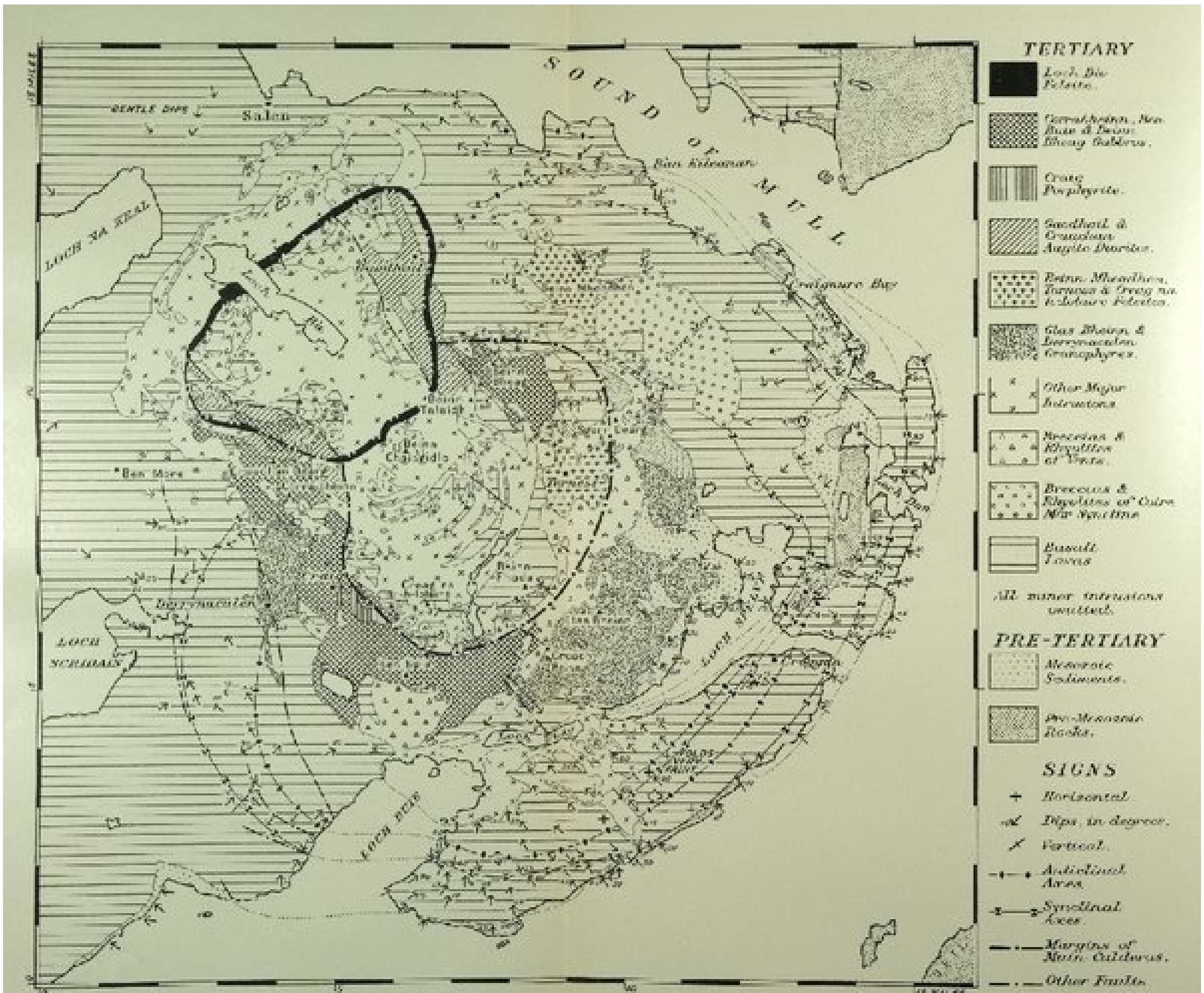
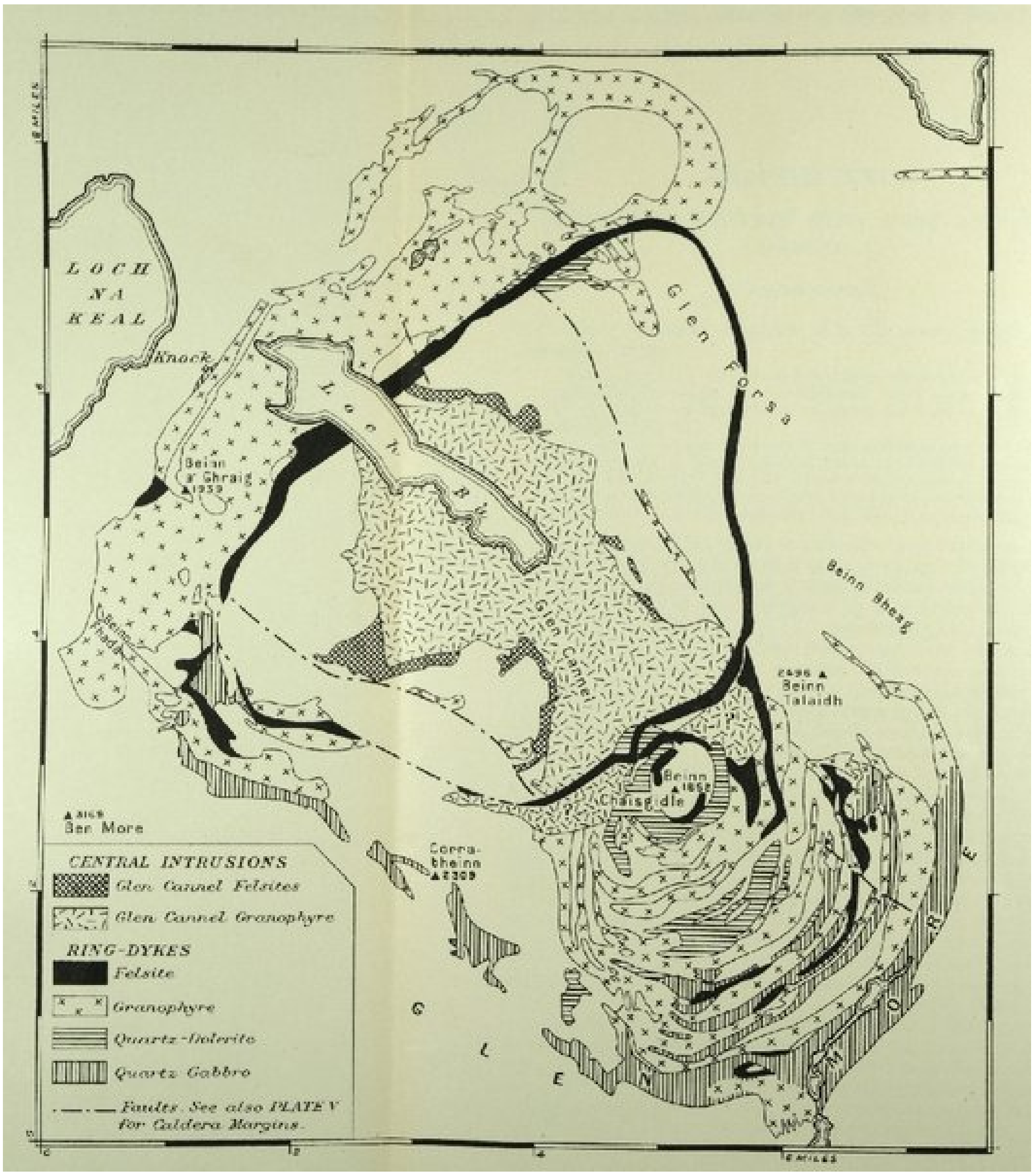


PLATE V. TECTONICS AND MAJOR INTRUSIONS ABOUT MULL CENTRES.

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



(Plate 6) Map showing ring-dykes

TABLE I. : PLATEAU MAGMA-TYPE OF FIG. 2.

	A	B	I.	II.	III.	C	D	E	
SiO_2 . .	43·94	45·24	45·37	45·48	45·52	46·46	46·61	47·64	SiO_2
TiO_2 . .	2·45	2·26	2·87	3·48	2·85	2·07	1·81	1.27	TiO_2
Al_2O_3 . .	14·03	15·63	15·16	15·66	14·30	15·48	15·32	14·15	Al_2O_3
Cr_2O_3 . .	tr.	tr.	...	...	...	0·02	tr.	0·01	Cr_2O_3
V_2O_3 . .	...	...	...	...	...	0·05	...	0·06	V_2O_3
Fe_2O_3 . .	1·95	5·56	3·38	3·64	3·43	3·63	3·49	5·18	Fe_2O_3
FeO . .	11·65	7·19	11·58	10·56	9·00	10·23	7·71	7·96	FeO
MnO . .	0·32	0·23	0·31	0·20	0·19	0·48	0·13	0 33	MnO
(Co,Ni)O .	nt. fd.	tr.	nt. fd.	...	...	0·02	tr.	tr.	(Co,Ni)O
MgO . .	10·46	7·82	6·72	6·99	10·65	6·80	8·66	7·38	MgO
CaO . .	8·99	9·38	8·11	8·24	9·54	9·05	10·08	11·71	CaO
(Ba,Sr)O .	nt. fd.	...	nt. fd.	..	...	0·02	...	nt. fd.	(Ba,Sr)O
Na_2O . .	2·68	2·01	2·90	2·68	2·21	3·01	2·43	2·38	Na_2O
K_2O . .	0·33	0 72	0.44	0·49	0·42	0·68	0·67	0·71	K_2O
Li_2O . .	nt. fd.	...	nt. fd.	nt. fd.	nt. fd.	? tr.	...	...	Li_2O
$H_2O+105°$.	2·31	2·21	1·96	1·52	1·53	1·43	2·07	1.44	$H_2O+105°$
H_2O at 105°	0·85	1·12	1·18	0·93	0·70	0·89	1·10	0·19	H_2O at 105°
P_2O_5 . .	0·20	0·20	0·29	0·26	0·23	0·30	tr.	0·09	P_2O_5
CO_2 . .	0·16	0·49	...	0·21	0·15	nt. fd.	tr.	...	CO_2
FeS_2 . .	0·04	...	...	...	...	...	...	...	FeS_2
Fe_7S_8 . .	0·06	...	...	...	...	...	...	...	Fe_7S_8
½S . .	...	...	...	...	...	0·08	...	...	½S
S . .	...	...	...	nt. fd.	nt. fd.	...	...	0·03	S
	100·42	100 06	100·27	100·34	100·72	100·70	100·08	100·53	...
Spec. grav.	...	2·85	2·95	2·93	2·99	...	2·87	...	...

(Table 1) Plateau Magma-Type of Figure 2

TABLE II.—NON-PORPHYRITIC CENTRAL MAGMA-TYPE OF FIG. 2.

	Tholeiite Salen Type	Basalt Staffa Type			Basalt Compact Central Type		Tholeiite Brunton Type		Quartz-Dolerite and Tholeiite Talaidh Type		
	I.	II.	III.	A	IV.	V.	VI.	VII.	VIII.	IX.	
SiO_2 . .	47·35	47·80	49·76	52·13	50·54	53·78	51·53	51·63	52·16	53·97	SiO_2
TiO_2 . .	1·75	....	0·94	....	2·80	2·28	1·57	2·00	3·25	1·24	TiO_2
Al_2O_3 . .	13·90	14·80	14·42	14·87	12·86	12·69	11·05	11·77	11·95	14·65	Al_2O_3
Fe_2O_3 . .	5·87	....	3·95	....	4·13	3·44	2·73	3·23	4·86	3·62	Fe_2O_3
FeO . .	8·96	13·08	7·77	11·40	8·75	8·94	10·98	10·47	9·92	6·32	FeO
MnO . .	0·23	0·09	0·20	0 32	0·32	0·53	0·45	0·35	0·18	0·30	MnO
(Co, Ni)O .	nt. fd.	....	nt. fd.	....	0·06	nt. fd.	nt. fd.	0·04	....	nt. fd.	(Co, Ni)O
MgO . .	5·97	6·84	5·30	6·46	4·63	2·58	5·21	5·02	3·77	4·49	MgO
CaO . .	10·65	12·89	10·22	10·56	8·74	6·36	9·68	9·34	7·14	7·98	CaO
BaO . .	....	....	0·04	....	nt. fd.	0·09	nt. fd.	0·03	....	0·04	BaO
Na_2O . .	2·73	2·48	2·49	2·60	2·89	2·74	3·48	2·90	2·36	2·54	Na_2O
K_2O . .	0·54	0·86	1·83	0·69	1·43	2·27	0·86	0·91	1·74	1·52	K_2O
Li_2O . .	....	....	tr.	....	nt. fd.	nt. fd.	tr.	nt. fd.	....	tr.	Li_2O
$H_2O-105°$	1·16	1·41	1·03	1·19	2·25	2·19	1·26	1·40	1·95	0·94	H_2O + 105°
H_2O at 105°	1·04		2·04		0·17	1·19	0·71	0·68	0·56	1·92	H_2O at 105°
P_2O_5 . .	0·24	....	0·21	....	0·34	0·55	0·22	0·29	0·24	0·27	P_2O_5
CO_2 . .	0·32	....	0·06	....	0·33	0·08	0·08	0·11	0·18	0·51	CO_2
FeS_2 . .	....	....	0·04	....	nt. fd.	0·42	0·26	0·08	....	0·09	FeS_2
S . . .	0·23	....	....	....	....	....	....	....	0·18	....	S
	100·94	100·25	100·30	100,22	100·24	100·13	100·07	100·27	100·44	100·40	
Spec. grav.	2·96	....	2·72	....	2·90	2·68	2·93	2·95	2·91	2·83	

(Table 2) Non-Porphyritic Central Magma-Type of Figure 2

TABLE III.—INTERMEDIATE TO SUBACID MAGMA-TYPE OF FIG. 2.

	Craignurite (basic) I.	Leidleite II.	Leidleite III.	Inninmorite IV.	Inninmorite V.	Craignurite (acid) VI.	
SiO_2 . .	55·82	59·21	61·69	62·37	64·13	66·27	SiO_2
TiO_2 . .	1·62	1·06	1·00	1·06	1·19	0·87	TiO_2
Al_2O_3 . .	11·47	14·06	14·43	12·04	13·15	11·92	Al_2O_3
Fe_2O_3 . .	3·68	2·66	1·23	1·87	1·08	3·09	Fe_2O_3
FeO . .	7·66	4·87	5·86	5·81	6·31	3·18	FeO
MnO . .	0·40	0·24	0·30	0·24	0·27	0·31	MnO
(Co,Ni)O .	0·04	nt. fd.	nt. fd.	nt. fd.	nt. fd.	nt. fd.	(Co,Ni)O
MgO . .	4·08	3·71	2·81	0·97	1·08	1·44	MgO
CaO . .	7·88	5·95	4·97	3·51	3·62	3·30	CaO
BaO . .	0·03	0·03	0·04	0·07	0·09	nt. fd.	BaO
Na_2O .	2·58	2·06	3·20	3·47	3·64	2·89	Na_2O
K_2O . .	2·00	2·83	1·72	2·34	2·32	4·03	K_2O
Li_2O . .	tr.	nt. fd.	nt. fd.	nt fd.	nt. fd.	tr.	Li_2O
$H_2O+105°$.	1·88	1·49	2·32	5·54	2·71	1·51	$H_2O+105°$
H_2O at 105°	0·66	2·06	0·25	0·44	0·36	0·78	H_2O at 105°
P_2O_5 . .	0·23	0·20	0·24	0·30	0·31	0·17	P_2O_5
Co_2 . .	0·08	...	...	...	...	0·53	Co_2
FeS_2 . .	0·09	nt. fd.	nt. fd.	nt. fd.	nt. fd.	nt. fd.	FeS_2
Cl . .	...	nt. fd.	0·02	...	...	...	Cl
	100·18	100·43	100·08	100·03	100·26	100·29	
Spec. grav.	2·88	2·61	2·64	2·50	2·57	2·65	

(Table 3) Intermediate to Subacid Magma-Type of Figure 2

TABLE IV.—Acid Magma-Type of Fig. 2.

	I.	II.	III.	IV.	V.	
SiO_2	70·70	71·30	72·66	73·12	73·32	SiO_2
TiO_2	1·27	0·58	0·34	0·39	0·51	TiO_2
Al_2O_3	11·78	11·24	12·00	12·44	12·25	Al_2O_3
Fe_2O_3	1·32	1·80	2·03	2·09	2·77	Fe_2O_3
FeO	3·45	2·84	2·04	1·65	2·20	FeO
MnO	0·07	0·31	0·18	0·17	0·12	MnO
(Co,Ni)O	...	nt. fd.	nt. fd.	nt. fd.	nt. fd.	(Co,Ni)O
MgO	0·53	0·61	0·07	0·14	0·11	MgO
CaO	1·30	1·56	1·25	0·88	1·65	CaO
BaO	...	0·07	0·12	nt. fd.	0·09	BaO
Na_2O	2·48	3·44	3·26	3·90	3·92	Na_2O
K_2O	4·71	4·66	5·26	4·67	2·34	K_2O
Li_2O	...	? tr.	nt. fd.	nt. fd.	nt. fd.	Li_2O
$H_2O + 105°$	1·14	1·04	0·47	0·24	0·35	$H_2O + 105°$
H_2O at 105°	0·50	0·39	0·22	0·25	0·35	H_2O at 105°
P_2O_5	0·26	0·22	0·04	0·09	0·10	P_2O_5
CO_2	0·51	...	0·24	0·05	0·06	CO_2
FeS_2	...	nt. fd.	nt. fd.	nt. fd.	nt. fd.	FeS_2
S	0·08	...	...	...	...	S
	100·10	100·06	100·18	100·08	100·14	
Spec. grav.	2·58	2·53	2·61	2·57	2·66	

(Table 4) Acid Magma-type of Figure 2

TABLE V.—ALLIVALITE—EUCRITE MAGMA SERIES OF FIG. 3.

	Allivalite	Eucrite		
	A	I.	B	
SiO_2	42·20	46·66	48·05	SiO_2
TiO_2	0·09	0·47	0·49	TiO_2
Al_2O_3	17·56	16·71	15·35	Al_2O_3
Cr_2O_3	0·06	...	0·14	Cr_2O_3
Fe_2O_3	1·20	2·69	1·86	Fe_2O_3
FeO	6·33	5·87	7·53	FeO
MnO	0·18	0·12	0·28	MnO
(Co, Ni)O	0·13	...	0·11	(Co, Ni)O
CuO	0·04	...	0·05	CuO
MgO	20·38	12·36	12·53	MgO
CaO	9·61	12·57.	11·02	CaO
Na_2O	1·11	1·16	1·26	Na_2O
K_2O	0·11	0·27	0·19	K_2O
Li_2O	...	nt. fd.	...	Li_2O
$H_2O + 105°$	1·13	1·24	0·45	$H_2O + 105°$
H_2O at 105°	0·06	0·13	0·15	H_2O at 105°
P_2O_5	...	0·13	...	P_2O_5
CO_2	tr.	0·18	0·44	CO_2
S	0·02	nt. fd.	0·20	S
	100·21	100·56	100·10	
Spec. grav.	2·96	2·97	2·95	

(Table 5) Allivalite-Eucrite Magma Series of Figure 3

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_2O_3 .	23·39	26·34	21·11	20·10	18·55	21·46	19·44	Al_2O_3
Cr_2O_3 .	...	tr.	...	...	...	...	...	Cr_2O_3
Fe_2O_3 .	1·98	2·02	3·52	1·97	6·02	1·72	5·66	Fe_2O_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_2O .	2·50	1·63	1·52	1·66	2·42	2·17	2·53	Na_2O
K_2O .	0·44	0·20	0·29	0·98	0·15	0·42	0·25	K_2O
Li_2O .	...	...	...	nt. fd.	nt. fd.	nt. fd.	nt. fd.	Li_2O
$H_2O + 105°$	0·72	0·48	0·53	0·44	2·24	2·54	0·48	$H_2O + 105°$
H_2O at 105°	0·62	0·10	0·13	0·02	0·21	0·17	0·04	H_2O at 105°
P_2O_5 .	0·13	tr.	tr.	0·04	0·26	0·43	0·16	P_2O_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

TABLE VII.—ALKALINE MAGMA-SERIES OF FIG. 4.

	Mugearite				Syenite	Trachyte		
	A	B	C	I.	II.	III.	IV.	
SiO_2	49·24	49·92	50·70	55·76	58·81	60·13	63·12	SiO_2
TiO_2	1·84	2·04	1·89	1·78	0·76	0·73	0·51	TiO_2
Al_2O_3	15·84	12·83	14·60	16·55	14·81	16·53	15·44	Al_2O_3
Cr_2O_3	tr.	tr.	..	...	...	...	...	Cr_2O_3
V_2O_3	...	0·04	...	...	...	...	...	V_2O_3
Fe_2O_3	6·09	6·96	5·23	3·10	4·58	2·86	1·73	Fe_2O_3
FeO	7·18	6·21	7·68	6·02	4·21	2·55	3·53	FeO
MnO	0·29	0·52	0·42	0·22	0·27	0·46	0·27	MnO
(Co,Ni)O	tr.	0·03	tr.	nt. fd.	nt. fd.	nt. fd.	nt. fd.	(Co,Ni)O
MgO	3·02	3·78	4·15	1·08	0·80	1·20	0·62	MgO
CaO	5·26	7·25	7·20	3·23	2·33	1·61	1·31	CaO
BaO	0·09	0·09	0·08	0·07	0·03	0·11	nt. fd.	BaO
SrO	tr.	tr.	tr.	...	...	...	...	SrO
Na_2O	5·21	3·72	3·71	6·28	5·60	8·06	5·81	Na_2O
K_2O	2·10	1·73	1·33	3·87	4·96	3·99	5·36	K_2O
Li_2O	...	tr.	? tr.	tr.	nt. fd.	tr.	nt. fd.	Li_2O
$H_2O + 105°$	1·61	1·05	1·15	0·95	0·82	0·97	0·44	$H_2O + 105°$
H_2O at 105°	1·08	3·58	2·08	0·80	2·00	0·55	0·14	H_2O at 105°
P_2O_5	1·47	0·45	0·49	0·40	0·20	0·57	0·25·	P_2O_5
CO_2	...	nt. fd.	nt. fd.	0·03	...	...	1·89	CO_2
FeS_2	...	...	...	nt. fd.	nt. fd.	nt. fd.	nt. fd.	FeS_2
S	0·03	? tr.	nt. fd.	...	...	...	...	S
F	0·18	...	...	...	...	...	...	F
	100·46*	100·20	100·71	100·14	100·18	100·32	100·42	
Spec. grav	2·79	...	...	2·67	2·64	2·51	2·89	

(Table 7) Alkaline Magma-Series of Figure 4

	Cruach Choireadail, Fig. 54, p. 322.				Coir' an t-Sailein.		
	I.	II.	III.	IV.	V.	VI.	
SiO_2	49·90	51·32	56·22	68·12	50·04	57·18	SiO_2
TiO_2	2·56	0·98	2·74	1·26	2·56	3·25	TiO_2
Al_2O_3	12·70	13·96	12·45	13·08	13·32	10·75	Al_2O_3
Fe_2O_3	4·20	2·48	3·09	1·02	4·71	4·96	Fe_2O_3
FeO	7·88	7·10	7·58	3·26	8·07	6·24	FeO
MnO	0·36	0·34	0·43	0·39	0·33	0·32	MnO
(Co, Ni)O	nt. fd.	nt. fd.	nt. fd.	nt. fd.	nt. fd.	nt. fd.	(Co, Ni)O
MgO	5·88	5·78	2·78	0·71	5·01	2·15	MgO
CaO	10·39	11·51	5·93	1·81	10·02	5·73	CaO
BaO	nt. fd,	nt. fd.	0·04	0·04	nt. fd.	0·06	BaO
Na_2O	2·86	3·50	3·82	4·15	3·28	4·62	Na_2O
K_2O	0·95	1·16	2·67	4·47	1·08	2·67	K_2O
iL_2O	nt. fd.	nt. fd.	nt. fd.	nt. fd.	tr.	tr.	Li_2O
$H_2O+105°$	1·65	1·27	1·35	1·16	1·45	1·31	$H_2O+105°$
H_2O at 105°	0·67	0·36	0·44	0·40	0·27	0·33	H_2O at 105°
P_2O_5	0·20	0·24	0·50	0·22	0·28	0·46	P_2O_5
CO_2	0·09	0·09	0·05	0·06	0·08	0·08	CO_2
FeS_2	nt. fd.	nt. fd.	nt. fd.	nt. fd.	nt. fd.	nt. fd.	FeS_2
	100·29	100·09	100·09	100·15	100·50	100·11	
Spec. grav.	2·95	2·91	2·77	2·55	2·97	2·71	

I.–IV. Ascending Sequence, Cruach Choireadail.

(Table 8) Differentiation — Column of Glen More Ring-Dyke as exposed In Cruach Choireadail and Coir' An T-Sailein, 2½ miles apart

TABLE IX.

	Phenocrysts		Amygdale—Minerals: Outside Pneumatolysis Limit								Inside Pneumatolysis Limit			Inside Contact-Zone		Mud-Stone	Xenoliths and enclosed Spinel			
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIIa.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII.	
SiO_2	49·72	50·80	53·74	53·41	52·35	53·29	48·91	46·51	46·62	46·75	46·21	48·10	45·9	38·60	37·66	30·26	49·74	38·67	0·77	SiO_2
TiO_2	0·85	...	...	...	...	...	...	...	...	...	...	nt. fd.	...	0·12	0·72	1·32	1·19	0·90	0·50	TiO_2
Al_2O_3	0·90	31·54	0·82	1·76	1·71	...	0·11	2·40	3·90	24·82	27·00	25·65	26·0	23·51	21·24	27·21	31·90	37·27	63·81	Al_2O_3
Fe_2O_3	1·72	...	...	...	...	...	...	1·14	0·00	...	...	...	...	0·97	1·07	1·57	1·53	2·78	4·20	Fe_2O_3
FeO	27·77	...	...	...	...	...	2·07	1·65	1·08	...	...	0·55	...	0·22	0·34	17·18	4·34	5·07	24·05	FeO
MnO	0·98	...	...	...	...	...	2·27	...	...	...	...	nt. fd.	...	0·29	0·53	0·13	0·13	0·17	0·15	MnO
(Co, Ni)O	nt. fd.	...	...	...	...	...	...	...	...	...	...	nt. fd.	...	nt. fd.	nt. fd.	0·04	nt. fd.	nt. fd.	nt. fd.	(Co, Ni)O
MgO	12·69	...	...	...	...	...	0·56	0·47	...	...	...	0·32	...	0·49	0·45	0·34	0·66	2·35	5·57	MgO
CaO	3·89	12·83	31·19	31·69	31·48	32·41	40·39	33·40	35·08	13·90	13·45	14·17	14·2	22·79	33·36	0·74	0·88	4·85	0·36	CaO
BaO	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	nt. fd.	nt. fd.	...	...	BaO
Na_2O	0·23	3·56	9·94	8·11	8·04	8·80	0·22	0·36	0·80	0·99	...	tr.	...	tr.	1·17	1·06	2·76	3·63	...	Na_2O
K_2O	0·12	tr.	nt. fd.	2·42	2·47	...	1·16	1·15	0·57	...	...	0·03	...	0·03	0·75	2·05	1·72	3·01	...	K_2O
Li_2O	tr.	...	...	...	...	...	...	...	...	...	...	nt. fd.	...	tr.	nt. fd.	nt. fd.	tr.	nt. fd.	...	Li_2O
$H_2O+105°$	1·37	0·32	3·38	3·06	4·07	4·16	4·17	12·91	12·11	13·64	13·78	13·78	13·8	0·39	0·20	7·20	3·44	1·03	0·14	$H_2O+105°$
H_2O at 105°	0·08	...	0·6	...	...	...	...	...	...	...	...	0·13	...	0·09	nt. fd.	1·44	0·51	0·22	nt. fd.	H_2O at 105°
P_2O_5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·24	0·86	...	...	P_2O_5
CO_2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0·04	...	...	CO_2
FeS_2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	nt. fd.	nt. fd.	...	...	FeS_2
	100·13	99·05	99·67	101·05	100·67	100·06	100·76	100·18	99·87	99·80	100·44	100·13	100·0	100·21	100·19	100·04	100·21	100·35	100·39	
Spec. grav.	3·44	2·78	...	...	...	...	2·605	...	2·423	...		2·285		3·488	3·61		2·65	2·91	3·857	

I. Uniaxial Augite. II. Labradorite. III.–VI. Pectolite. VII. Xonotlite. VIII, IX. Tobermorite.[1]
X.–XII. Scolecite. XIII. Pink Epidote. XIV. Garnet. XV. Basal Mudstone (altered).
XVI. Uncontaminated argillaceous xenolith. XVII. Contaminated argillaceous xenolith.
XVIII. Dark-green Spinel.

[1] In British Museum Students' Index Tobermorite is listed as a synonym of Gyrolite.

(Table 9) Analyses other than bulk anayses of igneous rocks, made from material collected collected in the Mull District.

TABLE X.—Synopsis of Mull Basalts Microscopically Examined from 1-inch Map, Sheet 44.

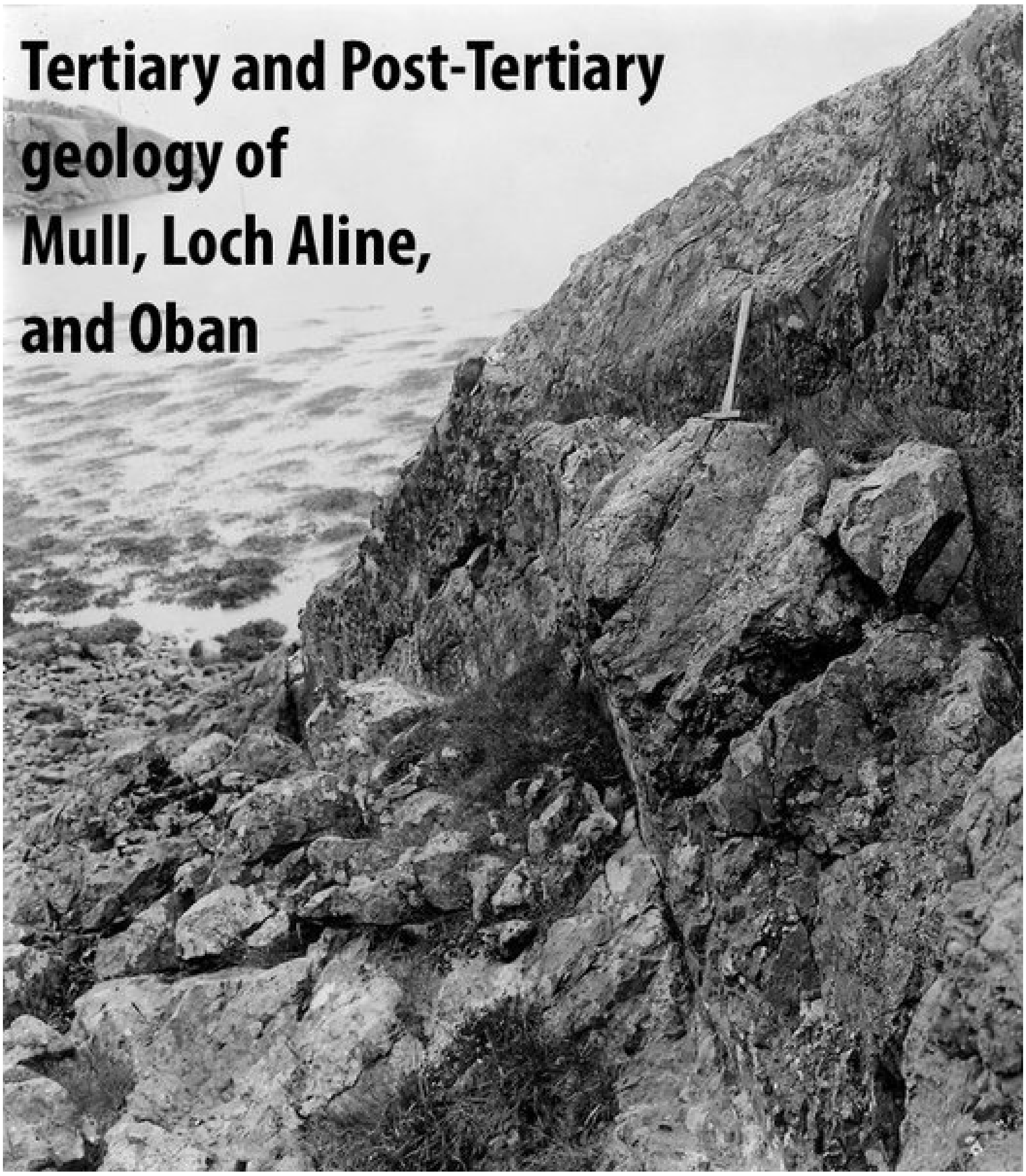
District.	Ornament employed in Pl. III.	Number of Slides Examined.		Number of Slides with—	
		Plateau Types.	*Central Types.*	*Olivine fresh.*	*Olivine all decomposed.*
Area 1	Plateau	16	1	15	2
,, 2	Plateau	8	1	4	5
,, 3	Plateau	6	Nil.	5	1
,, 4	Plateau	8	Nil.	8	Nil.
,, 4a	Plateau	4	Nil.	2	2
,, 5	Central	Nil.	1	Nil.	Nil.
	Plateau	60	1	Nil.	60
,, 6	Central	2	36	Nil.	3
	Plateau	38	6	Nil.	42
,, 7	Central	2	21	Nil.	5
	Plateau	17	1	Nil.	18
,, 8	Central	1	5	Nil.	1
	Plateau	107	5	Nil.	112
,, 9	Central	Nil.	2	Nil.	Nil.
	Plateau	52	8	Nil.	62
,, 10	Central	Nil.	74	Nil.	33
Sheet 44 (*inclusive*).	Central	5	139	...	...
	Plateau	316	23	...	...

(Table 10) Synopsis of Mull basalts microscopically examined from 1-inch map, Sheet 44

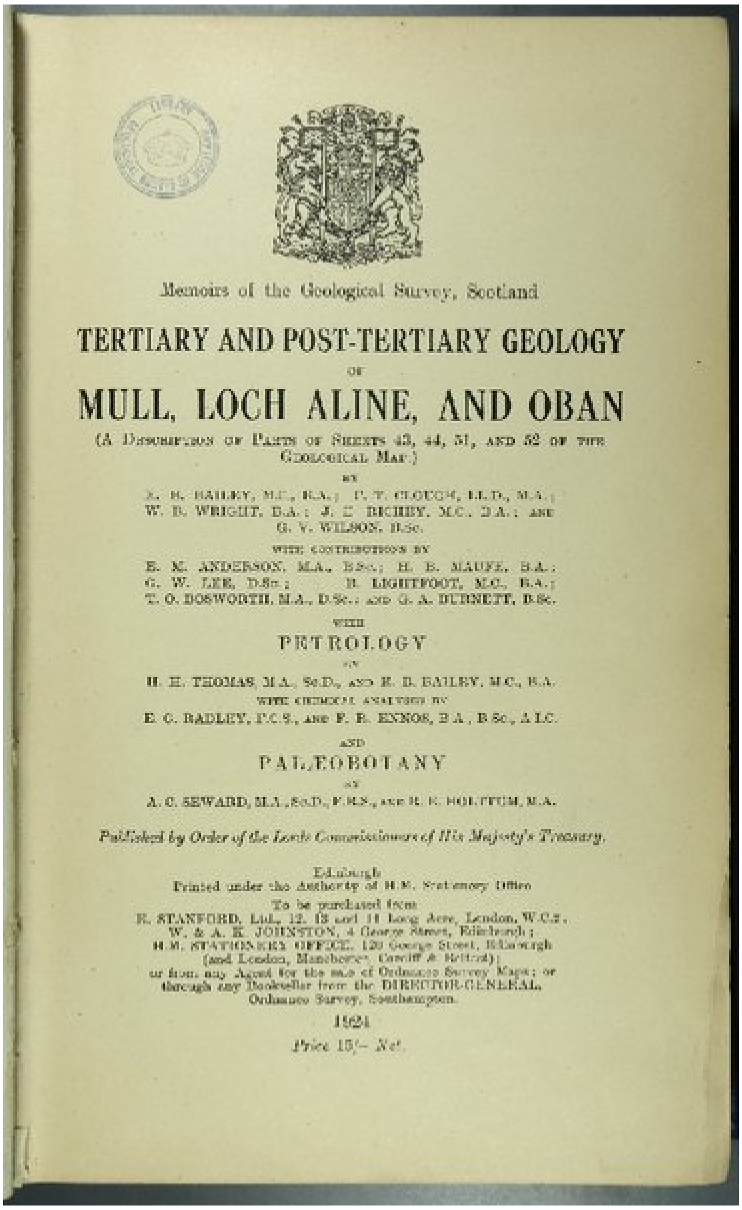
TABLE XI.—Water of Augite-Andesites.

	I*a*	I*b*	II*a*	II*b*	III*a*	III*b*	IV.	V.	
SiO_2	61·69	59·21					62·37	64·13	SiO_2
$H_2O + 105°$	2·36	1·54	2·38	1·56	2·44	0·93	5·54	2·71	$H_2O + 105°$
H_2O at 105°	0·25	2·05	0·45	1·34	0·38	1·64	0·44	0·36	H_2O at 105°
Cl	0·02	nt. fd.							Cl
Spec. grav.	2·64	2·61	2·82	2·77	2·89	2·71	2·50	2·57	

(Table 11) Water of augite-andesites



Shore at Creagan Mor, NE end of Loch Spelve, SE Mull. Chilled edge of dolerite cone-sheet against crushed Mesozoic sediments. BGS image: P216573.



Memoirs of the Geological Survey, Scotland

TERTIARY AND POST-TERTIARY GEOLOGY

OF

MULL, LOCH ALINE, AND OBAN

(A Description of Parts of Sheets 43, 44, 51, and 52 of the Geological Map.)

BY

E. B. BAILEY, M.C., B.A.; C. T. CLOUGH, LL.D., M.A.; W. B. WRIGHT, B.A.; J. E. RICHEY, M.C., B.A.; AND G. V. WILSON, B.Sc.

WITH CONTRIBUTIONS BY

E. M. ANDERSON, M.A., B.Sc.; H. B. MAUFE, B.A.; G. W. LEE, D.Sc.; B. LIGHTFOOT, M.C., B.A.; T. O. BOSWORTH, M.A., D.Sc.; AND G. A. BURNETT, B.Sc.

WITH

PETROLOGY

BY

H. H. THOMAS, M.A., Sc.D., AND E. B. BAILEY, M.C., B.A.

WITH CHEMICAL ANALYSES BY

E. G. RADLEY, F.C.S., AND F. R. ENNOS, B.A., B.Sc., A.I.C.

AND

PALÆOBOTANY

BY

A. C. SEWARD, M.A., Sc.D., F.R.S., AND R. E. HOLTTUM, M.A.

Published by Order of the Lords Commissioners of His Majesty's Treasury.

Edinburgh
Printed under the Authority of H.M. Stationery Office
To be purchased from
E. STANFORD, Ltd., 12, 13 and 14 Long Acre, London, W.C.2.
W. & A. K. JOHNSTON, 4 George Street, Edinburgh;
H.M. STATIONERY OFFICE, 120 George Street, Edinburgh
(and London, Manchester, Cardiff & Belfast);
or from any Agent for the sale of Ordnance Survey Maps; or
through any Bookseller from the DIRECTOR-GENERAL,
Ordnance Survey, Southampton.

1924

Price 15/- Net.

Title page, Tertiary and Post-Tertiary geology of Mull, Loch Aline, and Oban