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

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

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(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]] x15. 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]] x15. 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 microgranophyric 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]] \times 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]] \times 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.* Ixxi, 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.* Ixxviii, 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. Ixxi., 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.* Ixxi., 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; 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.

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(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.

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

(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.

Plates

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- (Plate 2) Phyllites ardtunensis sp. nov.,
- (Plate 3) Map showing the distribution of lava-types and the limit of pneumatolysis
- (Plate 4) Pillow-lavas of central Mull
- (Plate 5) Map showing calderas, major intrusions, and folds
- (Plate 6) Map showing ring-dykes

Tables

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- (Table 2) Non-Porphyritic Central Magma-Type of Figure 2
- (Table 3) Intermediate to Subacid Magma-Type of Figure 2
- (Table 4) Acid Magma-type of Figure 2
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(Table 8) Differentiation — Column of Glen More Ring-Dyke as exposed In Cruach Choireadail and Coir' An T-Sailein, 2½ miles apart

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

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

(Table 11) Water of augite-andesites



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(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: $bI = Basic Cone-Sheets aI = Acid Cone-Sheets D = Dolerite Sill fB = Big Felspar Basalt Lavas B = Non-porphyritic Basalt Lavas. Mesozoic: <math>h^5 = Ceitomanian$ 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 [<u>(S15756)</u> [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 [<u>(S14335)</u> [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. [<u>(S18477)</u> [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 [<u>(S14740)</u> [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 [<u>(S14811)</u> [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. [<u>(S16802)</u> [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. [<u>(S16800)</u> [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. [<u>(S16803)</u> [NM 7167 3731]] × 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 microgranophyric 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.



Basalt-Lavas with pillow-structure.
Vent-Agglomerate of Early Paroxism.
Early Acid Cone-Sheets.
Pre-Ben-Buie Early Basic Cone-Sheets.
Ben Buie Gabbro.
Vent-Agglomerate of Post-Ben-Buie Date.
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.



(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. [<u>(\$16525)</u> [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. [<u>(\$16523)</u> [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. Ixai., 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. Ixxviii, 1922, p. 234.



(Figure 46) Aluminous Xenoliths. A. [<u>(S16612)</u> [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. [<u>(S18493)</u> [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. [<u>(S18001A)</u>] ×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).



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; 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.



(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. [<u>(\$14844)</u> [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] × 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]] \times 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]] \times 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. [<u>(\$13744)</u> [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. [<u>(\$15788)</u> [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.

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

(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.

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

(Plate 2) Phyllites ardtunensis sp. nov.,

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

(Plate 4) Pillow-lavas of central Mull

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

(Plate 6) Map showing ring-dykes

		TABLE	I. : PI	LATEAU	Мадма-'	TYPE OF	FIG. 2.		
	A	B	I.	II.	III.	C	D	Е	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	43.94 2.45 14.03 tr. 1.95 11.65 0.32 nt. fd. 10.46 8.99 nt. fd. 2.68 0.33 nt. fd. 2.31 0.85 0.85 0.20	45.24 2.26 15.63 tr. 5.56 7.19 0.23 tr. 7.82 9.38 2.01 0.72 2.21 1.12 0.20	45.37 2.87 15.16 3.38 11.58 0.31 nt. fd. 6.72 8.11 nt. fd. 2.90 0.44 nt. fd. 1.96 1.18 0.29	45.48 3.48 15.66 3.64 10.56 0.20 6.99 8.24 2.68 0.49 nt. fd. 1.52 0.93 0.26	45.52 2.85 14.30 	46.46 2.07 15.48 0.02 0.05 3.63 10.23 0.48 0.02 6.80 9.05 0.02 3.01 0.68 3.01 0.68 3.tr. 1.43 0.89 0.30	46.61 1.81 15.32 tr. 3.49 7.71 0.13 tr. 8.66 10.08 2.43 0.67 2.07 1.10 tr.	47.64 1.27 14.15 0.01 0.06 5.18 7.96 0.33 tr. 7.38 11.71 nt. fd. 2.38 0.71 1.44 0.19 0.09	
CO ₂ FeS ₂ Fe ₇ S ₃ S	0.20 0.16 0.04 0.06 	0·49 		0.20 0.21 nt. fd.	0.15 0.15 nt. fd.	0.30 nt. fd. 0.08 	tr. 	0.03 0.03	CO ₂ FeS ₂ Fe ₇ S ₈ ¹ S S
	100.42	100 06	100.27	100.34	100.72	100.70	100.08	100.53	
opec. grav.		2.85	2.95	2.98	2.99		2.87		

(Table 1) Plateau Magma-Type of Figure 2

-	TAB	LE II	-Non-J	Роврну	RITIC C	JENTRA	L MAG	MA-TYP	в ок Б	IG. 2.	
	Tho- leiite Salen Type	st	Basalt affa Typ	e	Bas Com Centra	salt paet l Type	Tho Brunto	leiite n Type	Quartz- and T Talaid	Dolerite holeiite h Type	
	I.	II.	ш.	A	1V.	v.	VI.	VII.	VIII.	IX.	
$\begin{array}{c} {\rm SiO}_{2} & , \\ {\rm TIO}_{2} & , \\ {\rm Al}_{2}{\rm O}_{5} & , \\ {\rm Fe}_{2}{\rm O}_{3} & , \\ {\rm Feo}_{0} & , \\ {\rm FeO} & , \\ {\rm MnO} & , \\ {\rm (Co, Ni)O} \\ {\rm MgO} & , \\ {\rm CaO} & , \\ {\rm Na}_{2}{\rm O} & , \\ {\rm Na}_{2}{\rm O} & , \\ {\rm Na}_{2}{\rm O} & , \\ {\rm Li}_{2}{\rm O} & , \\ {\rm H}_{2}{\rm O} - 105 \\ {\rm H}_{2}{\rm O} = 105 \\ {\rm H}_{2}{\rm O} $	4735 175 1890 587 896 023 nt, fd. 597 1065 273 054 024 054 024 032 1065 104 024 023 1065 104 024 023 1064 023 1064 023 1065 1064 023 1064 023 1064 023 1064 023 1065 1064 023 1064 024 1065 1065	47'80 14'80 13'08 0'09 6'84 12'89 2'48 0'86 0'86 (1'41 100'25	49.76 0.94 14.42 3.957.77 0.20 nt, fd, 5.30 10.22 0.04 2.49 1.83 (tr. { 1.03 { 2.04 0.21 0.06 0.04 	52'18 14'87 11'40 0 82 6'46 10'56 2'60 0'69 2'60 0'69 1'19 ; 1'19 ; 1'19	50.54 2.80 12.86 4.13 8.75 0.32 0.06 4.63 8.74 nt. fd. 2.89 1.43 8.74 nt. fd. 1.225 0.034 0.033 nt. fd. 0.33 nt. fd. 	5378 228 1269 344 894 053 nt. fd. 258 6009 274 227 nt. fd. 219 119 055 008 042 	51'53 1'57 11'05 2'73 10'98 0'45 nt. fd. 5'21 9'68 nt. fd. 3'48 0'86 1'26 0'71 0'22 0'08 0'26	51.63 2.00 11.77 3.23 10.47 0.35 0.04 5.02 9.34 0.03 2.90 0.91 1.40 0.68 0.29 0.11 0.08 	5216 325 11.95 4.86 9.92 0.18 377 714 2.36 1.74 1.95 0.56 0.24 0.18 0.18	58:97 1:24 14:65 3:62 0:30 nt. fd. 4:49 7:98 0:04 2:54 1:52 tr. 0:94 1:92 0:27 0:51 0:09 	
Spec. grav	2.96	100 10	2.72	100,22	2'90	2.68	2.93	2:95	2:01	2.83	
	_							200	2.01	2,00	1. 1. 1. 1. 1. 1.

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

TAB	LE III.—IN	TERMEDI	ATE TO	SUBACID	MAGMA-	TYPR OF FI	G. 2.
	Craignurite	Leid	lleite	Innin	morite	Craignurite	- Surface of the
	(basic) I.	II.	III.	IV.	v.	VI.	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 55.82\\ 1.62\\ 11.47\\ 3.68\\ 7.66\\ 0.40\\ 0.04\\ 4.08\\ 7.88\\ 0.03\\ 2.58\\ 2.00\\ tr.\\ 1.88\\ 0.66\\ 0.23\\ 0.08\\ 0.09\\ \dots\end{array}$	59.21 1.06 14.06 2.66 4.87 0.24 nt. fd. 3.71 5.95 0.03 2.06 2.83 nt. fd. 1.49 2.06 0.20 nt. fd. nt. fd. nt. fd.	61.69 1.00 14.43 1.23 5.86 0.30 nt. fd. 2.81 4.97 0.04 3.20 1.72 nt. fd. 2.32 0.25 0.24 nt. fd. 0.02	62.37 1.06 12.04 1.87 5.81 0.24 nt. fd. 0.97 3.51 0.07 3.51 0.07 3.47 2.34 nt fd. 5.54 0.44 0.30 nt fd. 	64·13 1·19 13·15 1·08 6·31 0·27 nt. fd. 1·08 3·62 0·09 3·64 2·32 nt. fd. 2·71 0·36 0·31 nt. fd. 	66.27 0.87 11.92 3.09 3.18 0.31 nt. fd. 1.44 3.30 nt. fd. 2.89 4.03 tr. 1.51 0.78 0.17 0.53 nt. fd. 	$\begin{array}{c} \mathrm{SiO}_2\\ \mathrm{TiO}_2\\ \mathrm{Al}_2\mathrm{O}_3\\ \mathrm{Fe}_2\mathrm{O}_3\\ \mathrm{FeO}\\ \mathrm{MnO}\\ (\mathrm{Co,Ni})\mathrm{O}\\ \mathrm{MgO}\\ \mathrm{CaO}\\ \mathrm{BaO}\\ \mathrm{Na}_2\mathrm{O}\\ \mathrm{K}_2\mathrm{O}\\ \mathrm{Li}_2\mathrm{O}\\ \mathrm{H}_2\mathrm{O} + 105^\circ\\ \mathrm{H}_2\mathrm{O} + 105^\circ\\ \mathrm{H}_2\mathrm{O} + 105^\circ\\ \mathrm{H}_2\mathrm{O}_3\\ \mathrm{Co}_2\\ \mathrm{FeS}_2\\ \mathrm{Cl}\\ \end{array}$
	100.18	100.43	100.08	100.03	100.26	100.29	
Spec. grav.	2.88	2:61	2.64	2.20	2.57	2.65	

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

(Table 4) Acid Magma-type of Figure 2

	Allivalite	Eu	crite	
	Α	I.	В	
SiO	42.20	46.66	48.05	SiO
TiO	0.09	0.47	0.49	TiO
ALO	17.56	16.71	15:35	Al.Ö.
Cr O	0.06		0.14	Cr.O.
Fe O	1.20	2.69	1.86	Fe.O.
FeO	6.33	5.87	7.53	FeO
MnO	0.18	0.12	0.58	MnO
(Co Ni)O	0.13		0.11	(Co, Ni)O
CuQ	0.04		0.02	CuO
MgQ	20.38	12.36	12.53	MgO
CaO	9.61	12.57.	11.02	CaO
No O	1.11	1.16	1.26	Na.0
K O	0.11	0.27	0.19	K.Ô
LiO		nt. fd.	100 (B)	Li.O
$H_{0}^{2} + 105^{\circ}$	1.13	1.24	0.45	$H_{0}O + 105^{\circ}$
H O at 105°	0.06	0.13	0.15	H.O at 105°
P.O.		0.13		P.0.
CO.	tr.	0.18	0.44	CO.
S	0.05	nt. fd.	0.50	S
	100.21	100.26	100.10	

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

	Dolerite		Gabbro			Basalt		
•	Ι.	А	В	II.	III.	IV.	v.	
SiO ₂ . TiO.	$45.54 \\ 1.06$	46·39 0·26	47 [.] 28 0 [.] 28	48·34 0·95	$47.24 \\ 1.46$	47·49 0·93	$48.51 \\ 1.46$	SiO ₂ TiO ₂
Al_2O_3	23.39	26.34 tr.	21.11	20.10	18.55	21.46	19.44	Al ₂ Õ ₃ Cr.O.
Fe_2O_3	1.98	2.02	3.52	1.97	6.02	1.72	5.66	Fe ₂ O ₃
MnO .	0.98	0.14	0.15	0.32	0.31	0.15	0.23	MnO
(Co,Ni)O MgO .	4.60	4.82	 8.06	nt. fd. 5.49	$0.05 \\ 5.24$	0.04 4.59	0·04 5·12	(Co,Ni) MgO
CaO . BaO .	11.82	15.29	13.42	13·16 0·10	11·72 nt. fd	13.24 nt. fd.	12.03 nt. fd.	CaO BaO
$Na_{2}O$.	2.50	1.63	1.52	1.66	2.42	2.17	2.53	Na ₂ O
Li ₂ O		0.40	0.59	nt. fd.	nt. fd.	nt. fd.	nt. fd.	Li ₂ O
$H_{2}O + 105^{\circ}$ $H_{2}Oat 105^{\circ}$	0.62	0.48	0.33	0.44 0.02	0.21	0.17	0.48	H_2O+1 H_2O at 1
P_2O_5 . CO_6 .	0.13	tr.	tr. 	0.04 0.11	0.26 0.19	$0.43 \\ 0.08$	0.16 0.09	P ₂ O ₅ CO ₂
Fes ₂ .				nt. fd.	nt. fd.	nt. fd.	nt. fd.	FeS2
	100.02	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

	TAB	LE VII	-ALKA	LINE MA	GMA-SER	IES OF F	'ic. 4.	
1		Muge	arite		Syonite	Trac	hyte	in the second
	А	B	C	I.	II.	III.	IV.	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	49.24 1.84 15.84 tr. 6.09 7.18 0.29 tr. 3.02 5.26 0.09 tr. 5.21 2.10 1.61 1.08 1.47 0.03 0.18	49.92 2.04 12.83 tr. 0.04 6.96 6.21 0.52 0.03 3.78 7.25 0.09 tr. 3.72 1.73 tr. 1.05 3.58 0.45 nt. fd. î tr.	50 70 1 89 14 60 5 23 7 68 0 42 tr. 4 15 7 20 0 08 tr. 3 71 1 33 ? tr. 1 15 2 08 0 49 nt. fd. 100-71	55'76 1'78 16:55 3'10 6'02 0'22 nt: fd. 1'08 3'23 0'07 6'28 3'87 tr. 0'95 0'80 0'40 0'03 nt. fd. 	58.81 0.76 14.81 4.58 4.21 0.27 nt. fd. 0.80 2.33 0.03 5.60 4.96 nt. fd. 0.82 2.00 0.20 nt. fd. 	60.13 0.73 16.53 2.86 2.55 0.46 nt. fd. 1.20 1.61 0.11 8.06 3.99 tr. 0.97 0.55 0.57 nt. fd. 	63 12 0 51 15 44 1 5 44 1 73 3 53 0 27 nt. fd. 0 62 1 31 nt. fd. 0 62 1 31 nt. fd. 0 44 0 14 0 25 1 89 nt. fd. 	$\begin{array}{c} \text{SiO}_2\\ \text{TiO}_2\\ \text{Al}_2O_3\\ \text{Cr}_2O_3\\ \text{Cr}_2O_3\\ \text{Fc}_2O_3\\ \text{Fc}_2O_3\\ \text{Fc}_2O_3\\ \text{FeO}\\ \text{MnO}\\ (\text{Co,Ni})O\\ \text{MgO}\\ (\text{Co,Ni})O\\ \text{MgO}\\ \text{CaO}\\ \text{BaO}\\ \text{SrO}\\ \text{Na}_2O\\ \text{K}_2O\\ \text{Li}_2O\\ \text{H}_2O + 105^\circ\\ \text{H}_2O + 105^\circ\\ \text{H}_2O + 105^\circ\\ \text{H}_2O + 105^\circ\\ \text{H}_2O_5\\ \text{CO}_2\\ \text{FeS}_2\\ \text{S}\\ \text{F}\end{array}$
1		100 20				100 52		
Spec. grav	2.79		••••	2.67	2.64	2.51	2.89	

(Table 7) Alkaline Magma-Series of Figure 4

	Cruach	Choireada	il, Fig. 54,	p. 322.	Coir' an	t-Sailein.	
	I.	II.	III.	IV.	v.	VI.	
SiO	49.90	51.32	56.22	68.12	50.04	57.18	SiO.
TiO ₂	2.56	0.98	2.74	1.26	2.56	3.25	TiO.
Al_2O_3 .	12.70	13.96	12:45	13.08	13.32	10.75	Al _a Õ _a
FegOa	4:20	2.48	3.08	1.02	4.71	4.96	Fe ₂ O ₈
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	5.28	2.78	0.71	5.01	2.12	MgO
CaO	10.39	11.21	5.93	1.81	10.05	5.73	CaO
BaO	nt. fd,	nt. fd.	0.04	0.04	nt. fd.	0.06	BaO
Na_2O	2.86	3.20	3.82	4.15	3.28	4.62	Na ₂ O
$\mathbf{R}_{2}\mathbf{O}$	0.95	1°16	2.07	4.47	1.08	2.67	K ₂ O
H 0 : 105°	nt. Id.	nt. 10.	nt. 10.	nt. 1a.	Ur.	Lr. 1.91	
$H_{0}0 + 105$.	1 05	0.26	0.44	0:40	1.40	1 01	$H_{0}0 + 105$
P 0	0.90	0.94	0.50	0.99	0.21	0.46	P O
CO · ·	0.09	0.09	0.05	0.06	0.08	0.08	CO.
FeS ₂	nt. fd.	nt. fd.	nt. fd.	nt. fd.	nt. fd.	nt. fd.	FeS2
	100.29	100.09	100.09	100.15	100.20	100 11	
Spec. grav	2.95	2.91	2.77	2.55	2.97	2.71	

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

	1.222			Anygda — Minetals																
	Phonor	zysta		Outside Parumatolysis Limit							Inside Preumatolysis Länät Contact-Zone				ie -Zone	Slone	000	doera Sp	ined	
	I.	Π.	m	IV.	٧.	v1.	VII.	VIII.	TX,	x	XI.	хп	XIIa.	XIII.	XIV.	xv.	XVI.	хуп	XVIII.	
80,	(#772 9783 9760 1777 27777 0768 uL fol. 12769 0723 0712 UL 1977 0768	50780 51764 11785 5766 5766 5766 111	5374 õet 	50°41 176 11 11 11 11 11 11 11 11 11 11 11 11 11	52:35 171 11 11 11 11 11 11 11 11 11 11	33729 33741 33741 830 418	45'91 9'11 2'97 2'27 0'98 40'99 0'98 1'16 4'17	4531 540 114 185 547 5540 035 115 114 115 117 11	40.02 800 0.00 1.05 53.05 0.05 0.05 1.21111 1.21111 1.2111 1.21111 1.211111 1.211111 1.211111 1.211111 1.211111 1.211111 1.211111 1.211111 1.211111 1.2111111 1.2111111 1.2111111 1.21111111111	40775 26782 1111 16790 0989 15764	45°21 27°00 111111443 15°78 15°78	45710 al. fal. 25705 0555 14.17 0703 14.17 0703 1.278 0715 1.1	4519 2619 1413 1413 1578	25112 2351 2351 0022 0022 0022 0022 0022 1002 1000 1000000	27 66 0722 21 54 9734 9734 9734 9735 9735 9735 9735 9735 9735 9735 9735	201203 1122 27134 15715 9713 0744 0774 1108 2005 0144 0744 1108 2005 11444 0746 1144 0746 1144 0746 1144	40754 - 110 31190 1153 0.54 0.65 0.988 at. 61 - 276 - 275 - 15 - 15	28/47 0/90 87/27 27/3 9/07 0/17 2.25 4.85 3/07 2 2.45 3/07 2 2.45 3/07 2 2.45 3/07 2 2.45 3/07 2 2.45 3/07 0 1/2 1/2 2.45 3/07 0 0.17 0.17 0.17 0.17 0.17 0.17 0.17	0.777 0.550 0.5781 224000 24400 24400 24400 0.557 0.557 0.555 0.55	5003 7007 AL,03 Pe-0 Pe0 MnO (Co, NI)0 MnO (Co, NI)0 Na,0 Na,0 Na,0 H,0 +105 H,0 +105 Pr5, Pr5,
	100.13	99165	99767	101.02	100.62	100:06	100.76	100/19	09/81	5/P 80	100'44	100'13	100:0	100/21	100.10	100.04	160.51	100 35	100/39	
the second second second	27.64	2.78			-		2:005		2.458		-	21285		3'498	2:61		3.63	201	37872	

(Table 9) Analyses other than bulk analyses 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	Ornamen	t Number Exar	of Slides nined.	Numbe wi	r of Slides th—
District.	Pl. III.	Plateau Types.	Central Types.	Olivine fresh.	Olivine all decomposed
Area 1 .	Plateau	. 16	1	15	9
., 2 .	Plateau	8	î	4	5
,, 3 .	Plateau	6	Nil.	5	1
., 4 .	Plateau	8	Nil.	8	Nil.
,, 4a .	Plateau	4	Nil.	2	2
	(Central	Nil.	1	Nil	Nil
,, ,, ,	: · Plateau	60	ĩ	Nil.	60
e	(Central	2	36	Nil.	. 3
,, 0 .	: 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
C1	Ceptral	5	139	a land	
Sheet 44 (inclu	usive). Plateau	316	23		

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

	Ia	1b	IIa	IIb	IIIa	IIIb	IV.	v.	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	61.69 2.36 0.25 0.02	59.21 1.54 2.05 nt. fd.	2·38 0·45	1.56 1.34	2·44 0·38	0·93 1·64	62·37 5·54 0·44	64·13 2·71 0·36	${SiO_{g} \atop H_{g}O+105^{\circ} \atop H_{g}Oat 105^{\circ} \atop Cl}$
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.

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