

*Report of the Committee on British Petrographic
Nomenclature.*

THE Joint Committee was appointed in February 1920, by the Geological Society of London and the Mineralogical Society:—‘*To consider whether any standardization of British petrographic nomenclature is possible and desirable, and, if so, to make recommendations with that end in view.*’

The Committee is composed of the following:—*Professor W. W. Watts* (Chairman), *Dr. J. V. Elsdon*, *Dr. J. S. Flett*, *Sir Jethro J. H. Teall*, *Dr. Herbert H. Thomas*, *Mr. G. W. Tyrrell*, appointed by the Geological Society of London. *Dr. J. W. Evans*, *Dr. F. H. Hatch*, *Dr. A. Holmes*, *Dr. G. T. Prior*, *Mr. R. H. Rastall*, and *Mr. W. Campbell Smith* (Hon. Sec.), appointed by the Mineralogical Society.

The first meeting was held on March 16, and thirteen meetings in all have been held. The average number of members attending has been 7.5. Dr. Flett and Mr. Tyrrell were unable to be present at the meetings, but they communicated their views in writing from time to time. After each meeting all members of the Committee received a full report of all recommendations agreed upon.

The first two meetings were occupied with a discussion of the resolutions which were passed by the Commission of Rock Nomenclature of 1899–1900, set up by the International Geological Congress.

The committee then proceeded to consider a list of ninety *rock-names and petrographic terms which have been used in more than one sense by British authors*. The recommendations of the Committee on the future use of these terms are embodied in the two Lists A and B which follow.

List A includes all the terms that were discussed, with the definitions recommended for those terms which the Committee proposed should be retained in use.

List B includes twenty-seven names of which the Committee recommends the complete rejection.

The only obsolete name re-introduced is *trachybasalt*, which is proposed in place of *trachydolerite* as used by Washington in 1897.

No new names are proposed.

Attention is called to the fact that in these lists no names have been dealt with other than those which have been used in more than one sense by British authors.

LIST A.

Adamellite should be discarded. See List B. If some authors wish to retain the term it should be used only in the sense in which it was re-defined by Brögger; i.e. for the acid member of his 'monzonite series'.

Amphibolite is retained for unfoliated or slightly foliated metamorphic rocks of doubtful, or other than igneous, origin. It is composed essentially of hornblende and felspar, often containing various accessories, such as epidote and garnet. **Epidiorite** is retained for unfoliated metamorphosed igneous rocks of doleritic or basaltic composition in which augite has been replaced by hornblende. It usually occurs as dykes and sills. **Hornblende-schist** is distinguished from *amphibolite* and *epidiorite* by the possession of foliated texture.

Anamesite. Disuse recommended. See List B.

Anorthosite is retained in the sense of rocks similar in texture to the gabbros and composed almost entirely of basic plagioclase and almost free from ferromagnesian materials.

Aphanite. Disuse recommended. See List B.

Aplite and **Pegmatite**, when used alone as rock-names, should be used in the sense defined in Harker's *Petrology for Students, 1919*, pp. 38 and 39, as follows:—*Aplite* 'occurs as veins in granite. . . . It is a fine-textured rock with "panidiomorphic" to granulitic structure, and is somewhat more acid than the associated granite. A characteristic type occurs in connection with the muscovite-granites near Dublin. It consists of microcline, with some oligoclase, quartz, muscovite, and red garnet.' *Pegmatites* 'consist essentially of microcline or orthoclase and quartz, often with white mica and sometimes red garnet. The texture is often extremely coarse, and there is a frequent tendency to the graphic structure.' The possession of graphic structure by a pegmatite is not essential.

These terms (*aplite* and *pegmatite*) may be extended to rocks bearing the same relation to syenite, diorite, &c., as aplite and pegmatite bear to granite, but, if so used, some indication of their mineralogical composition should be given.

Banatite. Should be replaced by quartz-diorite (Banat type).

Basalt. The term 'basalt' used alone should not imply the presence of olivine. Basalts containing olivine as an essential constituent should be described as *olivine-basalts*. No definite line is drawn between basalt and dolerite. The distinction depends on coarseness of texture.

Basanite. See note under nephelinite.

Bauxitite. Disuse recommended. See List B.

Binary granite. Disuse recommended. See List B.

Bostonite. See note under trachyte.

Charnockite. The committee recommends that when reference is made to the *charnockite series* the word 'series' be never omitted. Reference to this series of rocks as 'the charnockites' is to be avoided. It is further recommended that *charnockite* as a rock-name be restricted to the granulitic variety of hypersthene-granite of the type locality as defined by Holland in 1893, and to rocks practically identical with this.

Cipolin. Disuse recommended. See List B. *Cipollino* may be retained for the ornamental stones so named.

Comendite should be replaced by soda-rhyolite (Comende type).

Cornubianite. Disuse recommended. See List B.

Diabase. Disuse recommended. See List B.

Diallagite. Disuse recommended. See List B.

Diorite should be limited to plutonic rocks of intermediate composition, the dominant feldspar being an acid plagioclase. More basic rocks consisting of hornblende and basic plagioclase should be classed with the *gabbros*.

Diorite-aplite. See aplite.

Ditroite should be replaced by nepheline-syenite (Ditro type).

Dolerite is retained in the sense of a coarse-grained rock of basaltic composition, usually, but not always, hypabyssal. No definite line is drawn between *basalt* and *dolerite*. The distinction depends on coarseness of texture.

Domite. Disuse recommended. See List B.

Dunstone. Disuse recommended. See List B.

Epi- as a prefix should not be used, but the term *epidiorite*, being well established, may be retained in use with the definition given above. See under amphibolite.

Epidiorite. See under amphibolite.

Essexite is retained for rocks practically identical with, or which show but slight divergence from, the original type of Salem Neck, Essex Co., Massachusetts.

Euphotide. Disuse recommended. See List B.

Eurite. Disuse recommended. See List B.

Felsite is retained for those acid and intermediate intrusives which carry no porphyritic constituent and in which the texture is felsitic.

Felsitic may be used to designate the cryptocrystalline texture of felsites and similar rocks. The term 'microfelsitic', used by certain authors, is unnecessary.

Felspar-rock. Disuse recommended. See List B.

Foyaite should be replaced by nepheline-syenite (Foya type).

Gabbro includes plutonic rocks of basic composition consisting essentially of a basic plagioclase with one or more ferromagnesian constituents, usually a pyroxene but sometimes hornblende, and with or without olivine. See diorite.

Gneiss is a medium or coarse-grained crystalline rock possessing some form of parallel structure due either to the uniform orientation of certain tabular or prismatic minerals, or to the presence of wavy discontinuous surfaces indicating a lenticular or phacoidal structure, or of bands of varying mineralogical composition which retain their continuity and parallelism throughout a considerable mass of rock (banded gneisses).

Gneisses may be of igneous, sedimentary, or doubtful origin. Those of igneous origin (orthogneisses) may have acquired their characteristic structure before, during, or subsequent to consolidation, and only in the last-mentioned class can they be said to be metamorphic rocks. Those of sedimentary origin (paragneisses) are invariably metamorphic rocks owing to the development in them of new minerals; their parallel structure may in some cases follow planes due to deposition, in others due to deformation.

The term gneiss, when used without qualification, should imply a rock of granitic composition but not necessarily of igneous origin.

Schist (*Crystalline schists*) differs from gneiss in being of finer grain, and in possessing a well-marked tendency to split into thin layers, except when puckered or folded by movement subsequent to the development of schistosity. The term carries with it no mineralogical connotation.

Granite-porphry. See under porphyry.

Granite. Disuse recommended. See List B.

Granodiorite is to be retained for rocks intermediate between quartz-diorite and granite in which orthoclase, while present as a notable constituent, is always subordinate in amount to the plagioclase.

Granophyre is retained in the sense in which the term is used by Rosenbusch (1872), and by Harker.

Granulite is not to be used in the sense of Michel Lévy, for muscovite-granite. When used as a rock-name it should be used only for rocks with granulitic texture, and should be qualified by prefixing the name of the mineral, or minerals, which characterize the rock.

Granulitic texture may be used for that texture of rocks characterized by even-sized and closely-fitting grains. It is applicable to metamorphosed

sedimentary and metamorphosed igneous rocks, and, to a more limited extent, to igneous rocks in which the texture has been produced directly. The texture shown in Pl. 46, fig. 1, of Mem. Geol. Surv. Gt. Brit., 1907, N.W. Highlands of Scotland, is granulitic.

The term *granulitic* should not be used to describe those textures of dolerites so described by Judd (Q. J. G. S., 1886, vol. 42, pp. 68, 76 and pl. 5). For such textures granulitic should be replaced by *intergranular* (Evans).

Hornblende-schist. See under amphibolite.

Hyperite. Disuse recommended. See List B.

Hypersthenite. Disuse recommended. See List B.

Intergranular. See under granulitic.

Kenyte is retained for rocks practically identical with the kenytes of Mt. Kenya described by Gregory, 1900.

Kerstophyre. See note under trachyte.

Lamprophyre is to be retained in its present generally accepted sense to cover the 'Lamprophyrische Ganggesteine' of Rosenbusch, 1910; i. e. the sense employed by Harker, Petrology for Students, 1919.

Leptynolite. Disuse recommended. See List B.

Leucite-basalt. See note under nephelinite.

Leucite-phonolite is to be used in the sense adopted by Zirkel (1893) for a phonolite containing leucite in addition to nepheline and alkali-felspar.

Leucite-trachyte is to be used in the sense of vom Rath (1867), as adopted by Zirkel (1893) and by Washington (1897); i. e. a volcanic rock containing leucite in addition to the constituents of trachyte, and consisting, therefore, essentially of alkali-felspar and leucite, with relatively small amounts of ferromagnesian minerals, nepheline being absent or present as a minor accessory.

Leucitite. See under nephelinite.

Leucitophyre. Disuse recommended. See List B.

Leuco- should not be used as a prefix indicating the presence of leucite, e.g. in leucotephrite.

Leucotephrite. Disuse recommended. See List B.

Melaphyre. Disuse recommended. See List B.

Meta-, if used as a prefix, is understood to imply alteration of the original rock-type to the name of which it is prefixed.

Miaskite to be replaced by nepheliné-syenite (Miask type).

Mica-syenite is retained in the sense of a syenite with dominant mica.

Minette is retained in use for the igneous rocks at present so named.

Monzonite should be restricted to rocks of the type occurring in the Monzoni district, Tyrol, typically augite-bearing and containing a noteworthy amount of basic plagioclase in addition to orthoclase. The term *monzonite series* may be used to comprehend related rocks whether more basic or more acid than monzonite itself.

Nepheline-dolerite. Disuse recommended. See List B.

Nephelinite, Leucitite, and Tephrite are to be retained in use in the sense at present adopted by British authors. They do not contain olivine as an essential constituent, but may contain it as an accessory. The names **Nepheline-basalt, Leucite-basalt, and Basanite**, are used so frequently that the Committee does not feel able to recommend their disuse, but it would prefer to see these terms replaced by *olivine-nephelinite, olivine-leucitite, and olivine-tephrite*.

Obsidian. Glassy volcanic rocks of acid or intermediate composition, to be distinguished when evidence of composition is available, as rhyolite-obsidian, trachyte-obsidian, phonolite-obsidian, dacite-obsidian, andesite-obsidian.

Oligoclasite. Disuse recommended. See List B.

Ortho- The use of this prefix as an abbreviation for orthoclase or to signify that a rock is rich in that mineral is not recommended. It is retained as a prefix to the name of a metamorphic rock to indicate igneous origin.

Palaeopicroite. Disuse recommended. See List B.

Pantellerite is allowable for rocks practically identical with those of the type locality, but preferably should be replaced by soda-rhyolite [or soda-trachyte] (Pantelleria type).

Para- is retained as a prefix to the name of a metamorphic rock to indicate sedimentary origin. The significations given to this prefix by Loewinson-Lessing (1905), and by Lacroix (1920), are not adopted.

Pegmatite. See under aplite.

Peridotite. Holocrystalline igneous rocks of ultrabasic composition, rich in olivine, and free from felspar or containing it only as an accessory constituent. Certain olivine-rich rocks which have been described as *hornblende-picrites* should be included. Varieties should be described by prefixing the name of the mineral characterizing them. The names *duvite* and *herzolite*, being well established and clearly understood, may be retained.

Perknite. See under pyroxenite.

Picrite should be restricted to rocks of the type locality of Söhle,

Moravia, as described by Tschermak (1866), and to those closely similar rocks associated with teschenites and theralites in other regions.

Pitchstone. Glassy rocks of similar range in composition to obsidian (q.v.), but characterized externally by pitchy lustre, splintery or hackly fracture, and a relatively high content of water. They are usually hypabyssal.

Porphyrite. See under porphyry.

Porphyritic texture. The definition given by Teall in 1888 (British Petrography, p. 51) is adopted, viz.: 'When . . . certain constituents occur as large or more or less perfect crystals in a matrix of finer grain the rock is said to be *porphyritic*.'

Porphyry and Porphyrite. Hypabyssal rocks of acid or intermediate composition with one or more porphyritic constituents in a crystalline (including cryptocrystalline) groundmass. Such rocks with dominant alkali-felspar are termed *porphyry*, as distinct from those with dominant soda-lime-felspar, which are termed *porphyrite*. These terms should be qualified by prefixing the name of the mineral or minerals which occur as porphyritic constituents. The name *granite-porphyry* is ambiguous, and should not be used.

Pyroxenite. Those members of the perknite group with dominant pyroxene; that is, in the original sense of Coquand, and the sense in which it is employed by Harker and Hatch. *Perknite*, introduced by Turner (1901), and adopted by Hatch (Igneous Rocks, 1914), may be usefully employed as a group name for:—Holocrystalline igneous rocks 'composed of various combinations of hornblende, augite, and rhombic pyroxenes, together with accessory biotite, olivine and iron-ores. They . . . occur as deep-seated masses or as dykes.'

Schist. See under gneiss.

Shonkinite is retained in the sense of the original definition of Weed and Pirsson (1895), and the more detailed definition of Pirsson (1900). The rock of Square Butte, Highwood Mts., Montana, described by Weed and Pirsson and analysed by the latter, is an olivine-bearing shonkinite with accessory nepheline, sodalite, etc., in small quantities. If, in certain varieties of shonkinite, leucite or nepheline become notable constituents, such rocks should be distinguished as *leucite-* or *nepheline-shonkinites*.

Syenite. Disuse recommended. See List B.

Tephrite. See under nephelinite.

Theralite is retained for nepheline-gabbros, the rock adopted as the type being the theralite of Duppau, Bohemia, and not the rock originally described as theralite from Gordon's Butte, Crazy Mts., Montana.

Tonalite should be replaced by quartz-diorite (Tonale type).

Trachybasalt is adopted to replace the term *trachydolerite* as used by Washington in 1897, that is, for intermediate potash-rich rocks containing basic plagioclase together with orthoclase. The use of the term *trachybasalt* in the sense of Borický (1873) having been long discontinued, no confusion should arise from its re-introduction in a new and self-explanatory sense.

Trachydolerite. Disuse recommended. See List B. Also see note under trachybasalt.

Trachyte. Tyrrell's proposal to use *trachyte*, *bostonite*, and *keratophyre*, with textural significations for rocks which have essentially the same chemical and mineral compositions, regardless of whether they are of extrusive or intrusive origin, is not adopted.

Wehrlite. Disuse recommended. See List B. Also see note under peridotite.

LIST B.

The following terms, which have been used in more than one sense, being either obsolete or unnecessary, it is recommended that their further use as petrological terms be avoided:—

Adamellite	Domite	Leucitophyre
Anamesite	Dunstone	Leucotephrite
Aphanite	Euphotide	Melaphyre
Bauxitite	Eurite	Nepheline-dolerite
Binary granite	Felspar-rock	Oligoclasite
Cipolin	Granitite	Palaeopicrite
Cornubianite	Hyperite	Syenitite
Diabase	Hypersthenite	Trachydolerite
Diallagite	Leptynolite	Wehrlite

SYNONYMS.

At its ninth meeting the Committee proceeded to consider a list of synonyms which had been circulated to members on April 27. As a result of the discussion the following list of terms for structures, textures, chemical characters, &c. (excluding rock-names), was drawn up.

For each set of synonyms in this list the term printed in small capitals is the one the use of which the Committee recommends in preference to the alternative term, or terms, which are printed in ordinary type.

ACCIDENTAL INCLUSION (Harker, 1900): exogenous enclosure.

ACID: persilicic.

- ALLOTRIOMORPHIC (Rosenbusch, 1897): xenomorphic; anhedral.
 Anhedral (Pirsson, 1895). See allotriomorphic.
- ARENACEOUS: psammitic.
- ARGILLACEOUS: pelitic; lutaceous.
- Autolith (Holland, 1900). See cognate inclusion.
- Automorphic (Rohrbach, 1886). See idiomorphic.
- BASIC: subsilicic.
- COGNATE INCLUSION (Harker, 1900): autolith; endogenous enclosure.
- CONTACT METAMORPHISM: exomorphism.
- CORONA: REACTION RIM¹; kelyphitic rim.
- Ellipsoidal structure. See pillow structure.
- Enclosure. See inclusion.
- Endogenous enclosure. See cognate inclusion.
- Euhedral. See idiomorphic.
- Exogenous enclosure. See accidental inclusion.
- Exomorphism (Fournet, 1867). See contact metamorphism.
- GLASSY: Hyalo-; vitro-.
- HEMICRYSTALLINE: merocrystalline; semicrystalline.
- Hyalo-. See glassy.
- Hypautomorphic. See hypidiomorphic.
- HYPIDIOMORPHIC: hypautomorphic; subhedral.
- IDIOMORPHIC: automorphic; euhedral.
- Included nodule. See inclusion.
- INCLUSION (in rock): enclosure; included nodule.
- INTERMEDIATE (silica content): mediosilicic.
- Kelyphitic rim (Schrauf, 1882). See corona, reaction rim.¹
- Lutaceous (Grabau, 1904). See argillaceous.
- Mediosilicic (Clarke, 1911). See intermediate.
- Merocrystalline. See hemicrystalline.
- MULLION STRUCTURE (Kinahan, 1891): rodding structure.
- ORBICULAR STRUCTURE (Delesse, 1849): spheroidal structure.
- Pelitic. See argillaceous.
- Persilicic (Clarke, 1911). See acid.
- PILLOW STRUCTURE: ellipsoidal structure.
- Psammitic. See arenaceous.
- PSEPHITIC: rudaceous.
- REACTION RIM; CORONA: kelyphitic rim.¹
- Rodding structure. See mullion structure.

¹ If the corona can be shown to be due to alteration or modification of the nucleus the term reaction rim is preferred

- Rudaceous (Grabau, 1904). See psephitic.
Semicrystalline. See hemicrystalline.
Spheroidal structure. See orbicular structure.
Subhedral (Pirsson, 1895). See hypidiomorphic.
Subsilicic (Clarke, 1911). See basic.
Vitro-. See glassy.
Xenomorphic (Rohrbach, 1886). See allotriomorphic.

GENERAL RECOMMENDATIONS.

The Committee makes the following recommendations for the formation and mode of presentation of rock-names. With these are embodied the general resolutions passed at the second meeting of the Committee.

It is desirable to avoid the use of a name or term in different senses, and to avoid the multiplication of terms to express the same rock, structure, or texture.

While it is undesirable to assign new meanings to old rock-names it shall be permissible, if the old names are retained, to modify their definitions so as to conform to modern views of classification.

When a new name is necessary for a rock, or group of rocks, it is preferable to make a name which is self-explanatory, and which conveys some idea of the relations of the newly-described rock, or group, to groups already defined, rather than to introduce a name, such as a place-name, which gives no information as to the affinities of the rock, or group, in question.

When a mineral-name, or names, and a rock-name are compounded to form a name of 'specific' signification, these should be joined by a hyphen; e. g. biotite-granite. But a mineral qualification of varietal character should be given in adjectival form; that is with terminations such as: -ic, -iferous, -bearing; e. g. hornblendic biotite-granite. When two mineral-names are of 'specific' value the most important should be placed next to the rock-name; e. g. biotite-quartz-diorite.

When a particular type of rock, typically developed at one locality, is clearly assignable to one of the main rock-groups, and when, at the same time, the prefixing of mineral qualifications to a group-name cannot be made to describe adequately the rock in question, it is advisable to designate such rock by the group-name, followed in brackets by the name of the place coupled with the word type; e. g. nepheline-syenite (Foya type) rather than 'foyaite'. This practice has been followed very successfully in the description of the Scottish basalts. Abbreviations such as 'basalt (Markle type)' to 'markle', as used by certain

authors, should be avoided. It is only permissible to use alternative expressions such as Markle basalt, Shap granite, when speaking of the rock of the type locality.

Chemical qualifications, when used, should be in the form of substantives joined by a hyphen to the rock-name, e. g. soda-trachyte.

'Alkali-' prefixed to a rock-name is understood to imply a relatively high content of either soda or potash or of both. When of these two alkalis one is definitely preponderant the word 'alkali-' should be replaced by 'soda-' or 'potash-' as the case may be.

In presenting their report the Committee wish it to be understood that they are not in favour of attempting to establish by national or even international councils a standard of orthodoxy in petrology. They recognize that petrological nomenclature is rapidly evolving, and their only object has been to assist if possible in the natural evolutionary process. How far they have succeeded will be shown by the extent to which their suggestions are adopted by petrologists who use the English language.

(Signed)¹ W. W. WATTS, Chairman.

JOHN W. EVANS.

J. VINCENT ELSDEN.

J. S. FLETT.

F. H. HATCH.

GEORGE T. PRIOR.

R. H. RASTALL.

J. J. H. TEALL.

HERBERT H. THOMAS.

G. W. TYRRELL.

W. CAMPBELL SMITH,

Hon. Sec.

December 15, 1920.

¹ Dr. Arthur Holmes's signature has not been obtained, on account of his absence abroad.