

Third supplementary list of British minerals.

By L. J. SPENCER, C.B.E., Sc.D., F.R.S.
Formerly Keeper of Minerals, British Museum.

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MANUAL of the mineralogy of Great Britain and Ireland' by Robert Philips Greg¹ and William G. Lettsom² (London, 1858, vi+483 pp., 400 figs.) still remains the standard work of reference for British minerals, but is now much out of date and also out of print. I was able to obtain in 1895 a second-hand copy, and, with the too ambitious idea of producing a revised edition, I started collecting material, which soon became overwhelming. So in the meantime I gave in 1898 a supplementary list³ of the names of British species and varieties that had been recorded since 1858. After a period of 33 years a second supplementary list⁴ was given in 1931. Rather than wait for another 33 years, the present third list is offered on the occasion of the centenary of 'Greg and Lettsom'. In addition to these there are many references to British minerals in the International Catalogue of Scientific Literature (1901-14), and in the indexes to the Mineralogical Magazine and, since 1920, to Mineralogical Abstracts.

In these three supplementary lists about 250 species have been added to the 241 given by Greg and Lettsom in 1858, making a total of 490, as

¹ Robert Philips Greg (1826-1906), biography with portrait in *Min. Mag.*, 1907, vol. 14, pp. 268-271. His mineral collection, which included that of Thomas Allan (1777-1833), was purchased for the British Museum in 1860, together with the 3-vol. Allan-Greg manuscript catalogue.

² William Garrow Lettsom (1805-87) was in the diplomatic service in many countries. Biographical note in *Monthly Notices Roy. Astron. Soc.*, 1888, vol. 48, pp. 165-166. His mineral collection passed to William Nevill of Godalming and later to Charles Hampton Turner of Godstone, Surrey. These all came into the collection of Henry Ludlam, which in 1880 he bequeathed to the Museum of Practical Geology (now Geological Survey Museum). The collection of Lettsom's grandfather, John Coakley Lettsom (1744-1815), was the foundation in 1793 of the Mineralogical Museum of Harvard University.

³ L. J. Spencer, *Supplementary list of British minerals*. 68th Report Brit. Assoc. Adv. Sci., 1899 (for 1898), pp. 875-877; reprinted in *Geol. Mag.*, 1899, decade 4, vol. 6, pp. 75-76; *Zeits. Kryst. Min.*, 1900, vol. 32, pp. 287-289.

⁴ Second supplementary list of British minerals. Report Brit. Assoc. Adv. Sci., 1932 (for 1931), centenary vol., London, p. 378 [M.A. 5-85].

compared with 824 numbered species in Dana's sixth edition in 1892, and now, due to X-ray methods, say 1 300.

Adamite $\text{Zn}_2\text{AsO}_4\text{OH}$ Orthorhombic

From several localities in Cumberland and Cornwall. A. W. G. Kingsbury, Min. Soc. Notice, 1958, no. 100.

Afwillite $\text{Ca}_3(\text{SiO}_3\text{OH})_2 \cdot 2\text{H}_2\text{O}$ Monoclinic

In chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley, Geol. Mag., 1930, vol. 69, p. 168 [M.A. 4-330]; Min. Mag., 1931, vol. 22, p. 444; H. D. Megaw, Acta Cryst., 1952, vol. 5, p. 477 [M.A. 12-98].

Aikinite CuPbBiS_3 Orthorhombic

In greisen, Grainsgill, Carrock Fell, Cumberland. A. W. G. Kingsbury and J. Hartley, Min. Mag., 1956, vol. 31, p. 297.

Alabandine MnS Cubic

With rhodochrosite in a mineral veinlet, Tintagel, Cornwall. C. E. Tilley, 1944 (private communication).

Alleghanyite $2\text{Mn}_2\text{SiO}_4 \cdot \text{Mn}(\text{OH},\text{F})_2$ Monoclinic

In metamorphosed manganese ore, Benallt mine, Rhiw, Carnarvonshire. W. C. Smith, F. A. Bannister, and M. H. Hey, Min. Mag., 1944, vol. 27, p. 40.

Antlerite $\text{CuSO}_4 \cdot 2\text{Cu}(\text{OH})_2$ Orthorhombic

Lake District, Cumberland. A. W. G. Kingsbury and J. Hartley, Min. Soc. Notice, 1951, no. 72 [Amer. Min. 36-637].

Old Gunnislake mine, Calstock, Cornwall. A. W. G. Kingsbury, Trans. Roy. Geol. Soc. Cornwall, 1954, vol. 18, pt. 4 (for 1952), p. 338 [M.A. 12-362].

Aphthalite $(\text{K},\text{Na})_2\text{SO}_4$ Rhombohedral

In salt deposits, Whitby, Yorkshire. F. H. Stewart, Proc. Yorks. Geol. Soc., 1954, vol. 29, p. 228 [M.A. 12-499].

Arseniosiderite $\text{Ca}_3\text{Fe}_4(\text{AsO}_4)_4(\text{OH})_6 \cdot 3\text{H}_2\text{O}$

Cumberland (four localities), Cornwall, and Devonshire. A. W. G. Kingsbury and J. Hartley, Min. Mag., 1957, vol. 31, p. 499.

Banalsite $\text{Na}_2\text{BaAl}_4\text{Si}_4\text{O}_{16}$ Orthorhombic

In metamorphosed manganese ore, Benallt mine, Rhiw, Carnarvonshire. W. C. Smith, F. A. Bannister, and M. H. Hey, *Min. Mag.* 1944, vol. 27, p. 33; W. C. Smith, *ibid.*, 1945, vol. 27, p. 63.

Barbertonite $\text{Mg}_6\text{Cr}_2(\text{OH})_{16}\text{CO}_3\cdot 4\text{H}_2\text{O}$ Hexagonal

The mineral described as stichtite (q.v.) may represent the hexagonal rather than the rhombohedral modification. C. Frondel, *Amer. Min.*, 1941, vol. 26, p. 311 [M.A. 8-100].

Basaluminite $2\text{Al}_2\text{O}_3\cdot \text{SO}_3\cdot 10\text{H}_2\text{O}$

White, compact, filling fissures in ironstone, Irchester, Northamptonshire, and in chalk, Clifton Hill, Brighton, Sussex. F. A. Bannister and S. E. Hollingworth, *Nature*, London, 1948, vol. 162, p. 565 [M.A. 10-452]; Hollingworth and Bannister, *Min. Mag.*, 1950, vol. 29, p. 1. (See Hydrobasaluminite.)

Bavenite $\text{Ca}_4(\text{Be},\text{Al})_4\text{Si}_9(\text{O},\text{OH})_{28}$ Monoclinic

In aplite, Meldon, Devonshire. W. R. Dearman and G. F. Claringbull, 1956 (private communication).

Beaverite $\text{Pb}(\text{Cu},\text{Fe},\text{Al})_3(\text{SO}_4)_2(\text{OH})_6$ Rhombohedral

From Cumberland and Cornwall. A. W. G. Kingsbury, *Min. Mag.*, 1953, vol. 30, p. xlv; *Trans. Roy. Geol. Soc. Cornwall*, 1954, vol. 18, pt. 4 (for 1952), p. 394 [M.A. 12-362]; *Min. Mag.*, 1957, vol. 31, p. 700.

Bementite $2\text{MnSiO}_3\cdot \text{H}_2\text{O}$ (?)

In manganese ore, Treburland mine, Altarnun, Cornwall. A. Russell, *Min. Mag.*, 1946, vol. 27, p. 225.

Beudantite $\text{PbFe}_3\text{AsO}_4\text{SO}_4(\text{OH})_6$ Rhombohedral

Cumberland. A. W. G. Kingsbury, *Min. Soc. Notice*, 1954, no. 84.

Penberthy Croft mine, St. Hilary, Cornwall. A. W. G. Kingsbury, *Trans. Roy. Geol. Soc. Cornwall*, 1954, vol. 18, pt. 4 (for 1952), p. 392 [M.A. 12-362]. (See Corkite.)

Bieberite $\text{CoSO}_4\cdot 7\text{H}_2\text{O}$ Monoclinic

Penberthy Croft mine and Wheal Alfred, Cornwall. J. Robson, *Trans. Roy. Geol. Soc. Cornwall*, 1949, vol. 17, pt. 8 (for 1948), p. 472 [M.A. 11-273]. Previously mistaken for erythrite.

Boehmite AlO(OH) Orthorhombic

In bauxitic clay, Kilwinning, Ayrshire. J. de Lapparent, *Compt. Rend. Acad. Sci. Paris*, 1934, vol. 199, p. 1629; *Bull. Soc. Franç. Min.*, 1935, vol. 58, p. 246; *Summ. Rep. Progr. Geol. Survey Great Britain*, for 1934, pt. 2, p. 1 [M.A. 6-135, 373].

In bauxitic clay baked by lava flows or basalt dikes, Co. Antrim. V. A. Eyles, *Mem. Geol. Surv. Northern Ireland*, 1952 [M.A. 12-159].

Boracite $\text{Mg}_6\text{Cl}_2\text{B}_{14}\text{O}_{26}$ Pseudo-cubic

In salt deposits, Aislaby, Eskdale, Yorkshire. E. M. Guppy, *Min. Mag.*, 1944, vol. 27, p. 51; F. H. Stewart, *ibid.*, 1951, vol. 29, p. 449.

Boulangerite $\text{Pb}_5\text{Sb}_4\text{S}_{11}$ Monoclinic

In greisen, Grainsgill, Carrock Fell, Cumberland. A. W. G. Kingsbury and J. Hartley, *Min. Mag.*, 1956, vol. 31, p. 297.

Endellion, Cornwall. *Ibid.*, p. 299.

Brammallite Sodium-illite

In coal-measure shales, Llandebie, Carmarthenshire. F. A. Bannister, *Min. Mag.*, 1943, vol. 26, p. 304. (*See Illite.*)

Bravoite $(\text{Fe,Ni})\text{S}_2$ Cubic

Mill Close mine, Derbyshire. F. A. Bannister, *Min. Mag.*, 1940, vol. 25, p. 609.

Bredigite $\alpha'\text{-Ca}_2\text{SiO}_4$ Orthorhombic

Chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley and H. C. G. Vincent, *Min. Mag.*, 1948, vol. 28, p. 255; A. M. B. Douglas, *ibid.*, 1950, vol. 29, p. 875.

Chalk-dolerite contact-zone, Ballycraig, Larne, Co. Antrim. J. D. C. McConnell, *Min. Mag.*, 1954, vol. 30, pp. 302, 672.

Limestone-gabbro contact-zone, Camas Mòr, Isle of Muck, Inverness-shire. C. E. Tilley, *Min. Mag.*, 1947, vol. 28, p. 257 (footnote).

Gabbro intrusion in limestone, Camphouse, Ardnamurchan, Argyllshire. S. O. Agrell, *Min. Soc. Notice*, 1950, no. 69 [*Amer. Min.*, 38-1080].

Bustamite $(\text{Mn,Ca,Fe})\text{SiO}_3$ Triclinic

Manganese ore, Treburland mine, Altarnun, Cornwall. C. E. Tilley, *Min. Mag.*, 1946, vol. 27, p. 236; A. Russell, *ibid.*, p. 224.

Cancrinite, sulphatic $(\text{Na}, \text{K}, \text{Ca})_{6-8}(\text{Si}, \text{Al})_{12}\text{O}_{24}(\text{SO}_4, \text{CO}_3)_{1-2} \cdot n\text{H}_2\text{O}$
Hexagonal

In borolanite, Loch Borolan, Assynt, Sutherlandshire. F. H. Stewart, *Min. Mag.*, 1941, vol. 26, p. 1.

Carnallite $\text{KMgCl}_3 \cdot 6\text{H}_2\text{O}$ Orthorhombic

In salt deposits, Aislaby, Eskdale, Yorkshire. F. H. Stewart, *Min. Mag.*, 1951, vol. 29, pp. 449, 557; 1956, vol. 31, p. 127; G. Armstrong *et al.*, *ibid.*, 1951, vol. 29, p. 667; L. R. Raymond, *Quart. Journ. Geol. Soc. London*, 1953, vol. 108 (for 1952), p. 289 [M.A. 12-283].

Carpholite $\text{MnAl}_2\text{Si}_2\text{O}_6(\text{OH})_4$ Monoclinic

Grainsgill, Carrook Fell, Cumberland, and three localities in Cornwall. A. W. G. Kingsbury and J. Hartley, *Min. Mag.*, 1957, vol. 31, p. 502.

Ceruleite $\text{CuO} \cdot 2\text{Al}_2\text{O}_3 \cdot \text{As}_2\text{O}_5 \cdot 8\text{H}_2\text{O}$

Sky-blue, botryoidal, on liroconite, Wheal Gorland, Gwennap, Cornwall. A. Russell and G. F. Claringbull, *Min. Soc. Notice*, 1955, no. 90 [M.A. 13-30].

Clinohumite $\text{Mg}_9\text{Si}_4\text{O}_{16}(\text{F}, \text{OH})_2$ Monoclinic

With humite and chondrodite in dolomite-granite contact-zone, Broadford, Skye, Inverness-shire. C. E. Tilley, *Geol. Mag.*, 1948, vol. 85, p. 215 [M.A. 10-355]; *Min. Mag.*, 1951, vol. 29, p. 636.

Collophane $\text{Ca}_3(\text{PO}_4)_2 \cdot \text{H}_2\text{O}$

In manganese ore, Benallt mine, Carnarvonshire. A. W. Woodland, *Proc. Geol. Assoc.*, 1939, vol. 50, p. 213 [M.A. 8-250].

In magnesian limestone, Castle Eden, Co. Durham. K. C. Dunham, G. F. Claringbull, and F. A. Bannister. *Min. Mag.*, 1948, vol. 28, p. 338.

In Thames gravel, London. S. E. Ellis and G. F. Claringbull, *Min. Mag.*, 1951, vol. 29, p. 615.

In chalk, Princes Risborough, Buckinghamshire. G. Brown and C. D. Ollier, *Min. Mag.*, 1956, vol. 31, p. 339.

With bones, Tornewton Cave, Devonshire. V. B. Proudfoot, *Min. Mag.*, 1956, vol. 31, p. 344.

Columbite $(\text{Fe}, \text{Mn})(\text{Nb}, \text{Ta})_2\text{O}_6$ Orthorhombic

In aplite, Meldon, Devonshire. O. von Knorring, *Min. Mag.*, 1951, vol. 29, p. 799.

Conichalcite $\text{CuCaAsO}_4(\text{OH})$ Orthorhombic

Cornwall. A. W. G. Kingsbury and J. Hartley, Min. Soc. Notice, 1951, no. 74 [Amer. Min., 36-784].

Bedford United mines, Tavistock, Devonshire. A. W. G. Kingsbury, Trans. Roy. Geol. Soc. Cornwall, 1954, vol. 18, pt. 4 (for 1952), p. 396.

Cookeite $\text{LiAl}_4\text{Si}_3\text{AlO}_{10}(\text{OH})_2$ Monoclinic

In quartz-sulphide ore with gold, Ogofau, Carmarthenshire. A. Brammall, J. G. C. Leech, and F. A. Bannister, Min. Mag., 1937, vol. 24, p. 507.

Corkite $\text{PbFe}_3(\text{PO}_4)(\text{SO}_4)(\text{OH})_6$ Rhombohedral

In iron ore, Glendore mine, Co. Cork. Previously referred to beudantite (q.v.) by Greg and Lettsom from which it differs in having (PO_4) in place of (AsO_4) .

Cornubite $\text{Cu}_5(\text{AsO}_4)_2(\text{OH})_4$

With cornwallite on quartz, Wheal Carpenter, Gwinear, Cornwall. G. F. Claringbull, M. H. Hey, and A. Russell, Min. Soc. Notice, 1957, no. 99; Min. Abstr., 1958, vol. 13, p. 558.

Cosalite $\text{CuPb}_7\text{Bi}_8\text{S}_{22}$ Orthorhombic

Fibrous tufts in greisen, Grainsgill, Carrock Fell, Cumberland. A. W. G. Kingsbury and J. Hartley, Min. Mag., 1956, vol. 31, p. 297.

Crossite $(\text{Na,K,Ca})_{2-7}(\text{Mg,Fe,Al,Ti})_5(\text{Si,Al})_8\text{O}_{23}(\text{OH})$ Monoclinic

A blue soda-amphibole previously referred to glaucophane, in 'glaucophane'-schist, Llanfairpwllgwyngyll, Anglesey, Carnarvonshire. N. Holgate, Min. Mag., 1951, vol. 29, p. 792.

Cubanite CuFe_2S_3 Orthorhombic

In veins of tin ore, East Pool mine, Redruth, Cornwall. J. C. Brown, Neues Jahrb. Min. Abt. A., 1934, Beil.-Bd. 68, p. 321 [M.A. 6-228].

Cuspidine $\text{Ca}_4\text{Si}_2\text{O}_7\text{F}_2$ Monoclinic

'Custerite' in metamorphosed limestone, Carlingford, Co. Louth. G. D. Osborne, Geol. Mag., 1933, vol. 69, pp. 61, 219 [M.A. 5-134]; S. R. Nockolds, Min. Mag., 1947, vol. 28, p. 157.

In dolomite-granite contact-zone, Broadford, Skye, Inverness-shire. C. E. Tilley, Min. Mag., 1947, vol. 28, p. 90; 1951, vol. 29, p. 634.

In limestone-gabbro contact-zone, Camas Mòr, Isle of Muck, Inverness-shire. C. E. Tilley, Bull. Comm. Géol. Finlande, 1947, no. 140, p. 100 [M.A. 10-258].

Cyanotrichite $\text{Cu}_4\text{Al}_2\text{SO}_4(\text{OH})_{12}\cdot 2\text{H}_2\text{O}$ Orthorhombic
[Synonym, lettsomite (J. Percy, 1850) from Moldava, Banat.]

Leadhills, Lanarkshire. C. Frondel (1949) in Dana's Min., 7th edn., 1951, p. 579.

Wheal Gorland, St. Day, Cornwall. A. W. G. Kingsbury and J. Hartley, Min. Soc. Notice, 1951, no. 74 [Amer. Min., 36-784]; A. W. G. Kingsbury, Trans. Roy. Geol. Soc. Cornwall, 1954, vol. 18, pt. 4 (for 1952), p. 389 [M.A. 12-362].

Cymrite $\text{BaAlSi}_3\text{O}_8(\text{OH})$ Hexagonal

In metamorphosed manganese ore, Benallt mine, Rhiw, Carnarvonshire. W. C. Smith, F. A. Bannister, and M. H. Hey, Min. Mag., 1949, vol. 28, p. 676.

Dickite $\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_2$ Monoclinic

Amlwch, Anglesey, Carnarvonshire. C. S. Ross and P. F. Kerr, Amer. Min., 1930, vol. 15, p. 34 [M.A. 4-247]. Described as kaolinite by A. B. Dick and H. A. Miers, Min. Mag., 1888, vol. 8, pp. 15, 24.

In sandstones, northern England and North Wales. F. Smithson and G. Brown, Min. Mag., 1957, vol. 31, p. 381.

Duftite $\text{PbCuAsO}_4(\text{OH})$ Orthorhombic

Brandy Gill, Carrock Fell, Cumberland. G. F. Claringbull, Min. Mag., 1951, vol. 29, p. 609; W. F. Davidson and N. Thomson, 1951 [M.A. 11-384].

Erythrosiderite $\text{K}_2\text{FeCl}_5\cdot\text{H}_2\text{O}$ Orthorhombic

In salt deposits, alteration product of rinneite, Aislaby, Eskdale, Yorkshire. F. H. Stewart, Min. Mag., 1951, vol. 29, p. 563.

Ettringite $\text{Ca}_6\text{Al}_2(\text{SO}_4)_3(\text{OH})_{12}\cdot 26\text{H}_2\text{O}$ Hexagonal

In chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley and H. F. Harwood, Min. Mag., 1931, vol. 22, p. 444; F. A. Bannister, *ibid.*, 1936, vol. 24, p. 324.

Euclase $\text{BeAlSiO}_4\text{OH}$ Monoclinic

Cligga Head, Perranporth, Cornwall. A. W. G. Kingsbury, Min. Mag., 1958, vol. 31, p. 815.

Eudialyte $\text{Na}_4(\text{Ca,Fe})_2\text{ZrSiO}_{17}(\text{OH,Cl})_2$ Rhombohedral

In quartz-syenite veins in limestone, Barnavave, Carlingford, Co. Louth. S. R. Nockolds, *Min. Mag.*, 1950, vol. 29, p. 27.

Eudnophite $\text{NaAlSi}_2\text{O}_6 \cdot \text{H}_2\text{O}$ Pseudo-cubic

Variety of analcime, in borolanite, Loch Borolan, Assynt, Sutherlandshire. F. H. Stewart, *Min. Mag.*, 1941, vol. 26, p. 1. (*See Leucite.*)

Ferrobrucite $(\text{Mg,Fe})(\text{OH})_2$ Rhombohedral

Variety of brucite, in limestone-gabbro contact-zone, Isle of Muck, Inverness-shire. C. E. Tilley, *Bull. Comm. Géol. Finlande*, 1947, no. 140, p. 102 [M.A. 10-235].

Fluoborite $\text{Mg}_3\text{BO}_3(\text{F,OH})_3$ Hexagonal

In dolomite-granite contact-zone, Broadford, Skye, Inverness-shire, C. E. Tilley, *Geol. Mag.*, 1948, vol. 85, 215 [M.A. 10-355]; *Min. Mag.*, 1951, vol. 29, p. 637.

Ganophyllite $\text{Mn}_7\text{Al}_2\text{Si}_8\text{O}_{26} \cdot 6\text{H}_2\text{O}$ Monoclinic

In manganese ore, Benallt and Nant mines, Rhiw, Carnarvonshire. W. C. Smith, F. A. Bannister, and M. H. Hey, *Min. Mag.*, 1946, vol. 27, p. 218; *ibid.*, 1948, vol. 28, p. 343.

Gedrite $(\text{Mg,Fe}''\text{,Al})_7(\text{Si,Al})_8\text{O}_{22}(\text{OH})_2$ Orthorhombic

In schists and granulite, Strathy, Sutherlandshire. R. S. Collins, *Min. Mag.*, 1942, vol. 26, p. 254.

Gedritite rock between serpentinite and kyanite-hydrobiotite rock, Glen Urquhart, Inverness-shire. G. H. Francis, *Min. Mag.*, 1955, vol. 30, p. 709.

Gehlenite $\text{Ca}_2\text{Al}_2\text{SiO}_7$ Tetragonal

In chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley, *Min. Mag.*, 1929, vol. 22, p. 83.

In limestone-gabbro contact-zone, Camas Mòr, Isle of Muck, Inverness-shire. C. E. Tilley, *Bull. Comm. Géol. Finlande*, 1947, no. 140, p. 99 [M.A. 10-285].

Gabbro intrusion in limestone, Camphouse, Ardnamurchan, Argyllshire. S. O. Agrell, *Min. Soc. Notice*, 1950, no. 69 [Amer. Min. 33-1080].

Gonnardite $(\text{Ca}, \text{Na})_{6-8}(\text{Si}, \text{Al})_{20}\text{O}_{40} \cdot 12\text{H}_2\text{O}$ Orthorhombic (?)

With saponite in vesicular basalt, Allt Ribhein, Fiskavaig Bay, Skye, Inverness-shire. R. C. Mackenzie, *Min. Mag.*, 1957, vol. 31, p. 672.

Greenalite $3\text{FeO} \cdot 4\text{SiO}_2 \cdot 2\text{H}_2\text{O}$ Isotropic

In greenalite-chert, Glenluce, Wigtownshire. W. Q. Kennedy, *Min. Mag.*, 1936, vol. 24, p. 433.

Grovesite $(\text{Mn}, \text{Mg}, \text{Al})_2(\text{Si}, \text{Al})_2(\text{O}, \text{OH})_9$

In metamorphosed manganese ore, Benallt mine, Rhiw, Carnarvonshire. F. A. Bannister, M. H. Hey, and W. C. Smith, *Min. Mag.*, 1955, vol. 30, p. 645. Closely allied to pennantite (q.v.).

Grunerite $\text{Fe}_7\text{Si}_3\text{O}_{22}(\text{OH})_2$ Monoclinic

In greenstone-hornfels with almandine, Botallack, Cornwall. C. E. Tilley, *Min. Mag.*, 1935, vol. 24, p. 191; A. R. Alderman, *ibid.*, p. 42.

In eulysite, Loch Duich, Ross-shire. C. E. Tilley, *Min. Mag.*, 1936, vol. 24, p. 333.

In pyroxmangite-grunerite-garnet schist, Glen Beag, Glenelg, Inverness-shire. C. E. Tilley, *Amer. Min.*, 1937, vol. 22, p. 720 [M.A. 6-528].

Harkerite Ca-Mg carbonate borosilicate Cubic

In dolomite-granite contact-zone, Broadford, Skye, Inverness-shire. C. E. Tilley, *Min. Mag.*, 1949, vol. 28, proc. p. lxxi (for 1948); *Geol. Mag.*, 1948, vol. 85, p. 215 [M.A. 10-355]; *Min. Mag.*, 1951, vol. 29, p. 640.

Hedenbergite $(\text{Ca}, \text{Fe})\text{SiO}_3$ Monoclinic

In metamorphosed limestone, Tregullen, Bodmin, Cornwall. G. Barrow and H. H. Thomas, *Min. Mag.*, 1908, vol. 15, p. 117.

In eulysite, Loch Duich, Ross-shire. C. E. Tilley, *Min. Mag.*, 1936, vol. 24, p. 334.

Dolomite-granite contact-zone, Broadford, Skye, Inverness-shire. C. E. Tilley, *Geol. Mag.*, 1948, vol. 85, p. 214 [M.A. 10-354]; *Amer. Min.*, 1948, vol. 33, p. 736 [M.A. 11-16]; *Min. Mag.*, 1951, vol. 24, p. 635.

Herderite CaBePO_4F Orthorhombic

Wheal Cock, St. Just, Cornwall, and Colcerrow quarry, Luxullyan, Cornwall. A. W. G. Kingsbury, *Min. Mag.*, 1958, vol. 31, p. 816.

Hillebrandite $\text{Ca}_2\text{SiO}_4 \cdot \text{H}_2\text{O}$ Orthorhombic

In metamorphosed limestone, Carlingford, Co. Louth. S. R. Nockolds, *Min. Mag.*, 1947, vol. 28, p. 156.

Hübnerite MnWO_4 Monoclinic

Grainsgill, Carrock Fell, Cumberland. A. W. G. Kingsbury, *Min. Soc. Notice*, 1958, no. 100.

Hydrobasaluminite $2\text{Al}_2\text{O}_3 \cdot \text{SO}_3 \cdot 4\text{H}_2\text{O}$

Plastic material containing more water than basaluminite (q.v.). F. A. Bannister and S. E. Hollingworth, *Nature*, London, 1948, vol. 162, 565 [M.A. 10-452]; Hollingworth and Bannister, *Min. Mag.*, 1950, vol. 29, p. 1.

Hydrobiotite Hydrated biotite grading to vermiculite.

In amphibolite, Malvern, Worcestershire. A. Brammall, J. G. C. Leech, and F. A. Bannister, *Min. Mag.*, 1937, vol. 24, p. 517.

In soil-clays, Aberdeenshire. G. W. Walker, *Min. Mag.*, 1949, vol. 28, p. 699.

Hydrocalumite $4\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 12\text{H}_2\text{O}$ Monoclinic

In chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley, *Min. Mag.*, 1934, vol. 23, p. 607.

Hydrogrossular $\text{Ca}_3\text{Al}_2[\text{SiO}_4, 4(\text{OH})]_3$ Pseudo-cubic

In limestone-gabbro contact-zone, Camas Mòr, Isle of Muck, Inverness-shire. C. E. Tilley, *Bull. Comm. Géol. Finlande*, 1947, no. 140, p. 99 [M.A. 10-285].

Hydrogarnet in metamorphosed limestone, Camphouse, Ardnamurchan, Argyllshire. S. O. Agrell, *Min. Soc. Notice*, 1950, no. 69 [Amer. Min., 38-1080].

Hydromuscovite Hydrated muscovite grading to illite (q.v.).

In quartz-sulphide ore with gold, Ogofau, Carmarthenshire. A. Brammall, J. G. C. Leech, and F. A. Bannister, *Min. Mag.*, 1937, vol. 24, p. 507.

Illite Finely divided hydrated muscovite. Monoclinic

In soil-clay, Aberdeenshire. G. W. Walker, *Min. Mag.*, 1950, vol. 29, p. 75.

In fireclay, Yorkshire. K. Carr *et al.*, *Min. Mag.*, 1953, vol. 30, p. 139.

In Old Red Sandstone soils, Denholm Hill quarry, Roxburghshire. R. C. Mackenzie, *Min. Mag.*, 1957, vol. 31, p. 681.

See Brammallite 'sodium-illite'.

Iron-wollastonite (Ca,Fe)SiO₃ Monoclinic

In chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley, *Min. Mag.*, 1937, vol. 24, p. 572.

In limestone-gabbro contact-zone, Camas Mòr, Isle of Muck, Inverness-shire. Bull. Comm. Géol. Finlande, 1947, no. 140, p. 103 [M.A. 10-285].

In dolomite-granite contact-zone, Broadford, Skye, Inverness-shire. C. E. Tilley, *Amer. Min.*, 1948, vol. 33, p. 736 [M.A. 11-16]; *Min. Mag.*, 1951, vol. 29, p. 634.

Ferrowollastonite in metamorphosed limestone, Camphouse, Ardnamurchan, Argyllshire. S. O. Agrell, *Min. Soc. Notice*, 1950, no. 69 [*Amer. Min.*, 38-1080].

Isostannite Cu₂FeSnS₄ Cubic

Cligga Head, Perranporth, Cornwall. G. F. Claringbull and M. H. Hey, *Min. Soc. Notice*, 1955, no. 91; M. H. Hey, *Mineral Index (Brit. Mus.)*, 1955, pp. 34, 468.

Jacobsite (Mn,Fe,Mg)(Fe,Mn)₂O₄ Cubic

In manganese ore, Benallt mine, Rhiw, Carnarvonshire. W. C. Smith, F. A. Bannister, and M. H. Hey, *Min. Mag.*, 1944, vol. 27, p. 39.

Jarosite KFe₃(SO₄)₂(OH)₆ Rhombohedral

Several localities in Cumberland. A. W. G. Kingsbury and J. Hartley, *Min. Mag.*, 1958, vol. 31, p. 813.

Jordanite Pb₁₄As₇S₂₄ (?) Monoclinic

Penberthy Croft mine, St. Hilary, Cornwall. J. Robson, *Trans. Roy. Geol. Soc. Cornwall*, 1949, vol. 17, pt. 8 (for 1948), p. 457 [M.A. 11-273].

Kasolite PbO.UO₃.SiO₂.H₂O Monoclinic

With pitchblende, Tyndrum, Perthshire. R. K. Harrison, *Min. Soc. Notice*, 1956, no. 95; *Min. Mag.*, 1957, vol. 31, proc. p. lxiv.

Kieserite MgSO₄.H₂O Monoclinic

In salt deposits, Sleights, Eskdale, Yorkshire. G. Armstrong *et al.*, *Min. Mag.*, 1951, vol. 29, p. 672; L. R. Raymond, *Quart. Journ. Geol. Soc.*, 1953, vol. 108 (for 1952), p. 284 [M.A. 12-283].

Knebelite $(\text{Fe,Mn})_2\text{SiO}_4$ Orthorhombic

In quartz–knebelite–magnetite schist, Gairloch, Ross-shire. C. E. Tilley, *Geol. Mag.*, 1938, vol. 75, p. 77 [M.A. 7–191].

Langbeinite $\text{K}_2\text{SO}_4 \cdot 2\text{MgSO}_4$ Cubic

In salt deposits, Sleights, Eskdale, Yorkshire. G. Armstrong *et al.*, *Min. Mag.* 1951, vol. 29, p. 674.

Larnite $\beta\text{-Ca}_2\text{SiO}_4$ Monoclinic

In chalk–dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley, *Min. Mag.*, 1929, vol. 22, p. 77; *ibid.*, 1931, vol. 22, p. 443.

In chalk–dolerite contact-zone, Ballycraigy, Larne, Co. Antrim. J. D. C. McConnell, *Min. Mag.*, 1954, vol. 30, pp. 302, 672.

In limestone–gabbro contact-zone, Camas Mòr, Isle of Muck, Inverness-shire. C. E. Tilley, *Bull. Comm. Géol. Finlande*, 1947, no. 140, p. 100 [M.A. 10–285].

In metamorphosed limestone, Camphouse, Ardnamurchan, Argyll-shire. S. O. Agrell, *Min. Soc. Notice*, 1950, no. 69 [*Amer. Min.*, 38–1080].

Leucite $\text{KAl}(\text{SiO}_3)_2$ Pseudo-cubic

No record found for fresh leucite. Usually assumed to be represented by its alteration product analcime.

In analcime–basalt, Rathjordan, Co. Limerick. G. T. Prior, *Min. Mag.*, 1910, vol. 15, p. 315.

Leucite–basanite, leucite–kulaite, &c., East Lothian. E. B. Bailey, *Mem. Geol. Surv. Scotland*, 1910, 126; D. Balsillie, *Geol. Mag.*, 1936, vol. 73, p. 16 [M.A. 7–39]; J. A. E. Bennett, *Trans. Edinburgh Geol. Soc.*, 1945, vol. 14, p. 34 [M.A. 9–272].

Leucite-minette, Permian lavas, Exeter, Devonshire. W. G. Tidmarsh, *Quart. Journ. Geol. Soc. London*, 1932, vol. 88, p. 755.

Pseudo-leucite in borolanite, Loch Borolan, Sutherlandshire. J. J. H. Teall, *Geol. Mag.*, 1900, decade 4, vol. 7, p. 388. (*See Eudnophite.*)

Liebigite $\text{Ca}_2\text{U}(\text{CO}_3)_4 \cdot 10\text{H}_2\text{O}$ Orthorhombic

Wheal Basset, Redruth, Cornwall. H. T. Evans and C. Frondel, *Amer. Min.*, 1950, vol. 35, p. 252 [M.A. 11–229].

Lindgrenite $\text{Cu}_3(\text{MoO}_4)_2(\text{OH})_2$ Monoclinic

Brandy Gill, Carrock Fell, Cumberland. A. W. G. Kingsbury and J. Hartley, *Min. Mag.*, 1955, vol. 30, p. 723 [M.A. 12–505].

Lizardite $\text{H}_4\text{Mg}_3\text{Si}_2\text{O}_9$ Monoclinic

A serpentine mineral, Lizard, Cornwall. E. J. W. Whittaker and J. Zussman, *Min. Mag.*, 1956, vol. 31, p. 118; J. Zussman *et al.*, *Amer. Min.*, 1957, vol. 42, p. 135.

Ludwigite $(\text{Mg}, \text{Fe}^{2+})_2\text{Fe}^{3+}\text{BO}_5$ Orthorhombic

In dolomite-granite contact-zone, Broadford, Skye, Inverness-shire. C. E. Tilley, *Geol. Mag.*, 1948, vol. 85, p. 215 [M.A. 10-355]; *Min. Mag.*, 1951, vol. 29, p. 638.

Manganfayalite $(\text{Fe}, \text{Mn})_2\text{SiO}_4$ Orthorhombic

In eulysite, Loch Duich, Ross-shire. C. E. Tilley, *Min. Mag.*, 1936, vol. 24, p. 332.

Manganhedenbergite $(\text{Ca}, \text{Fe}, \text{Mn}, \text{Mg})\text{SiO}_3$ Monoclinic

In manganese ore, Treburland mine, Altarnun, Cornwall. C. E. Tilley, *Min. Mag.*, 1940, vol. 27, p. 237.

Merwinite $\text{Ca}_3\text{Mg}(\text{SiO}_4)_2$ Monoclinic

In chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley, *Min. Mag.*, 1929, vol. 22, p. 24.

In limestone-gabbro contact-zone, Camas Mòr, Isle of Muck, Inverness-shire. C. E. Tilley, *Bull. Comm. Géol. Finlande*, 1947, no. 140, p. 100 [M.A. 10-285].

Metagreenalite $3\text{FeO} \cdot 4\text{SiO}_2 \cdot 2\text{H}_2\text{O}$ Anisotropic

In greenalite-chert, Glenluce, Wigtownshire. W. Q. Kennedy, *Min. Mag.*, 1936, vol. 24, p. 434.

Monticellite CaMgSiO_4 Orthorhombic

In metamorphosed limestone, Carlingford, Co. Louth. G. D. Osborne, *Geol. Mag.*, 1932, vol. 69, pp. 61, 219 [M.A. 5-134]; S. R. Nockolds, *Min. Mag.*, 1947, vol. 28, p. 157.

In chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley, *Geol. Mag.*, 1948, vol. 85, p. 216 [M.A. 10-355]; *Min. Mag.*, 1951, vol. 29, p. 644.

In metamorphosed limestone, Camas Mòr, Isle of Muck, Inverness-shire. C. E. Tilley, *Bull. Comm. Géol. Finlande*, 1947, no. 140, p. 99 [M.A. 10-285].

- Mossottite* $(\text{Ca,Sr})\text{CO}_3$ Orthorhombic
 Variety of aragonite. Lunehead mine, Yorkshire. J. N. Friend and J. P. Allchin, *Min. Mag.*, 1940, vol. 25, p. 591.
- Nacrite* $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$ Monoclinic
 A kaolin mineral in syenite, Groby, Leicestershire. G. F. Claringbull, *Min. Mag.*, 1952, vol. 29, p. 973.
 In metamorphosed lava, Shap, Westmorland. R. J. Firman, *Min. Mag.*, 1953, vol. 30, p. 199.
 [The 'nacrite' listed by Greg and Lettsom (1858) is muscovite.]
- Nadorite* PbSbO_2Cl Orthorhombic
 With jamesonite, Bodannon mine, St. Endellion, Cornwall. A. Russell, *Min. Mag.*, 1927, vol. 21, p. 272.
 With jamesonite, Trevinnick mine, St. Kew, Cornwall. A. W. G. Kingsbury, *Min. Mag.*, 1957, vol. 31, p. 499.
- Natrojarosite* $\text{NaFe}_3(\text{SO}_4)_2(\text{OH})_6$ Rhombohedral
 Wanthwaite mine, St. John-in-the-Vale, Threlkeld, Cumberland, A. W. G. Kingsbury and J. Hartley, *Min. Mag.*, 1958, vol. 31, p. 814.
- Neptunite* $(\text{Fe,Mn})\text{O} \cdot (\text{Na,K})_2\text{O} \cdot 4\text{SiO}_2 \cdot \text{TiO}_2$ Monoclinic
 In quartz-syenite veins in limestone, Barnavave, Carlingford, Co. Louth. S. R. Nockolds, *Min. Mag.*, 1950, vol. 29, p. 27.
- Omphacite* $(\text{Ca,Mg,Fe})\text{SiO}_3$ Monoclinic
 A pyroxene in eclogite, Glenelg, Inverness-shire. A. R. Alderman, *Quart. Journ. Geol. Soc. London*, 1936, vol. 92, p. 493.
- Orpiment* As_2S_3 Monoclinic
 In clay, Clevedon, Somersetshire. A. Russell, *Min. Mag.*, 1944, vol. 27, p. 3. [An earlier record, A. Gages, 1860, from Silvermines, Co. Tipperary, is doubted.]
- Paracelsian* $\text{BaAl}_2\text{Si}_2\text{O}_8$ Pseudo-orthorhombic
 In metamorphosed manganese ore, Benallt mine, Rhiw, Carnarvonshire. L. J. Spencer, *Min. Mag.*, 1942, vol. 26, p. 231.
- Paratacamite* $\text{Cu}_2\text{Cl}(\text{OH})_3$ Rhombohedral
 Botallack mine, St. Just, Cornwall. F. A. Bannister, M. H. Hey, and G. F. Claringbull, *Min. Mag.*, 1950, vol. 29, p. 280.

- Pennantite* $(\text{Mn,Al})_6(\text{Si,Al})_4\text{O}_{10}(\text{OH})_8$
- A chloritic mineral in manganese ore, Benallt mine, Rhiw, Carnarvonshire. W. C. Smith, F. A. Bannister, and M. H. Hey, *Min. Mag.*, 1946, vol. 27, p. 217.
- Periclase* MgO Cubic
- In metamorphosed limestone, Carlingford, Co. Louth. G. D. Osborne, *Geol. Mag.*, 1932, vol. 69, p. 214 [M.A. 5-134]; S. R. Nockolds, *Min. Mag.*, 1947, vol. 28, p. 157.
- In dolomite-granite contact-zone, Broadford, Skye, Inverness-shire. C. E. Tilley, *Geol. Mag.*, 1948, vol. 85, p. 216 [M.A. 10-354]; *Min. Mag.*, 1951, vol. 29, p. 634.
- In metamorphosed limestone, Camas Mòr, Isle of Muck, Inverness-shire. *Bull. Comm. Géol. Finlande*, 1947, no. 140, p. 101 [M.A. 10-285].
- Picromerite* $\text{K}_2\text{Mg}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$ Monoclinic
- In salt deposits, Whitby, Yorkshire. F. H. Stewart, *Proc. Yorks. Geol. Soc.*, 1954, vol. 29, p. 228 [M.A. 12-499].
- Pigeonite* $(\text{Mg,Fe,Ca})\text{SiO}_3$ Monoclinic
- In quartz-dolerite and tholeiite, central Scotland. F. Walker, *Min. Mag.*, 1935, vol. 24, p. 141.
- In olivine-dolerite, Portrush, Co. Antrim. N. Harris, *Proc. Roy. Irish Acad.*, 1937, vol. 43, sect. B, p. 95 [M.A. 7-25].
- Pinnoite* (?) $\text{MgB}_2\text{O}_4 \cdot 3\text{H}_2\text{O}$ Tetragonal
- In salt deposits, Sleights, Eskdale, Yorkshire. G. Armstrong *et al.*, *Min. Mag.*, 1951, vol. 29, p. 672.
- Pisanite* $(\text{Fe,Cu})\text{SO}_4 \cdot 7\text{H}_2\text{O}$ Monoclinic
- Parys Mountain, Anglesey, Carnarvonshire. L. Bor, *Min. Mag.*, 1950, vol. 29, p. 63.
- Plombierite* $\text{CaO} \cdot \text{SiO}_2 \cdot n\text{H}_2\text{O}$ Gelatinous
- Chalk-dolerite contact-zone, Ballyeraigy, Larne, Co. Antrim. J. D. C. McConnell, *Min. Mag.*, 1954, vol. 30, p. 293; 1955, vol. 30, p. 672.
- Polyhalite* $\text{K}_2\text{Ca}_2\text{Mg}(\text{SO}_4)_4 \cdot 2\text{H}_2\text{O}$ Monoclinic
- In salt deposits, Eskdale, Yorkshire. C. E. Tilley, *Min. Mag.*, 1943, vol. 26, proc. (for 1942) p. lvii; G. M. Lees and A. H. Taitt, *Quart. Journ.*

Geol. Soc. London, 1946, vol. 101 (for 1945), pp. 268, 271; F. H. Stewart, *Min. Mag.*, 1949, vol. 28, pp. 631, 657; 1951, vol. 29, p. 449; G. Armstrong *et al.*, *Min. Mag.*, 1951, vol. 29, p. 667; L. R. Raymond, *Quart. Journ. Geol. Soc. London*, 1953, vol. 108 (for 1952), p. 284 [M.A. 12-283].

Portlandite Ca(OH)_2 Hexagonal

In chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley, *Min. Mag.*, 1933, vol. 23, p. 419.

Pumpellyite $\text{Ca}_4(\text{Al,Mg,Fe})_6\text{Si}_6\text{O}_{23}(\text{OH})_3 \cdot 2\text{H}_2\text{O}$ Monoclinic

In spilitic lava, Builth, Brecknockshire. G. D. Nicholls, *Proc. Geol. Soc. London*, 1957, session 1956-57, p. 8.

In Ordovician spilitic lava, Lendalfoot, south Ayrshire. T. W. Bloxam, *Min. Mag.*, 1958, vol. 31, p. 811.

Pyrophanite MnTiO_3 Rhombohedral

In manganese ore, Benallt mine, Rhiw, Carnarvonshire. W. C. Smith, F. A. Bannister, and M. H. Hey, *Min. Mag.*, 1946, vol. 27, p. 218; W. C. Smith and G. F. Claringbull, *ibid.*, 1947, vol. 28, p. 108.

Peroxmangite $(\text{Fe,Mn})\text{SiO}_3$ Triclinic

In grunerite-garnet schist, Glen Beag, Glenelg, Inverness-shire. C. E. Tilley, *Amer. Min.*, 1937, vol. 22, p. 720 [M.A. 6-528].

Rammelsbergite NiAs_2 Orthorhombic

Glencrieff mine, Wanlockhead, Dumfriesshire. A. K. Temple, *Min. Mag.*, 1954, vol. 30, p. 541.

Rankinite $3\text{CaO} \cdot 2\text{SiO}_2$ Monoclinic

In chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley, *Min. Mag.*, 1942, vol. 26, p. 190.

In metamorphosed limestone at gabbro contact, Camas Mòr, Isle of Muck, Inverness-shire. C. E. Tilley, *Bull. Comm. Géol. Finlande*, 1947, no. 140, p. 100 [M.A. 10-285].

Rashleighite $\text{Cu}(\text{Al,Fe})_6(\text{PO}_4)_4(\text{OH})_8 \cdot 5\text{H}_2\text{O}$ Triclinic

Bunny mine, St. Austell, and Castle-an-Dinas mine, St. Columb Major, Cornwall. A. Russell, *Min. Mag.*, 1948, vol. 28, p. 353; 1952, vol. 29, p. 819. (*See* Turquoise.)

- Realgar* AsS Monoclinic
 With native arsenic in dolerite (greenstone), Burraton Combe quarry, Saltash, Cornwall. A. Russell, *Min. Mag.*, 1944, vol. 27, p. 3.
- Rinneite* $K_3NaFeCl_6$ Rhombohedral
 In salt deposits, Aislaby, Eskdale, Yorkshire. F. H. Stewart, *Min. Mag.*, 1949, vol. 28, p. 622; 1951, vol. 29, p. 563.
- Rockbridgeite* $(Fe'', Mn)Fe'''_4(PO_4)_3(OH)_5$ Orthorhombic
 Previously confused with dufrenite. Cornwall and Devonshire. A. W. G. Kingsbury, *Min. Mag.*, 1957, vol. 31, p. 429.
- Römerite* (?) $Fe''Fe'''_2(SO_4)_4 \cdot 14H_2O$ Triclinic
 Parys Mtn, Anglesey, Carnarvonshire. L. Bor, *Min. Mag.*, 1950, vol. 29, p. 66.
- Rosasite* $(Cu, Zn)_2CO_3(OH)_2$ Botryoidal
 Lake District, Cumberland (7 localities), and Cornwall. A. W. G. Kingsbury and J. Hartley, *Min. Mag.*, 1957, vol. 31, p. 501.
- Russellite* $(Bi_2, W)O_3$ Tetragonal (?)
 Castle-an-Dinas mine, St. Columb Major, Cornwall. M. H. Hey and F. A. Bannister, *Min. Mag.*, 1938, vol. 25, p. 41; A. Russell, *ibid.*, 1938, vol. 25, p. 49; 1944, vol. 27, p. 2. Cf. L. G. Sillén and K. Lundborg, *Arkiv Kemi, Min. Geol.*, 1953, vol. 17A, no. 21 [M.A. 9-99].
- Rutherfordine* UO_2CO_3 Orthorhombic
 South Terras mine, St. Stephens, Cornwall. C. C. James, *Trans. Roy. Geol. Soc. Cornwall*, 1947, vol. 17 (pt. 5, for 1945), p. 257 [M.A. 10-114]; J. Robson, *ibid.*, 1949, vol. 17 (pt. 8, for 1948), p. 462 [M.A. 11-273].
- Sapphirine* $(Mg, Fe)_2Al_4SiO_{10}$ (?) Monoclinic
 In hornstone, Tievebulliagh, Co. Antrim. S. O. Agrell quoted by H. Sørensen, *Meddel. om Grønland*, 1955, vol. 137, no. 1, p. 25 [M.A. 13-202].
- Scawtite* $Ca_7Si_6O_{16}CO_3(OH)_4$ Monoclinic
 In chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley, *Nature*, London, 1929, vol. 124, p. 896; *Min. Mag.*, 1930, vol. 22, p. 222; *ibid.*, 1938, vol. 25, p. 38.

In chalk-dolerite contact-zone, Ballycraigy, Larne, Co. Antrim. J. D. C. McConnell, *Min. Mag.*, 1954, vol. 30, p. 295.

Sepiolite $\text{Mg}_3\text{Si}_4\text{O}_{11}\cdot 5\text{H}_2\text{O}$ (?) Compact

In serpentinite, Lizard, Cornwall. S. Caillère, *Bull. Soc. Franç. Min. Crist.*, 1949, vol. 72, p. 5; S. Caillère and S. Hénin, *Nature*, London, 1949, vol. 163, p. 962 [M.A. 11-50].

Siderophyllite $\text{H}_4\text{K}_2\text{Fe}_3\text{Al}_4\text{Si}_6\text{O}_{24}$ Monoclinic

Variety of biotite, in greisen veins in granite, Mourne Mts., Co. Down. S. R. Nockolds and J. E. Richey, *Amer. Journ. Sci.*, 1939, vol. 237, p. 39 [M.A. 7-305].

Sphaerodialogite Variety of rhodochrosite, MnCO_3 Rhombohedral

In manganese ore, Harlech, Merionethshire. A. W. Woodland, *Quart. Journ. Geol. Soc. London*, 1939, vol. 95, p. 34 [M.A. 7-437].

Spurrite $2\text{Ca}_2\text{SiO}_4\cdot\text{CaCO}_3$ Monoclinic

In chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley, *Min. Mag.*, 1929, vol. 22, p. 78; 1931, vol. 22, p. 443; 1938, vol. 25, p. 38.

In limestone-gabbro contact-zone, Camas Mòr, Isle of Muck, Inverness-shire. C. E. Tilley, *Bull. Comm. Géol. Finlande*, 1947, no. 140, p. 100 [M.A. 10-285].

In metamorphosed limestone, Carlingford, Co. Louth. S. R. Nockolds, *Min. Mag.*, 1947, vol. 28, p. 155.

Gabbro intrusion in limestone, Camphouse, Ardnamurchan, Argyllshire. S. O. Agrell, *Min. Soc. Notice*, 1950, no. 69 [Amer. Min., 38-1080].

Stichtite $\text{Mg}_6\text{Cr}_2(\text{OH})_{16}\text{CO}_3\cdot 4\text{H}_2\text{O}$ Rhombohedral

Replacing chromite in serpentinite, Cunningsburgh, Shetland Islands. H. H. Read and B. E. Dixon, *Min. Mag.*, 1933, vol. 23, p. 309. (See Barbertonite.)

Sylvine KCl Cubic

In salt deposits, Eskdale, Whitby, Yorkshire. G. M. Lees and A. H. Taitt, *Quart. Journ. Geol. Soc. London*, 1946, vol. 101 (for 1945), p. 268; F. H. Stewart, *Min. Mag.*, 1949, vol. 28, p. 622; 1951, vol. 29, pp. 451-563; G. Armstrong *et al.*, *Min. Mag.*, 1951, vol. 29, p. 667; L. R. Raymond, *Quart. Journ. Geol. Soc. London*, 1953, vol. 108 (for 1952), p. 288 [M.A. 12-283].

Szdjbelvite $2\text{MgO} \cdot \text{B}_2\text{O}_3 \cdot \text{H}_2\text{O}$ Orthorhombic (?)

In chalk-dolerite contact-zone, Broadford, Skye, Inverness-shire. C. E. Tilley, *Geol. Mag.*, 1948, vol. 85, p. 215 [M.A. 10-355]; *Min. Mag.*, 1951, vol. 29, p. 638.

Tephroite Mn_2SiO_4 Orthorhombic

In manganese ore, Benallt mine, Rhiw, Carnarvonshire. W. C. Smith, F. A. Bannister, and M. H. Hey, *Min. Mag.*, 1944, vol. 27, p. 40.

In manganese ore, Treburland mine, Altarnun, Cornwall. A. Russell, *Min. Mag.*, 1946, vol. 27, p. 224; C. E. Tilley, *ibid.*, p. 236.

Thucholite Pitchblende + hydrocarbon

Laxey lead-mine, Isle of Man. C. F. Davidson and S. H. U. Bowie, *Bull. Geol. Surv. Gt. Britain*, 1951, no. 3, p. 4 [M.A. 11-325].

Tilleyite $3\text{CaO} \cdot 2\text{SiO}_2 \cdot 2\text{CaCO}_3$ Monoclinic

In metamorphosed limestone, Carlingford, Co. Louth. S. R. Nockolds, *Min. Mag.*, 1947, vol. 28, p. 151; J. V. Smith, *Acta Cryst.*, 1955, vol. 6, p. 9 [M.A. 12-337].

In metamorphosed limestone, Camas Mor, Isle of Muck, Inverness-shire. C. E. Tilley, *Bull. Comm. Geol. Finlande*, 1947, no. 140, p. 100 [M.A. 10-285].

Turquoise $\text{CuAl}_6(\text{PO}_4)_4(\text{OH})_8 \cdot 5\text{H}_2\text{O}$ Triclinic

Castle-an-Dinas mine, St. Columb Major, and Bunny mine and Gunheath pit, St. Austell, Cornwall. A. Russell, *Min. Mag.*, 1938, vol. 25, p. 54; 1952, vol. 29, pp. 819, 909. (*See Rashleighite.*)

Varlamoffite $\text{H}_2\text{SnO}_3 + \text{Fe}_2\text{O}_3$, &c.

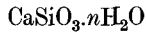
In tin-mines, Cligga mine, Perranzabuloe; Bunny mine, St. Austell; Kit Hill mine, Stokeclimsland, Cornwall. A. Russell and E. A. Vincent, *Min. Mag.*, 1952, vol. 29, p. 817.

Veatchite $\text{SrB}_6\text{O}_{10} \cdot 2\text{H}_2\text{O}$ Monoclinic

In salt deposits, Aislaby, Eskdale, Yorkshire. F. H. Stewart, R. A. Chalmers, and R. Phillips, *Min. Mag.*, 1954, vol. 30, p. 389.

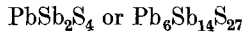
Xanthophyllite $\text{Ca}(\text{Mg}, \text{Al})_3(\text{Al}, \text{Si})_4(\text{O}, \text{OH})_{12}$ Monoclinic

In dolomite-granite contact-zone, Broadford, Skye, Inverness-shire. C. E. Tilley, *Geol. Mag.*, 1948, vol. 85, p. 216 [M.A. 10-354]; *Min. Mag.*, 1951, vol. 29, pp. 625, 634.

Xonotlite

In chalk-dolerite contact-zone, Scawt Hill, Larne, Co. Antrim. C. E. Tilley, *Min. Mag.*, 1931, vol. 22, p. 444.

In dolomite-granite contact-zone, Broadford, Skye, Inverness-shire. C. E. Tilley, *Geol. Mag.*, 1948, vol. 85, p. 216 [M.A. 10-354]; *Min. Mag.*, 1951, vol. 29, p. 634.

Zinckenite

Orthorhombic (pseudo-hexagonal)

In greisen, Grainsgill, Carrock Fell, Cumberland. A. W. G. Kingsbury and J. Hartley, *Min. Mag.*, 1956, vol. 31, p. 297.

The Supplementary List of British Minerals (1898) and Second Supplementary List of British Minerals (1931), above referred to, are reprinted below by permission of the British Association [M. H. H.].

Supplementary List of British Minerals. [1898].

By L. J. SPENCER, M.A., F.G.S.

During the forty years which have elapsed since the publication of Greg and Lettsom's 'Manual of the Mineralogy of Great Britain and Ireland' a considerable number of species, variety, and other names have been added to the list of minerals occurring in the British Isles. In 1858 Greg and Lettsom recognized 241 British species; but of these only 209 are given as numbered species by Dana in the sixth edition (1892) of his 'System of Mineralogy'. To this list may now be added 84 more, bringing the total number of British species up to 293, as compared with the total of 824 known mineral species recognized by Dana in 1892. Owing to the difficulty, in some cases, of defining a mineral species, to the uncertainty of some of the determinations, and to the fact that a systematic search through the whole of the literature has not yet been made, these numbers can only be considered approximate.

Some of the most notable additions are of minerals which have been detected by the microscopical examination of rock-sections, e.g. nephelite, nosean, and various feldspars, pyroxenes, and amphiboles.

In the following list are added 113 other names which have been applied to British minerals; the species are distinguished by italics. The first observer and date have been added (in parenthesis) wherever possible; in other cases the earliest reference found is given.

- Abriachanite (Heddle, 1879).
 Achroite (Collins, 1876).
Egirite (Teall, 1888).
Aikinite (Museum Pract. Geol.).
 Albertite (Morrison, 1884).
Alanogen (Smithe, 1882).
 Amazon stone (Heddle, 1877).
 Amblystegite (Judd, 1885).
Andesine (Heddle, 1877).
 Andrewsite (Maskelyne, 1871).
Anorthite (Haughton, 1856).
 Antigorite (Heddle, 1878).
Antimony? (Garby, 1848).
Atacamite (Church, 1865).
 Balvraidite (Heddle, 1880).
 Baricalcite (Breithaupt, 1841).
 Barytocelestite (Collie, 1878).
 Bastite.
 Bathvillite (Williams, 1863).
Baukite (Sutherland, 1870).
Bayldonite (Church, 1865).
 Beekite.
Beraunite (Greg, 1860).
 Bhreckite (Heddle, 1879).
 Botallackite (Church, 1865).
 Bowlingite (Hannay, 1877).
Braunite? (Collins, 1871).
 Bruiachite (Macadam, 1886).
 Bytownite (Teall, 1884).
 Cantonite (Davies, 1877).
 Cathkinite (Glen and Young, 1882).
Celadonite (Heddle, 1879).
 Centrallassite (How, 1878).
Chalcosiderite (Maskelyne, 1875).
Chenevirite (Adam, 1866).
Chloritoid (Heddle, 1879).
Chloropal (Church, 1866).
 Chlorophyllite (Heddle, 1882).
 Chrome-diopside (Teall, 1888).
Chrysoberyl (Haughton, 1856).
 Chrysotile.
Churchite (Church, 1865).
 Cleavelandite (Heddle, 1877).
Clinocllore (British Museum).
 Cloustonite (Heddle, 1880).
 Coccolite (Heddle, 1877).
Collyrite (Gladstone, 1862).
 Cotterite (Harkness, 1878).
Craigtonite (Heddle, 1882).
Crocidolite (Heddle, 1879).
 Cryptolite (Church, 1872).
Danalite (Miers and Prior, 1892).
Daphnite (Tschermak, 1891).
Delessite (Heddle, 1879).
 Demidoffite (Greg, 1860).
Descloizite (Frenzel, 1875).
 Devilline (Pisani, 1864).
 Dolianite (Des Cloizeaux, 1862).
 Dudgeonite (Heddle, 1889).
Dufrenite (Kinch and Butler, 1886).
 Duporthite (Collins, 1877).
 Edenite (Heddle, 1878).
 Electrum (Forbes, 1867).
 Ellonite (Heddle, 1882).
Enstatite.
 Enysite (Collins, 1876).
 Eosite (Schrauf, 1871).
Eulytite (Collins, 1881).
Evansite (Woodward, 1884).
 Ferrite (Heddle, 1882).
Fibrolite (Heddle, 1882).
 Fichtelite (Macadam, 1889).
Freieslebenite? (Museum Pract. Geol.).
 Funkite (Heddle, 1882).
Genthite (Heddle, 1878).
Gersdorffite (Forbes, 1868).
 Gigantolite (Heddle, 1882).
Glaucophane (Blake, 1888).
 Gramenite (Collins, 1877).
 Grastite (Heddle, 1878).
 Grossular (Heddle, 1878).
 Grünlingite (Muthmann Schröder, 1897).
Halloysite (Heddle, 1882).
 Haughtonite (Heddle, 1879).
Hausmannite (Goodchild, 1875).
 Henwoodite (Collins, 1876).
 Hibbertite (Heddle, 1878).
Hisingerite (Church, 1870).
 Hovite (Gladstone, 1862).
 Hullite (Hardman, 1878).
 Hydrated labradorite (Heddle, 1880).
Hydrocerussite (Heddle, 1889).
Hydrophilite (Dana, 1892).
 Hydroplumbite (Heddle, 1889).
Hydrozincite (Goodchild, 1883).
 Iddingsite? (Arnold-Bemrose, 1894).
Igelströmite (Heddle, 1878).
 Inverarite (Heddle, 1883).
 Jarrowite (Lebour, 1887).
Johannite? (Garby, 1848).
Langite (Maskelyne, 1864).
 Latrobite (Heddle, 1877).
Lepidomelane (Haughton, 1859).
Lettsonite (British Museum).
 Leuchtenbergite (Glen and Young, 1876).

- Leucoxene (Geikie, 1879).
 Linnite (Church, 1865).
 Linnæite (Terrill & Des Cloizeaux, 1880).
 Liskeardite (Maskelyne, 1878).
 Loganite (Harkness, 1866).
 Lollingite (Collins, 1871).
 Ludlamite (Field, 1877).
 Lussatite (Mallard, 1890).
 Lyellite (Maskelyne, 1864).
 Marmolite (Heddle, 1878).
 Martite (Heddle, 1882).
 Massicot? (Collins, 1871).
 Melanite (Teall, 1892).
Microcline.
Mirabilite (Glen and Young, 1876).
Monazite (Miers, 1885).
Montmorillonite (Collins, 1878).
 Mottramite (Roscoe, 1876).
 Mountain silk, &c. (Heddle, 1879).
 Necronite (Heddle, 1877).
 Neotype (Breithaupt, 1841).
Nephelite (Allport, 1871).
 Nephrite (Heddle, 1878).
Nosean (Allport, 1874).
Okenite (Glen and Young, 1876).
Oligoclase (Haughton, 1862).
 Omphacite (Teall, 1891).
 Orangite (Heddle, 1883).
 Ottrelite (Hutchings, 1889).
 Pargasite (Heddle, 1878).
Penninite (Heddle, 1878).
 Penwithite (Collins, 1878).
 Perthite (Heddle, 1883).
Phlogopite? (Heddle, 1878).
Pickeringite (British Museum).
 Picotite (Bonney, 1877).
 Picrolite (Heddle, 1878).
Piedmontite (Dana, 1892).
 Pihlite (Heddle, 1879).
 Pilolite (Heddle, 1879).
 Plumboaragonite (Collie, 1889).
Plumbogummite (Dana, 1850).
 Plumbonacrite (Heddle, 1889).
Polybasite (Joy, 1860).
 Polytelite (Forbes, 1867).
 Prasilite (Thomson, 1840).
 Protolithionite (Sandberger, 1885).
Proustite (British Museum).
 Pseudo-hypersthene, &c. (Heddle, 1878).
 Pseudophite (Heddle, 1879).
Pyroaurite (Heddle, 1878).
Pyrophyllite (Foster, 1876).
 Pyrosclerite (Heddle, 1879).
 Reichite (Breithaupt, 1865).
 Restormelite (Church, 1870).
Rhabdophane (Lettsom, 1878).
Riebeckite (Harker, 1888).
 Rock silk, &c. (Heddle, 1879).
 Rubislite (Heddle, 1879).
 Sanidine.
Scapolite (Ormerod, 1869).
 Schraufite? (Thomson, 1887).
Schröterite (Dana, 1868).
Senarmontite (Davies, 1867).
 Sericite.
Spangolite (Miers, 1893).
 Spessartite (Heddle, 1878).
Stephanite (Davies, 1866).
 Tallingite (Church, 1865).
Tavistockite (Church, 1865).
Thorite (Heddle, 1883).
 Tobermorite (Heddle, 1880).
 Totaigite (Heddle, 1878).
Tridymite (Lasaulx, 1876).
Turgite (Heddle, 1882).
 Tyreeite (Heddle, 1881).
 Uigite (Heddle, 1856).
 Uralite.
Valentinite (Hall, 1868).
Vauguelinite (Davies, 1877).
 Vermiculite (Parke, 1877).
Voltzite (Dana, 1868).
 Walkerite (Heddle, 1880).
 Waringtonite (Maskelyne, 1864).
 Wicklowite (D'Achiardi, 1883).
Willemite (Glen and Young, 1876).
Wittichenite? (Collins, 1871).
 Woodwardite (Church, 1866).
 Xantholite (Heddle, 1879).
Xanthosiderite (Haughton, 1866).
 Xonaltite (Heddle, 1882).
Zeunerite (Weisbach, 1872).

By L. J. SPENCER, F.R.S.—*Second Supplementary List of
British Minerals.* [1931].

The first of these lists was presented at the Bristol meeting in 1898. They are intended to supplement the still standard work of Greg and Lettsom's 'Mineralogy of Great Britain and Ireland' (1858). The present list includes 90 names, of which 46 (printed in italics) may be regarded as well-defined species with satisfactory records. This brings the total number of mineral-species that have been found in the British Isles up to 339, representing about one-third of the number of known species.

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| Aegirine-augite (Tyrrell, 1909). | <i>Forsterite</i> (Clough & Pollard, 1899). |
| <i>Aenigmatite</i> (Heddle, 1901). | Fuchsite (Heddle, 1901). |
| <i>Afwillite</i> (Tilley, 1930). | <i>Geocronite</i> (Prior, 1902). |
| <i>Altaite</i> (Des Cloizeaux, 1893). | <i>Gibbsite</i> (British Museum). |
| <i>Anorthoclase</i> (Heddle, 1901). | Gilpinite (Larsen & Brown, 1917). |
| <i>Arfvedsonite</i> (Seymour, 1900). | Glockerite (Dana, 1899). |
| Barkevikite (Busz, 1900). | Hastingsite (Tilley, 1931). |
| Bassetite (Hallimond, 1915). | Hercynite (Teall, 1897). |
| <i>Bertrandite</i> (Bowman, 1911). | Hitchcockite (Miers & Hartley, 1900). |
| Botryolite (McLintock, 1910). | Hydronephelite (Tilley, 1931). |
| Calciopalygorskite (Fersman, 1908). | Keilhauite (?) (Heddle, 1901). |
| <i>Carminite</i> (Russell, 1910). | Kilmacooite (Tichborne, 1885). |
| <i>Cebollite</i> (Tilley, 1931). | <i>Larnite</i> (Tilley, 1929). |
| <i>Celsian</i> (Russell, 1911). | <i>Laurionite</i> (Russell & Hutchinson,
1922). |
| Chamosite (Rudler, 1905). | Lepidocrocite (Heddle, 1901). |
| <i>Chloanthite</i> (Russell, 1922). | <i>Magnesite</i> (Heddle, 1901). |
| <i>Chloroviphite</i> (Spencer, 1923). | Magnesium-diopside (Rosenbusch, 1905). |
| Chonichite (Heddle, 1901). | Marmatite (Rudler, 1905). |
| Christophite (Collins, 1879). | <i>Melilite</i> (Flett, 1900). |
| <i>Claudetite</i> (Hintze, 1904). | <i>Merwinite</i> (Tilley, 1927). |
| Clinozoisite (Thomson, 1908). | Meta-torbernite (Hallimond, 1920). |
| Collieite (Brown, 1927). | <i>Morenosite</i> (Heddle, 1901). |
| <i>Cotunnite</i> (Russell, 1920). | Mullite (Bowen, Grieg, & Zies, 1924). |
| <i>Crednerite</i> (Spencer, 1923). | <i>Nadorite</i> (Russell, 1923). |
| Crocalite (Heddle, 1901). | Nigrine (Reynolds, 1871). |
| <i>Crocoite</i> (Brown, 1927). | <i>Orpiment</i> (Gages, 1860). |
| Cummingtonite (Teall, 1907). | <i>Paralaurionite</i> (Russell & Hutchinson,
1922). |
| Dechenite (?) (Heddle, 1901). | Passyite (Rudler, 1905). |
| Diabantite (Garnett, 1923). | <i>Perovskite</i> (Elsden, 1904). |
| <i>Diaboleite</i> (Spencer, 1923). | <i>Petalite</i> (McLintock, 1923). |
| Diamond (?) (Heddle, 1901). | <i>Phenakite</i> (Russell, 1911). |
| <i>Diaspore</i> (Tilley, 1927). | Pimelite (?) (Heddle, 1901). |
| Diatomite (Macadam, 1884). | Prochlorite (Heddle, 1892). |
| Dopplerite (Moss, 1903). | Ptilolite (Bøggild, 1922). |
| <i>Dumortierite</i> (Mackie, 1924). | Rammelsbergite (?) (Heddle, 1901). |
| <i>Dundasite</i> (Prior, 1906). | <i>Scawtite</i> (Tilley, 1929). |
| <i>Embolite</i> (Prior & Spencer, 1902). | <i>Semseyite</i> (Smith, 1919). |
| Epichlorite (Garnett, 1923). | |
| <i>Ettringite</i> (Tilley, 1931). | |

Serpierite (Russell, 1927).

Sideroplesite (Heddle, 1901).

Spurrite (Tilley, 1929).

Stilpnomelane (Hallimond, 1924).

Stokesite (Hutchinson, 1899).

Titanaugite (Tyrrell, 1909).

Tschermigite (Shand, 1910).

Ullmannite (Spencer, 1910).

Uranospathite (Hallimond, 1915).

Urpethite (Dana, 1868).

Wurtzite (Noelting, 1887).

Yttrotantalite (?) (Heddle, 1901).

Xanthochroite (Rogers, 1917).

Xenotime (Gilligan, 1920).
