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MINERAL SPECIES FROM CANADIAN TYPE LOCALITIES, AN ANNOTATED LIST

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ABSTRACT

The annotated list of mineral species from Canadian type localities contains one hundred and six entries to date. Information on the current whereabouts of the type specimens is provided, and the originally published data on many of the localities have been revised and expanded. Only minerals currently considered as valid species are listed (Fleischer 1980, 1981, 1982). Where possible the type specimens have been classified according to Embrey & Hey (1970).

Keywords: Canada, type specimens, type localities.

SOMMAIRE

Une liste des minéraux provenant de localités-type canadiennes comprend à ce jour 106 espèces. On décrit où se trouvent ces échantillons-type aujourd'hui; on corrige et on complète la description originelle de plusieurs localités. Seules les espèces considérées comme valides (Fleischer 1980, 1981, 1982) figurent sur la liste. Dans la mesure du possible, on a classé les échantillons-type selon la systématique de Embrey & Hey (1970).

(Traduit par la Rédaction)

Mots-clés: échantillons-type, localités-type, Canada.

INTRODUCTION

Name and locality

The 106 species from Canadian type-localities are listed alphabetically with a separate entry for each that provides references to the original description and other selected papers. Each entry includes data on the type localities and information on the current repositories of the type specimens. In those instances where the mineral is originally described from two or more localities, all the localities are given for completeness. Where possible, data for the Canadian localities have been updated and given in more detail. Care was taken to avoid unwarranted assumptions regarding details of the localities. Inevitably, ambiguous situations exist and the author welcomes additional information, corrections and criticisms, so that a more accurate and complete list can be published at a later date. Only minerals currently considered as valid species are listed (Fleischer 1980, 1981, 1982).

References

In most instances, only the reference to the full original description is given. However, additional references are used where necessary to elucidate the first appearance of the species name in print (*i.e.*, earlier abstracts and proceedings of annual meetings) or to give a source of new data.

Additional references consulted for this compilation were: Embrey & Fuller (1980), Hey (1955, 1963), Hey & Embrey (1974), Mitchell (1979), Roe & White (1976) and Satterly (1977).

Type material

The institutions where the type material is housed have each been given an abbreviation and in each entry these are listed in alphabetical order. Where known, a catalogue number is also given. An attempt has been made to classify the type according to Embrey & Hey (1970), and the source of that designation is given where possible. The latter may be a personal communication from one of the authors of the original description, in which case it is acknowledged. Where a type is designated but not acknowledged, the source is either in the records of the collection in which it is located or the designations were given in the original description. All entries that have not been classified are "undesignated" types. In a few instances, this author has taken the responsibility for the designation of the type.

The following are brief definitions of the type classification used in this paper. They are very similar to the definitions of Embrey & Hey (1970), the main difference being in the definition of the cotypes.

Holotype: This refers to a single specimen, the only one involved in the full original description of species.

Cotypes: The term cotype is used when more than one specimen was used for the original description. In this paper, the existence of the cotypes precludes the existence of a holotype for that species.

Metatype(s): One or more specimens compared to the type by the *author* and *determined* to be the same.

Ideotype(s): Metatype(s) from a different locality. For example: tetranatrolite was described from Mont St-Hilaire, Quebec by Chen & Chao in 1980; however, "a tetragonal natrolite" was described from Greenland in 1969. Chen & Chao (1980) examined the original Greenland material and have shown it to be tetranatrolite. Therefore, the original Greenland material is an ideotype.

Plesiotype(s): Specimen(s) upon which subsequent significant additional data are based, for example, in a redefinition of the species. In some instances a plesiotype may be a neotype.

Neotype(s): Specimen(s) selected to represent either the holotype or the cotypes when it is reasonably certain that the actual holotype or cotypes are lost or destroyed.

Topotypes(s): Specimen(s) from the original locality.

The principal designations used are holotype and cotype; metatype has been used if neither holotype nor cotype are known, or where only minute quantities of the holotype or cotype are known. No attempt has been made to locate or list topotypes. Where appropriate, the terms ideotype, neotype and plesiotype have been used.

Abbreviations

AMNH	American Museum of Natural History, New York, New York, U.S.A.
BM	British Museum (Natural History), London, England.
BRGM	Bureau de Recherches Géologiques et Minières, Orléans, France.
CANMET	Canada Centre for Mineral and Energy Technology, Ottawa, Ontario, Canada.
CU	Carleton University, Ottawa, Ontario, Canada.
ENSM	Musée de Minéralogie, Ecole Nationale Supérieure des Mines, Paris, France.
EP	Ecole Polytechnique de Montréal, Montréal, Québec, Canada.
FM	Fersman Mineralogical Museum, U.S.S.R. Academy of Sciences, Moscow, U.S.S.R.
GSC	Geological Survey of Canada, Ottawa, Ontario, Canada.
GSWA	Geological Survey of Western Australia, Perth, Western Australia.
HMM	Harvard Mineralogical Museum, Harvard University, Cambridge, Massachusetts, U.S.A.
IGEM	Mineralogical Museum of the IGEM Institute, U.S.S.R. Academy of Sciences, Moscow, U.S.S.R.
IMGRE	Institute for the Mineralogy, Geochemistry, and Crystal Chemistry of the Rare Elements, Moscow, US.S.R.
MNHN	Muséum National d'Histoire Naturelle, Paris, France.
MPM	Mineraloško-Petrografski Musej, Zagreb, Yugoslavia.
NMNH	National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A.
NMNS	National Museum of Natural Sciences, Ottawa, Ontario, Canada.
NSM	Nova Scotia Museum, Halifax, Nova Scotia, Canada.
QU	Queen's University, Kingston, Ontario, Canada.
RM	Redpath Museum, McGill University, Montreal, Quebec, Canada.
ROM	Royal Ontario Museum, Toronto, Ontario, Canada.
SDSMT	South Dakota School of Mines and Technology, Rapid City, South Dakota, U.S.A.
UBC	University of British Columbia, Vancouver, British Columbia, Canada.
UC	University of Cambridge, Cambridge, England.
UCSB	University of California, Santa Barbara, California, U.S.A.
UM	University of Manitoba, Winnipeg, Manitoba, Canada.
UO	University of Ottawa, Ottawa, Ontario, Canada.
UP	University of Paris, Paris, France.
US	University of Saskatchewan, Saskatoon, Saskatchewan, Canada.
UT	University of Toronto, Toronto, Ontario, Canada.

Type Minerals

Agrellite $NaCa_2Si_4O_{10}F$ (Gittins *et al.* 1976): Sheffield Lake (Kipawa River) Villedieu Tp., Témiscamingue Co., Quebec. BM 1976, 431; IMGRE; NMNH #127007; ROM M34496; UC; UT. Presumably all are cotypes.

ALLARGENTUM $Ag_{1-x}Sb_x$ (Ramdohr 1949, 1950, 1960): Cobalt, Ontario. BM 1952, 204. Possible metatype.

ALLARGENTUM (redefined) $Ag_{1-x}Sb_x$ (Petruk *et al.* 1970): (1) Patricia vein, (2) Cadesky vein, both from the Hi-Ho mine (Cleopatra mine), Claim A25, N shore of Giroux Lake, Gillies Limit Tp., Timiskaming Dist., Ontario. (3) No. 2 vein, Silverfields mine (Alexandra mine), Claim 395, N½ of SE¼, N½ Lot 5, Con. IV, Coleman Tp., Timiskaming Dist., Ontario. GSC #61343, 61344 (both Patricia vein), 61345 (Cadesky vein), 61519 (Silverfields); NMNH #135409 (Cadesky vein). All plesiotypes designated by Petruk.

APLOWITE $(Co,Mn,Ni)SO_4 \cdot 4H_2O$ (Jambor & Boyle 1965): Magnet Cove Barium Corp. mine, 4 km S of Walton, Hants Co., Nova Scotia. ENSM; GSC #12145. Both cotypes designated by Jambor.

ARSENOHAUCHECORNITE Ni_9BiAsS_8 (Gait & Harris 1980): Vermilion mine, Lot 6, Con. IV, Denison Tp., Sudbury Dist., Ontario. ROM #M29206, M29207, M29208. Cotypes designated by Gait.

ATHABASCAITE Cu_5Se_4 (Harris *et al.* 1970): Martin Lake mine, Beaverlodge Lake, Saskatchewan. GSC #61581, 61582, 62052; ROM #M29432. All cotypes designated by Harris.

AUROSTIBITE $AuSb_2$ (Graham & Kaiman 1951a, b): (1) Giant Yellowknife mine, W side of Yellowknife Bay, N shore of Great Slave Lake, Northwest Territories. (2) Chesterville mine, about 1¼ km NE of Virginiatown, McGarry Tp., Timiskaming Dist., Ontario. CANMET #2094-21 ["type material" of Berry & Thompson (1962)]; GSC #61458 (cotype), 12127 (metatype); ROM #M37248 (R685) (metatype). All from Northwest Territories.

BARICITE $(Mg,Fe^{2+})_3(PO_4)_2 \cdot 8H_2O$ (Sturman & Mandarino 1976): Rapid Creek (Cross-cut Creek), Big Fish River–Blow River area, Yukon Territory. MPM; NMNH #135698, 137303, 145736; ROM #M34169, M35430. All cotypes designated by Sturman.

CARLETONITE $KNa_4Ca_4Si_8O_{18}(CO_3)_4(OH,F) \cdot H_2O$ (Chao 1971): Mont St-Hilaire, Rouville Co., Quebec. NMNS #37134, 37135, 37136. Cotypes designated by Chao.

CAYSICHITE $(Y,Ca)_4Si_4O_{10}(CO_3)_3 \cdot 4H_2O$ (Hogarth *et al.* 1974): Evans–Lou mine, near St-Pierre-de-Wakefield, Lot 28, Range VI, Portland Tp., Papineau Co., Quebec. BM 1977, 278 (metatype); GSC #10402 (cotype); ROM #M33784 (metatype); UO (cotype). Designated by Hogarth.

CERIANITE $(Ce^{4+},Th)O_2$ (Graham 1955a, b): Firetower area, about 11 km NE of Nemegos, Lackner Lake, Lackner Tp, Sudbury Dist., Ontario. GSC #16588; ROM #M34491, M37257 (R724). All cotypes.

ČERNÝITE Cu_2CdSnS_4 (Kissin *et al.* 1978): (1) Tanco mine, Bernic Lake, Township 17, Range 15, 48 km ENE of Lac-du-Bonnet, Manitoba. (2) Hugo mine, Keystone, Pennington Co., South Dakota, U.S.A. CANMET (cotype S.D.); GSC #12119 (cotype, Man.), 12118 (metatype, S.D.), 12120 (metatype, Man.); NMNH #136924 (metatype, S.D.); ROM #M34728, M34729 (metatypes, Man.), M34730 (metatype, S.D.); SDSMT #5099 (cotype, S.D.), 5098 (metatype, Man.); UM #M5159 (metatype, S.D.), M5160 (metatype, Man.). Designated by Kissin. [Note: In Kissin *et al.* (1978), the GSC numbers are given as M5159 and M5160; these should read 12118 and 12119, respectively].

CHAPMANITE $Sb^{3+}Fe^{3+}{}_2(SiO_4)_2(OH)$ (Walker 1924a, b): Keeley mine, Claims HR19 and HR21, South Lorrain Tp., Timiskaming Dist., Ontario. ROM #M35432; this is probably cotype material as it is labeled "original material" and consists of one vial of powdered material previously catalogued with many other specimens under ROM #M14075. Three other vials are registered as M33773 and are also probable cotypes. Some of the specimens from M14075 were exchanged with other institutions (BM 1950, 128; GSC #16589; HMM #91501) but their status as type material is uncertain.

CLINOSAFFLORITE $(Co,Fe,Ni)As_2$ (Radcliffe & Berry 1971): Cobalt, Ontario. QU #1B20 [sample number from Radcliffe & Berry (1971)].

COLLINSITE $Ca_2(Mg,Fe^{2+})(PO_4)_2 \cdot 2H_2O$ (Poitevin & Connor 1924, Poitevin 1927): François Lake, S of Babine Lake, Ranges 4 & 5, Coast Dist., British Columbia. Type material may be in an extensive unsorted collection of collinsite at the GSC (G. Ansell, pers. comm.).

COWLESITE $CaAl_2Si_3O_{10} \cdot 5–6H_2O$ (Wise & Tschernich 1975): (1) Goble, Columbia Co., Oregon, U.S.A. (2) Superior, Pinal Co., Arizona, U.S.A. (3) Monte Lake, Kamloops Dist., British Columbia. (4) Capitol Peak, Thurston Co., near Olympia, Washington. U.S.A. (5) Beech Creek quarry, Grant Co., Oregon, U.S.A. (6) Spray, Wheeler Co., Oregon, U.S.A. (7) Table Mountain, near Golden, Colorado, U.S.A. BM 1977, 426 (metatype, Spray, Ore.); NMNH #135026 (Goble, Ore.), NMNH unnumbered (Supe-

rior, Ariz.); UCSB #6720 (Goble, Ore.); 6721 (Superior, Ariz.). These are undesignated types and the deposition of the material from the other localities is not mentioned.

CUPROSPINEL $(Cu,Mg)Fe^{3+}{}_2O_4$ (Nickel 1973): Consolidated Rambler mine, near Baie Verte, Newfoundland. NMNH #128673. Undesignated type material.

DADSONITE $Pb_{21}Sb_{23}S_{55}Cl$ (Coleman 1953, Jambor 1967b, 1969a): (1) Brock zone, Giant property, Yellowknife, Northwest Territories (Coleman 1953 — mineral Q). (2) Taylor pit, Lot 13 [Jambor (1967b) gives Lot 12], Con. XIV, Huntingdon Tp., Hasting Co., Ontario [Jambor (1967b): mineral QM]. (3) Pershing Co., Nevada, U.S.A. (4) Wolfsberg, Harz Mountains, Germany. BM 1972, 11; GSC #12130, 12131, 12197, 12198; NMNH #123240; ROM #M30905. All are cotypes from Germany designated by Jambor. The whereabouts of the ideotypes of minerals Q and QM is not known.

DAWSONITE $NaAl(CO_3)(OH)_2$ (Harrington 1875): Foundations of the new Humanities Building, McGill University, Montreal, Quebec. BM 1964, 697–8 (possibly type material); RM #F2381A (collected by J.W. Dawson, 1874).

DONNAYITE $Sr_3NaCaY(CO_3)_6 \cdot 3H_2O$ (Chao *et al.* 1978): Mont St-Hilaire, Rouville Co., Quebec. NMNH #144522; NMNS #39395, 39396; ROM #M35222, M35544. All cotypes designated by Chao.

DRESSERITE $Ba_2Al_4(CO_3)_4(OH)_8 \cdot 3H_2O$ (Jambor *et al.* 1969): Francon Ltée. quarry, Pie IX Blvd. & Jarry St., St-Michel district, Montreal, Quebec. No type material was designated (Jambor, pers. comm.).

FERRIERITE $(Na,K)_2MgAl_3Si_{15}O_{36}(OH) \cdot 9H_2O$ (Graham 1918): N shore of Kamloops Lake, Kamloops Dist., British Columbia. BM 1919, 147–8; 1930, 1008–9 (metatypes); GSC #60325 (metatype); RM #F3909 (undesignated type, collected by W.F. Ferrier, 1917).

FERRISYMPLESITE $Fe^{3+}{}_3(AsO_4)_2(OH)_3 \cdot 5H_2O$ (Walker & Parsons 1924): Hudson Bay mine, NE¼, N½, Lot 6, Con. VI, Coleman Tp., Timiskaming Dist., Ontario. NMNH #95461 (undesignated); ROM #M14248 (probable cotype.

FROHBERGITE $FeTe_2$ (Thompson 1946, 1947a, b): Robb-Montbray mine, Lots 55 & 56, Range II, Montbray Tp., Abitibi Co., Quebec. ROM #M31173 (cotype, gift from M.A. Peacock to M.H. Frohberg), M37270, M37272, M37275, M37286 (probable cotypes), M37274, M37276 (metatypes).

FROODITE $PdBi_2$ (Hawley & Berry 1958): Frood mine, Lots 6 & 7, Con. VI, McKim Tp., Sudbury Dist., Ontario. HMM #108371. Cotype from C.E. Michener, designated by C.A. Francis, HMM.

FROODITE $PdBi_2$ (Cabri *et al.* 1973a): Vermilion mine, Lot 6, Con. IV, Denison Tp., Sudbury Dist., Ontario. GSC #12138; ROM #M29438, M31189. All plesiotypes designated by Cabri.

GAIDONNAYITE $Na_2ZrSi_3O_9 \cdot 2H_2O$ (Chao 1973, Chao & Watkinson 1974): Mont St-Hilaire, Rouville Co., Quebec. NMNH #144522 (undesignated); NMNS #37127, 37128; ROM #M34803, M34804. Cotypes designated by Chao.

GASPÉITE $(Ni,Mg,Fe^{2+})CO_3$ (Kohls & Rodda 1966): Lemieux Tp., Gaspé-ouest Co. (formerly Gaspé-nord Co.), Gaspé peninsula, Quebec. NMNH #119544; UBC #S–75–4222. Undesignated types.

GITTINSITE $CaZrSi_2O_7$ (Ansell *et al.* 1980): Sheffield Lake (Kipawa River), Villedieu Tp., Témiscamingue Co., Quebec. GSC #19558 (part of holotype), 19560 (metatype); ROM #M37321 (part of holotype), M36265, M36266, M37322 (metatypes).

GORMANITE $Fe^{2+}{}_3Al_4(PO_4)_4(OH)_6 \cdot 2H_2O$ (Sturman *et al.* 1981a): Rapid Creek, Big Fish River – Rapid Creek area, Yukon Territory. NMNH #137494, 137495, 145741 (undesignated); ROM #M35123, M35124, M37368, cotypes designated by Sturman.

GUETTARDITE $Pb(Sb,As)_2S_4$ (Jambor 1967b): Taylor pit, Lot 13 [Jambor (1967b) gives Lot 12], Con. XIV, Huntingdon Tp., Hastings Co., Ontario. GSC #12167, 12173; ROM #M35890, M35891. All cotypes designated by Jambor.

GUNNINGITE $(Zn,Mn)SO_4 \cdot H_2O$ (Jambor & Boyle 1962): Comstock–Keno property, 650-ft. level, Calumet mine, Keno Hill – Galena Hill area, Yukon Territory. GSC #12139 (holotype); ROM #M25441; UBC #S–75–4063. Both metatypes designated by Jambor.

HASTINGSITE $NaCa_2(Fe^{2+},Mg)_4Fe^{3+}Si_6Al_2O_{22}(OH)_2$ (Adams & Harrington 1896a, b, Adams & Barlow 1910, p. 243-247): Dungannon Tp., Hastings Co., Ontario. MNHN 110.459, possible metatype presented by Adams.

HAWLEYITE CdS (Trail & Boyle 1955a, b): Hector–Calumet mine, Galena Hill, Yukon Territory. GSC #12164, holotype.

HEDLEYITE Bi_7Te_3 (Warren & Peacock 1945): Good Hope claim, about 6½ km SE of

Hedley, Similkameen Dist., British Columbia. ROM #M37250 (R131), M37251 (R223), M37252 (R228), M37253 (R563). Probable cotypes.

HILAIRITE $Na_2ZrSi_3O_9 \cdot 3H_2O$ (Chao *et al.* 1974): Mont St-Hilaire, Rouville Co., Quebec. NMNS #37125, 37126; ROM #M34803, M34804, M34805. All cotypes designated by Chao.

HOWLITE $Ca_2B_5SiO_9(OH)_5$ (How 1868, Dana 1868): near Windsor, Hants Co., Nova Scotia. Many specimens, presumably metatypes, were acquired by How and some of these are in the following institutions: BM; GSC; NSM.

HYDRODRESSERITE $BaAl_2(CO_3)_2(OH)_4 \cdot 3H_2O$ (Jambor *et al.* 1977b): Francon Ltée. quarry, Pie IX Blvd. & Jarry St., St-Michel district, Montreal, Quebec. GSC #13936; ROM #M34547. Cotypes designated by Jambor.

HYDROROMARCHITE $Sn_3O_2(OH)_2$ (Organ & Mandarino 1971): Boundary Falls, Winnipeg River, Kenora Dist. (Patricia portion), Ontario. ROM #M28744. Holotype designated by Mandarino.

JAGOWERITE $BaAl_2(PO_4)_2(OH)_2$ (Meagher *et al.* 1973): 25 km N of the Hess River, Yukon Territory. NMNH #128337 (undesignated); UBC #S–75–4220 (cotype designated by J. Nagel, UBC).

KULANITE $Ba(Fe^{2+},Mn,Mg)_2Al_2(PO_4)_3(OH)_3$ (Mandarino & Sturman 1976): Rapid Creek (Cross-cut Creek), Big Fish River – Blow River area, Yukon Territory. ROM #M34170. Holotype designated by Sturman.

LANGISITE (Co,Ni)As (Petruk *et al.* 1969): Vein 30, 235-ft. level, Langis mine, NW¼, N½, Lot 5, Con. VI, Harris Tp., Timiskaming Dist., Ontario. CANMET #329 (Cobalt Series Collection); GSC #12140, 12141; ROM #M28883, M28884. All are part of the holotype designated by Petruk.

LAROSITE $(Cu,Ag)_{21}(Pb,Bi)_2S_{13}$ (Petruk *et al.* 1971, Petruk 1972): Foster mine, Lot 4, Con. IV, Coleman Tp., Timiskaming Dist., Ontario. GSC #12126. Holotype designated by Petruk.

LATRAPPITE $(Ca,Na)(Nb,Ti,Fe)O_3$ (Nickel & McAdam 1963, Nickel 1964): St. Lawrence Columbium and Metals Corp., paroisse de L'Annonciation d'Oka, Deux-Montagnes Co., Quebec. ROM #M26143. "Type" material designated by Nickel.

LAUNAYITE $Pb_{22}Sb_{26}S_{61}$ (Jambor 1967b): Taylor pit, Lot 13 [Jambor (1967b) gives Lot 12], Con. XIV, Huntingdon Tp., Hasting Co., Ontario. GSC #12176, 12177, 61062. Cotypes designated by Jambor.

LEMOYNITE $(Na,K)_2CaZr_2Si_{10}O_{26} \cdot 5–6H_2O$ (Perrault *et al.* 1969): Mont St-Hilaire, Rouville Co., Quebec. ROM #M32124. Part of holotype designated by Perrault.

MADOCITE $Pb_{17}(Sb,As)_{16}S_{41}$ (Jambor 1967a): Taylor pit, Lot 13 [Jambor (1967a) gives Lot 12], Con. XIV, Huntingdon Tp., Hastings Co., Ontario. GSC #12146, 12178; ROM #M35896. All are cotypes designated by Jambor.

MARIĆITE $NaFe^{2+}PO_4$ (Sturman *et al.* 1977): Big Fish River, Big Fish River – Blow River area, Yukon Territory. NMNH #145745; ROM #M34241 (both part of holotype designated by Sturman); MPM (metatype).

MATTAGAMITE $CoTe_2$ (Thorpe & Harris 1973): Mattagami Lake Mines Ltd., Galinée Tp., Abitibi Co., Quebec. GSC #12151, 12152, 12153. All cotypes designated by Harris.

MCGILLITE $(Mn,Fe^{2+})_8Si_6O_{15}(OH)_8Cl_2$ (Donnay *et al.* 1980): Sullivan mine, raise 42135D, Kimberley, British Columbia. RM #NS 3100 (undesignated; collected by Arthur Morris, 1945); UBC #S–75–21123 (this is the original material labeled "friedelite" studied by R.M. Thompson in 1951).

MCKINSTRYITE $(Ag,Cu)_2S$ (Skinner *et al.* 1966): Foster mine, SE¼, N½, Lot 4, Con. IV, Coleman Tp., Timiskaming Dist., Ontario. GSC #12136; HMM #108804 (Both part of holotype designated by Jambor); NMNH #120056 (undesignated).

MICHENERITE (Pd,Pt)BiTe (Hawley & Berry 1958): Frood mine, Lots 6 & 7, Con. VI, McKim Tp., Sudbury Dist., Ontario. No type material could be located.

MICHENERITE (Pd,Pt)BiTe (redefined) (Cabri *et al.* 1973a): Vermilion mine, Lot 6, Con. IV, Denison Tp., Sudbury Dist., Ontario. GSC #12138 (neotype from ROM #M29438): ROM #M29438, M31189. Both neotypes designated by Cabri.

MOLYBDENITE–3*R* MoS_2 (Traill 1963): Con mine, 4th level, 2 km S of Yellowknife, Northwest Territories. GSC #12112. Holotype.

MONTBRAYITE $(Au,Sb)_2Te_3$ (Peacock & Thompson 1945, 1946a, b): Robb–Montbray mine, Lots 55 & 56, Range II, Montbray Tp., Abitibi Co., Quebec. HMM #97681 (cotype), 102067 (metatype). Designated by C.A. Francis, HMM; ROM #M19883, M37273 (R288, R494), M37276 (R288, R494), M37282 (R494), M37287 (R288). All cotypes. M37272 (R494), M37275 (R288, R494), M37286 (R494), M37288 (R288). Probable cotypes.

MONTEREGIANITE $(Na,K)_6(Y,Ca)_2Si_{16}O_{38} \cdot 10H_2O$ (Chao 1978): Mont St-Hilaire, Rouville Co.,

Quebec. NMNH #145548 (undesignated); NMNS #37130. Holotype designated by Chao.

MOORHOUSEITE $(Co,Ni,Mn)SO_4 \cdot 6H_2O$ (Jambor & Boyle 1965): Magnet Cove Barium Corp. mine, Walton, Hants Co., Nova Scotia. GSC #12145. Holotype designated by Jambor.

MORDENITE $(Ca,Na_2,K_2)Al_2Si_{10}O_{24} \cdot 7H_2O$ (How 1864): 3–5 km E of Morden, King's Co., Nova Scotia. BM 52574a [labeled type-material, acquired from How (1879)], several other BM specimens are metatypes received from How in 1870 and 1879; NMNH #R4062 (undesignated).

MUSKOXITE $Mg_7Fe^{3+}{}_4O_{13} \cdot 10H_2O$ (Jambor 1969b): Muskox complex, Coppermine River area, Northwest Territories. GSC #12123 (metatype); ROM #M36526. Cotype designated by Jambor.

NAHPOITE Na_2HPO_4 (Coleman & Robertson 1981): Big Fish River (Lat. 68°28′N, Long. 136°29′W), Yukon Territory. US #12504 (undesignated).

NEYITE $Pb_7(Cu,Ag)_2Bi_6S_{17}$ (Drummond *et al.* 1969): Patsy Creek, Lime Creek stock, British Columbia Molybdenum Ltd., Kitsault, 8 km S of Alice Arm, Observatory Inlet, Cassiar Dist., British Columbia. UBC #S–75–4403. Metatype designated by J. Nagel, UBC.

NICKELBISCHOFITE $NiCl_2 \cdot 6H_2O$ (Crook & Jambor 1979): Dumont ultramafic body, 27 km W of Amos, Launay Tp., Abitibi Co., Quebec. GSC #17980. Holotype designated by Jambor.

NIOBOPHYLLITE $(K,Na)_3(Fe^{2+},Mn)_6(Nb,Ti)_2Si_8(O,OH,F)_{31}$ (Nickel *et al.* 1964): Ten Mile Lake area, Seal Lake, Labrador, Newfoundland. GSC #61503 (metatype); ROM #M26148. Part of holotype designated by Nickel.

NIOCALITE $Ca_4NbSi_2O_{10}(O,F)$ (Nickel *et al.* 1956, 1958): Bond zone, Oka area, Deux-Montagnes Co., Quebec. GSC #61568 (metatype, Nickel *et al.* 1956), 62052 (plesiotype, Nickel *et al.* 1958).

NISBITE $NiSb_2$ (Cabri *et al.* 1970): Trout Bay, Red Lake area, Mulcahy Tp., Kenora Dist. (Patricia portion), Ontario. GSC #12162. Holotype designated by Cabri.

NOLANITE $Fe_3V_7O_{16}$ (Barnes & Qurashi 1952, Robinson 1955, Robinson *et al.* 1957): (1) "A" zone of Eldorado Mining & Refining Ltd., Fish Hook Bay, Lake Athabasca, Beaverlodge region, Saskatchewan. (2) 1st level, Nicholson mine (Consolidated Nicholson Mines Ltd.), N side of Lake Athabasca, about 3 km E of the site of Goldfields, Beaverlodge region, Saskatchewan. (3) Ace mine, about 10 km E of Uranium City, Beaverlodge Lake, Saskatchewan. (4) Pitche group of claims, SW shore of Beaverlodge Lake, Saskatchewan. BM 1965, 206 (cotype, part of NMNH #112965); BM 1966, 210 (undesignated); NMNH #112965 (cotype).

NUFFIELDITE $Pb_2Cu(Pb,Bi)Bi_2S_7$ (Kingston 1968): Patsy Creek, Lime Creek stock, British Columbia Molybdenum Ltd., Kitsault, 8 km S of Alice Arm, Observatory Inlet, Cassiar Dist., British Columbia. GSC #13448 (cotype); ROM #31491, M31618, M31619 (probable cotypes collected by J.D. Scott), M37319 (R893) (cotype).

PARACOSTIBITE CoSbS (Cabri *et al.* 1970): Trout Bay, Red Lake area, Mulcahy Tp., Kenora Dist. (Patricia portion), Ontario. GSC #12162, 12163; ROM #M29431, M29435. All cotypes designated by Cabri.

PARANATROLITE $Na_2Al_2Si_3O_{10} \cdot 3H_2O$ (Chao 1980): Mont St-Hilaire, Rouville Co., Quebec. NMNS #37132; ROM #M35546. Both are part of the holotype designated by Chao.

PARARAMMELSBERGITE $NiAs_2$ (Peacock 1939, 1940, Peacock & Michener 1939, Peacock & Dadson 1940): (1) Moose Horn mine, Lot 4 Con. V, James Tp., Timiskaming Dist., Ontario. (2) Hudson Bay mine, Lot 6, Con. VI, Coleman Tp., Timiskaming Dist., Ontario. (3) Keeley mine, Claims HR19 and HR21, South Lorrain Tp., Timiskaming Dist., Ontario. ROM #M11772a (R13), M11772b (R15), M11772c (R16) Hudson Bay mine, M12411 (R18) Moose Horn mine, M14242 (R14) Keeley mine. All are cotypes.

PARAREALGAR AsS (Roberts *et al.* 1980): (1) Mount Washington copper deposit, Comox Dist., Vancouver Island, British Columbia. (2) Gray Rock property, head of Truax Creek, Bridge River area, Lillooet Dist., British Columbia. GSC #61566 (Mount Washington), 61567 (Gray Rock). Both are cotypes designated by Roberts.

PELLYITE $Ba_2Ca(Fe^{2+},Mg)_2Si_6O_{17}$ (Meagher 1971, Montgomery *et al.* 1972): Ross River and Pelly River, 3 km SW of Gillespite Lake, Yukon Territory. UBC #S–79–21844. Cotype designated by J. Nagel, UBC.

PENIKISITE $Ba(Mg,Fe^{2+})_2Al_2(PO_4)_3(OH)_3$ (Mandarino *et al.* 1977): Rapid Creek (Cross-cut Creek), Big Fish River – Blow River area, Yukon Territory. ROM #M34172. Holotype designated by B.D. Sturman, ROM.

PETARASITE $Na_5Zr_2Si_6O_{18}(Cl,OH) \cdot 2H_2O$ (Chao *et al.* 1980): Mont St-Hilaire, Rouville Co., Quebec. GSC #61531; NMNS #43721,

43630, 43631; ROM #M36456, M36457, M36458. All cotypes designated by Chao.

PLAYFAIRITE $Pb_{16}Sb_{18}S_{43}$ (Jambor 1967b): Taylor pit, Lot 13 [Jambor (1967b) gives Lot 12], Con. XIV, Huntingdon Tp., Hastings Co., Ontario. GSC #12168, 12171; ROM #M35893, M35896. Cotypes designated by Jambor.

POITEVINITE $(Cu,Fe^{2+},Zn)SO_4 \cdot H_2O$ (Jambor *et al.* 1964): Avoca claim, Hat Creek, Bonaparte River, Lillooet Dist., British Columbia. ENSM; GSC #12122; NMNH #142995; ROM #M25440. NMNH specimen undesignated, the rest are cotypes designated by Jambor.

ROMARCHITE SnO (Organ & Mandarino 1971): Boundary Falls, Winnipeg River, Kenora Dist. (Patricia portion), Ontario. ROM #M28744. Holotype designated by Mandarino.

SABINAITE $Na_9Zr_4Ti_2O_9(CO_3)_8$ (Jambor *et al.* 1980): Francon Ltée quarry, Pie IX Blvd. & Jarry St., St-Michel district, Montreal, Quebec. ENSM; GSC #61017 to 61024 (inclusive), 61063; ROM #M35902, M35907. All cotypes designated by Jambor.

SATTERLYITE $(Fe^{2+},Mg,Fe^{3+})_2(PO_4)(OH)$ (Mandarino *et al.* 1978): Big Fish River, Big Fish River – Blow River area, Yukon Territory. NMNH #145743; ROM #M34649. Both are part of the holotype designated by B.D. Sturman, ROM.

SORBYITE $Pb_{17}(Sb,As)_{22}S_{50}$ (Jambor 1967b): Taylor pit, Lot 13 [Jambor (1967b) gives Lot 12], Con. XIV, Huntingdon Tp., Hastings Co., Ontario. GSC #12166, 61065; ROM #M35892. All cotypes designated by Jambor.

SPENCERITE $Zn_4(PO_4)_2(OH)_2 \cdot 3H_2O$ (Walker 1916a, b, c, 1918): H.B. mine, about 8 km SE of Salmo, near Nelson, Kootenay Dist., British Columbia. MNHN 120.22; NMNH #121566; ROM #M9602, M9610, M9691, M9726. All metatypes.

SPENCITE: see TRIPHYLITE – (Y).

SPERRYLITE $PtAs_2$ (Wells 1889): Vermilion mine, Lot 6, Con. IV, Denison Tp., Sudbury Dist., Ontario. BM 63937. Probable cotype, acquired from Wells in 1889.

SPERTINIITE $Cu(OH)_2$ (Grice & Gasparrini 1981): Jeffrey mine, Shipton Tp., Richmond Co., Quebec. NMNS #44696, 44697, 44698. 44699. All cotypes designated by Grice.

SPIONKOPITE $Cu_{39}S_{28}$ (Goble 1980): Yarrow Creek, Yarrow Creek – Spionkop Creek deposit, SW Alberta. GSC #61551 (cotype); QU (metatype). Designated by Goble.

STEACYITE $Th(Na,Ca)_2(K_{1-z}\square_z)Si_8O_{20}$, $z = 0.39$ (Perrault & Szymański 1982): Mont St-Hilaire, Rouville Co., Quebec. EP #E.P. 12480; GSC #61529. Both cotypes.

STERRYITE $Pb_{12}(Sb,As)_{10}S_{27}$ (Jambor 1967b): Taylor pit, Lot 13 [Jambor (1967b) gives Lot 12], Con. XIV, Huntingdon Tp., Hastings Co., Ontario. GSC #12169, #12172, 61066; ROM M#35891, M35894. All cotypes designated by Jambor.

STIBIVANITE $Sb^{3+}{}_2V^{4+}O_4$ (Kaiman *et al.* 1980): Lake George antimony deposit (Consolidated Durham Mines & Resources Ltd.), 453 stope, Prince William Parish, York Co., New Brunswick. GSC #61523, 61524, 61525 (cotypes); NMNS #44654, 44655, 44656, 44657, 44658 (metatypes); ROM #M36642 (cotype).

STRONTIODRESSERITE $(Sr,Ca)Al_2(CO_3)_2(OH)_4 \cdot H_2O$ (Jambor *et al.* 1977a): Francon Ltée. quarry, Pie IX Blvd. & Jarry St., St-Michel district, Montreal, Quebec. GSC #13704; ROM #M34626, M34627. All cotypes designated by Jambor.

SUDBURYITE $(Pd,Ni)Sb$ (Cabri & Laflamme 1974): Copper Cliff South mine, Lot 1, Con. I, Snider Tp., Sudbury Dist., Ontario. BM; BRGM; IGEM; ROM #M32841. All cotypes designated by Cabri.

TANCOITE $HNa_2LiAl(PO_4)_2(OH)$ (Ramik *et al.* 1980): Tanco mine, Bernic Lake, Township 17, Range 15, 48 km ENE of Lac-du-Bonnet, Manitoba. BM; ENSM; FM; HMM #117129; NMNH #146284; NMNS #42900; ROM #M36416, M36417, M36418; UM #M5553, M5554. All are cotypes designated by Ramik.

TELLURANTIMONY Sb_2Te_3 (Thorpe & Harris 1973): Mattagami Lake Mines Ltd., Galinée Tp., Abitibi Co., Quebec. GSC #12151, 12152, 12154, 12155; ROM #M31957, M31958. All cotypes designated by Harris.

TELLUROHAUCHECORNITE Ni_9BiTeS_8 (Gait & Harris 1980): Strathcona mine, Lot 4, Con. IV, Levack Tp., Sudbury Dist., Ontario. ROM #M30942. Holotype designated by Gait.

TEMAGAMITE Pd_3HgTe_3 (Cabri *et al.* 1973b): Temagami mine, Temagami Island, Lake Temagami, Phyllis Tp., Nipissing Dist., Ontario. ROM #M32528. Holotype designated by Cabri.

TETRANATROLITE $Na_2Al_2Si_3O_{10} \cdot 2H_2O$ (Andersen *et al.* 1969, Chen & Chao 1980): (1) Ilimaussaq, Greenland (referring to "tetragonal natrolite"). (2) Mont St-Hilaire, Rouville Co., Quebec. NMNS #37131; ROM #M35545 (Both cotypes, Quebec), M36160 (ideotype, Greenland). Designated by Chao.

TINTINAITE $Pb_5(Sb,Bi)_8S_{17}$ (Harris *et al.* 1966, 1968): (1) Tintina Silver Mines Ltd., 160 km NW of Watson Lake, Whitehorse Div.,

Yukon Territory. (2) Deer Park mine, Rossland, British Columbia. GSC #12133, 12134, 12135 (Yukon); ROM #M27173, M27174, M27175, M27176 (British Columbia), M37320 (R894) (Yukon). All are cotypes.

TRITOMITE–(*Y*) $(Y,Ca,La,Fe^{2+})_5(Si,B,Al)_3(O,OH,F)_{13}$ (Frondel 1961, Jaffe & Molinsky 1962, Hogarth *et al.* 1973): Lot 7, Con. XX Cardiff Tp., Haliburton Co., Ontario. GSC #14270; HMM #10800; NMNH #106358. All part of the holotype designated by Frondel.

TULAMEENITE Pt_2FeCu (Cabri *et al.* 1973c): (1) Tulameen River, (2) Similkameen River, Similkameen Dist., British Columbia. NMNH #128460; ROM #M33256. Both cotypes from Similkameen River, designated by Cabri.

TWINNITE $Pb(Sb,As)_2S_4$ (Jambor 1967b): Taylor pit, Lot 13 [Jambor (1967b) gives Lot 12], Con. XIV, Huntingdon Tp., Hastings Co., Ontario. GSC #12175 (holotype), 12173, 12174, 12195 (metatypes). Designated by Jambor.

TYRRELLITE $(Cu,Co,Ni)_3Se_4$ (Robinson & Brooker 1952, Hey 1961): (1) Western part of the Eagle group of claims, Goldfields Dist., Saskatchewan. (2) Head of Ato Bay, Beaverlodge Lake, Saskatchewan. GSC #61952 (cotype, Beaverlodge); MNHN 180.53 (cotype, Beaverlodge, gift of Robinson); ROM #M26095, M26096 (both Beaverlodge, undesignated).

VEENITE $Pb_2(Sb,As)_2S_5$ (Jambor 1967a): Taylor pit, Lot 13 [Jambor (1967a) gives Lot 12]; Con. XIV, Huntingdon Tp., Hastings Co., Ontario. GSC #12170, 12174; ROM #M35895. All cotypes designated by Jambor.

WAKEFIELDITE YVO_4 (Hogarth & Miles 1969, Miles *et al.* 1971): Evans–Lou mine, near St-Pierre-de-Wakefield, Lot 28, Range VI, Portland Tp., Papineau Co., Quebec. GSC #12165 (holotype); ROM #M30382 (metatype); UO (metatype). Designated by Hogarth.

WELOGANITE $Sr_3Na_2Zr(CO_3)_6{\cdot}3H_2O$ (Sabina *et al.* 1968, Gait & Grice 1971, Grice & Perrault 1975): Francon Ltée. quarry, Pie IX Blvd, & Jarry St., St-Michel district, Montreal, Quebec. GSC #17257, 61337. Cotypes designated by J.L. Jambor.

WICKSITE $NaCa_2(Fe^{2+},Mn)_4MgFe^{3+}(PO_4)_6{\cdot}2H_2O$ (Sturman *et al.* 1981b): Big Fish River, Big Fish River – Blow River area, Yukon Territory. GSC #61309; NMNH #145607; ROM #M37364. All part of the holotype designated by Sturman.

WODGINITE $(Ta,Nb,Sn,Mn,Fe)_{16}O_{32}$ (Nickel *et al.* 1963): (1) Wodgina, Western Australia. (2) Tanco mine, Bernic Lake, Township 17, Range 15, 48 km ENE of Lac-du-Bonnet, Manitoba. GSC #12200 (Man.); GSWA #8492 (Wodgina); ROM #M25655 (Man.). The Wodgina specimen may be a cotype; the others are ideotypes.

YARROWITE Cu_9S_8 (Goble 1980): Yarrow Creek, Yarrow Creek-Spionkop Creek deposit, SW Alberta. GSC #61552 (cotype); QU (metatype). Designated by Goble.

YOFORTIERITE $(Mn,Mg)_5Si_8O_{20}(OH)_2{\cdot}8$–$9H_2O$ (Perrault *et al.* 1975): Mont St-Hilaire, Rouville Co., Quebec. BM 1975, 418; ENSM; MNHN 178.118; NMNH #131952; NMNS #37133; ROM #M33627, UP. These are probably cotypes.

YUKONITE $Ca_3Fe^{3+}_7(AsO_4)_6(OH)_9{\cdot}18H_2O$ (Tyrrell & Graham 1913, Jambor 1966): west side of Windy Arm, Tagish Lake, Yukon Territory. GSC #18594 (holotype); NMNH #R5783 (undesignated); ROM #M11468 (metatype).

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