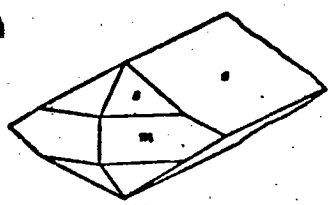
DIASPORE [$HAlO_2$].



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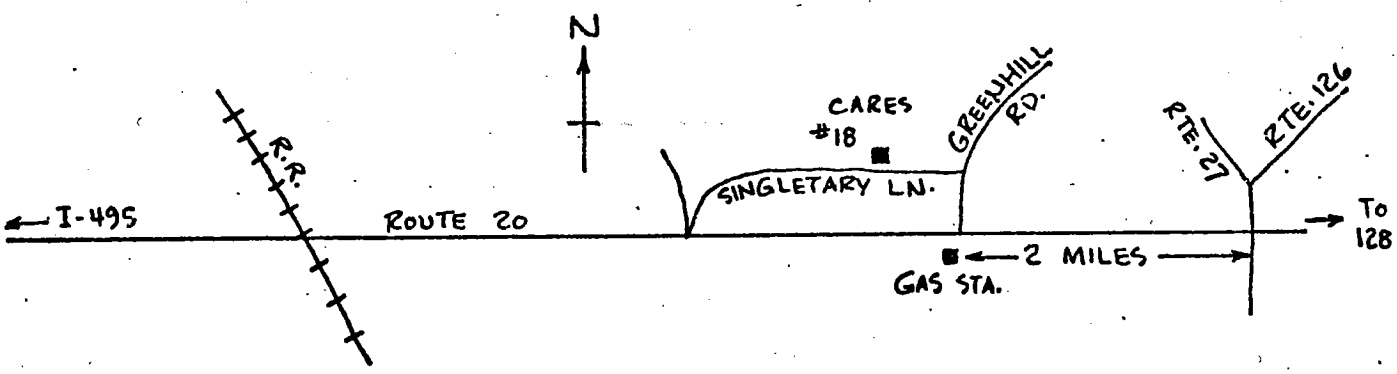
NEWSLETTER #48

MAY 1, 1979

NEXT REGULAR MEETING: SUNDAY - MAY 13, 1979 · 10AM - 4PM

PLACE: THE CARES' HOME - SUDBURY, MASS.



LAWRENCE PITMAN, OF SUDBURY, WILL JOIN US AND DISCUSS CHEMICAL ANALYSIS, METHODS, & PROCEDURES REGARDING MINERAL IDENTIFICATION.

In a recent article in the Canadian Mineralogist, Pete Dunn reports the results of his study of the green garnets from a number of localities in Canada. Of particular interest to club collectors may be his findings about garnets from two localities in Quebec. Green garnets, long considered to be uvarovite, occur with diopside and chromite at the Orford Nickel Mine, Brompton Lake, Quebec. These are not uvarovite, but chromian grossular. Likewise, all the garnets from the Jeffrey Mine, Asbestos, Quebec including the deep green ones are grossular. Again the green ones are chromian grossular.

Wroewolfeite, a new copper sulphate hydroxide hydrate

#49

PETE J. DUNN AND ROLAND C. ROUSE,
with chemical analysis by JOSEPH A. NELEN

Department of Mineral Sciences, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560

SUMMARY. Wroewolfeite is a new mineral from the Loudville lead mine in Loudville, Massachusetts, U.S.A. The mineral occurs as blue, monoclinic crystals, twinned on {001}, very similar in appearance to posnjakite and langite. It is formed as small isolated pinacoidal crystals (up to 1·0 mm) implanted on covelline and chalcosine. There are three cleavages of equal facility of production. The cell dimensions are a 6·058 Å, b 5·654 Å, c 14·360 Å, β 93° 28′, space group Pc or $P2/c$. The strongest diffraction lines (in Å) are 7·152 (100), 3·581 (70), 2·628 (35), 2·004 (30), 2·431 (20), 2·379 (20), 2·278 (20). Electron-microprobe analysis gives CuO 64·22 %, SO_3 16·48 %, water by difference 19·30 %. Empirical cell contents are $Cu_{7.44}(SO_4)_{2.00}(OH)_{11.16}.(H_2O)_{4.32}$ or $Cu_4(SO_4)(OH)_6.2H_2O$ with $Z = 2$. Wroewolfeite is strongly pleochroic with α light blue, β deep greenish blue, and γ medium greenish blue. Absorption $\beta > \gamma \gg \alpha$. The mineral is biaxial with α 1·637, β 1·682, and γ 1·694, $2V_a = 53°$. The name is for C. Wroe Wolfe, American crystallographer, educator, and philosopher.

IN the course of an investigation of the minerals of the oxidized zone from an abandoned lead mine at Loudville, Massachusetts, one of the authors (PJD) noted some blue platy crystals associated with chalcosine and covelline. The X-ray powder pattern of this mineral does not match that of any known species, so we proceeded on the assumption that the crystals were a new copper sulphate mineral. The X-ray pattern closely resembled those of posnjakite and langite and the mineral was tentatively assigned to this group. Subsequent investigation has verified that the mineral is indeed a new species, and we have named it wroewolfeite in honour of C. Wroe Wolfe, eminent American crystallographer, educator, and philosopher. The mineral and the name were approved by the Commission on New Minerals and New Mineral Names, I.M.A., prior to publication. Type material is deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C., catalog #127329.

The Loudville lead mine, also known as the Manhan River lead mine, was described briefly by Silliman (1810) and Emerson (1917). The mine was worked intermittently from 1679 until 1865 but the ore body is presently inaccessible. The new mineral was found on a specimen removed from the old mine dumps near the central adit. The primary minerals in the deposit are galena, chalcopyrite, calcite, fluorite, quartz, and baryte. Oxidation of the primary minerals has produced a suite of secondary lead and copper minerals including wulfenite, pyromorphite, cerussite, anglesite, covelline, chalcosine, malachite, brochantite, and langite.

Wroewolfeite occurs as deep greenish blue crystals intimately associated with brochantite, malachite, and langite in the above mentioned suite of secondary minerals. It forms minute euhedral crystals, apparently monoclinic in morphology, implanted on a thin film of chalcosine, which in turn coats microgranular covelline. The covelline replaced galena and shows relict cleavage traces. Several crystals of wroewolfeite were also found on drusy quartz adjacent to chalcosine and covelline. The maximum observed size of the crystals is 0·5 mm × 1·0 mm, but most are considerably smaller. Wroewolfeite alters to brochantite and malachite. Because wroewolfeite and langite are intimately associated at the Loudville mine, specimens from other langite localities were examined in the hope of obtaining more wroewolfeite but none was found. A recent communication from Dr. M. H. Hey indicates the existence of samples of wroewolfeite from the Ladywell mine, Shelve, Shropshire, England, and the Nantycagal mine, Ceulanywaesmawr, Cardiganshire, Wales. These samples are in the collections of the British Museum (N.H.).

Physical properties. Wroewolfeite crystals are deep greenish blue in colour and exhibit no discernible zoning. There are three cleavages parallel to {010}, {100}, and {001}, which are very easily produced and perfect. The lustre is vitreous and the streak light blue. As the crystals are very deeply coloured, they are only weakly translucent in visible light. The hardness is about 2½. There is no discernible fluorescence in either long- or short-wave ultraviolet radiation. The density was determined by flotation of clear crystals in Clerici solution, which gave a value of 3·27±0·01 g/cm³. The calculated density is 3·30 g/cm³, in excellent agreement with the observed value.

#49

INFORMATION TO DATE ON FRANCON UNKNOWNS (May 5, 1979)

No. 3. Chalk-white powdery coatings; porcelain-like and waxy granular; white smooth translucent globules and botryoidal crusts; white shells. Commonly coating cryolite crystals. Nearly always present in cavities containing weloganite and dresserite. No. 11 nearly always admixed with it, often associated with No. 5. Difficult to distinguish from No. 11. In lower level A. S. has only found it with weloganite.

Best distinguishing characteristic is its fluorescence and phosphorescence, described as bluish-white (short wave) and cream-white (long wave). First reported to be an aluminum hydroxide with x-ray pattern similar to gibbsite, however revised report does not mention this.

JWC has noted that fluorescent coatings associated with pink strontianite and artichoke quartz are always No 3. Another fluorescent mineral appears to be acicular strontianite. Dresserite/hydrodresserite also fluoresces white. JWC found gravity of No 3 to be between 2.8 &

No. 5. White silky fine flakes "much like sericite" forming compact, friable, or foamy aggregates associated with weloganite, dresserite, dawsonite, quartz, calcite, and No. 3. Has more silky lustre than No. 3, less silky than dawsonite, In upper level. Does not fluoresce, but often associated with No. 3 which does. Possible new mineral with formula $Na_{10}Zr_5Ti_2O_{10}(CO_3)_9$, Gravity is 3.36. Effervesces in warm HCl. Ass'd with No. 3.

No. 10. White to cream-white globules (less than .25 mm diameter) composed of radiating plates, porcelain-like surface and silky cross-section. Generally occurs on weloganite, but also found on calcite, artichoke quartz, and colorless cryolite. Always accompanied by brown hydrocarbon coating. Under high magnification surface of globule is rough and shows fibrous structure when broken (difference from No. 3). As yet found only in upper level. Uncommon. Major elements are niobium and sodium. Ass'd with No. 3.

No. 11. White finely globular crusts on crystals of quartz and calcite lining vugs. Often admixed with No. 3 from which it is difficult to distinguish. (Note: Is it fluorescent?) Believed to be an aluminum hydroxide with x-ray pattern similar to nordstrandite.

REFERENCES:

Sabina, Ann P., "The Francon Quarry, a Mineral Locality", Report of Activities, Geological Survey of Canada, Paper 76-1B (1976) and Paper 79-1A (1979).

Personal Correspondance, Ann P. Sabina to Janet W. Cares, 1979

#49

MINERAL ASSOCIATIONS AT FRANCON

If you see:	Look for:
If you are looking for:	**Look in known specimens of:**
Acmite	Analcime, dachiardite
Analcime	Acmite, dachiardite
Anatase	Brookite, ilmenorutile
Ankerite	Dachiardite, mordenite, smythite
Baddeleyite	Hematite, zircon, thorbastnaesite
Brookite	Anatase, ilmenorutile
Cristobalite	Mordenite, dolomite
Crocoite	Pseudorutile, pyrochlore, siderite
Cryolite (colorless)	Pyrrhotite, No. 3 (crust)
Cryolite (yellow)	Elpidite, synchysite
Dachiardite	Acmite, analcime, dolomite, mordenite, weloganite
Dolomite	Cristobalite, dachiardite, gypsum, mordenite
Elpidite	Cryolite (yellow), synchysite
Galena	Hydrocerussite (white powdery coating)
Hydrocarbon coating	Weloganite, No. 10
Ilmenorutile	Anatase, brookite
Magnetite	Pyrite, pyrrhotite, smythite
Marcasite	Mordenite, natrojarosite, rozenite, No. 10
Molybdenite	Weloganite
Mordenite	Dachiardite, Marcasite
Nahcolite	Halite
Natrojarosite	Botryoidal pink sphalerite
Pseudorutile	Crocoite, magnetite, natrojarosite, pyrochlore, zircon
Pyrite	Rozenite, Sulfur (coating)
Pyrochlore	Crocoite, pseudorutile, siderite, with pyrite & zircon in sill rock
Pyrrhotite	Magnetite, smythite
Rozenite	Marcasite, pyrite
Siderite	Crocoite, pyrochlore
Smythite	Magnetite, pyrrhotite
Sphalerite	Natrojarosite, sulfur
Strontianite (pink)	No. 3
Sulfur	Natrojarosite, pyrite, sphalerite
Synchysite	Elpidite
Thorbastnaesite	Baddeleyite, zircon
Weloganite	Dachiardite, elpidite, dresserite, hydrodresserite, strontiodresserite, galena, harmotome, molybdenite, mordenite, sphalerite
Zircon	Baddeleyite, thorbastnaesite, pyrochlore
Unknown No. 3	No. 5, No. 11, dresserite, pink strontianite, colorless cryolite, No. 10
Unknown No. 5	No. 3
Unknown No. 10	No. 3, hydrocarbon coating, marcasite
Unknown No. 11	No. 3
In Sill Rock	Anatase, apatite, fluorite, galena, garnet, graphite, halite, nahcolite, pyrochlore, siderite, thenardite, zircon
In Massive Dawsonite	Fluorite (black)

Reference: Sabina, Ann P., "The Francon Quarry, a Mineral Locality", Report of Activities, Geological Survey of Canada, Paper 76-1B (1976), and "Minerals of the Francon Quarry...", Paper 79-1A (1979).

FRANCON MINERALS

#49

ASSEMBLAGE A (UPPER LEVEL)

ALBITE CALCITE
CALCITE
DAWSONITE
QUARTZ
Barite
Cryolite (colorless)
Dresserite
Fluorite
Hydrodresserite
Kaolinite
Pyrite
Strontianite
Strontiodresserite
Weloganite
Unknowns 3, 5, & 10

ASSEMBLAGE B (LOWER LEVEL)

ALBITE
ANALCIME
CALCITE
DAWSONITE
FLUORITE
QUARTZ
Acmite
Ankerite
Baddeleyite
Barite
Celestine
Cryolite (yellow)
Dachiardite
Elpidite
Goethite
Gypsum
Halite
Hematite
Kaolinite
Magnetite
Marcasite
Montmorillonite
Mordenite
Nahcolite
Natrojarosite
Smythite
Strontianite
Sulfur
Synchysite
Thorbastnaesite
Weloganite
Zircon

Unknown No. 3

SOLUBILITY CHARACTERISTICS

EFFERVESCE DILUTE HCl

S.G.	
2.44	Dawsonite (delayed)
2.71	Calcite (fast)
2.7	Strontiodresserite
2.8	Hydrodresserite (rapid)
2.89	Dolomite (warm)
2.97	Ankerite (warm)
3.0	Dresserite (rapid)
3.2	Weloganite (rapid)
3.36	Unknown No. 5 (warm)
3.7-3.8	Strontianite (fast)
3.9-4.2	Synchysite
3.96	Siderite (warm)
4.9-5.2	Thorbastnaesite (warm?)
6.8-6.9	Hydrocerussite

SLOWLY SOLUBLE WITHOUT EFFERVESCENCE

S.G.	
2.1-2.2	Mordenite (gel)
2.2	Dachiardite (gel)
2.3	Gypsum
2.4-2.5	Harmotome (no gel)
2.9-3.2	Natrojarosite
3.1-3.2	Apatite
3.3-4.3	Goethite
3.9-4.1	Sphalerite
4.5-4.8	Pyrrhotite
5.26	Hematite (Concentrated HCl)
6.0-6.1	Crocoite
7.6	Galena (Decomposed by HNO_3 with separation of sulfur)

(Fluorite & cryolite decompose in H_2SO_4)

INSOLUBLE DILUTE HCl

S.G.	
2.2-2.3	Analcime
2.5	K-Feldspar
2.6	Kaolinite
3.0	Cryolite
3.18	Fluorite
4.0	Celestine
4.25	Barite

Also anatase, baddeleyite, brookite, ilmenorutile, marcasite, zircon

WATER-SOLUBLE

S.G.	
2.17	Halite
2.2	Nahcolite (effervesces in HCl)
2.2-2.3	Rozenite
2.68	Thenardite

(Montmorillonite swells in water)

FLUORIDE ETCH TEST

Cryolite
Fluorite
Bastnaesite
Synchysite

Add 1 drop conc H_2SO_4 to small chip on CLEAN dry glass slide. Let stand overnite, wash & dry slide, examine for pits or etching, using binocular mike .

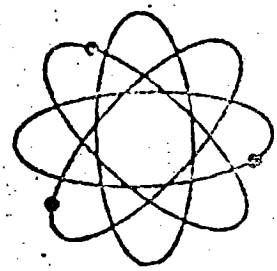
FLUORESCENT MINERALS

Dresserite/Hydrodresserite spheres (white)
Strontianite (acicular habit only) (white)
Strontiodresserite (?)
Unknown No. 3 (white)
Weloganite (variable - See APS Paper 79-1A)
(Some calcite fl. pink/red)

Submitted by Janet W. Cares

#49

THE NEW JERSEY 7th ANNUAL GEM & MINERAL SHOW



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SPEAKER SCHEDULE

SATURDAY

DR. BEVAN M. FRENCH, N.A.S.A., Washington, D.C.
"A ROCKHOUND'S GUIDE TO THE SOLAR SYSTEM"

1:00 pm

"Meet the Author" of THE MOON BOOK at Autograph Session

3:00 pm

MISS IRENE MAGYAR, SMITHSONIAN INSTITUTION, Washington
"THE NATURALIST'S CENTER OF THE NATIONAL MUSEUM OF NATURAL HISTORY"

8:00 pm

MR. PAUL SEEL, Bala Cynwyd, Pennsylvania
P.P. Eastern & American Federations of Min. & Lap. Soc.
"MY FAVORITE MINERAL SITES"

BANQUET

COACHMAN INN, CRANFORD, N.J.

SUNDAY

11:00 AM

MR. JOHN MURPHY of CYBIS STUDIOS, Trenton, N. J.
"PORCELAIN ART by CYBIS"

1:00 pm

MR. THOMAS PETERS - Director, Paterson Museum
Associate, American Museum of Natural History
"RARE AND UNUSUAL SPECIMENS FROM NEW JERSEY"

2:30 pm

DR. GEORGE E. HARLOW
Assistant Curator of Mineral Sciences,
American Museum of Natural History, New York City
"GOLD!"

Meet the Authors of Simon & Schuster's GUIDE TO ROCKS & MINERALS
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