MICROMOUNTERS OF NEW ENGLAND
NEWSLETTER

The MMNE was organized on November 8, 1966 for the purpose of promoting the study of minerals that require a microscope

No. 249 October, 2003

Next Meeting

Saturday, October 18
Home of Vera Fogg
Dumbarton, NH
9:00am to 3:00pm

Map and directions are on the back page

For information regarding **MEETING CANCELLATION** due to inclement weather, contact President Jim Cahoon at (978) 897-8221 or cahooncj@aol.com

MARCELLE WEBER

A Memorial Service for Marcelle Weber will be held on Saturday, October 11th, at 2 PM at the First Congregational Church, 122 Broad Street, at the head of the town green in Guilford, CT. Time will be included in the service for remarks from any of the attendees. Following the services there will be a time of gathering and fellowship at the church.

MMNE's Gene Bearrs was recently inducted into the Micromounters Hall of Fame at the September 2003 Desaultels Micromount Symposium. He is shown here receiving his plaque from Quintin Wight.

MEMBERSHIP RENEWAL NOTICE

Enclosed is a membership renewal form. Dues are $10 for individuals and $15 for families. Members who have not renewed prior to the publication date for the February issue will not receive further issues of the Newsletter. There is a membership date on each mailing address.

The ***Newsletter*** is the official publication of the Micromounters of New England (MMNE). The last by-laws revision was April 19, 2003. The MMNE is a member of the Eastern Federation of Mineralogical and Lapidary Societies (EFMLS) (<http://www.amfed.org/efmls>) and the American Federation of Mineralogical Societies (AFMS) (http://www.amfed.org). Material from the *Newsletter* may be copied in other rock and mineral publications if credit is given to the author and the *Newsletter* and permission has been obtained from the author. If there are questions regarding copying contact the editor. The club address is c/o the Secretary. Meetings are held monthly, September through May, except for December, and usually on an informal basis in July and August. Sites rotate and will be posted in the *Newsletter* as far in advance as possible. Visitors are welcome to attend all meetings. Bring a microscope and light source if you have one.

DUES are $10/year for a single person and $15/year for a family membership, levied on a calendar basis. The family membership includes two adults and all children under 18 living at the same address. One copy of the *Newsletter* will be sent on a family membership.

CALENDAR OF UPCOMING EVENTS: SHOWS

October 2003

11-12 - 40th Annual Gem & Mineral Festival. Capitol Mineral Club. Sunapee State Park, Rte 103, Newbury, NH. Sat. 9-5, Sun. 10-4. Show info: John McCrory (603) 796-2152.

17-19 - EFMLS Annual Convention/34th Annual Show Mid-Hudson Valley Gem & Mineral Society. Mid-Hudson Civic Center, 14 Civic Center Plaza, Poughkeepsie, NY

25-26 - 32nd Annual Gem, Mineral & Fossil Show. Community College of RI, Knight Campus, Rte 113, East Ave., Warwick, RI. 10-6 Saturday, 10-5 Sunday. Info: Tom O'Brien, (401)-682-2480, e-mail tom@rimh.org or www.rimh.org.

December 2003

6-7 - Bristol Gem & Mineral Club 31st Annual Show, Beals Senior Center, 240 Stafford Avenue, Bristol CT.

MICROMINERAL RELATED CONFERENCES AND SYMPOSIUMS

October 2003

17-19 - 4th Mont St. Hilaire Mineral Exhibition and Symposium. Friday pm mineral ID and exchange. Collecting Saturday and Sunday. Saturday pm dinner and "What's been found at MSH in 2003." For info contact Gilles Haineault: (450)-584-2453 or collection haineault@sympatico.ca.

18 - (Saturday) - **MMNE meeting**, Vera Fogg's home, Dumbarton, NH. 9:00am to 3:00pm. POT LUCK LUNCH. Bring tables, chairs, power cords, etc.

18-19 (Saturday/Sunday) - **MSH** collecting trip and mini-symposium (see note in *Newsletter*)

November 2003

7-9 - **Cleveland Micromineral Symposium**. Cleveland Museum of Natural History, 1 Wade Oval, Cleveland, OH Contact: Dick Green. 1745 13th Street, Cuyahoga Falls, OH 44223. (330) 929-2395. jgreen2@neo.rr.com

22 - (Saturday) - **MMNE meeting**, Chelmsford, MA. Chelmsford Public Library. 9:00am - 3:30pm. McCarthy Meeting Room. Up front stairs.

December 2003

MMNE - No meeting.

April 2004

2-4 - 32nd Annual Atlantic Micromounters Conference. Tyson's Westpark Hotel, McLean, VA. Info & Registration: Steve Weinberger, cweinber@bcpl.net.

July 2004

7-12 - EFMLS/AFMS Convention & Show. Gem & Mineral Society of Syracuse. State Fairgrounds. Syracuse, NY.

MASCOT MUSINGS

By Bob Janules

In Gorham, New Hampshire there is an old lead mine named the Mascot Mine that recently has gotten a lot of attention from micromounters. In addition to lead mineralization in the form of galena; copper, zinc, and iron minerals are present and abundant as primary phases (chalcopyrite, sphalerite, and pyrite). When these metal sulfides oxidize from weathering, an impressive suite of secondary minerals can form. This is the case here.

The Mascot mine satisfies three criteria for making it an important locality for micromounters. First, a large number of minerals can be found there in attractive microcrystals. Secondly, they often present challenges in identification. (If identification were easy, we would never learn much about minerals.) And finally, the Mascot suite of minerals raises interesting questions about how minerals form.

Included among the mineral species identified from the Mascot mine are uncommon to rare minerals such as schulenbergite, posnjakite, serpierite and also the possibility of claraite and lanarkite. With this assemblage the locality takes on a European flavor. These minerals are rare in the United States but occur at several localities in Europe, a number of these being slag localities. The best example is at Laurium, Greece where ancient miners threw processed ore slags into the ocean. When these boulders wash up on the beaches they often feature microcrystals of exotic secondary minerals. Mineralogists have long disagreed as to whether these can actually be called minerals. In the definition of a mineral is the phrase “naturally occurring”. There is nothing natural about processing metal ores and throwing them into the ocean, a foreign environment. The hand of man clearly is involved. At the Mascot mine the situation may not be that extreme; however, much of the mineralization is post-mining in origin, occurring on the surface of dump rocks that were placed in a pile by man and allowed to weather. There is also the question of whether the pond contributed to mineral formation. The most productive dump at the locality is at the edge of Mascot Pond. Perhaps it was at that spot that the miners cobbed the ore. At its deepest spot the dump is more than five feet deep. Water is hit at the bottom, yet, the dump rocks are wet by capillary attraction two to three feet above this. Maybe constant moisture helped solutions supersaturate with metal ions for at this deepest part of the dump, solution driven surface mineralization is widespread.

As a contributor to Van King’s upcoming book “The Mineralogy of New Hampshire” I will at some point in time have to wrestle with the post- mining question. In the introduction to Van’s “The Mineralogy of Maine” it is clear that he doesn’t feel that minerals formed on the dumps reflect the geological and chemical processes of the state and are not suitable for inclusion in the book. For example, if the mined Mascot material were moved to the edge of a pond in Vermont, we would be talking about schulenbergite from Vermont. In the case of the Mascot minerals some may have formed both in place within the ore vein and also as a post-mining druse. It will be difficult to sort this out.

A bizarre twist occurred regarding the mineral acanthite, a silver sulfide that forms as flat bristles upon wire silver on some Mascot specimens. Scott Whittemore approached me one day and he said “I think my acanthites are growing.” He looked in all directions before stating this to make sure no one else heard such crazy talk. Later I checked my own acanthite specimen and found the crystals to be about three times larger than before. I also found acanthites starting to grow on silver wires that previously showed no acanthite. Post mining is one thing, but post-collecting mineralization brings this thorny problem to a level of absurdity.

THE MASCOT MINERALS

There are two types of rock in the Mascot dumps that are productive for the finding of secondary minerals. The first rock type is a mix of massive sulfide ore minerals cemented together by quartz, the second is siderite. Siderite is abundant upon the Mascot dumps and some of it features cavities lined with siderite rhombs. Within these cavities other minerals can be found. It is this author’s opinion that the minerals within the siderite vugs are not post-mining in origin. The Mascot mineral identified to date are :

Acanthite – Ag_2S -Acanthite forms splendent black flat bladed crystals that resemble feathers or leaves. This mineral forms exclusively on or near wire silver within the siderite vugs.

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THE MASCOT MINERALS (*continued from previous page*)

Anglesite – PbSO4 - Anglesite at the Mascot typically occurs as lustrous colorless short or elongated prismatic crystals with a rhombic cross-section. Equant anglesite crystals of complex crystal morphology have been found less frequently. Typically, anglesite is found within rusty patches in the mixed sulfide assemblage. It also has been observed within the siderite vugs growing upon chalcopyrite crystals. Mascot anglesite crystals are usually quite small, less than .5mm in length.

Aragonite (?) – CaCO3 - Chalky-white tapering prismatic crystals to .5cm growing in jack-straw fashion upon the surface of dump rocks are believed to be aragonite. These effervesce strongly in acid confirming the mineral is a carbonate.

Arsenopyrite – FeAsS - Arsenopyrite crystals are rare at the Mascot. They have been found as diamond-shaped striated crystals to 1mm within the mixed sulfides. It is possible that massive arsenopyrite occurs more commonly, as it may be difficult to distinguish it from massive pyrite.

Aurichalcite (?) – (Zn,Cu)5(CO3)2(OH)6 - An acicular mineral that forms as tufts of needles and as fibrous mats is believed to be aurichalcite. An SEM EDS trace does show copper with some zinc. The color of the mineral is a robin's egg blue to a pastel blue-green or green. It is uncommon at the Mascot.

Brochantite – CuSO4(OH)6 - Brochantite is moderately abundant, usually as a druse of minute crystals often associated with chalcopyrite- bearing ore. Larger crystals (still less than .5mm in size) are blocky pseudo-orthorhombic in habit with a rectangular or diamond-shaped cross section. Brochantite is a dark emerald green color and is usually gemmy.

Cerussite – PbCO3 - Cerussite displays a number of habits at the Mascot. Opaque white thin prismatic crystals are sometimes found, usually associated with malachite. Cerussite can also be in the form of very thin tabular plates. Bladed cerussite is perhaps the most common habit at this locality especially within the siderite vugs where it often is found associated with chalcopyrite. The cerussite is white to yellow in color usually with a characteristic oily luster. Twinning is common. Very clear lustrous prismatic cerussite is sometimes noted within the siderite matrix. These crystals ,at quick glance, can resemble quartz crystals. Mascot cerussite crystals are usually less than 1mm in size.

Chalcopyrite – CuFeS2 - Primary chalcopyrite is common and is usually associated with other sulfides in massive form. Within the siderite vugs , however, sharp sphenoidal crystals of secondary chalcopyrite to .5cm are commonly found. These crystals are sometimes a clean brassy color, but usually they are tarnished or coated. Associated minerals include silver, cerussite and rarely anglesite. This author is not aware of a better locality in New Hampshire to find chalcopyrite crystals.

Chamosite / Ortho-chamosite- (Fe,Mg,Al)6(Si,Al)4O10(OH,O)8 - SEM EDS analysis of a mineral that forms olive-green botryoidal crystals shows it is an iron-rich member of the chlorite group of minerals. The individual botryoidal crystals are under .5mm across, but they sometimes form into dense mats that line seams in fine-grained siderite.

Cuprite – Cu3O - Cuprite crystals usually are found within rusty patches of the mixed sulfide assemblage. The cuprite is a deep ruby red in color with the most common crystal habit being the octahedron. The crystals are usually very tiny, perhaps .1mm in size. A few larger ones have been found, but even these are smaller than .5mm. Chalcopyrite is the most common associated mineral. Cuprite has not been found to date within the siderite cavities.

Galena – PbS - Galena is common as embedded crystals, veins and stringers. Free growing crystals are rare at this locality.

Goethite – a-FeO(OH) - Goethite is a common alteration product formed by the weathering of the Mascot vein material. It is found as earthy or velvety brown patches in pieces rich with primary sulfides. Goethite has also been noted as shiny black or ochre-yellow crusts with a smooth outer surface.

Gypsum- CaSO4.2H2O - Colorless gypsum crystals to 2mm were found on one occasion growing on a dump boulder. The gypsum crystals were clearly post-mining in origin.

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Hydrozincite (?) – Zn5(CO3)2(OH)6 - A mineral that forms as a white chalky crust is believed to be hydrozincite largely because it is fluorescent. It hasn't been otherwise tested.

Linarite- CuPbSO4(OH)2 - Gorgeous microcrystals of linarite have been found at the Mascot where it forms as distinct tabular crystals, either as individuals or as groups of subparallel plates resembling an open book. Stout crystals are a deep azure blue, while extremely thin blades are a pale blue. The crystals are transparent, but become an opaque blue-gray when weathered. Although crystals average only .5mm across, their sharpness and vivid color make them one of the most sought after Mascot mineral species. Linarite is relatively common, occurring on the surface of dump material and also within the sulfide and quartz matrix. It has not been found in the siderite vugs.

Malachite – Cu2CO3(OH)2 - Malachite is common as green botryoidal crystals and crusts that have an earthy surface appearance. Acicular malachite has not been identified from this locality.

Metazeunerite –Cu(UO2)2(AsO4)2.8H2O Metazeunerite is known from a single find where it forms tiny clusters of yellow-green tetragonal plates on sphalerite. It is, thus far, the only secondary mineral at this locality containing arsenic. The source of uranium likely came from the granite country rock that hosted the Mascot vein.

Posnjakite – Cu4SO4(OH)6.H2O - Posnjakite crystals at the Mascot are a distinct aqua blue, a different shade of blue than linarite. The crystals (about 1mm. or smaller) tend to be rounded without sharp crystal angles. Often they appear as stubby pseudo-hexagonal barrels. Rarely elongated crystals are encountered. Posnjakite is moderately common and is often associated with schulenbergite. The "barrel-shaped" crystals were confirmed to be posnjakite by x-ray analysis. It is possible that Mascot specimens with crystals of the same distinct color as the posnjakite but that display a different habit than the pseudo-hexagonal barrels may, in fact, be other species. Other copper sulfates like langite and wroewolfeite are possible here, but they have not been confirmed.

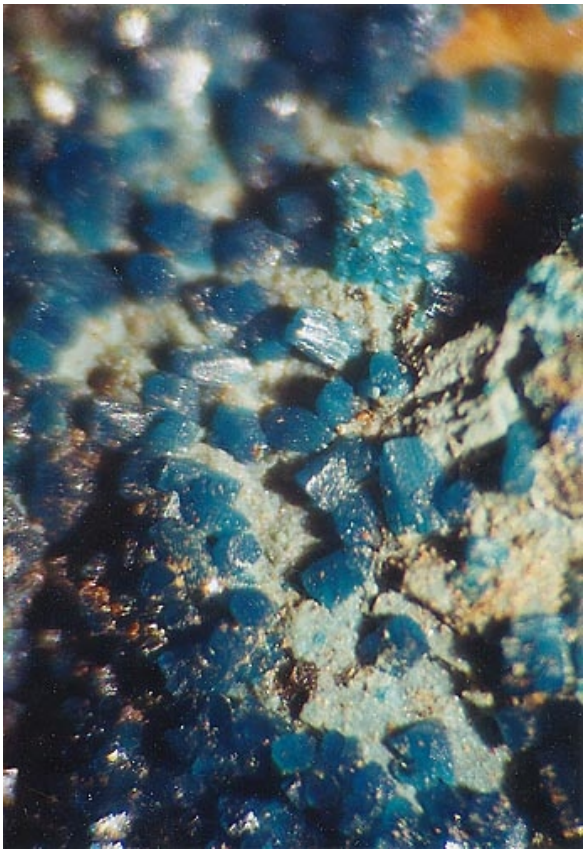
Pyrite – FeS2 - Pyrite is common in the mixed sulfide assemblage in massive form and also as inter-grown cubic crystals. It also is found within seams of a very fine- grained siderite matrix. Here other crystal forms are noted besides the cube including octahedrons, pyritohedrons, and elongated crystals.

Quartz- SiO2 - Quartz is common in massive form. Some plates of crystals have been found, but usually the crystals (to 3cm) are rather dull in luster. In contrast, clear and lustrous microcrystals of quartz are commonly found within the siderite vugs.

Rosasite (?) – (Cu,Zn)2CO3(OH)2 - A mineral that forms as blue to blue-green botryoidal crystals with a very smooth outer surface was thought to be smithsonite. Analysis showed it to be a carbonate of both copper and zinc. Because of its crystal shape rosasite is the most likely mineral that this could be. It is uncommon at this locality. Rounded smooth spheroids of a deep green color may be this mineral as well.

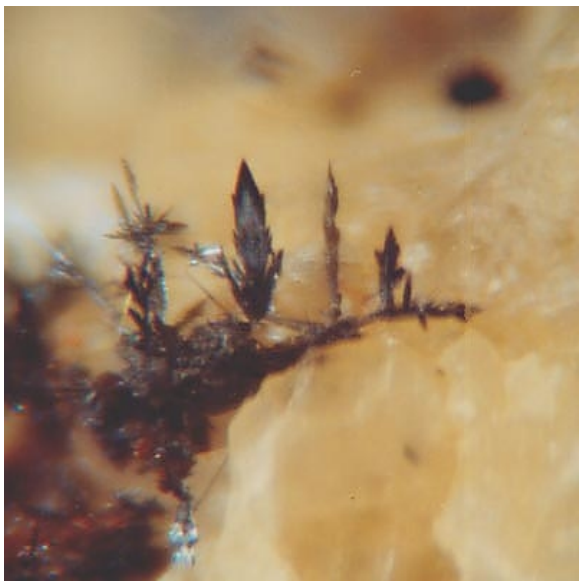
(Note: A version of this article was previously published in the newsletter of the Nashua Mineral Society.)

(*To be concluded in the next issue of the Newsletter)*



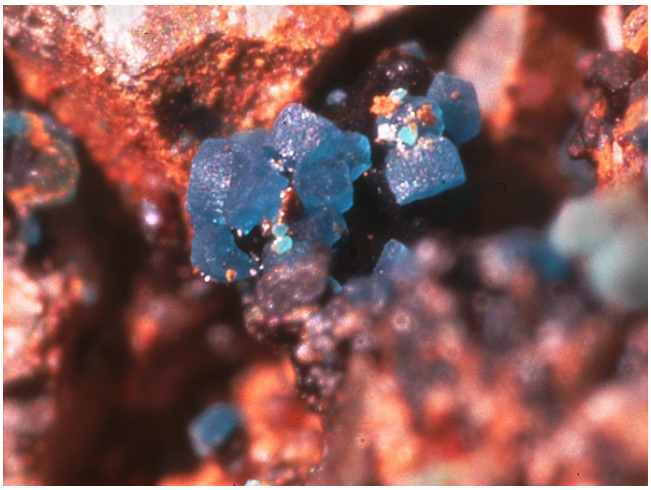
MASCOT MINE MINERALS

Top left: Chalcopyrite
Top right: Linarite
Bottom left: Posnjakite
Bottom right: Acanthite
Photos by Bob Janules



MASCOT MINE MINERALS

Top left: Cerussite
Top right: Anglesite
Bottom left: Posnjakite
Bottom right: Smithsonite
Photos by Scott Whittemore



MMNE MEETING NOTES, September 13, 2003

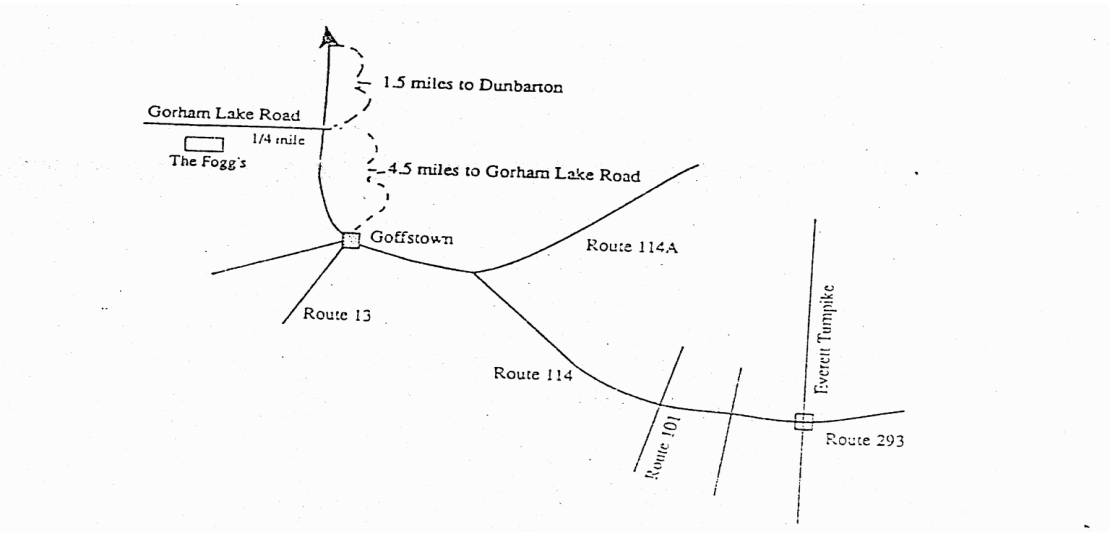
Nine members were present at the September 13th meeting. Business was conducted by VP Bob Janules. The membership discussed and voted on several issues:

1) The club should continue to make donations to the Rocks and Minerals color fund in the name of deceased members as they have done in the past. Any contributions to the Canadian Museum of Nature in the name of Marcelle Weber should be done by individuals. We also need to determine the status of contributions in the names of deceased members over the past few years.

2) Several members have volunteered articles for the *Newsletter*, and the general feeling is to continue publication frequency the way it has been.

3) The Stewart's are no longer going to be able to bring the coffee pot to every meeting. We need a volunteer to pick up this activity, or else we need to find a regular meeting site where we can store items like the coffee pot in a secure location.

4) Refreshments for meetings (other than coffee) are on a pot luck basis. Please consider bringing some food to share at each meeting.



Fogg Home, Dunbarton, NH. Saturday October 18, 2003
9am - 3pm. Pot luck lunch. Bring microscopes, cords, and tables.
Note: Rte 13 goes through Goffstown and heads to Dunbarton. Gorham Lake Road goes off Rte 13.

Michael W. Swanson, Editor
Micromounters of New England *Newsletter*
646 Greenfield Road
Leyden, MA 01301-9400

MicroMounters of New England
Membership Renewal Form

2004 Dues

Individual Membership **$10.00**

Family Membership **$15.00**
(All Family members have to reside at the same address and only one copy of the newsletter)

Please make checks out to MMNE and mail them to the Membership Chairperson:

Brian Porter
355 Walsh Ave
Newington, CT 06111-3542

Name(s): _____

_____

Street Address: _____

_____

City: _____

State: _____ **Zip Code:** _____

Phone Number: _____

E-Mail: _____