MICROMOUNTERS OF NEW ENGLAND NEWSLETTER

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Dues are $7.00/year and due on January 1st, payable to the treasurer.

News items for the *Newsletter* are welcome and should be submitted to the Editor.
The *Newsletter* may quoted if credit is given.
The Club address is c/o Editor

Upcoming Meetings
March 7, Westford, MA Public Library. Doors open at 10 AM.

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

Next meeting

Due to inclement weather, November's program at the Burlington, MA Public Library was cancelled at the last minute. Dana Krueger had been scheduled to speak on the Manhan River/Loudville lead mines. This program is now scheduled for the February 7, 1998 meeting at the, Auburn, MA Public Library. Doors open at 9 AM.

DUES ARE DUE!

The MMNE annual membership dues are due by January 1, 1998 and should be sent to our secretary, Janet Cares (see address to left). As you may remember from the last newsletter, dues have been raised from $6 to $7 per year. Please use the enclosed application/renewal form when submitting payment. If you have a FAX number or email address, please include this as well. The 'special interests' section will be included in the membership list to be published at a later date, and may encourage exchanges or trades between members.

May Symposium - sources of sales material

Although it may seem premature to initiate the discussion, perhaps it's time to think about the giveaway and sales tables at the May Symposium. With the handful of symposiums I've attended, I've acquired a large number of interesting and beautiful specimens. However, the wealth of material we all enjoy comes only though the hard work, generosity (and perhaps the deep pockets) of MMNE members. I'd like to get some feedback on how we can maintain the quality and quantity of sales material.

First, might I encourage members to clean house? Over the winter, I plan to attack at least part of a large backlog of material sitting in the basement and garage. I have 5-gallon buckets and milk crates of stuff collected over the last 7 years or so from Mont-Saint Hilaire; Loudville; the Palermo and Charles Davis mines; the Route 5 roadcut in Putney, VT; Francon; Obsidian Cliffs, OR; Belvedere Mtn., VT; Iron Mtn, Glen, NH; Silliman Quarry, CT... the list goes on. After all, how many Oregon osumilites does a guy need? Besides, it'll make room for more.

You may also have mounted duplicates. Consider donating even just one - every MMNE member doing so would result in 70 or so sales items.

Another source of sales material are the numerous dealers that advertise in the journals and on the Internet. I have had dealings with some of them - prices and quality vary widely, as with everything else. We might consider using club money to buy one or two lots of specimens. As dealer specimens rarely come mounted, we would need willing volunteers for the carpentry and labeling tasks.

Perhaps a sister club would be willing to trade a lot of specimens from their area. This would involve a bit of work on our part to assemble a suitable number of good-quality specimens. We should start making contacts soon if this appeals...

Part of this discussion hinges on what members would like to see on the sales table. New England and Mont-Saint Hilaire specimens seem to predominate, as these are places we personally collect most often. Perhaps some members are interested in European or western US specimens - I happen to like arsenates, which aren't readily collectable in the Northeast. As an example, this may suggest the purchase of a small lot of arsenates from, say, Gold Hill or Majuba Hill (assuming, of course, that a sufficient number of others share this interest!).

Limitations of identifying zeolites: Why no one will tell you exactly which is which.
(Donald G. Howard, from Micro News & Views, quarterly newsletter of the South African Micromount Society, Oct., 1997: with acknowledgements to "Microprobe", Spring, 1997)

The fuzzy little white crystals in the basalts can be very confusing. Some come in very characteristically shaped crystals and we can say with a cursory look that a mineral is probably present. Some come is such a variety of forms that it takes years of experience to recognize them all. For those that are seldom encountered, we take them to one of the experts for identification. And sometimes we get an immediate answer and are satisfied. Sometimes we do not. What goes into the identification of the more difficult ones? Chemical tests are seldom of much value, since all zeolites are made of more or less the same elements – aluminum, silicon, and some combination of alkali and alkali earth elements. Very careful qualitative tests are necessary to detect differences, and these types of tests are expensive and time-consuming. The most practical tests usually are one of two types: structural determination by x-ray diffraction and optical tests in a polarizing microscope. But these two types of tests are always sufficient to differentiate between certain established mineral names that we encounter while collecting the zeolite family. The purpose of this note is to describe these related minerals, and explain what is involved in separating them.

Natrolite family
X-ray diffraction is incapable of easily seeing differences between natrolite, mesolite and scolecite. All three of these minerals have the same basic lattice structure. They differ chemically in possessing entirely sodium (natrolite), calcium (scolecite), or a 50/50 mixture of the two elements (mesolite). Fortunately, when calcium substitutes for sodium in this lattice, a small distortion occurs in the structure. Altough this is too small to see easily as a shift in the position of the x-ray diffraction peaks, it causes enough change to the optical properties to clearly differentiate the three minerals. This group is therefore always studied optically in polarized light.

A number of disordered members of this group have been named. These include gonnardite, tetranatrolite and paranatrolite. The x-ray patterns for these disordered forms do not differ enough from the ordered minerals to be distinguished except under very special circumstances. Mainly, the peak intensities and widths differ somewhat, and these changes are generally masked by sample preparation, especially when less than ideal samples are under study. Gonnardite and tetranatrolite differ mainly in sodium-calcium ratio (which unlike the ordered minerals can be of any value). They can sometimes be differentiated optically, but the refractive indices overlap and identification is not certain. Paranatrolite is a water-rich variety that can be distinguished optically only when fresh (before it has dehydrated); otherwise it is identical to the other disordered species.

Erionite-offretite
Erionite and offretite are two minerals closely related to levyne, and are often found growing on levyne blades, although they do occur as separate crystals and crystal clusters. They are often intergrown with each other. Their physical appearance is in general the same. Offretite is the calcium-rich member and erionite tends to be more potassium-rich. The unit cell for erionite is twice as large as for offretite, and it therefore has more x-ray reflection angles. However, these additional reflections are rather weak, and may be obtained only with a very good sample. If the minerals are at all intergrown, the resulting pattern will resemble erionite. Therefore, separating then using x-ray diffraction is not reliable. In general, erionite has lower refractive indices than offretite, and the two minerals can be separated optically. However, the ranges overlap slightly, so in some cases even this means is not reliable.

Overgrowths on levyne seldom make good samples for structural studies. At localities in the USA, the overgrowth has generally been identified as offretite, while in some European localities it is generally called erionite. In actuality, what is present is probably an intergrowth of both minerals.

Merlinoite-phillipsite
Recent work on the zeolites associated with the montesommaite from Mt. Vesuvius in Italy has indicated that merlinoite has been present. Now clear twinned crystals are available in addition to the earlier merlinoite that was primarily in the form of finely crystalline crusts. In fact, the morphology of the two minerals is identical, so that visual differentation is impossible. X-ray diffraction is not much help. The two minerals differ only in a shift of part of the unit cell with respect to the rest. As a result, the two minerals can (and often do) intergrow. The pattern of x-ray peaks are nearly identical in positions. The pattern for merlinoite has recently been worked out, and the documentation on pure material is good. The documentation on phillipsite is older, dating before the advent of merlinoite as a separate species, and is therefore possibly contaminated by intergrowths. Better x-ray data for pure phillipsite would be needed berfore any hope of separating them by qualitative x-ray diffraction. The chemical composition of both minerals is very nearly the same as well. Differentiating these two minerals is a difficult job that requires the best of technical equipment. It is well beyond the ability of most technical people, let alone even advanced collectors.

Gismondine and its disordered relative garronite, possess related x-ray patterns, but they have considerably fewer reflections, so they can be easily separated from phillipsite/merlinoite and from each other. Gobbinsite is the sodium-rich equivalent of garronite (which is calcium-rich) and has an identical x-ray pattern. The sodium tends to lower the refractive index below that of garronite, and can therefore probably be differentiated.

Chabazite group

Chabazite is one of those minerals that can form in a variety of forms due to its often complex twinning. The x-ray pattern for chabazite, herschelite, and willhendersonite are identical (with the exception that herschelite often shows some intergrowth of gmelinite). The chemistry and optical properties also range over the same values. Willhendersonite is supposed to be an ordered chabazite. Herschelite generally is a name reserved for a bladed form that resembles levyne but has a chabazite-like x-ray pattern. Because there seems to be no way to define these three minerals uniquely, they are lumped together in *Zeolites of the World* under the heading of chabazite.

Analcime

Analcime, in disordered from, is a cubic mineral. Ordered forms can be tetragonal, orthorhombic, monoclinic, or triclinic depending on the nature of the ordering. The distortions are too small to be picked up in normal x-ray diffraction. Fortunately, separate names have not been assigned to the various ordered forms in this case. Wairakite and pollucite have the same structure as analcime and are therefore not identifiable by x-rays. The refractive indices are somewhat different, but tend to border on each other, so optical differentiation is difficult. Here, chemistry forms the basis for differentiation. Analcime is a sodium zeolite. Wairakite is calcium-rich, so the presence of large concentrations of calcium (identifiable by x-ray fluorescence spectroscopy in an electron microscope study) serves to identify it. Pollucite is lithium-rich and must be verified by other chemical tests, since lithium cannot be detected by x-ray fluorescence. Both wairakite and pollucite are quite rare compared to the relatively common zeolite analcime.

In each of these cases, a new find of one of these groups are impossible to differentiate by the field collector. Unless independent work has been done to identify which mineral is present, they should be classified as: natrolite group; erionite/offretite; phillipsite; chabazite; analcime.

Well, enough... I will volunteer to act as clearing house for any and all suggestions, so get on the phone, sharpen that pencil, log into the Internet, but get in touch!!!

A curious phenomenon...

I've been organizing and adding to my collection lately and, as always, enjoy looking at past acquisitions. Since I've been working on Palermo and other phosphates, a number of these minerals passed under the 'scope – vivianite, whitmoreite, jahnsite, etc. On a number of pieces, I have noticed the occurrence of very fine threads or fibers on certain areas of the specimen. The fibers are much thinner than a human hair and appear to be white or colorless. They also seem to radiate from discrete spots – the fibers don't appear to just be draped across the specimen like airfallen dust. I have a senegalite (aluminum phosphate) specimen that is almost completely covered with these fibers. Other than the usual dust, I don't remember the specimens being this dirty when I first acquired them. Do certain phosphates 'spoil' – that is, can biologic systems (fungi, bacteria, etc.) avail themselves of the phosphate as a nutrient and produce such fibers? Or can phosphate minerals break down inorganically and produce some sort of mineral fiber in the process? Sounds strange, but I don't think my eyes or memory are going yet. I'd be interested in similar observations or any insights.

A repair tip..

Have you ever had the frustration of trimming a specimen and having it fracture or split through the area of interest? Other specimens may display perfectly fine crystals ensconced on a matrix that crumbles at the slightest touch. It always seems a shame to toss them out. I've tried holding the pieces together with mineral putty or ample amounts of Duco cement, but I often end up with an unsightly mess or find that the separate fragments pull apart.

Better success comes with repairing or reassembling specimens using Super/Krazy glue. The minute nozzle on the little plastic vials allows exact placement, and just tipping the container puts enough glue in contact with the specimen to allow capillary action to draw the glue into the fracture; squeezing the container usually deposits too much. Fast action with a piece of paper towel or Q-tip soaks up the excess. Be careful not to get any on your fingers; I've inadvertently mounted a number of specimens on my left hand. With care, this technique will hold broken or crumbly pieces together with near-invisible results. Of course, you might want to put a note in the catalog or on the label indicating the specimen has been repaired. Now, anyone have any neat ways of mounting sand-sized grains invisibly? I have a vial of tiny chromite crystals hand-picked from Oregon beach sand...

From the literature...

Rocks and Minerals, vol. 72, no. 5 – Sept/Oct 1997:
Some articles in this issue may be of interest to micromounters. An article on Colorado gold (the second of two parts) by Ed Raines has some nice photographs of crystallized and wire gold, some of millimeter size. Descriptions of mines and mining districts are very complete with abundant historical and production notes. Characteristics of gold specimens from various mines are also provided. This article was of personal interest, as I recently acquired some tiny gold crystals from the Dixie Mine, Clear Creek Co., CO.

Two articles on the Flambeau mine, Ladysmith, Rusk Co., WI describe the history and reclamation of the mine, and the microminerals, respectively. A page of photographs in the latter article displays chalcocite, kolbeckite, tennantite, cuprite, galena and azurite, all in exquisite micro crystals. A number of other minerals occur in micro-sized crystals including arsenopyrite, copper, leocuphosphite, rutile and vivianite. As this mine has been closed as of March, 1997 and will be entirely reclaimed, such specimens will become increasingly difficult to acquire.

Finally, this issue also carries a description of graphite microcrystals from the Lime Crest quarry, Sparta, NJ. The crystals occur in the Franklin Marble and display a wide range of morphologies. See the Mineralogical Record, vol. 22:427-432, for similar graphite microcrystals from the Crestmore quarry, Riverside Co., CA.

Rocks and Minerals, vol. 72, no. 6 – Nov/Dec 1997:
This issue is devoted to the state of Missouri. The mines in this state have produced some sizeable specimens – calcite crystals nearly 1 meter long and galena crystal groups weighing over 2000 lbs! Micro secondary Pb minerals, marcasite, siegenite and polydymite have been reported from a number of mines. An article on geodes from the Warsaw Formation in northeastern Missouri (and neighboring Iowa and Illinois) describes filiform marcasite, goethite, jarosite, malachite, pyrite, and other minerals, many in microumount size.

Mineralogical Record, vol. 28, no. 6 – Nov/Dec 1997:
Aside from the abstracts of new mineral descriptions, this magazine has lately had little to offer the micromounter. I had a telephone conversation with Wendell Wilson, the editor, about 8 months ago and he indicated there seemed to be little interest in micromounting among the readership. Perhaps a polite letter ar two would turn things around...?

ENCYCLOPEDIA OF MINERAL NAMES

An attractive book was released this spring as a special publication of the Canadian Mineralogist Magazine. This Encyclopedia of Mineral Names was authored by William H. Blackburn, Dept. of Earth Sciences, the University of Windsor, Ontario, and William H. Dennen, Emeritus Professor of Geology at the Univ. of Kentucky, former Professor at M.I.T. and now living in Rockport, Ma. Drawings were done by Peter I. Russell. Earth Science Museum, Univ. of Waterloo.

Usually lists of minerals aren't considered light reading. Well, here is a book of mineral names in alphabetical order that I have read page by page. And fascinating reading it is, too.

On the back cover it describes the contents as giving an up-to-date listing of all I.M.A. approved mineral species and answers the questions:

What is the etymology of the name? Who discovered the mineral? Where is the discovery locality? What is the chemical formula, symmetry, space group, and relationship to other species?

The book affords much worthwhile information and some amusing facts. For instance the mineral ixiolite was named because the mineral is similar to tantalite, and in Greek mythology both Ixion and Tantalus were condemned to eternal damnation.

Magnetite was named by Pliny the Second "after Magnes, the Greek shepherd, reputed to be the discoverer of lodestone on Mount Ida by having the nails of his shoes (on a shepherd of that time!) and the iron ferrule of his staff cling to the rock."

And here is a tribute by a husband: marialite was named after Maria Rosa, wife of Gerhard Vom Rath a geology professor from the Univ. of Bonn in 1866. Later, in 1896, a mineral rathite was named for the Professor.

Johnwalkite, sadly, isn't named for medicinal refreshments after a long day of collecting, but instead it honors two men at the Smithsonian: Richard Johnson and Frank Walkup. Pete Dunn came up with that one, of course.

Rooseveltite was named by R. Herzenberg for Franklin Delano Roosevelt. If that got him any perks, the book doesn't say. Maybe not, it was named the year after Roosevelt died.

Chabazite comes from the Greek word for tune or melody, one of twenty stones named in the poem Peri Lithos which extolled the virtues of minerals in the early centuries A.D. The mineral was named in 1788.

And here is an interesting one: cordierite was named after Pierre Louis Antoine Cordier, 1777-1862. Cordier was the first to study minerals under the microscope in 1815.

Elpidite was named in 1894 from the Greek word hope, because the discoverer was looking forward to finding many more new minerals at Narsarsuk, Greenland. And so it turned out. (Narsarsukite was discovered in 1901 but not by the same mineralogist).

Eugenite was named for Eugen Stumpfl born in 1935, but under the entry stumpflite, it says he was born in 1931. I hope having a mineral named for you doesn't age you!

Under petedunnite (I love these both-name minerals) it gives a nice tribute to some of Pete Dunn's many accomplishments at the Smithsonian and in Franklin, New Jersey.

Other good friends of our Micromounters of New England listed are:

Foggite , of course, honors Forrest F. Fogg "a specialist in micromounts," which he certainly is. And we could add, a very generous friend to our club.

Whitmoreite named after our member Bob Whitmore who discovered the mineral in his famous Palermo Mine. Bob is the authority on the Groton pegmatites, and interested in all minerals and mining artifacts around the world.

Willhendersonite is named for a micromounter par excellence "who supplied the original material." Bill Henderson is one of the leading micromounters in the U.S.; He is well-known for his articles in <u>Mineralogical Record</u> over the years.

The late Gunnar Bjareby is another member that we are very proud of. Gunnar was a remarkable person; one of founders of this organization. He was posthumously elected to the Micromounters Hall of Fame. A life-long student of phosphates and other New England minerals; he amassed an enormous collection of mostly self-collected micros.

Disappointingly, the mineral caresite named for Janet and Steve Cares and the mineral charmarite named for Marcelle and Charlie Weber doesn't appear in the book. It hadn't been published in time. But those minerals do appear in the <u>Dana's New Mineralogy</u> just published in October.

<u>The Encyclopedia of Mineral Names</u> costs $40.00 from the Mineralogical Association of Canada, P.O. Box 78087, Meriline Postal Outlet, 1460 Merivale Road, Ottawa, Ontario, Canada, K2E1B1.

Pat Berry Barker