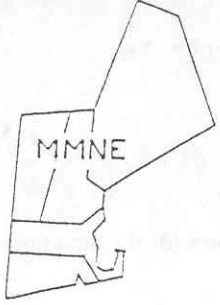

MICROMOUNTERS OF NEW ENGLAND NEWSLETTER

#204 February, 1998

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

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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
April 4, Northboro, MA Public Library. Doors open at 9:30 AM.

Next meeting

The next meeting of the MMNE will be held on March 7th at the Westford MA Public Library. Doors open at 10 AM. The featured speaker will be Bob Whitmore of Weare, NH, who will discuss the mineralogy of Fletcher Mountain, North Groton, NH. He may also discuss his current work at the Palermo #2 mine.

Phosphate minerals found in the literature as occurring at the Fletcher mine include:

❑ beraunite	monoclinic	$Fe^{2+}Fe^{3+}_5(PO_4)_4(OH)_5 \cdot 4H_2O$
❑ bermanite	monoclinic	$Mn^{2+}Mn^{3+}_2(PO_4)_2(OH)_2 \cdot 4H_2O$
❑ brazilianite	monoclinic	$NaAl_3(PO_4)_2(OH)_4$
❑ crandallite	trigonal	$CaAl_3(PO_4)_2(OH)_5 \cdot H_2O$
❑ hureaulite	monoclinic	$Mn^{2+}_5(PO_4)_2[PO_3(OH)]_2 \cdot 4H_2O$
❑ strengite	orthorhombic	$Fe^{3+}PO_4 \cdot 2H_2O$

(Min. Rec., 1973, v. 4, no. 3 – article by Paul Moore)

❑ frondellite	orthorhombic	$Mn^{2+}Fe^{3+}_4(PO_4)_3(OH)_5$
❑ herderite	monoclinic	$CaBe(PO_4)F$
❑ laueite	triclinic	$Mn^{2+}Fe^{3+}_2(PO_4)_2(OH)_2 \cdot 8H2O$
❑ leucophosphite	monoclinic	$KFe^{3+}_2(PO_4)(OH) \cdot 2H_2O$
❑ metastrengite		
❑ purpurite	orthorhombic	$Mn^{3+}PO_4$
❑ rockbridgeite	orthorhombic	$(Fe^{2+}, Mn^{2+})Fe^{3+}_4(PO_4)_3(OH)_5$
❑ strunzite	triclinic	$Mn^{2+}Fe^{3+}_2(PO_4)_2(OH)_2 \cdot 6H2O$
❑ tavorite	triclinic	$LiFe^{3+}(PO_4)(OH)$
❑ triphylite	orthorhombic	$LiFe^{2+}PO_4$
❑ vivianite	monoclinic	$Fe^{2+}_3(PO_4)_2 \cdot 8H2O$
❑ xanthoxenite	triclinic	$Ca_4Fe^{3+}_2(PO_4)_4(OH)_2 \cdot 3H2O$

(P. Morrill, 1960, New Hampshire Mines & Mineral Localities)

❑ hydroxylherderite	monoclinic	$CaBe(PO_4)(OH)$
❑ phosphosiderite	monoclinic	$Fe^{3+}PO_4 \cdot 2H_2O$
❑ stewartite	triclinic	$Mn^{2+}Fe^{3+}_2(PO_4)_2(OH)_2 \cdot 8H2O$

(Rocks & Minerals, 1990, v. 65., no. 4 – article by D. Dallaire & R. Whitmore)

Dues are still due!

If you haven't paid your 1998 dues yet, please do so today. Send payment of $7 to our treasurer, Janet Cares.

Next Meeting

The next meeting of the MMNE is on April 4th at the Nortboro, MA Public Library. This is the annual business meeting, which includes election of officers and discussion of the club's future direction.

Upcoming shows

Now that the new year is upon us, the mineral shows will begin. The following is a listing of area mineral shows for the next few months. If other events of interest are known of by members, please contact the editor!

35th Annual Earth Science Gem and Mineral Show
March 7-8, 1998, Sat 10-6, Sun 11-5. Sponsored by Delaware Mineralogical Society, Inc., at Brandywine Terrace, 3416 Philadelphia Pike, Claymont, DE. For information, contact Donna L. Brown, (610) 255-5356.

1998 Show Announcement
March 7-8, 1998, Sat 10-7, Sun 10-6. Hosted by New York Mineralogical Club and sponsored by Excalibur Mineral Co. at the Holiday Inn, 440 W. 57th St., New York, NY.

Mineral, Jewelry, and Gem Show
March 21-22, 1998, Sat 10-5, Sun 10-5. At the Sacred Heart University Gym, 5151 Park Ave., Fairfield, CT.

Gem, Mineral, and Fossil Show
March 21-22, 1998. Sponsored by the Buffalo Geological Society, Inc. at the Erie County Fairgrounds, Agricultural-Grange Building. For information, contact Dean R. Lagerwall, 4417 Chestnut Ridge Rd. #6, Amherst, NY 14228, phone (716) 691-9147.

12th Annual Gem and Mineral Show
March 28-29, 1998. Sponsored by the Connecticut Valley Mineral Club, at the Best Western Colonial Inn, Exit 45 off I-91, East Windor, CT. For information, contact Stu Benson, 17 Kibbe Dr., Somers, CT 06071, phone (860) 749-3807.

Annual Gem and Mineral Show
April 18-19, Sat 10-5, Sun 10-5. Sponsored by the Lapidary and Mineralogical Society of Central Connecticut, at Maloney High School, 121 Gravel St., Meriden, CT.

Southeastern MA Mineral Club Show
April 18-19. Sponsored by the Southeastern Massachusetts Mineral Club at South Shore Voc./Tech. High School, 476 Webster St. (Rte 123), Hanover, MA.

25th Rochester Mineralogical Symposium
April 23-26, 1998. Symposium speakers include Rainer Bode, Rock Currier, John Koivula, Fred Steinar Nordrum, Ole Petersen, Bill Pinch, Jeff Scovil, and Skip Simmons. For registration material, write Dr. Helen Chamberlain, PO Box 85, Manlius, NY 13104-0085, phone (315) 682-6023.

26th Annual Gem and Mineral Show
April 25-26, 1998. Sponsored by the Bristol Gem and Mineral Club at Douglas A. Beals Senior Center, 240 Stafford Ave., Bristol CT.

9th Annual Maine Mineral Symposium
May 15-17, 1998, at the Senator Inn, Augusta, ME. For information, contact Robert Hinkley, Rte. 115, Yarmouth Rd., Gray, ME 04039; or call (207) 657-3732.

Annual Gem and Mineral Show
June 13-14, 1998. Sponsored by the New Haven Mineral Club, Inc., at the Amity Regional Jr. High School, Sheffield St. and Ohman Ave., Orange, CT.

Relationship Between Crystal Size and Morphology

(Garry Glenn, in Micronews (bulletin of the Canadian Micro Mineral Assoc.), vol. 32, no., 1, February, 1998)

For a long time I have observed and been curious about a morphological trend that I have observed in galena specimens from a great many localities. The preponderance of very small (micro) galenas in the collection have octahedral or dominantly octahedral form, while most hand specimens are predominantly cubic in habit. I have felt there must be a relationship between size and form., but have never encountered any data on this phenomenon until recently. From the **Ontogeny of Minerals** by D. P. Grigor'ev (p. 59) I read the following:

> "During the evolution of form of minerals the following regularity is observed: as the morphology of the natural crystals changes, their forms usually appear in the order of decreasing minimum period of repetition (d/m) of the fine structure of their faces, ie: in the order of decreasing lattice densities."

With this bit of knowledge, I began investigating. If we examine the molecular drawing (fig. 1) of a galena crystal showing both cubic and octahedral faces we notice that with regard to the planes of sulfur atoms for example (we could as easily have used the lead atoms, but the sulfurs are larger), the octahedral face is essentially an array of hexagonally close-packed atoms as in fig. 2, while the cube face is a square array of sulfur atoms with a lead atom nested in the plane above or below the sulfurs (fig. 3).

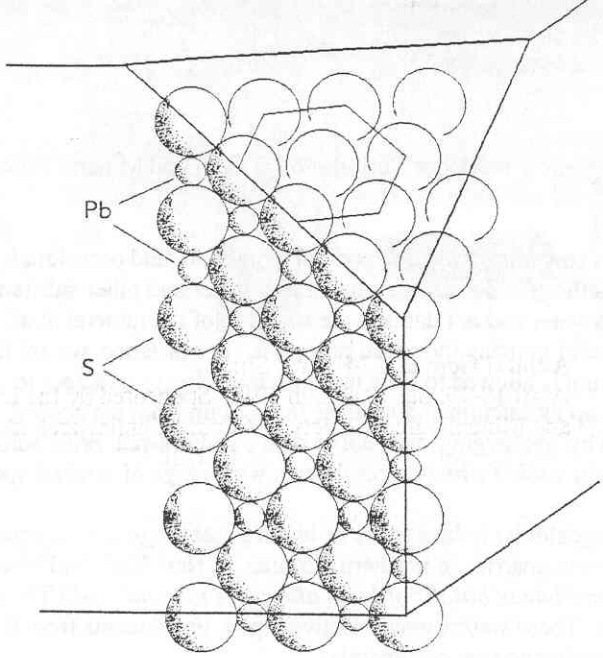

Fig. 1

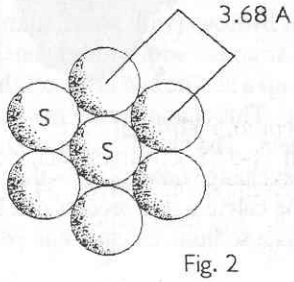

Fig. 2

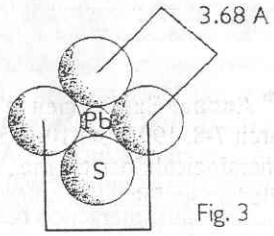

Fig. 3

From **Mineralogy** by Berry and Mason (p. 306) we see that the cell dimensions of galena are 5.936 A (fig. 3) and from the **Chemical Bond** by Linus Pauling (p. 151) that the ionic radius of sulfur is 1.84 A, so that the distance between adjacent sulfurs is 2 x 1.84 = 3.86 A (figs. 2 & 3) . It becomes obvious that the atomic density is greater by some amount on the octahedral face than on the cube face.

This, and the observations of size and morphology of galena crystals in my collection, in keeping with the aforementioned statement by Grigor'ev, would offer a reasonable explanation for the dominance of octahedral forms over the cube in the micro-size range of crystals that I have observed.

New minerals from Mont St.-Hilaire minerals

(from Mineral News, v. 14, no. 1)

Kukharenkoite-(Ce)

$Ba_2Ce(CO_3)_3F$, monoclinic, yellow, white, pinkish gray, transparent, vitreous to greasy, white streak, H=4.5, D=4.7, no cleavage, uneven fracture; prismatic bladed crystals to 1 mm, in dendritic or stellate groups 2-3 mm across, effervesces in HCl; in carbonatites and zeolite-carbonate rock in Khibina and Vuorijarvi alkaline massifs, Kola Penninsula, Russia; in a hornfels xenolith at Mont St.-Hilaire, Quebec, Canada, and in cavities in the related Saint-Amable nepheline syenite sill; name is for the late K. K. Kukharenko for his contributions to the geology of the Kola Penninsula.

reference

Zaitsev, A. N., et al, 1996, Kukharenkoite-(Ce), $Ba_2Ce(CO_3)_3F$, a new mineral from Kola Penninsula, Russia, and Quebec, Canada: *Eur. J. Mineral.*, 8:1327-1336.

Lukechangite-(Ce)

$Na_3Ce_2(CO_3)_4F$, hexagonal, colorless to pale beige, vitreous luster, white streak, H=4.5, D=4.02, 1 cleavage on {0001} perfect, even to conchoidal fracture, brittle; as tabular crystals 0.5 to 1 mm or short, prismatic crystals 0.5 to 1 mm across; from Mont St.-Hilaire, Quebec, Canada, with aegirine, albite, analcime, astrophyllite, catapleiite, eudialyte, fluorite, microcline, petersenite-(Ce), serandite, sodalite; name is for Luke L. Y. Chang, University of Maryland for his contribution to the study of carbonate group mineralogy.

reference

Grice, Joel D., and Chao, George Y., 1997, Lukechangite-(Ce), a new rare-earth fluorocarbonate mineral from Mont Saint-Hilaire, Quebec, *Am. Min.* 82:1255-1260.

Zeolites – Setting the Record Straight

(by Chuck Miller, from the Roanoke (VA) Valley Mineral & Gem Society newletter, July. 1996 via Gem and Mineral editors email list)

Zeolites are a large family of hydrous (with water) aluminosilicates containing calcium, sodium, potassium and occasionally barium. They possess a unique open structure with wide channelways (something like a sponge) that allows water and other substances to be stored inside. You can heat up a zeolite and drive off the stored-up water and not damage the structure of the mineral at all. In effect, it works like a reusable filter. This characteristic makes zeolites useful in many industrial processes. For instance, we are familiar with zeolites as water softeners. The "hard" water containing calcium is allowed to flow into the channelways of a zeolite containing sodium in its structure. An exchange takes place – the water gives up its calcium and receives the sodium from the zeolite. When the zeolite gets saturated with the calcium, the process can be reversed by 'recharging' the zeolite with a sodium-rich brine solution. In nature, this interaction between sodium, calcium and potassium in the zeolite structure results in a wide range of mineral species.

Zeolites most commonly occur in the cracks and voids (called amygdaloids) in lava flows or in other late-stage (low temperature) hydrothermal environments. As collectors, we've encountered them in quarries of northern Virginia, in New York and New Jersey and in the Upper Penninsula of Michigan (*the zeolites of the Deccan Plateau basalts of India also come to mind – ed.*) The minerals crystallize from silica-rich waters that move through the lave flows. These waters may selectively pick up elements from the lavas that will later be combined in the crystal structure of the zeolites or other accessory minerals.

The zeolite family is subdivided into groups based on chemistry and structure. You'll recognize some of the mineral names:

Natrolite group: includes natrolite, mesolite, scolecite, thomsonite, gonnardite and edingtonite. Natrolite, mesolite and scolecite are generally in radiating or fibrous clusters of white or clear crystals. The thomsonite I'm familiar with is usually a dense porcelaneous material with pink to buff colored bands. Hunt the beaches of Lake Superior!

Harmotome group: includes harmotome, phillipsite, gismondine and garronite.

Chabazite group: includes chabazite, gmelinite, levyne and erionite. Chabazite cane be white, yellowish, pink or rarely red. It occurs as rhombohedral crystals that appear almost cubic (like a squashed-over cube). The basalt 'traps' of New Jersey are a good location for this mineral.

Faujasite group: includes faujasite, some synthetic zeolites used for water softeners.

Mordenite group: includes mordenite and dachiardite.

Heulandite group: includes heulandite, stilbite, epistilbite, ferrerite, brewsterite. Heulandite and stilbite are the common species. Both may occur as red, white or pink. Stilbite may also be brown. Heulandite is typically in blocky crystals exhibiting a greasy or pearly luster. Stilbite occurs in very distinctive sheaves of crystals that 'pinch' in the middle, much like a bowtie. The stilbite from Poona, is spectacular (right, David?).

Laumontite and leonhardite, the partially dehydrated variety of laumontite have yet to finally placed in a group. Laumontite is beige or pink to white and occurs as stubby lathes or short pointed terminations.

As you can see, the list of zeolites is long. Did you notice, however, that minerals scuh as apophyllite, prehnite and analcime are not on the list? While these silicate minerals commonly occur in association with the zeolites, they are different structurally and chemically and thus don't fit in the zeolite family. Now that we've set the record straight, let's head for those lava rocks up in Manassas and see what we can find...

For sale:

Set of 48 refractive index liquids in sturdy wooden box (13 x 17 x 4.75 in). Range from 1.430 to 1.730, but no guarantee as to accuracy, as the liquids were last checked in 1971. All liquids in glass-stoppered bottles, 5 to 10 of which are empty or congealed. Sold as is. Make an offer to Janet Cares (address on masthead). Must arrange for pickup. Proceeds go to MMNE.

MICROMOUNTERS OF NEW ENGLAND

Minutes of Meeting January 10, 1998

The January meeting was held at the curatorial offices of the Harvard University Mineralogical Museum. It was the first meeting since October, as the November meeting was cancelled due to the storm on the previous day. Nearly twenty members attended.

The business meeting was held at 1:15 pm, conducted by Janet Cares, the only officer present. Members were reminded that the next meeting will be February 7 at the Auburn Public Library. Dana Krueger will present the program originally scheduled for November on the Manhan led mines.

The treasurer reported a balance of $3820.23 as of December 24, 1997. She omitted time-consuning details, but invited members to inspect the books at any time. Contrary to the published minutes of the October meeting, dues of $7.00 were set at the September meeting, and members rejected a proposal for family membership at that time.

Member Janet Cares asked for input on Shaft 10 of the Quabbin Reservoir including slides which she might borrow in preparation of a program on that locality.

Following the business meeting our host, museum curator Carl Francis, was introduced. He summarized Museum activities over the past year, in particular noting that plans are going forward to completely refurbish the New England Room.

Janet Cares, who is a volunteer at the Museum, then gave a history of the micromount collection which Steve Cares initiated over ten years ago. The contemporary collection now numbers over 6000 specimens arranged in alphabetical order. Some of particular interest such as Palermo and Franklin, New Jersey are separated from the main collection.A second collection called the Historic collection has been in existence for many years, and numbers about 3200 mounts prepared by such well-known early micromounters as Bement, Cahn, Fiss, Wills, and others. All fo the contemporary collection and about half of the Historic collection have been entered into a computer with the capability of separating by geographic location, donor, etc.

Janet Cares,

Secretary pro tem

cc: P. BARKER

J. SWARTS