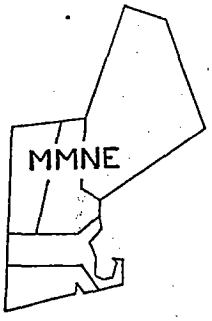


MICROMOUNTERS OF NEW ENGLAND

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

December 1995 Newsletter # 187

PRESIDENT
Ralph Carr
25 Farnum Road
Warwick, RI 02888
(401) 467-3823

VICE-PRESIDENT
Jim Clark
18 Central Street
Topsfield, MA 01983
(508) 887-5881

SECRETARY
Patricia Barker
PO Box 810
Compton, NH 03223
(603) 536-2401

TREASURER
Janet Cares
18 Singletary Lane
Sudbury, MA 01776-2402
(508) 443-9180

EDITOR
Mike Swanson
29 Chestnut Hill
Greenfield, MA 01301-3003
(413) 773-3867

Dues are $6.00/year and due on January 1st, payable to the treasurer.

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

Upcoming Meetings
Feb. 10, 1996 (Saturday)
Auburn, MA Public Library.
Snow date Feb. 17.

Mar. 16, 1996 (Saturday)
Hudson, MA Public Library

NEXT MEETING

The **JANUARY** meeting will be held at Boston University on Sunday, Jan. 14, 1996. John Stewart will speak on the minerals in the Boston University collection. A map is on the back of this page.

MEMBERSHIP NEWS

Lifetime member **John Reiner** passed away on Labor Day. He will be sadly missed by all of those who knew him. Pat Barker has written a Memorial.

Welcome back to returning member **Scott Whittemore**, 8 Goldfinch Lane, Nashua, NH 03062. Phone (603) 888-1174.

It's ***DUES TIME*** again, the same old $6.00. A slip is enclosed for you to fill out and return to Janet Cares. On the form is a place to list special interests (localities, species, special categories such as phosphates, microphotography etc. - we already know you are micromounters, so come up with something more specific) as well as want lists and available trading material. This information will be put on the membership list, and therefore will be sent to a few other micromount clubs with whom we swap newsletters. You might want to indicate whether you are interested in trading by mail, and if so, what you have to offer.

FROM THE EDITOR

Starting with this issue, there will be a serialized review of techniques for the cleaning of minerals as they apply specifically to micromounting. This review on "Cleaning Micromounts" started as a survey of the mineralogic literature looking for cleaning techniques which might be applicable to micromounting. Since no one source seemed to cover all the relevant techniques, I thought it might be worth a review of the subject in the Newsletter so that all of the members could benefit. Hopefully the readers of this review will send in their comments and additions so that we can make this a club project and produce a manual which all of us will find useful. This material has been culled from multiple references, the most helpful of which have been listed in the bibliography. Most of the techniques are mentioned in several sources, so specific references are not listed for the most part. The reactivity chart for Mont-Saint Hilaire minerals (which will be the last piece of the review) is designed to keep the micromounter from damaging a specimen and ***should not be used*** as a solubility guide for mineral identification.

Multiple techniques for cleaning minerals are described in the literature. Many of these are not appropriate for micromounters since micromounts are often not physically able to tolerate some of the mechanical cleaning measures used on larger specimens. Some of the chemical cleaning methods used on larger specimens may cause changes in crystal surfaces when viewed under the microscope. These techniques are not listed in this review. Remember that it is always wise to test a cleaning technique on a sample rather than lose the prize specimen.

This issue contains techniques for cleaning using mechanical methods: picks, air, brushes, etc. Subsequent articles will cover the use of water, acids, and other cleaning solutions.

Thanks to Janet Cares and Bill Henderson for their editorial assistance. The comments and additions of each and every member will also be appreciated. Write it up, even if it is an anecdotal experience. I need your input!

MONT ST-HILAIRE 1994 REVISITED AND ON TO 1995

Marcelle H. Weber, *Triassic Valley Bulletin* 10/95

Publish...and spend forever after hoping the corrections catch up with readers of the first report. Those who write non-fiction, especially on subjects undergoing constant study, are well aware that whatever is written may be obsolete before anyone else reads it. This happens because continuing research reveals additional information; or, the author made wrong decisions; or, there were misunderstandings or even misinformation.

Thus it was that the 1994 report on Mt. St-Hilaire contained some inaccuracies. The clear to opaque wedge-shaped crystals, reported to be epididymite, are gaidonnayite and do fluoresce green. These were collected in October, although they were found on other 1994 trips as well as in May and July 1995. In both the hornfels breccia and the albite "contact rock" there were clusters of crystal aggregates much resembling those identified in 1991 as phillipsite. However, these crystals are apparently gobbinsite. More, in larger clusters, were collected in August-October 1994 and May-July 1995. Some of the crystal groups collected in 1991 look more like phillipsite and probably are.

It can be reported that the eudidymite listed in the last report, collected in October, is eudidymite. Bill Henderson has checked the optical data.

Surprisingly, during the hottest spells in 1995, the collecting days were comfortable at the quarry, and dry. Even so, collecting areas in shade were welcome! It took a lot of searching to find very much to collect. For the first time visitor, the usual 30 or so species could still be found. May 27/28, rocks like those available in October 1994 were still there with donnayite-(Y) in good yellow crystals, brown bastnäsite, gmelinite, dolomite, brookite, molybdenite, and gaidonnayite. Also found were genthelvite in pegmatite, leifite, marcasite, and vesuvianite.

July 1, on the newer lower level, a few very fine hilairites were found in miarolytic cavities in the nepheline-seyenite, and numerous crystals of synchesite-(Ce) coated with pyrite were nearby in a crystalline albite rock. On the old "pond level," the albite "contact rock" was still available although most of the vugs were smaller. Gobbinsite, gmelinite and quartz crystals are among the minerals in these vugs.

July 29 was comfortable due to the breeze in the morning and a shaded collecting area in the afternoon. There was a lot of albite with vuggy areas containing zircon - some very clear; siderite; sphalerite; dawsonite--fibrous, curly, freestanding and embedded clear crystals; natrolite, clear, colorless, but soon altering to white on the surface (tetranatrolite?). There were also spherical aggregates of what appeared to be a platy mineral, stretching across vugs or lining them. Generally appearing as white to gray, they were also found in a pale pink. This material resembled nordstrandite. Later, under the microscope, it was discovered that some of these spheres appeared to be needles which were usually pale pink. Only one mineral came to mind--gibbsite which has not been found since we found one specimen in 1975 (to our knowledge). The current material is smaller, not as pink or glassy. Bill Henderson checked them chemically and optically to confirm the sight identification. Quintin Wight gave a specimen to Dr. Chao at Carleton University; it was nordstrandite. This matrix contains many white spherical aggregates of franconite needles. It has turned up so consistently that it can no longer be considered a rare mineral.

There was certainly a lot of hope that the selection would improve September 9, but it took a lot of looking. A few miarolytic cavities were reported to contain andradite and burbankite--if one could find the vugs. These were on the lowest level where a number of collectors spent most of the day. Pat Barker found hornfels with goethite in brassy needles, as did Bill Grohskopf. Since goethite is hardly considered a common mineral at this locality and the last time we found it was in 1992, these specimens are worth adding to a collection. They are micro, of course. The matrix can generally be spotted because the cavity in the hornfels is iron stained slightly reddish. However, we found some sprays of goethite in vugs which were not stained. Some pieces had pyrrhotite crystals in profusion.

Back at the "quarry level", a rock here, and a rock there, disclosed: serandite, including a few nice pink crystals, catapleiite, pectolite, natrolite, titanite, nenadkevichite, zircon and sodalite which was being collected for cutting material.

CLEANING MICROMOUNTS

Most micromounts need to be cleaned at some point during their preparation for mounting. Dirt and other contaminants should be removed to enhance the aesthetic value of the specimen, and yet care must be taken to do this enhancement without damaging the specimen. Care must be taken to avoid removing a coating or encrustation which is itself a significant species and thus a major part of the overall specimen.

These contaminants include material present on the specimen when mined, chips and dust collected during trimming, lint of various kinds from storage materials, and airborne matter accumulated while sitting in an uncovered state. Unwanted materials which are an integral part of the specimen include iron and manganese oxides, hydrocarbon coatings, encrusting minerals, and visually uninteresting parts of the specimen. (Remember that many of these "unwanted" materials are an integral part of the original paragenesis, and thus have scientic value which may justify keeping them on the specimen.) A variety of cleaning techniques are available to deal with these contaminants which include mechanical measures, air, water, and chemical cleaners. The use of an ultrasonic cleaners can enhance many of these techniques..

Wrapping materials are notorious for generating lint which clings to acicular crystals. Avoid the use of jeweler's cotton, toilet and tissue paper, paper towels, and other lint producing materials for wrapping. Tissue paper of the kind for wrapping packages is relatively free of lint, as is newspaper. Colored paper may permanently stain some minerals, particularly zeolites, if it is placed in contact with a damp specimen. Small plastic bags work well. Another good wrapping material is the ultrathin plastic sheeting which comes on clothing from the dry cleaners or Saran Wrap™. This material can be loosely wrapped around specimens or balled up and used as packing inside a mailing box in much the same way that styrofoam pellets are used, and can actually be stuffed inside micromount boxes to provide a shock absorber during shipment of mounted specimens.

A sudden shift of temperature during the cleaning process can cause thermal shock which can crack or fracture some crystals (fluorite is particularly sensitive to sudden temperatures shifts). For this reason, cleaning procedures should be performed with all the solutions at the same temperature. If solution temperatures have been raised during the cleaning process, bring the specimen back down to room temperature by letting the first rinse slowly equilibrate with room temperature. If a double boiler arrangement is used during cleaning, the water bath part of the system can be utilized as the first rinse since it will start out at the same temperature as the cleaning solution.

The energy of an ultrasonic cleaner is transformed into heat with subsequent elevation of the solution temperature. Moving a specimen from the elevated temperature of the ultrasonic bath to a room temperature rinse may cause thermal shock. The use of a hair dryer or a warm oven may also cause a rapid change in temperature with resultant damage.

If a diamond saw is used for trimming specimens, be sure to use a water soluble coolant which has little in the way of chemical additives. Any oil based coolant will be extremely difficult to remove from the tiny crevices of micromounts. Ethylene glycol (antifreeze), either straight or somewhat diluted, works very well and is totally water soluble, but it is poisonous if ingested or absorbed through the skin to any degree. Another option is to use plain water and a stainless steel blade, draining the water after each use.

John Reiner: Micromounter's Memories

July has meant Reiner's Meeting since 1969 for the Micromounters of New England. It is still very difficult to believe, really believe, that that constant in our lives has ended --- John passed away on Labor Day.

I've been trying to put those memorable days into words for those who never knew John and Martha. It never rained; I remember it that way, anyhow. Once or twice it may have been too chilly for swimming from their gorgeous little cusp beach. But mostly it was hot, and by mid-afternoon even the most dedicated of the microscope gang were ready to take a swim or at least go wading and enjoy the lovely view off across Lake Winnipesaukee.

Martha used to drive the late ones over that lurchy road down to the shorefront. This was after she had cleaned up after the pot luck lunch. (Martha had spent all day in her tiny corridor kitchen preparing her contributions). After some lazy time on the beach, it was back to the microscopes, then more food. After dark someone usually showed slides before everyone headed for home tired but happy.

Do you remember all the give-aways that John always had for us in those serrated pressure fitted boxes of his? Some of his give-aways were a bit different: oolites, Panama agate, tiny fossils; everything in nature fascinated John.

Writing John's Memorial for Rocks and Minerals I learned about his life before Long Island on Lake Winnipesaukee. Even as a small boy in New Jersey he was interested in nature, making collections of beetles, rocks, lists of stars and birds. He was very active in the Y.M.C.A. hiking and camping groups, and he soon was leading them. He helped to form a Y.M.C.A. Pioneer Nature Study Group when he was a Chief Pioneer at age 22. Years later, John Demar says, he used this expertise while working at a summer camp on Lake Winnipesaukee.

He was also very active in the Newark Mineral Society and a little in awe of those famous mineralogists that lectured at meetings: H. P. Whitlock, James Manchester, Alfred Hawkins, Samuel Gordon. Don't we wish we could have heard them, too! In 1934 John was elected President of that organization.

That same year John and Martha married, and they spent 54 years together, or as Gene Bearss put it so well, "I always thought of them as 'John and Martha'". Their 50th Wedding Anniversary was the occasion for a joyeous Micromounter"s party.

John's occupation was photography, but I didn't know till Frank Leighton, himself a professional photographer, recalled that John was a teacher at the School of Modern Photography in New York City. That was an amazing period, for John started as an instructor in hand tinting photographs and later taught the use of the very earliest color films.

Norm Biggart remembers that he had military students learning color photo procedures during World War II years. In Bob Whitmore's files on John I learned that he volunteered to go to Veteran's Hospitals to teach convalescing and handicapped soldiers about photographic techniques that they might use to build meaningful careers.

John had won some prestigeous awards for his photographs and had exhibited at many important shows in New Jersey and New York City. Besides his teaching he wrote for at least five photography magazines, and had articles and photos accepted for other magazines such as Field and Stream .

The stress was such that Martha and John decided to leave the city and move to New Hampshire in 1953. The place they chose on Long Island on Lake Winnipesaukee, connected to the town of Center Harbor, must have seemed like a little bit of heaven. John set to work to finish winterizing the cottage and built a little studio on the property that he named "Hemlock Hollow Gallery". There he would continue as a free lance photographer. In the tourist season he sold his photos, mineral specimens, gems, and crafts.

John and Martha joined the Saco Valley Mineral Club immediately after moving to New Hampshire and later the Capital Mineral Club in Concord and our Micromounters of New England.

In 1964 John became a Feature Editor of the "Thumbnail" column for Rock and Minerals magazine. Although recurring illness prevented him from writing every month, he did do just that for 7 years from May 1968 to Nov. 1975. All in all he wrote that column for 20 years.

He dearly loved to swap minerals by mail with untold numbers of collectors. He published the directions to his home, and people came to visit from all over the United States and all over the world --- always sure of a warm welcome.

It is interesting to read John's correspondence with William Ulrich at the time that Ulrich, Burt Segler, Anthony Kampf, and Bob Whitmore were preparing that landmark issue of Rocks and Minerals. "Phosphate Minerals of Palermo No. 1 Pegmatite" was the first article illustrated with color pictures. M.M. of N.E. members Janet Cares, Bob Whitmore, and John Reiner supplied information and photos. John's laueite is pictured in color on the cover of that Sept.- Oct. 1979 issue.

It was an exciting step in 1986 when John and Martha decided to sell their choice waterfront property and purchase a new home on the "mainland" in Center Harbor. It was such a bright sunny home with a modern kitchen for Martha and a spacious mineral room for John, They eagerly awaited a dreamed-of trip to Alaska, but Martha was taken ill on that trip and passed away in January 1988. It nearly broke our hearts, and we wondered if John could survive such a blow, but with good friends like John Demar and good housekeeping support from a former friend of Martha's, he carried on.

After sifting through boxes of Bob Whitmores's collection of John's papers and notebooks, I feel that John was a Naturalist in the tradition of the turn of the century. Those natural scientists wrote about and recorded with sketches, watercolors, and oils the birds, animals, insects, minerals, and fossils that they had gathered. John dearly loved to record his collections, too, with photographs and words. He loved to teach children, and he taught all of us about observing and sharing.

Janet Cares recalled that John and Martha delayed the sale of their home on Long Island just so that the Micromounters could have one last party there. Those of us who went to the 1995 meeting at John's in July were delighted to find him seemingly so much younger and better than he had been for several years. A month and a half later he died. Thanks for one last party, John!

PAT BARKER

MECHANICAL CLEANING TECHNIQUES

Mineral species are chemicals, and as such are vulnerable to attack by many of the chemicals used in the cleaning process. Some are affected by water, while others seem to be inert to the actions of almost anything we throw at them. Remember that the degree of reactivity may vary significantly among the various species on a single specimen, and therefore the fewer chemicals (and this includes water) which you have to apply to a specimen the better. Dry techniques are the safest way to start the cleaning process. Human breath is neither dry nor clean. It contains a great deal of moisture which can harm some species and can induce dust to adhere to the specimen. There are also substances in breath which can leave stains or scum on the surface of crystals.

- ***Tapping***. Hold the specimen upside down and tap the reverse side of the specimen or the back of the hand or fingers holding the specimen. This will often knock loose material off the specimen.

- ***Squeeze bulbs*** are generally available through camera stores and are used for cleaning photographic equipment. Ear syringes are available in pharmacies and are also effective. They can be deliver air as a gentle puff or a relatively strong blast. Air blown straight onto the front surface of a specimen can force the dirt deeper into the cavities, while directing the flow parallel to that surface is more likely to remove the dirt. Using the squeeze bulb with the specimen upside down may enhance the cleaning, and if you are really dexterous, tapping at the same time will help to loosen the dirt.

- ***Pressurized air*** is available in a variety of delivery systems. Some are 100% disposable while others have a disposable canister but a reusable nozzle. The best ones are those developed for cleaning photographic or electronic/computer equipment. They can be used at low pressure if you are careful, but generally they deliver a very strong stream of air. This can be very effective for cleaning, but obviously is capable of removing some of the material which you are trying to clean, particularly acicular or loosely attached crystals. The systems available now are usually ozone friendly.

  Pressurized air can also be delivered by using a 25 gauge or smaller hypodermic needle attached to a syringe. The sharp end of the needle makes a very good pick for lifting out lint or digging out other unwanted materials.

- ***Vacuum cleaner.*** Creating airflow across the surface of a specimen by suction will often remove unwanted dirt with less damage than with positive pressure. Holding the specimen upside down and tapping it at the same time may facilitate the cleaning process. Practice using the vacuum cleaner on unwanted specimens or you may lose your prize specimen down the tube. If there is an exhaust port on the vacuum cleaner which allows the attachment of a hose, you may be able to use it as a source of positive pressure air as well.

- ***Brush.*** A tiny artist's paint brush (usually camel hair or red sable) which comes to a very fine point can be lightly dampened and used to pick off hairs or other tiny fragments. This will not work if the specimen is already wet. A toothbrush can be used on hard specimens.

- ***Forceps, tweezers.*** Very fine forceps such as those used for eye surgery or watch repair can be used to remove individual fibers or hairs.

To be continued next issue

One of the Canadian collectors reported that on the uppermost level, where collectors have been digging for months for cutting sodalite and elpidite, he had dug deeper and reached very attractive pink albite with elpidite.

Dr. Don Miller brought back a number of large rocks such as those collected by fluorescent mineral collectors, which made a striking display under his powerful SW lamp; shades of red, orange, yellow, green and blue-white. However, the rocks were generally rather fine-grained and even the smaller ones which could be viewed under the microscope contained few identifiable crystals. The shades of red can be primarily albite; some of the yellow was zircon; the sodalite was also responding as was the fluorite. With 40-50 fluorescent minerals at this locality, it is difficult to identify them when distinguishing characteristics cannot be seen.

A recent letter from Dr. George Chao states that the number of species at Mt. St.-Hilaire has reached 308. Opal (hyalite) and orthojoaquinite (old material and old work) are the last two. The opal was found this summer, looks like it (surprise!), and is fluorescent.

BACK TO MONT SAINT-HILAIRE---AGAIN

Marcelle H. Weber, *Triassic Valley Bulletin*, 11/95

Return again to the 1994 report. Some points were omitted in the October article. It has been reported that gobbinsite and herschelite were identified among the minerals collected in May, and it sounded as though they were collected in the pegmatite. A correction was received later that they were not from the pegmatite, but it was not known where they had been found. Other reports of gobbinsite placed it in the albite "contact rock." The mineral is rather notable. The clusters are spherical or octahedral in general outline, clear, showing striations along the broad "corners" projecting from the aggregates, resembling a chevron. It was reported in October that Bill Henderson had found that what was thought to be eudidymite was. However, it was a specimen collected in May 1994 that proved to be eudidymite, not the October 1994 specimen which probably is, too. These crystals are smaller, white, micaceous, in spherical aggregates or embedded pearly fans, in albite. The edges of the free-growing crystals are tinged with a brown coating of something.

Dr. Chao's letter was referred to insofar as the number of species at Mt. St.-Hilaire is concerned. However, there was other information of note. Tiny crystals of UK 35, hexagonal, white, thicker in the center than on the edges occurring on pink apophyllite, were found July 12, 1975, DeMix Quarry, in breccia. Smaller crystals, also called UK 35, were found with green crystals and taeniolite in June of 1973. Both were eventually termed "chabazite-like." Dr. Chao's letter reports that he has come to the conclusion that the 1975 crystals are herschelite, and the 1973 crystals are chabazite "with roughly one half of its Ca substituted by Na, K, and Ba and causing the variations in the x-ray diffraction pattern." He had reviewed all the x-ray film and some probe analyses to make this determination.

Much of our trip through Vermont on Friday, October 6, was in the rain. Saturday morning started much the same--wet and cold. However, except for a short mid-day period of rain, the rest of the day was fine. There was rock all over the quarry. Much nepheline-seyenite was in the western end of DeMix Quarry (now operated by Poudrette). Eudialyte and serandite were found in the vugs, as well as natrolite, sphalerite, aegerine, etc. Breccia was exposed on the north wall in the same general area. In 1975, workings higher on the mountain exposed breccia with cordylite, smoky quartz, lorenzenite and brookite, as well as the UK 35 mentioned above. Unfortunately, such findings have not been reported from the present work.

In the "pit" (lowest level), there was a huge pile of hornfels, plus a few other rock types. Much more goethite was found, some better than before. Two collectors had reportedly "cleaned it all out" but some excellent pieces were found elsewhere on the pile. A fine display specimen of labuntsovite with green crystals was taken from a cavity in nepheline-seyenite--striking. Quartz, green dolomite and anatase were in the hornfels. Not great collecting, but not a loss, either.

(This is the third installment on Mont Saint-Hilaire, 1995. The other two parts are later in the newsletter.)

MONT SAINT-HILAIRE, QUEBEC
Last 1995 Round-up

Dr. Peter Tarassoff has reported some interesting finds from Mont Saint-Hilaire in 1995:

- July 1: ***UK93A***, as very sparse, transparent, pale lemon-yellow, blocky micro crystals resembling anatase, closely associated with, and sometimes perched on, tan micro crystals of a ***burbankite group*** mineral. Found in siderite-microcline-aegerine-albite pegmatite from the vein in the south corner.
- July 29: ***Nenadkevichite***, as colorless to thin tabular to bladed, rectangular micro crystals (an unusual morphology or nenadkevichite), associated with glassy, colorless, blocky micro crystals of gaidonnayite. In siderite-microcline-aegerine-albite pegmatite from the south corner.
- September 9: ***Bastnäsite***, as white coatings and hexagonal, prismatic micro psuedomorphs (after burbankite?), associated with colorless, tabular micro crystals of gaidonnayite. In siderite-microcline-albite pegmatite from the "pit".

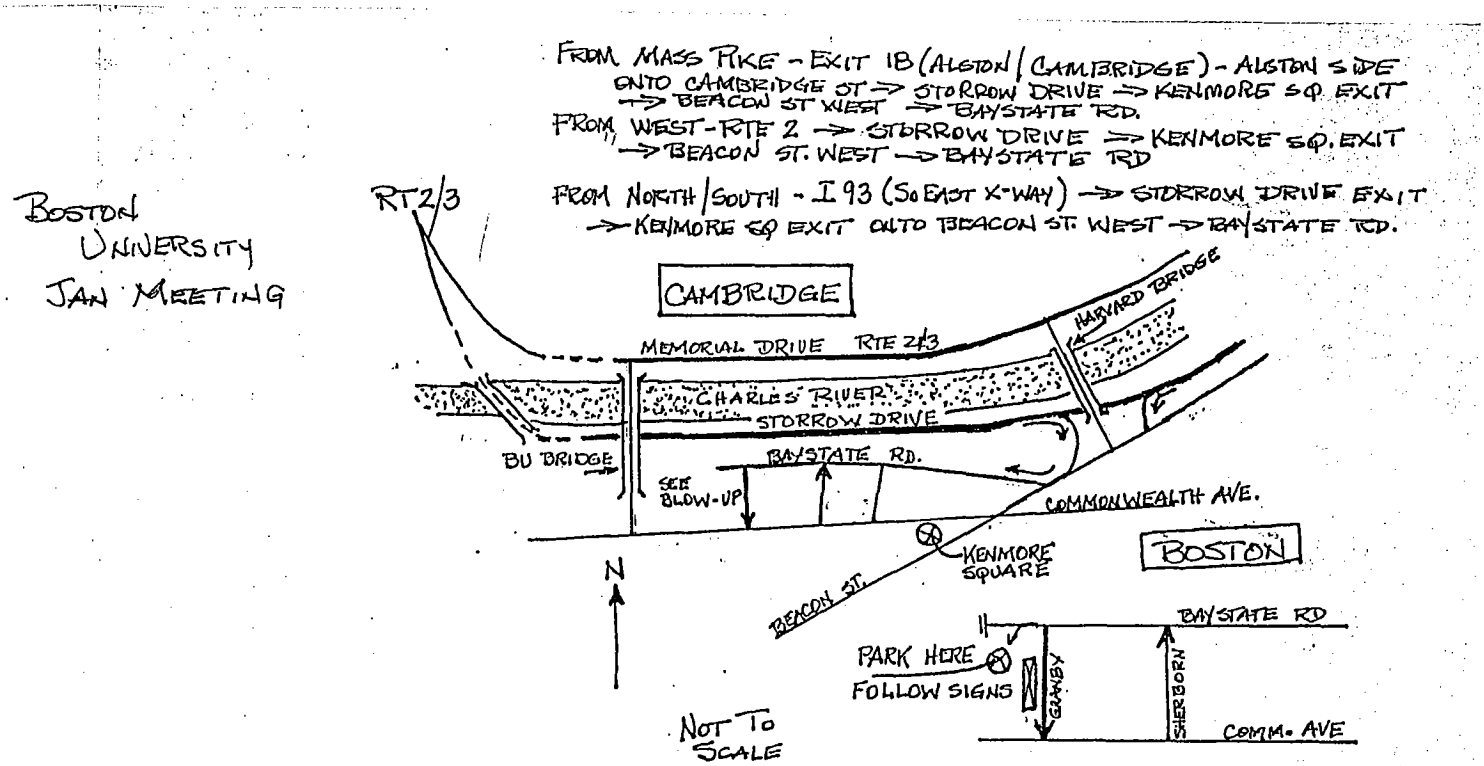
UPCOMING MEETINGS AND SHOWS

- 31th **Pacific Micromount Conference**, sponsored by the Southern California Micro-Mineralogists, Inc., Jan. 26-28, 1996 at the San Bernardino Co. Museum, Redlands, CA. Theme is **Carbonates**. For more information contact: Paul Adams (301) 336-6927, E-mail: paul-adams@qmail2.aero.org.

CLASSIFIED ANNOUNCEMENTS

This space is available to active members of th MMNE at no cost. Contact your editor with any sale items (no minerals), trades, want items, etc. The announcement will run for 2 issues of the Newsletter.

- Trade: Used LER ***ultrasonic cleaner*** in good condition to trade for a pair of 14x eye pieces from a Russian microscope. Gene Bearss (207) 324-3610. (12/95)
- Trade/ Sale: Complete run of ***Gems and Gemology*** (Journal of the Gemologic Institute of American), Vol. XVII (1981) through XXV (1989). Good tp excellent condition. These volumes start with the first issue in the large format. Value $250 +. Trade for MSH rarities, other quality micros, make an offer. Mike Swanson (413) 773-3867. (12/95)



MINERALS AND MINE FIRES

Somewhat akin to slag minerals are those species that owe their origin to the occurrence of disastrous mine fires. They were produced no more intentionally by man than were those in the slags from his smelters.

I have several from different mines in my collection and their history is an interesting adjunct to the specimens. In 1981 I collected beautiful sulphur crystals from the fumaroles of the still burning Star Coal Mine at Rosedale near Drumheller, Alberta. The fire started in 1957 and when efforts to extinguish it failed the mine was sealed. Enough air is drawn into the mine, however, to keep it smouldering, and the rock around the vents was hot enough in 1981 to burn your shoes.

More dramatic are the fires such as occurred at the United Verde Mine in Jerome, Arizona in 1894. I have samples of copiapite, and arsenolite from this occurrence. The fire burned for several decades despite attempts to extinguish it. It was thought to have been caused by spontaneous combustion of unstable sulphide minerals on exposure to air. Surface stripping operations later exposed rocks above the fire area to reveal a suite of newly formed hydrated sulphate minerals.

The burning stopes were sealed with bulkheads and unsuccessful methods attempted to extinguish the fire included the use of water, carbon dioxide and steam under pressure. The introduced water as vapour probably reacted with the iron and copper sulphides at high temperature and their upward migration into fractures produced the unusual suite of species.

The new species found were, butlerite, guildite, ransomite lausenite, yavapaiite, selenium (first natural occurrence) and the now questionable species jeromeite. Also found were, alunogen, copiapite, coquimbite, voltaite, claudetite, and arsenolite. Of the new species only butlerite, ransomite and selenium have since been found elsewhere.

Reference: Mineralogy of Arizona, Anthony, Williams & Bideaux, page 29, University of Arizona Press, 1977.

Garry Glenn, of Niagara Falls, Ontario

The above appeared in CMMA's "Micronews", September, 1944. An additional item of interest is to be found in Rocks & Minerals, March/April, 1982, page 73 on Wayne Downey, who collected in burning coal mines of Pennsylvania, and for whom downeyite is named.