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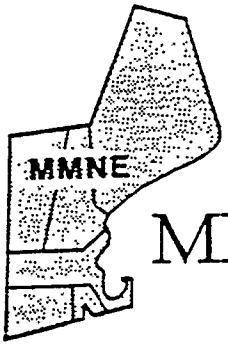
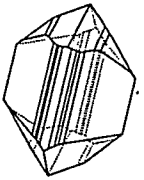
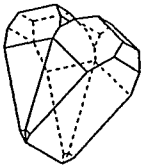
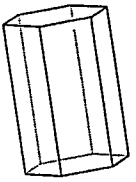
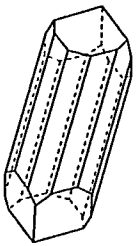


MICROMOUNTERS
OF NEW ENGLAND



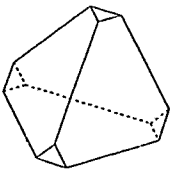






NORTHEAST MEETING
May 11, 1991

4–H Conference Center
Ashland, MA

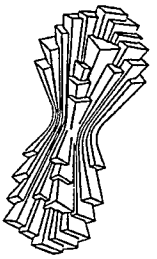


PROGRAM

9:00	Registration and Informal Session
12:00	Lunch
1:00	Presentation:

MICROMINERALS OF THE FOOTE MINE
KINGS MOUNTAIN, NORTH CAROLINA
by
John S. White, Jr..

2:00	Doorprize Drawings
4:00	Departure



President – Robert Janules Vice Pres. – Scott Whittemore
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GUEST SPEAKER: JOHN SAMPSON WHITE, JR.

Curator - in-Charge
Dept.of Mineral Sciences, NHB-119
National Museum of Natural History
Smithsonian Institution
Washington, DC 20560

Our speaker is well-known in the mineral world as Curator of the superb gem and mineral collection at the Smithsonian, a position which he will be leaving later this year. Next in importance for collectors would be the Mineralogical Record of which he was founder, first editor (1970 - 1976), and publisher until 1983. He has also been involved in publication of the Glossary of Mineral Species, which is indispensable to the serious collector.

John became interested in minerals when he studied them in 8th grade science class. He went on to major in geology at Franklin & Marshall College, and to receive his MS in Mineralogy from the University of Arizona. Prior to joining the Smithsonian staff his career included mineral exploration in Canada and our southwest, military service, and teaching 9th grade Math and Science. Along the way he has taught or lectured on minerals and related subjects to students from high school to graduate school as well as to adult groups at the Smithsonian, at clubs, and at shows.

With photographer Lee Boltin he published a mineral book entitled Color Underground, and has participated in the production of several films and videotapes on minerals. He has been involved in the naming of at least nine new minerals, most of which are from the Foote Mine which is of particular interest to him, and the subject of today's presentation.

In 1978 he was honored by having the phosphate mineral whiteite named for him. The authors, Paul Moore and Jun Ito said of him that "he has played a major role in the renaissance of mineralogy as an amateur as well as professional pursuit". There is now a whiteite group which includes four distinct species depending on the variation of the alkaline earth or transition metal content.

John resides in Maryland where he pursues his hobbies of gardening and cooking. He is the father of three grown children.

Cover drawings: Beryllium minerals of New Hampshire. Clockwise from left: Phenakite, bertrandite, milarite/beryl, euclase, genthelvite, gadolinite.

BERYLLIUM MINERALS OF NEW HAMPSHIRE

Bob Janules

Beryllium is a rather scarce element, comprising an estimated 3.5 x 10-4% of Earth's upper lithosphere. (1) One mineral, beryl, accounts for the bulk of the known beryllium stock, while the remainder is distributed among about seventy-five other mineral species, many of them rare. A number of these minerals are available to the New England mineral collector; most occur as fine microcrystals. New Hampshire has eighteen known species which are discussed below. Those illustrated on the cover are indicated by an asterisk (*). See key on page 2.

SILICATES

Beryl. $Be_3Al_2Si_6O_{18}$ is by far the most abundant beryllium mineral in New Hampshire and is the parent, by the process of alteration, of most of the other species described below. It has been designated the official state mineral, and is covered as such in another part of this publication.

The Helvite Group

Danalite. $Fe_4Be_3(SiO_4)_3S$

Genthelvite. * $Zn_4Be_3(SiO_4)_3S$

Helvite. $Mn_4Be_3(SiO_4)_3S$,

Species designation of the helvite group of minerals is dependent upon whether iron, zinc, or manganese is dominant in the composition. Commonly, two or all three of these elements are present, and pure end-members, as represented by the formulas given, are quite rare. Visual characteristics are often unreliable to distinguish members of this group from one another; some testing is usually required. All three minerals have been confirmed from localities in New Hampshire's Conway Granite.

Superb museum-quality specimens of danalite, the iron-rich member, were found at the Government Pit in Albany (2). These were sharply euhedral reddish-brown octahedrons to nearly 5 cm. Danalite also occurs at Sugarloaf Mountain in Bethlehem (3) usually as very crude crystals embedded in granite. Some fine octahedral and tetrahedral microcrystals, ruby to yellow-red in color, were found where the primary danalite was hydrothermally attacked and recrystallization occurred. Other localities for danalite include areas of Moat Mountain, the Passaconaway Gravel Pit in Albany, and the Bartlett or Iron Mountain mines in Glen, where it occurs in some quantity associated with magnetite.

Helvite, the manganese-rich member has been identified from the core of a compositionally-zoned danalite crystal from the Bartlett or Iron Mountain locality (4) but its occurrence at Sugarloaf Mountain (3) is in question. Yellow tetrahedrons that were tentatively identified as helvite, when microprobed revealed major zinc, minor iron, and no detectable manganese - hence genthelvite. Further study is needed to determine if both species are present. Genthelvite of an unusual vitreous blue color were found at this locality, (3) and the species has been confirmed from Moat Mountain (4).

Bertrandite. * $Be_4Si_2O_7(OH)_2$, has a fairly wide distribution in New Hampshire. It is a secondary mineral derived from alteration of beryl or danalite. At the Parker Mountain Mine in Center Strafford and the Fletcher Mine in North Groton it has been found as pseudomorphs after beryl. Other localities feature micro-sized crystals of bertrandite either with such pseudomorphs, or in the casts left by vacated beryl, or perched on albite. Two fine examples of beryl-derived bertrandite are in the collections of Dana Jewell and Inge Burggraf. One from the Globe mine in Springfield is a pocket quartz crystal liberally studded with crystals of bertrandite. In the other, from the Demott Mine in Grafton, bertrandite lines many cavities in an albite matrix. Other mines where bertrandite can be found by the lucky include the Palermo #1 in North Groton, the Kilton in Grafton, the Chandler and Smith mines of Raymond, Beryl Mountain in Andover, the Keyes #1 in Orange, and the Beauregard in Alstead. It is likely that bertrandite occurs at many other beryl-bearing pegmatites in New Hampshire, but in small quantities, as is the case with the above-mentioned mines.

Spectacular micro crystals of bertrandite have been recovered from two Conway Granite localities: Sugarloaf Mountain and the Government Pit. Danalite is the primary beryllium mineral at these localities, although beryl also plays a part at Sugarloaf. The bertrandites from both localities are lustrous, and display the dizzying number of crystal habits and frequent twinning that make this mineral so popular with micromounters. Some Government Pit bertrandite may be pink due to hematite inclusions, but it is generally colorless.

Another Conway Granite locality featuring bertrandite is the Raccoon Mountain Gulch in Center Ossipee, but it is known from only one specimen.

Phenakite. * Be_2SiO_4, Factors that favor the formation of phenakite over beryl are high concentrations of beryllium in relation to silicon or aluminum. It can form as a secondary mineral after beryl if aluminum and excess silicon from the beryl are taken up by the formation of other minerals, such as topaz or a member of the mica group. Colorless microcrystals of beryl-derived phanakite have been noted at the Ham-Weeks Mine in Wakefield (5) and the Keyes #1 in Orange. The best known phenakite localities in New Hampshire are in Conway Granite. South Baldface Mountain in Chatham has produced fine crystals in association with topaz (2). At Sugarloaf Mountain phenakite has been observed as an alteration product of danalite, either as an etched rind capping the danalite, or as highly-lustrous free-standing crystals in vugs near the danalite mass. Other localities include the Bartlett or Iron Mountain mines in Glen, the Government Pit, North Percy Peak in Stratford (2), and Green's Ledges in Effingham (6). It is possible that phenakite may be primary in origin at some New Hampshire occurrences.

Euclase. * $BeAlSiO_4OH$, The first confirmed pegmatite occurrence for euclase in North America is the sidecut at the Chandler Mine in Raymond. (7) Here it occurred in one pocket as micro crystals perched on quartz and albite. The crystals are monoclinic, often double-terminated and colorless with a high luster. They make excellent micromounts.

Bavenite. $Ca_4(Be,Al)_4Si_9(O,OH)_{28}$, In the collection of Gene Bearss are fine examples of this species from the Government Pit. They range from white mats of acicular crystals to sprays of orthorhombic prisms spread out from a central point like a fan. These are colorless at the terminations and white at the base. Bavenite has also been found on Moat Mountain on Red Ridge at 1200 ft. elevation, and at the Lovejoy Gravel Pit in Conway.

Milarite.* $KCa_2AlBe_2(Si_{12}O_{30})H_2O$, is one of the rare miarolitic cavity minerals found in the Conway Granite at the Government Pit and on Moat Mountain at Hale's Location. Fine examples of this mineral have been found in the past. It was often mistaken for beryl, as it commonly forms colorless to pale yellow hexagonal prisms, visually identical to the common habit of beryl. Gene Bearss has specimens of milarite from the Government Pit that show this habit and others that are in the form of long thin prisms, appearing nearly acicular. Another specimen shows a cluster of prisms with complex terminations. Milarite forms in an alkaline environment where the ratio of silicon to beryllium plus aluminum is about 4:1.

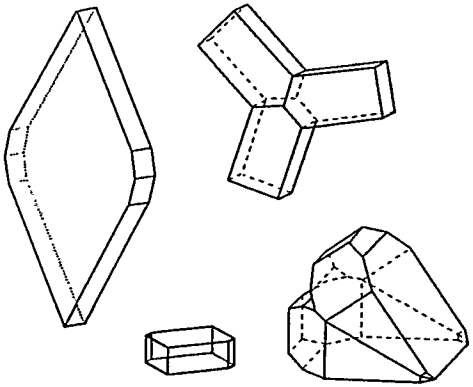
Bazzite. $Be_3(Sc,Al)_2Si_6O_{18}$, A complete solid solution series exists between bazzite and beryl with Sc replacing the Al. Bazzite has recently been identified by Dr. Eugene Foord of the U.S. Geological Survey from two New Hampshire localities: Sugarloaf Mountain and the Government Pit. At both localities it forms tiny (under 0.5mm) prisms of a lively blue color in association with bertrandite. Bazzite is rare.

Gadolinite-(Y)-Gadolinite-(Ce).* $(Y\ Ce,La,Nd)_2Fe^{+2}Be_2Si_2O_{10}$, A member of the gadolinite group with equal amounts of yttrium and cerium in its composition was found by Scott Whittemore at Sugarloaf Mountain (3) where it commonly forms sheaf-like crystal clusters in association with fluorite and bastnaesite-(Ce). Subsequently, many more crystals were recovered at this locality, including sturdy pocket crystals to 2 cm. The color of the mineral when fresh is a resinous brownish-black with color zoning perpendicular to the length. More commonly found at this locality are light brown earthy pseudomorphs after this mineral, probably now a form of bastnaesite.

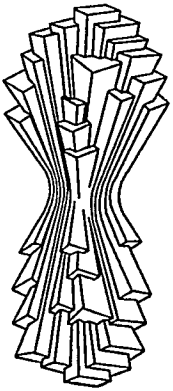
Hingganite - (Y). $(Y,Yb,Er)BeSiO_4(OH)$, a member of the gadolinite group, occurs at Sugarloaf Mtn. as minute sheaf-like clusters of monoclinic crystals, colorless to honey-yellow in color. Etched masses of purple fluorite from this locality should be routinely examined for this very rare mineral.

OXIDES

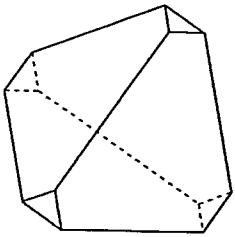
Chrysoberyl. $BeAl_2O_4$, is the next most abundant beryllium mineral to beryl world-wide. Scarcity of free silica and aluminum enrichment are factors that favor the formation of chrysoberyl instead of beryl. At the Wasau Abrasives Mine in Wilmot it occurs as typically-twinned yellow-green flat crystals embedded in quartz. At the Ham-Weeks Mine in Wakefield it usually forms abutting beryl crystals as crudely crystallized masses (5). Other localities for chrysoberyl in New Hampshire are the Ruggles Mine in Grafton and the Summit Mine in Orange (6).



Bertrandite

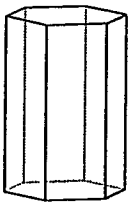


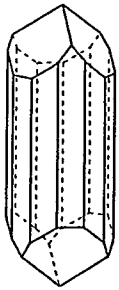
Gadolinite



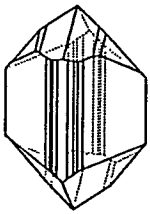
Genthelvite

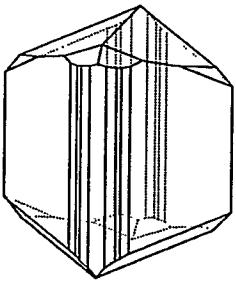
Milarite





Phenakite





Euclase

PHOSPHATES

Hydroxyl-Herderite. $CaBePO_4(OH,F)$, This mineral generally forms during the albitization process of beryl-bearing pegmatites. New Hampshire has a few good localities for hydorxyl-herderite and one outstanding one - the Fletcher Mine in North Groton. It has produced glassy, colorless to light brown crystals to 5 cm. in length (8). At the Palermo mine it has been found in albite units near beryl as microcrystals to miniatures, often associated with fluorapatite. These are glassy and colorless but coated with a reddish-brown to grey mineral. In quartz cavities of the core zone hydroxyl-herderite has been found as uncoated, glassy crystals often larger than their counterparts in the albite vúgs. It has also been found at he Mud Mine in Alexandria, Keyes #1 in Orange and the Charles Davis in North Groton. Also from North Groton is a specimen in Dana Jewell's collection from the Valencia Mine. It is very unlikely that the mineral herderite, where fluorine exceeds hydroxyl in its composition, exists in New Hampshire. Analyses indicate that herderite is an extremely rare mineral (9).

Hurlbutite. $CaBe_2(PO_4)_2$, occurs at one New Hampshire locality, the G.E. Smith Mine at Newport, its type locality. It is colorless to greenish-white and is found embedded in quartz and siderite. It forms stout, striated, sometimes etched, orthorhombic crystals to about 3 cm.

Beryllonite. $NaBePO_4$, is listed as occurring at the Smith Mine in Newport (6). Here it probably is found in close association with hurlbutite. This author found beryllonite at the Palermo #1 Mine in a beryl-rich area associated with other beryllium minerals. The beryllonite occurs as etched, colorless tablets frozen in matrix, very similar in appearance to the type beryllonite from the Dunton Mine in Newry, Maine. Gene Bearss has a beryllonite of identical habit from the Charles Davis Mine in North Groton.

Moraesite. $Be_2PO_4OH{\cdot}4H_2O$, New Hampshire's beryllium phosphates are generally formed as secondary minerals when beryl is hydrothermally attacked near triphylite or another primary phosphate. At Palermo #1 fine specimens of moraesite were found by this author in a beryl-rich area where the phosphate ion was supplied by manganapatite. The mineral forms as white acicular crystals, often in thick felted mats. Moraesite is also known from the G.E. Smith Mine in Newport, the E.E. Smith Mine in Alexandria, the Nancy #1 Mine in North Groton, and in one specimen from the Valencia Mine at North Groton.

Roscherite. $(Ca,Mn,Fe)_3Be_3(PO_4)_3(OH)_3{\cdot}2H_2O$, is known to the author from the Palermo #1 Mine as pseudo-orthorhombic crystals of a brown-olive green color. These were associated with the moraesite and beryllonite described previously. Roscherite had been found there previously in other crystal habits including sub-parallel bundles of crystals forming botryoidal clusters. Excellent crystals were found at the Charles Davis Mine in North Groton (10). This mineral is also listed (without confirmation) as occurring at the E.E. Smith Mine in Alexandria and the G.E. Smith in Newport (6).

The chances are excellent that other beryllium-bearing species will be found in New Hampshire. The author would be very interested to hear of other localities (or species) relevant to this report that he may have missed.

Thanks to Scott Whittemore, Gene Bearss, Dana Jewell, Inge Burggraf, Dr. Eugene E. Foord, and Janet and Steve Cares for their assistance in the preparation of this article. The drawings were supplied by Scott Whittemore.

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At this meeting Bob steps down as MMNE President to devote more time to collecting the phosphates or beryllium and rare earth minerals of New Hampshire. He often speaks on these topics to the Nashua Mineral Society and Capital Mineral Clubs to which he belongs. Recently he coauthored a paper in Rocks & Minerals on Sugarloaf Mountain and his mineral photos were used in that and other articles. Bob's degree in chemistry is valuable on his job in R & D as well as in mineral studies. His other hobbies include fly-fishing and gardening.

TALC - THE VERMONT STATE MINERAL ?

Sue Hadden

Vermont, the state that sent a Socialist candidate to Congress this year, sent its own legislature a message about a state mineral back in the late 50's. Proposed by State Geologist Charles Doll, green schist became the brunt of untold numbers of jokes, and the august halls of Montpelier rang with laughter as members poked one another and asked, "Hey, did you hear the one about green sh_?" Serpentine was proposed as an alternate but got nowhere because of snake connotation, and is, according to Fleischer's "Glossary of Mineral Species", not recognized as a mineral species.

Thirty years have passed, so the reintroduction of a candidate for state mineral, coupled with a state gem and rock, seems long overdue. The mineral collector immediately thinks of the brilliant pyrite found at Chester and Montpelier or the outstanding specimens of vesuvianite and green grossular found at Eden Mills. Although traditionally the mineral community sponsors these state symbols, it is well to consider other factors such as the historical or economic significance of the mineral. After discussing the subject with mineral collectors, geologists and industrialists in addition to consulting a number of references on the geology and mineralogy of the state, it appears that talc is the most appropriate choice for the state mineral of Vermont.

Talc is one of Vermont's most important industrial minerals, supplying approximately 20% of the combined production total of the U.S. and Canada. Its aggregate form, soapstone, had tremendous economic importance in the 1800's, and as a typical product of regional metamorphism, it characterizes the geology of Vermont. The native American Abenaki tribe used it for ceremonial pipes and carvings of people and animals. In addition to these qualifications, talc rhymes with nothing, sounds like nothing awful (or offal), and suggests nothing reptilian.

The other candidates must be considered not only as an alternative to talc, but within the context of the choice of a state gem. The nearly unanimous choice for gem is the grossular garnet from Eden Mills, a specimen of which was deemed by a world-wide panel of judges to be the "finest ever produced" according to Peter Bancroft in his book "The World's Finest Minerals and Crystals". This selection diminishes the candidacy of vesuvianite, which though spectacular from Eden Mills is found virtually nowhere else in the state, and would focus two choices on that one area. Pyrite is found throughout the state but is common in other states as well, and thus could not be considered unique to Vermont.

Talc is a phyllosilicate. The prefix "phyllo-" refers to "leaf" and is indicative of the thin cleavage flakes which separate as the crystals of this species are split. Phyllosilicates cleave perfectly at right angles to the C axis along which the crystals develop into elongated prisms or tabular to wafer-like crystals. A magnesium hydroxy silicate, it is one of the softest known minerals with a hardness of 1 on the Moh's scale. It has a greasy feel, a satiny luster, and is closely associated with serpentine. Two varieties found are the common white or gray commercial variety and the rarer and beautiful green, often foliated talc, especially fine specimens of which have come from Carlton Talc Mine in Chester and the Bemis Soapstone Quarry in Townshend.

Unfortunately for the collector, crystals are rare, but have been found at Rochester in beautiful translucent sprays of sea-green crystals.

Talc deposits occur in a broad belt of quartz-sericite schist which extends throughout Vermont from north to south in the chain of metamorphic rock constituting the Appalachian Mountains. These deposits lie in two roughly parallel broken chains represented by the Rochester valley in the west and the Roxbury valley in the east. In the western chain occurrences have been found in Berkshire, Enosburg, Waterville, Cambridge, Johnson, Moretown, Fayston, Waitsfield, Warren, Plymouth, Ludlow, Andover, Windham, Dover and Marlboro. The eastern chain deposits lie in East Granville, Braintree, Bethel, Hammondsville, Reading, Cavendish, Chester, Grafton, and Athens.

The mineral occurs in irregular lenses or pods with their longest axes running north and south. A typical lens consists of a core of grit (half talc and half carbonate mineral) which merges on both sides into talc. This in turn lies against a grayish-black chlorite schist called blackwall.

The geologic processes which gave rise to the formation of Vermont's talc began 600 million years ago during the Cambrian period. Tectonic theory places the state at that time near the equator with western Vermont located on the continental shelf of an ancient continent. Corals, algae and marine animals inhabited the warm shallow waters which were left as fossil remains in the shales, limestones and reefs along Lake Champlain and its islands. As the proto-Atlantic ocean closed, the European (or African?) plate plunged under the edge of the American plate raising a long north-south mountain chain and leaving a chunk of its own crust wedged against Vermont to become New Hampshire, providing the fortunate New Hampshire mineral collectors with their beryl, smoky quartz and topaz, and leaving merely a metamorphosed aggregate of crypto-crystalline massifs for the hapless Vermonters. As the two gigantic plates collided, magma welled up through fractures at the contact site intruding mainly dunite and peridotite. Sea water reacting on the magma caused olivine in the dunite to become serpentine. As the serpentine reacted with CO_2 from the limestone-rich country rock, talc and magnesite formed.

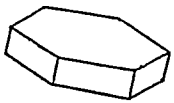
Economically talc has been an extremely important mineral to Vermont. It has been actively mined and processed for over a hundred years. Before the turn of the century, the Eastern Magnesia & Talc Co. supplied fillers to an industrializing nation for products including rubber, paint, paper, pottery and cosmetics. Currently there are seven active talc mines in Vermont, and the state ranks second only to Montana in production. Talc is used extensively as an extender in structural steel replacement plastics and as fillers in polypropylene products, the backing of linoleum, and in paper as the industry moves away from acid materials.

Soapstone or steatite are other names for massive talc or a composite mass of interwoven fibers of talc, chlorite, and other minerals (State Geologists Doll and Perkins). Like talc it is heat-resistant and does not disintegrate under wide temperature variations. Formerly used as foot warmers in "one-horse, open sleighs", water pipes, stoves, window caps and sills, it is enjoying a resurgence in popularity for stoves, sinks and griddles. The Grafton soapstone quarry in my home town was the longest worked and most profitable in Vermont.

Talc in a pure state is seldom found in Vermont. Generally a mixture occurs, 50 to 60% talc, the remainder magnesite. It is this combination that finds usage in the aforementioned industries. Pure talc is extracted by two beneficiation plants and in this form finds use in the cosmetic, paint, plastic, ceramic and paper industries. Its use as an electrical insulating material earned it strategic designation during WW II.

In summation I think the case for talc as the Vermont state mineral is best put forth by a famous, but anonymous poet:

Hooray for talc, it rhymes with naught,
A better choice could not be thought
For candidate for mineral.
It surely is a winner, all
The products and the uses
Give you really no excuses
Not to vote for talc. It's great - at leasties
It's not like schist which sounds like feces.



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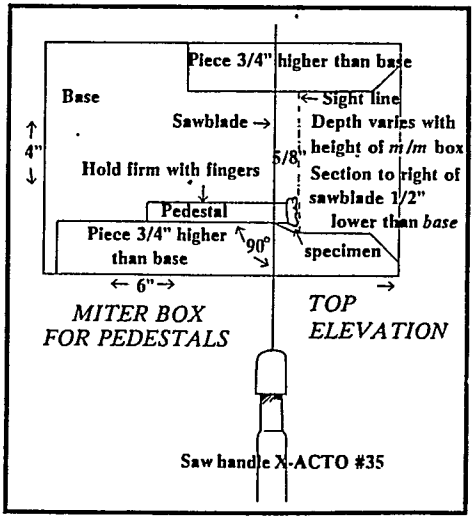
A resident of Vermont, Sue is a member and past President of the Brattleboro Mineralogical Society, and a member of the neighboring Keene (NH) Mineralogical Society. She is co-founder and past President of the Grafton Museum of Natural History which includes a mineral display featuring Vermont minerals. Sue is an artist specializing in large-scale portraiture. Her special interests in minerals include fluorite and geodes.

A MITER BOX FOR MICROMOUNTERS

Steve Cares

A charter member of MMNE, Steve remains an indispensable part, but does not consider himself a writer. To represent him, the following excerpt from Yedlin on Micromounting is offered, with words and illustration taken directly from Neal's column in the Mineralogical Record of May/June, 1974, pages 141 and 142, reprinted with permission of the editor.

"We've encountered another problem in mounting: the determination of the length of the pedestal. It is good procedure to have the top of the specimen flush with the top of the box... Well, an "out of the blue" package arrived one day from Steve Cares, 18 Singletary Lane, Sudbury, MA 01776 (from that area the Zip just HAD to be that number) and in it was a solution. Cares had built a cutter for just this situation and it works to perfection. It's really an adaptation of a carpenter's mitre box, using as a cutter an X-ACTO #35 saw sold in all hobby shops. His sketch gives details"



Throughout the year Steve works to provide us with bountiful, good quality and often rare giveaways, and is one of the major contributors of specimens for the Sale Table in May. He specializes in St-Hilaire and phosphates, especially those of Tip Top and Palermo. He has established a contemporary micromount collection for Harvard University of about 5000 uniformly mounted specimens, a large portion of them from the Cares' collection. When not occupied with minerals he works on his vegetable garden and yard or travels with his wife, Janet in their mini-motor home.

HIGHLIGHTS OF ANOTHER DECADE

Shelley Monaghan

It seems extraordinary that we are convening our tenth annual Northeast Meeting this year. In 1982, when the first meeting was held, it was very much an experimental concept, but I think all members will agree that the experiment proved so successful, that it would be impossible to imagine our not holding this annual event. In the first program book, a history of the Micromounters of New England appeared. This article will review the events and changes which have occurred in the intervening decade.

At the time of the first Northeast Meeting, which was held May 1, 1982, at Springfield's Museum of Natural History, our membership numbered about forty persons. We hoped that this meeting would increase our membership from other Northeast States, and we were very successful. During these ten years we have more than doubled our membership, which has outgrown the original New England area and is now represented in twelve states.

These logistics were bound to have an effect on the club. We could no longer meet in most private homes,so monthly meetings generally have been scheduled in public meeting areas -- schools, universities and libraries. (However, with town fiscal cutbacks, many libraries may no longer have adequate weekend scheduling available.) Favorite meeting areas have been: the Auburn, Hudson, and Northborough Public Libraries, and Boston University, which has become the traditional January meeting site. Two homes have remained host sites all these years: The Reiners', in Center Harbor, New Hampshire in July; and the Fogg's, in Dunbarton, New Hampshire during fall foliage season. And, we have kept other traditional "informal" meetings, including the Capital Mineral Club's Sunapee Show in August, and the "Swap, Talk and Brag Day" now in Chocorua, New Hampshire, in September. We have also participated in the Rhode Island Mineral Hunters Show, and our November meeting is usually scheduled for Auburn, to allow members to enjoy the Worcester Mineral Club's Show located a few blocks form the Library.

The Northeast Meetings also changed over this interval. After two meetings, we outgrew the Museum of Natural History in Springfield. We moved on, first to Greenfield Community College in 1984, and then to the 4-H Conference Center in Ashland, Massachusetts, where we have remained since 1985. We started with sandwiches for lunch and progressed to an outdoor picnic/barbecue. One item which has remained constant, however, is the interesting and informative speakers who have provided our annual presentations, from Bill Henderson, who spoke about non-pegmatite phosphate minerals in 1982, to Steve Chamberlain who presented a 3-D delight with the microminerals of upstate New York last year. Many of us had our only opportunity at these events of meeting and listening to two speakers, unfortunately now deceased: Violet Anderson and Curt Segeler.

Our format for the Northeast Meeting has remained essentially unchanged. We have morning registration, a "workshop" session with scopes and minerals, and a noon lunch, which is followed by our speaker's presentation. Door prizes are awarded after the program,and members return to their scopes and minerals until our 4 pm departure time. During the first two meetings, John Anderson set up a sales table of micromount

specimens, with a percentage going to the club. He also edited the first Program Book after which Janet Cares took over. At the second meeting, the club started a "modest" sales area, with specimens donated by members, and all proceeds going to the club to cover the expenses of the speaker. This sales area, sustained by donations from many generous members, has grown over the years under the capable management of Edna Lerer. At all meetings the club has enjoyed give-away specimens, donated door prizes,and a drawing for beautiful, framed mineral photos donated by Marilyn Dodge. Marilyn also generously donated sandwiches for the lunch, in 1989, as well as a copy of Mandarino and Anderson's "Monteregian Treasures".

In looking over this ten year interval, I cannot possibly mention, in so limited space, all the events which occurred. However, I will mention a few episodes that have become legend in the club. In 1983, when Vi Anderson was scheduled to be our program speaker, Bill Lindeyer volunteered to go to her hotel to pick her up. Supplied with directions and a description of our speaker, Bill set off to the hotel and retrieved the person he assumed to be his passenger. After several blocks however, Bill learned that his passenger was not Vi, but a lady who was headed for a dog show! Bill quickly recovered the situation, and returned to our meeting with the appropriate guest.

In 1985, during a regularly scheduled meeting at the Hudson Public Library, members were invited upstairs for a guided tour of the town's Historical Society. At the moment when club members assembled in the hall, the adjacent town flagpole came crashing down through one of the windows of the library, sending glass everywhere. Luckily, the members were standing at the far end of the room when the impact occurred. It had been a windy day, and the pole apparently harbored a nest of carpenter ants that had literally eaten themselves out of house and home.

Many other changes and events occurred since the first Northeast Meeting. I succeeded John Anderson as editor of the MMNE Newsletter in 1983. The club hosted a meeting with the Mineralogical Society of Pennsylvania in 1984 at Harvard University, where we also enjoyed the presentation of the "Micromounters Hall of Fame" award to the family of the late Gunnar Bjareby in 1985. We joined the Eastern Federation of Mineralogical and Lapidary Societies in 1986, and our bulletin won third place trophy in the category of special interest bulletins in the American Federation's Editor's Contest in 1987. In the same year the Editor was designated Corresponding Secretary and given executive committee status. Our 1987 Northeast Meeting was featured in Bill Henderson's column "Micronews" in the *Mineralogical Record* (Sept./Oct. 1988).

The MMNE has taken many occasions to support mineral publications, libraries and funds through donations. The club contributed to the New Hampshire Issue of Rocks & Minerals magazine and to Mandarino and Anderson's Monteregian Treasures for the purpose of increasing color photography. A donation was given to the EFMLS scholarship fund in memory of charter member Chet Teichman. Subscriptions to Rocks & Minerals have been given to the Hudson and Auburn Public Libraries, and a sturdy table was donated to the Auburn Public Library. When speaker John Baum declined his honorarium we made a donation to his Franklin Mineral Museum, and inaugurated the Rocks & Minerals' new "color fund" in Lou Perloff's name when he did the same.

Many of our members have either been mentioned in print or have contributed articles themselves. The following table should give you an idea of the devotion to the science and hobby which our members have shown. May the next ten years continue to be as productive and as fun!

MMNE MEMBERS IN PRINT

Gunnar Bjareby: Personality Profile by Steve and Janet Cares	Mineralogical Record, M/A, 1977
John Stewart, Palmer Sevrens credited as finders of uralolite at Newry	Mineralogical Record, M/A, 1978
Bob Whitmore coauthor of Palermo article; cover photo of John Reiner specimen; photos of Cares' and Bob Whitmore specimens	Rocks & Minerals S/O, 1981 (Palermo Issue)
John Stewart, Palmer Sevrens, Brownie Thompson, Gunnar Bjareby mentioned in article on Maine tourmaline	Mineralogical Record, S/O, 1985
Forrest Fogg, Bob Whitmore mentioned in article on Chandler Mine	Rocks & Minerals, N/D, 1985
Gunnar Bjareby "Hall of Fame" plaque presentation reported by Janet Cares. Subject of "Who's Who in Mineral Names"	Rocks & Minerals, M/A 1986
Ralph Carr, Holmes Wilson, Jim Cahoon, Janet Cares authors of major articles	Rocks & Minerals S/O, 1986 (RI Issue)
Gunnar Bjareby featured in article on mineral art	Rocks & Minerals, S/O, 1987, letter N/D, 1989
Gene Bearss: contributor	A Collectors Guide to Maine Mineral Localities, 1988
John Ebner subject of article "Micromounters, Past and Present"	Rocks & Minerals, J/A, 1988
Larry Pitman author of article on laueite/ushkovite	Mineralogical Record, S/O, 1989
Steve and Janet Cares, Marcelle and Charlie Weber, Ken Hollman: photos of their specimens	Monteregian Treasures, 1989
Marcelle and Charlie Weber: photos of their specimens	Encyclopedia of Minerals, 2nd Edition, 1990
Scott Whittemore, Bob Whitmore, Bob Janules, Janet Cares, Ken Hollman: authors of major articles	Rocks & Minerals, J/A, 1990 (NH Issue)
Forrest Fogg, Bob Whitmore: subjects of "Who's Who in Mineral Names"	Rocks & Minerals J/A, 1990 (NH Issue)
Scott Whittemore author of article on Mine Falls Park, Nashua, NH	Rocks & Minerals S/O, 1990
Gene Bearss: coauthor of article on Weeks Mine, Wakefield, NH	Rocks & Minerals, M/A, 1991
Dana Morong: Author of article on pinpointing mineral localities	Rocks & Minerals, in press

Shelly has edited not only our own MMNE Newsletter, but also Mineral Matter for the North Shore Rock and Mineral Club for several years. She has recently produced an exhibit entitled "Disappearing Ozone" for Harvard's Mineralogical Museum, where she is a part-time exhibits designer and volunteer cataloger.

BERYL: THE NEW HAMPSHIRE STATE MINERAL

Janet Cares

Surprisingly, New Hampshire had a state bird, tree, flower, and insect before it had a state mineral, rock, or gem. To correct the omission, the Council of New Hampshire Mineral Clubs was formed whose membership consisted of the presidents of the mineral clubs in the state. A list of candidates which they prepared was voted on by the clubs for the final selection. Initially mica was high on the list because of its importance in the history and early economy of the state, however beryl won out as being more attractive to collectors and more desirable for cutting. Granite and smoky quartz were chosen as the state rock and gem. A legislative package advocating these choices was prepared by Tom Lalish, President of the Southeastern NH Mineral Club at that time, and presented as House Bill 60. After passage by the legislature it was signed into law by then Governor John Sununu in May, 1985. In August, 1990 a display case designed to contain as many of the state symbols as possible was presented to Governor Judd Gregg. Made of New Hampshire oak by New Hampshire craftsmen it is on permanent display at the Visitors Center in Concord.

The mineral beryl was known to the ancient Egyptians who used it as an ornamental stone at least 3000 years ago. The name is derived from the Greek word "beryllos" meaning "green stone". The suggestion that it is a corruption of the word "pearl" may have come from the similar pronunciation of the two names. Beryl is hexagonal with a hardness of 8 and specific gravity of 2.7-2.9. Chemically it is extremely inert, being insoluble in the common acids and only soluble with difficulty in hydrofluoric acid. It has a strong tendency to crystallize, usually as hexagonal prisms with flat terminations. Less often, but typical of the pink varieties it is thick tabular and highly modified. Crystals may be clear to opaque, the later often mottled, and growth may be interrupted, giving the appearance of a cleavage across the prism. In its structure are open channels (sub-microscopic) which may enclose cesium and other alkali metals.

Common beryl is the name used for the variety most often encountered by collectors. It is green to yellow-green due to traces of ferrous iron. Strictly speaking the varietal names given to other colors are valid only for transparent or gemmy beryl, but are in common use by collectors to describe their finds in terms of color. The green of emerald is due to chromium and/or vanadium, the blue of aquamarine (aqua) to ferric and ferrous iron, the yellow of golden beryl or heli odor to ferrous iron. Morganite, the pink clear variety is rich in cesium, lithium, and other alkali metals, but the color is entirely due to manganese. A higher concentration of that element is found in the deep red beryls of Utah. The colorless variety, goshenite, is usually high in alkali metals, but lacks those metals which in trace concentrations produce the colors of the other varieties of beryl.

At one time beryl was actively mined in New Hampshire as an ore of beryllium, especially as it was encountered during mica and feldspar mining. During, and for a time after World War II the metal was in demand for use in atomic energy, and for many years it was used alloyed with copper for watch springs. Its use in phosphors of fluorescent lamps came to a halt when production workers became ill and died as a result of exposure to the toxic dust.* Today the metal or its alloys finds application in

the computer and aerospace industries where it is valued for its combination of lightness and structural strength. The extremely high heat tolerance of the oxide permits it to be used as a heat shield on nose cones of manned spacecraft. Large reserves of the mineral bertrandite, which is much more easily mined and processed, have been found in Utah, thus reducing the demand for beryl, and there is little or no commercial mining for it in New Hampshire today.

New Hampshire beryl is notable for its abundance and huge (though mostly turbid) crystals, at one time perhaps the largest in the world. Extremely large crystals have been found in Grafton and Acworth. A cluster of crystals removed from the Palermo Mine in 1943 weighed about 35 tons; a single crystal of that cluster measured 3 1/2 x 6 1/2 feet.

For the collector there is a good chance of finding beryl crystals at almost any pegmatite (or rarely granite) mine, prospect, or road cut in New Hampshire, though gems are rare. Most will be the opaque blue-green common beryl, especially in the areas of Acworth, Alstead, Gilsum, Grafton, or Groton. The less common yellow variety (usually a bit muddy in appearance) may occur at the same localities and is sought at the Keyes Mine in Orange. Parker Mountain in Center Strafford has occasionally produced gemmy aquamarine, but the blue beryl at Wakefield is nearly always opaque. Colorless beryl (goshenite) has been found at the Island Mine in Alstead and the 8-Ball Mine in Rumney. The pink beryl at Raymond is unfortunately not gemmy enough to be termed morganite. True emeralds have not been found to date in New Hampshire. An unusual occurrence of 18- and 24-sided beryl crystals is found at the McGiness Mine in Wentworth, some giving the appearance of being cylindrical. Micros are possible at any beryl locality, but none is outstanding.

A number of gemstones have been cut from New Hampshire beryl, many of them described and illustrated in the New Hampshire Issue of Rocks & Minerals. A unique cat's-eye aquamarine cabochon is described from the Island Mica Mine in Alstead, as well as a carving, owned by Bob Whitmore,of a mermaid from Palermo material.

The interested collector will find many specific localities for beryl in Philip Morrill's "Mines and Minerals of New Hampshire", 2d edition, 1960, obtainable from the Montshire Museum, Hanover, NH 03755. The New Hampshire Issue of Rock & Minerals has several articles in which beryl is mentioned. Recommended for information on properties, varieties, and occurrence world-wide is "Beryl - A Review" by Richard Gaines in the Mineralogical Record, September/October, 19776, page 211.

The author is indebted to Tom Lalish for details on the state mineral bill in which he played a major role. Bob Janules, Edna Lerer, and Bill Metropolis assisted with additional valuable suggestions.

*The compounds used as phosphors were particularly toxic due in part to their solubility in body fluids. To date there has been no case of berylium poisoning reported from mining of beryl, probably because of its chemical inertness.

MINERALS OF THE FOOTE MINE, KINGS MOUNTAIN, NORTH CAROLINA

We would like to thank John S. White for this list of minerals from the Foote Mine. Type species are denoted by an asterisk (*).

Actinolite
Albite
Analcime
Arsenopyrite

Bavenite
Beraunite
Bertrandite
Beryl
Bikitaite
Biotite
Birnessite
Bityite (?)
* Brannockite

Cacoxenite
Calcioancylite
Calcite
Cassiterite
Chalcopyrite
Chlorite
Clinozoisite
Collinsite
Cookeite
Cryptomelane
Cyrilovite

Diopside
Dolomite
Dravite

* Eakerite
* Earlshannonite
Eosphorite
Epidote
Eucryptite

Fairfieldite
Ferrisicklerite
Ferroaxinite
Ferrocolumbite
Fersmite
Fluorapatite
Fluorite
Frondelite

Grossular
Gypsum

Helvite
Heterosite
Holmquistite
Hureaulite
Hydromagnesite
Hydroxyapophyllite
Hydroxylderderite

Jahnsite
* Kingsmountite

Laueite
Laumontite
Lithiomarsturite
Lithiophilite
Lithiophorite
Lithiophosphate

Magnetite
* Mangangordonite
Messelite
Meta-autunite
* Metaswitzerite
Metatorbernite
Microcline
Milarite
Mitridatite
Monazite
Montebrasite
Moraesite
Muscovite

Natrolite
Neotocite
Oligoclase
Parsettensite
Phlogopite
Phosphosiderite
Prehnite
Pyrite
Pyrrhotite

Quartz

Reddingite
Rhodochrosite
Rockbridgeite
Roscherite
Rutile

Schorl
Serpentine
Siderite
Sphalerite
Spodumene
Staurolite
Strengite
Strunzite
Swinefordite
* Switzerite

Talc
* Tetrawickmanite
Titanite
Todorokite
Triphilite
Triploidite

Uralolite
Uraninite
Uranophane

Vivianite

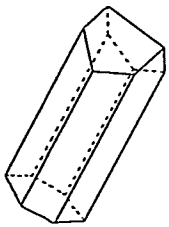
Whiteite

Zircon

THANKS....are due to many people for their help in making this meeting a success. It would be impossible to list everyone who contributed, so only those in charge of the various aspects are named here. We will attempt to credit others in the Newsletter.

Edna Lerer - Sales and door prizes
Steve Cares - Specimen Giveaways
Vi Robinson - Registrar
Pat Barker - Refreshments
Janet Cares - Program Book Editor
Bob Janules, Steve Cares, Sue Hadden, Shelley Monaghan, and Janet Cares who contributed to the Program Book
Marilyn Dodge - Donor of framed mineral photo for drawing

All others who contributed time, specimens, food or talent



whiteite