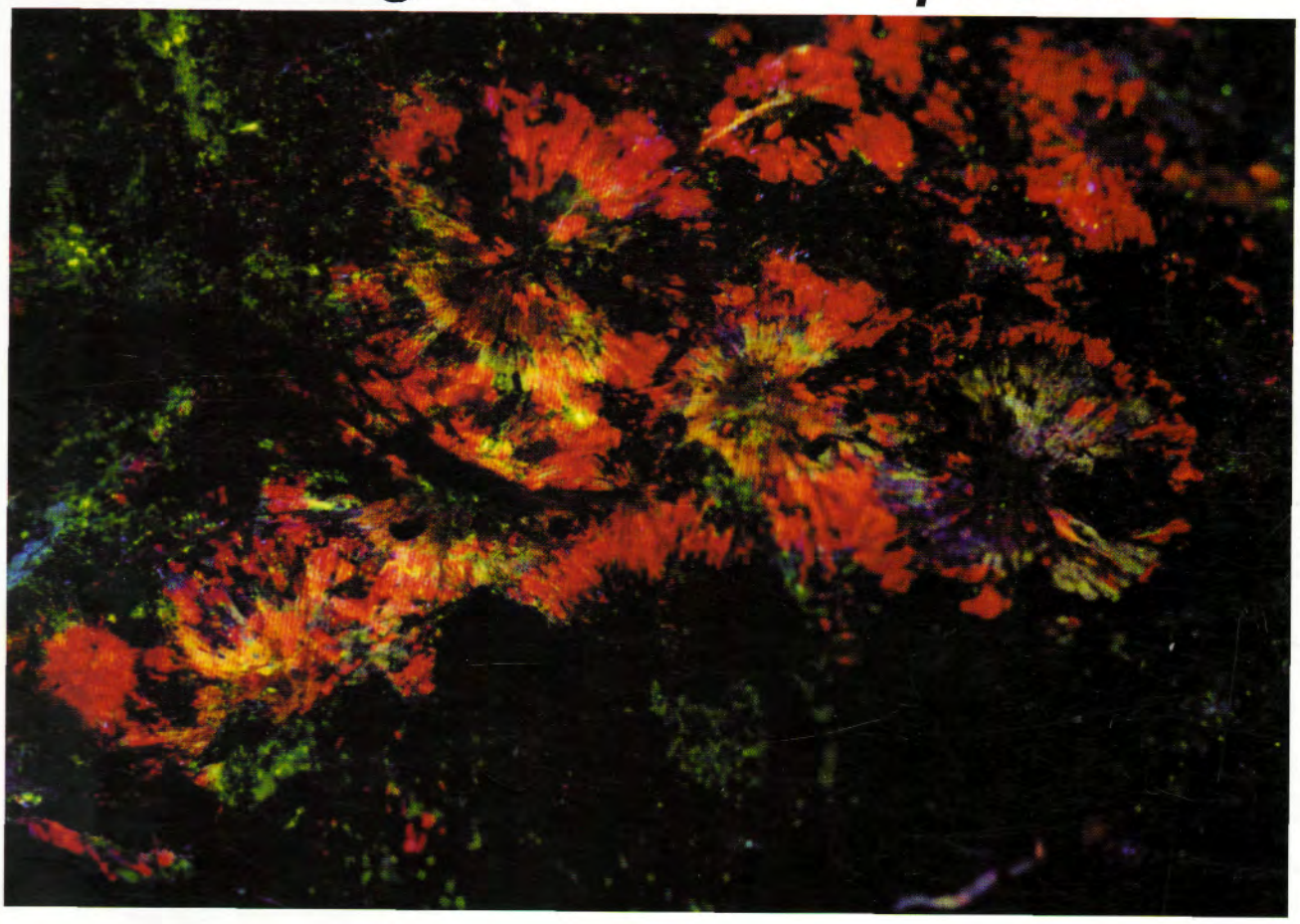
The PICKING TABLE

JOURNAL OF THE FRANKLIN–OGDENSBURG MINERALOGICAL SOCIETY
Volume 41, No. 2 - Fall 2000
$10.00 U.S.

Midrange Ultraviolet Responses



Palache's Contributions to the Mineralogy of Sterling Hill

New Species:
Synchysite
Thorutite

Schedule of Activities
FOMS News

THE 44TH ANNUAL

Franklin-Sterling Hill

Mineral and Gem Show

Proudly Presented By

THE FRANKLIN MINERAL MUSEUM

September 23 & 24, 2000

Saturday: 9:00 AM - 6:00 PM

Sunday: 10:00 AM - 5:00 PM

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Daily Admission: Adults: $4.00 Two Days: $7.00
Children: $2.00 $3.00

Admission covers the show, outdoor swap,and admission to the Franklin Mineral Museum.

The Franklin Mineral Museum is a nonprofit, educational institution.

The PICKING TABLE

JOURNAL OF THE FRANKLIN–OGDENSBURG MINERALOGICAL SOCIETY

Feature Articles

On the Cover: Photo of SW fluorescence of a 6" x 4" Franklin Mineral Museum specimen: manganaxinite (red), xonotlite (violet), nasonite (yellow), and willemite (green, SW), Prehnite is present but not fluorescent.

The Picking Table

Vol.41, No. 2 - Fall 2000

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The Picking Table is the official journal of the FOMS, and publishes articles of interest to the mineralogical community which pertain to the Franklin-Ogdensburg, New Jersey area.

Articles related to the minerals or mines of the district are welcome for publication in *The Picking Table*. Prospective authors should address correspondence to:

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The views and opinions expressed in *The Picking Table* do not necessarily reflect those of the FOMS or the Editors.

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Subscription to *The Picking Table* is included with membership in the FOMS. For membership, back-issuse, and information, write to: John Cianciulli, Treasurer FOMS, 60 Alpine Road, Sussex, New Jersey 07461.

FRANKLIN-OGDENSBURG MINERALOGICAL SOCIETY, INC.

FALL 2000 ACTIVITY SCHEDULE

Saturday, Sept.16, 2000
Collecting at the Noble and Passaic Pits at Sterling Hill.
*Open from 9:00 A.M. to Noon for FOMS members, and ** from 8:00 AM. to 3:00P.M.*
for members of the Sterling Hill Mining Museum Foundation. Fee: $1.00/lb.
10:00- Noon —Micro Group, Sterling Hill Mining Museum.
1:30 - 3:30 P.M. - FOMS Meeting and Lecture - Franklin Mineral Museum.
Geology of the Hawaiian Islands , by Professor Steve Okuwewicz

Saturday, and Sunday, September 23-24, 2000
44TH ANNUAL FRANKLIN-STERLING MINERAL AND GEM SHOW*
Sponsored by the Franklin Mineral Museum.
Franklin Middle School, Washington St., Franklin, N.J.
Hours: Saturday, 9:00 AM. to 6:00P.M.;
Sunday, 10:00 AM. to 5:00 P.M. Admission charged.

The Pond Swap-and-Sell, sponsored by the FOMS, takes place outside
on the school grounds, all day Saturday and Sunday. Show admission required.
Saturday 6:30 A.M. - 6:00 P.M., Sunday 8:00 A.M. - 5:00 P.M.

The FOMS Annual Banquet starts at 6:30 P.M. on Saturday at the Lyceum Hall of Immaculate Conception Church, located at the south end of Main St. in Franklin. Tickets may be reserved by calling Steve Misiur at (973) 209-7212 or John Cianciulli at (973) 827-6671. The meal is an all-you-can-eat Italian buffet, and soda, tea, and coffee are included. B.Y.O.B. After the banquet there will be a talk by Jay Lininger, publisher and editor *of Matrix.* There will also be an auction for the benefit of the FOMS, with Vandall King as auctioneer. Please bring a good specimen, artifact, book, etc. for this auction! Note that auction items may be earmarked for the benefit of The Color Fund of *The Picking Table.*

Saturday, October 21, 2000
9:00 A.M. - Noon - FOMS Field Trip - Collecting on the Buckwheat Dump,
Franklin Mineral Museum.
1:30 - 3:30P.M. - FOMS Meeting and Lecture - Franklin Mineral Museum:
Zeolites of Prospect Park, NJ, by James Zegris, collector and dealer

Sunday, October 22, 2000
9:00 A.M. - 3:00 P.M. - FOMS Field Trip - Lime Crest Quarry, Limecrest Road,
Sparta, N.J. This is an invitational field trip hosted by the FOMS, and is open to
members of mineral clubs which carry EFMLS membership and liability insurance.
Proof of EFMLS membership/insurance required. Proper safety gear a must.

Saturday, November 4, 2000
**7:00 P.M. - 10:00 P.M. - Night Dig on the Buckwheat Dump, for the benefit of
the Franklin Mineral Museum. Poundage fee charged, reservations suggested.

Saturday, November 18, 2000
9:00 A.M. - Noon - FOMS Field Trip Franklin Quarry, Cork Hill Rd., Franklin, N.J.
1:30 - 3:30 P.M. - FOMS Meeting and Lecture - Franklin Mineral Museum:
Collecting Pallasites in Chile's Atacama Desert, by Geoffry Notkin

FOMS field trips are open only to FOMS members aged 13 or older.
Proper field trip gear required: hard hat, protective eyewear, gloves, sturdy shoes.

**Activities so marked are not FOMS functions but may be of interest to its members;
fees and memberships in other organizations may be required.

Message from the President

By Steven Kuitems, D.M.D.

While reflecting on my interest in minerals and geology I thought about why this particular area appeals to me and why it has remained interesting. It struck me that our mutual interest must have a certain dynamic to it or else it will remain static and boring. For the past 30 years I have enjoyed the study of minerals, but if there were nothing dynamic about this avocation why would I bother to continue? As I ruminated on this concept several components of this dynamic that have kept up my enthusiasm came to mind: 1) opportunities for field collecting; 2) ongoing mineral identification and research; 3) specimen preparation and identification; 4) continual learning through reading mineral journals and books; 5) participation in FOMS events; and 6) enjoying interpersonal relationships with like-minded individuals. Your list may be different. These items are in no particular order of importance, but I am sure you have similar areas of activity that have kept up your interest and enthusiasm over the years and make up your individual dynamic.

A recent conversation with a fellow mineral collector about field collecting brought out his surprise that I could still add specimens to my collection this way. Well, yes, sometimes to my wife's chagrin when I come home with another bucket of rocks. But as I explain, there is potential there (not always readily apparent) for a first-rate specimen once a little cleaning and preparation have been done. The worst that results is a return trip to the dump or an addition to our rock garden, and I am grateful that my spouse is very tolerant of my hobby. At best it is extremely gratifying to find an intact crystal or a special fluorescent rock that I can say was personally collected. While health and energy allow, field collecting is part of our hobby's dynamic. It is much more than a virtual hobby. While I don't want to put down "silver picking" for specimens, there is something wonderful about finding them oneself. Through our society's meetings and field trips we still have the ability to participate actively in field collecting and mineral study. We need to be invigorated and stimulated through active participation in FOMS events. Keep up the dynamics of your interest; the alternative is reversion to a passive state that will only immobilize us and our society. So while the weather is conducive and the energy level up, Happy Hunting!

Steven M. Kuitems, D.M.D.
14 Fox Hollow Trail
Bernardsville, NJ 07924

From the Editor's Desk

By Peter Chin

The Picking Table has come into the new millenium sporting a new look and a large dedicated and enthusiastic staff, Richard Bostwick, Tema Hecht, Earl Verbeek, Paulus Moore, Wellington Chin, and Gary Grenier. The look has change but not the heart. *The Picking Table* is a club publication and as such it cannot succeed and improve without input from the members of the FOMS. YES, contribute articles. YES, contribute money to the COLOR FUND. Yes, contribute suggestions. Yes, tell your friends and anybody else willing to listen about FOMS and *The Picking Table*.

FRANKLIN MINERAL MUSEUM NEWS

John Cianciulli, Curator
Franklin Mineral Museum
P.O. Box 54
Franklin, NJ 06416

The Curatorial Department has much to report for the first half of Y2K. As promised the fluorescent exhibit has been re-arranged. A long wave section has been installed and much of the material collected from the Buckwheat Dump has been removed enabling better viewing of rarer more spectacular fluorescent mineral species. Mineral species have been grouped to help in identification while retaining much of the array of spectacular fluorescent color. Display case #7 has been completed and installed in Welsh Hall. Steven Phillips and daughter Casey installed the first of what we hope will be a series of revolving exhibits in the Dunn Cases in the passageway to the mine replica. Copper from the Franklin Mine is the theme. This exhibit is superb! Not to be outdone, Chester and Mary Bridget Lemanski have loaned their colossal pyrite exhibit for exhibition in Welsh Hall. This is another "must see" exhibit. The original New Jersey Zinc Company exhibit of mineral specimens is back home. It was first exhibited in the lobby of the Franklin School, the collection was moved to the Neighborhood House, and served as a part of the original collection of the Franklin Mineral Museum. Twenty five years ago it was moved to what is now Bank of New York. This collection has now come full circle and is presently on display in Kraissl Hall of the Franklin Mineral Museum. There are many very fine Classic Franklin specimens in this exhibit.

Miner's Day was modified to include and recognize people who have contributed or volunteered for the museum during the course of the year. The ceremonies were moved to the rear of the museum where there is more shade and better seating. The celebration was a huge success.

During the first week in May the Buckwheat dump was turned over in several areas. Collecting on the Buckwheat has never been better. Large specimens of sphalerite - calcite - hydrozincite are being found as well as the following: fluorite with fluorapatite; typical green ore with calcite; vuggy dolomite with monazite, rutile etc.; petedunnite; radiating hematite xls; hardystonite; massive and crystallized rhodonite and much more.

Research has been active and productive. Two new species found on the Buckwheat Dump have been confirmed from Franklin. The total number of species from Franklin - Sterling Hill deposits is now up to 352. Mont Saint-Hilaire is presently at 333 species. These new species to the deposit will be described elsewhere along with the discovery of a fluorescent serpentine from Franklin, NJ. The official confirmed mineral species list from Franklin and Sterling Hill is posted on the Franklin Mineral Museum website: http://www.geocities.com/CapeCanaveral/Lab/6347/index.html . The list will be periodically updated. ●

ERRATUM

I incorrectly reported that Dr. Pete J. Dunn donated 197 Part III monographs to the Franklin Mineral Museum. The Part III monographs were donated to the FOMS

J.C.

NEWS FROM STERLING HILL

Joseph Kaiser
40 Castlewood Trail
Sparta NJ 07871

After much hard work, the Thomas S. Warren Museum of Fluorescence is very close to opening and may have opened by the time this newsletter appears. Design of the cases involved many considerations including room dimensions, the expected height range of museum visitors, the size range of specimens, aisle width for comfortable viewing and many others. An important design feature is the use of OP-3 plastic sheet for the viewing windows. This plastic offers nearly perfect transmission of light throughout the visible range combined with near-total absorption of ultraviolet light.

On June 17, 2000 the Sterling Hill Mining Museum (SHMM) will have an exhibit featuring selected Marie Zimmermann metalworks. SHMM plans to exhibit the work for four months in keeping with its mission to highlight the creative uses of Earth's minerals and metals through human artistic endeavors. In 1935 Marie Zimmermann was referred to "not only as the foremost worker in metals from iron to gold but as the greatest artisan in the field of beautiful home accessories and exquisite objects d'art."

The GEMS teacher education program has been well received. Even those on a restricted financial budget can still provide their students with an interactive and highly informative educational experience. One teacher noted that the New Jersey Rocks and Sediments kit is very informative. Most teachers evaluated it as an effective tool for all grade levels, not just a specific or lower-grade level.

On Sunday, September 24, 2000 (the weekend of the Franklin Show), a portion of the Chorney collection will be available. During the hours of 1:00 to 3:00 P.M. many specimens will be sold, some pre-priced and some by silent auction.

On Saturday, October 21, 2000 from 6:30 TO 9:30 P.M., fall night collecting will take place on the Mine Run Dump for SHMM members only. Collecting in the Passaic and Noble pits for members only will be on September 16, 2000 from 8:00 A.M. to 3:00 P.M, with the FOMS field trip running concurrently from 9:00 A.M. to Noon. Some interesting crazy calcite and sphalerite has been found here lately. ●

FIELD TRIP REPORT

Steven M. Kuitems, D.M.D.
14 Fox Hollow Trail
Bernardsville NJ 07924

Lime Crest Quarry
May 21, 2000

Sometimes the biggest challenge on a field trip outing is not the location but the weather. That was the case today as the dawn revealed a dark gray sky with intermittent mist threatening more to come. But it never came, and what in clear weather is a bright white oven of a marble quarry became on this occasion very subdued and pleasant for the collector. The optimistic souls who showed up were amply rewarded with an abundance of Lime Crest specials. The first area that produced specimens was the on the second bench down the main access road, where numerous white and densely crystallized marble boulders yielded abundant bright-orange norbergite crystals 1 cm to 5 cm in length. This norbergite fluoresces bright yellow in shortwave ultraviolet light. As these specimens were being recovered, spinel crystals were also coming to light that were just as much a challenge to retrieve intact as the norbergites. But retrieve they did, and many fine spinel crystals from 5 mm to 2 cm in diameter went home with collectors this day. One superb specimen of the purple-colored beauties had three intact 1-cm crystals on a 5 x 6 cm surface! And yes, even a few distinctively reddish spinels emerged although these were considerably smaller than the purple crystals; the largest seen was 5 x 6 mm.

In three different areas of the quarry from the top bench to the second bench, though not in the deeper levels, various types of corundum were found. Two general colors predominated: purple to pink and red, and gray to blue. The more abundant purple to red corundum was associated with large plates of phlogopite, small amounts of margarite, and scattered rutile crystals as much as 1 cm across. The largest specimen seen today of purplish corundum measured 5 x 14 cm. The drab gray to light blue corundum was concentrated in a large vein-like mass bordered by tiny phlogopite plates. An interesting note is that the purple to red crystals all seemed to have a strong red fluorescence in longwave ultraviolet light while the gray to blue crystals were unresponsive to any ultraviolet source.

This trip produced fewer pyrites than previous outings, though a few intact cubic and bar-shaped crystals were found in the 1 – 1.5 cm range. As many of the larger pegmatite boulders had been removed only a few sphene crystals, none larger than 2 cm, were recovered. Only one rather beaten up mass of brown uvite and a few 2-cm cross-sections of uvite crystals were found.

It was nice to see those hardy collectors rewarded for their perseverance with some truly great Franklin Marble classics!

Franklin Quarry
June 17, 2000

What a contrast to the previous trip: absolutely bright white-hot 90°+ F temperatures were magnified inside the quarry! Fortunately the Franklin Quarry is quite level and has easy access for the collector. There has been an unusually large amount of activity recently, producing the largest amount of marble blocks this observer has ever seen here. But there seemed to be an inverse-proportion rule operating this day because there appeared to be an actual reduction in specimen production for the collectors who braved the heat. There were a few fine pyrites of high luster recovered in white marble, crystals up to 2 cm across in octahedral and modified cubic form. Most people have little idea how difficult it is to recover intact pyrite crystals from this marble. Don't lose hope here because even though only a few sizeable specimens came out there was ample evidence that much larger crystals are present in the current workings. I observed three unsalvageable crystal cross-sections in the 4 cm range!

Several collectors found small green uvite crystals as large as 2 cm in diameter and one fine gemmy chromium-green uvite 4 x 4 mm in size. Many people also found lookalike pale-green equant crystals of diopside up to 1 cm in diameter. These diopsides generally fluoresce bright pale blue, and the uvites pale yellow to cream, in shortwave ultraviolet light. Several well-formed dark gray, almost black tremolite prisms were recovered and some of these were arranged in fan-shaped clusters up to 12 cm long by 2 cm wide.

The collectors of fluorescence, once they overcame the near-blinding white of the quarry walls, discerned the faint outlines of the "bullseye" pattern diopside/norbergite masses this site is well-known for, since they fluoresce a pleasing pattern of blue-white and yellow rings, respectively, in shortwave ultraviolet light. Other masses and radiating sprays of fluorescent diopside were collected (white on white in daylight, but found by seeing subtle pattern changes in the marble) and these ranged in size up to 15 x 30 cm.

Most collectors learned very quickly to pace themselves during these extreme weather conditions, and the importance of proper hydration cannot be overemphasized. ●

Through the Looking Glass

Modris Baum

John Ebner

Ralph Thomas

Comparative Numerology of Franklin and Sterling Hill, New Jersey

Never mind Tsumeb or Minas Geraes! We all know that the "world's most magnificent mineral deposits" are in Franklin and Sterling Hill, New Jersey. We knew this long before Dr. Dunn said so [Dunn, 1995]. And it isn't mere chauvinism. We know because we have "the list" - that indisputably objective measure of mineralogical supremacy published each year in the Franklin - Sterling Gem & Mineral Show brochure [FMM, 2000].

Oh sure. We all know better. The fame of Franklin and Sterling Hill is not hanging by the thread of this list (of all species found there). Should the list consist of just franklinite, willemite and zincite, F/SH would still be a classic locality. And there are other "objective" titles such as: "most minerals first described from ..."; "most species unique to ..."; or "most fluorescent species" that F/SH can claim. (Unkind – jealous! - wags have suggested the title "most poorly crystallized species" as well. Bunk!)

But it is "the" list that we all watch and in whose reflected glory we bask. Just a little? You probably already know that the current total on this list is 349. And we're still number one - right?

Well - let's take a look.

What about the Kola peninsula, in particular Khibiny and Lovozero [Britvin et al., 1996; Ivanjuk et al., 1997]? As of April 2000, the very carefully maintained lists of Laszlo Horváth tallied 376 species for Khibiny and 314 for Lovozero [Horváth, 2000a]. Together nearly 500. Other sources give even higher counts [Steffens, 2000] - and you can buy several more from dealers! (It is easy to surpass F/SH if you ignore niceties such as IMA approval of species names.)

Both "Khibiny" and "Lovozero" consist of several mountains, mines, and other sites. Both are also very large areas. Khibiny is roughly 500 square miles and Lovozero a bit more than 250 - nearly 100 times the "formal Franklin-Sterling Hill area" [Dunn, 1995, p. 71; Wight and Chao, 1995]. While size, in itself, should not prevent consideration as a single locality, and Khibiny and Lovozero are indisputably closely related geologically, one might be equally justified in giving single locality status to "Arizona" or the "Rocky Mountains".

Not that comparison of the "Rocky Mountains" with other mountain ranges would lack interest or scientific value. Even lists such as "minerals first discovered on the territory of the former Soviet Union " are not only fascinating but quite valuable [Pekov , 1998]. And what list is more valuable than the list of all known minerals? Furthermore, in the context of planetary mineralogy, it may well make sense to think of even the entire Earth or Moon or Mars as a "single locality".

But that is not the sort of definition that we have in mind when claim that F/SH has "more [minerals] by far than any other place on earth" [Dunn, 1995 p. 331]. In his discussion of locality species lists Dunn does not explicitly address the definition of "locality", suggesting instead that the "scope", possibly including "several deposits taken together"], of each list be clearly defined [Dunn, 1991]. Very reasonable, - but not very satisfying for those who take vicarious pride in "length of list". While the "formal F/SH area" is very clearly defined, there is no prescription for defining "comparable" areas elsewhere

And clearly there will be no single, *universally acceptable*, definition of "locality" which excludes "Khibiny" (or even "Kola") while including F/SH. Indeed, the formal F/SH area also includes "the Furnace Magnetite Bed, and the host Franklin Marble, all of the same Precambrian age, and adjacent to or between Franklin and Sterling Hill" [Dunn, 1995, p. 71]. Where and how to draw the line?

For F/SH collectors wishing to be "number one" in the eyes of the "list" world, a (hierarchical) *multiplicity* of commonly acceptable locality definitions seems the only possibility. Indeed, such definitions could be of intrinsic value apart from any desire to salvage local pride. Since "lists constitute prime, basic documents on the overall chemistry of deposits, and are of critical importance to a full understanding of the mineralogy of specific occurrences" [Dunn, 1991], commonly accepted categories of "locality" (or "scope") would provide valuable guidelines for compilation of more usefully comparable lists.

But even if we exclude Kola or Khibiny on some "reasonable" grounds of "scope", there is another site that has been causing "list angst" of late. I speak of Mont Saint-Hilaire, Quebec, one of ten "Monteregian Hills" that stretch from Oka to Megantic like a foundered island arc. Alkali intrusives to geologists - annoying gelogical "zits" to F/SH partisans.

While other sites in these Hills and the numerous closely related alkaline sill intrusions are also of significant mineralogical interest, it is Mont Saint-Hillaire (MSH), the "Magic Mountain" less than 25 miles east of Montreal, that has grabbed our attention. In less than 40 years of active quarrying, MSH has become a serious challenger to "the list".

MSH also produces perhaps the world's most beautiful and spectacular specimens of serandite, catapleiite, genthelvite, analcime, siderite, pectolite and many, many rarities [Horváth and Gault, 1990]. And the willemite ain't bad either - how does a 1" gemmy blue crystal sound? Much larger crystals to 4" have also been found. But - apart from the rather rare willemite - we don't care. By their "lists" do we judge them.

Well, don't worry - be happy. It is already too late. If you have not yet heard, the count for Laurium, Greece, passed 360 (361 to be exact) as of last summer [Wendel et al, 1999a], thereby leaving both F/SH and MSH in the numerological dust. (Twelve more species were listed in a recent update [Mockel, 2000]. The MinMax Mineral Information System lists 379 species [Zampano, 2000].)

OK, OK. "Laurium" is again a collection of many mines, no single one of which has many more than 200 distinct species [Horváth, 2000a], spread over 25 square miles [Wendel et al, 1999b] - nearly 10 times "F/SH". Even one of the authors [BR] of the *Lapis* articles agrees that Laurium is not a single locality [Horváth, 2000b]. But neither does he feel that Khibiny, Lovozero, or F/SH are single localities.

Returning for a moment to the subject of locality definitions, the "one hole one locality" definition [Horváth, 2000a] is perhaps least open to debate (though not necessarily the most interesting.) But that definition excludes F/SH as well as Laurium, Khibiny and Lovozero.

However, the "one hole" definition does not exclude MSH. While the "mountain" itself is about 5 square miles in extent, only the northeastern side is mineralogically interesting. The quarried area occupies but a small portion of that - perhaps 0.2 sq miles [Wight and Chao, 1995] or less than one tenth the area of F/SH. (While at one time the home of three separate, but essentially contiguous operations (a thin wall separated two of them for a time), it is now a single "hole" being excavated by one company.

Even if we agree that Laurium is "too big", and that F/SH is "just right" one can't very well call MSH "too small". It must be "just right" as well.

And "there is another" [Yoda. 1980]: Grube Clara in Germany, though not well known to US collectors, is also "just right" and fast approaching in the rear view mirror. As of last winter, the count was 316 [Horváth, 2000], which trails MSH by a "whisker" – literally. For unlike MSH, which has not only well crystallized rarities but also impressive cabinet specimens, most of the rarities from Grube Clara, an underground barite and fluorite mine in the Black Forest, are in the micro to "whisker" category. For list watchers, however, Grube Clara should be as much of a concern as MSH since new discoveries continue apace [Walenta, 1999]. (Again, there are plenty of less conservative lists than Horváth's which surpass MSH [Zampano, 2000] and even F/SH.)

As for MSH, the "official" count is now published by the Canadian Micro Mount Association and reached 331 in April [Back et al., 2000]. Horváth [2000b, 2000c, 2000d] includes three other species (including kentbrooksite - likely the most common member of the eudialyte group at MSH) and six IMA approved, but as yet unpublished, species.

There are caveats concerning a few of the MSH species, but neither is the F/SH list free of such For example, both andesine and oligoclase are on the MSH list [Favere, 2000] but not in [Mandariono, 1999b]. But oligoclase is also on the F/SH list. The MSH list has been updated to reflect the new zeolite nomenclature [Mandariono, 1999a], the F/SH list has not. Both ferri- and ferrostilpnomelane are on the F/SH list whereas the new nomenclature of micas [Rieder et al., 1998] does not mention the former and equates the latter to stilpnomelane. Etc.

Regardless - when the nitpicking dust settles, it will still be true that MSH is almost up to the F/SH "bumper". And it is gaining rapidly.

Indeed, it is the rate at which MSH has been adding new species that fuels "list angst". The July/August 1979 *Rocks & Minerals* article listed 143 species [Marble et al., 1979]. By the time of the second *Rocks & Minerals* article in March/April of 1986 [Wight and Chao, 1986] there were 185 and the third article in March/April of 1995 [Wight and Chao, 1995], listed 307. The most recent published update in *Lapis* lists 337 [Horváth, 2000c, 2000d].

While the rate of addition has slowed a bit recently, in part due to the retirement of Dr. George Chao of Carleton University, it seems likely that MSH will "surpass" F/SH in 5 years or less. Furthermore, the MSH count includes neither minerals found on the rest of the mountain, nor those found in any of the geologically related alkaline intrusions such as Oka, Francon [Glenn and Fisher, 1993] or the Saint-Amable sill [Horváth et al, 1998]. If one were to include just the species found in the alkaline intrusions within 25 miles of Montreal, the "MSH" list would boast more than 400 species, of which 55 are type species [Horváth, 2000c]. (Francon is the type locality for 5 of the minerals found at MSH [Steffens, 2000a].)

If this troubles you, then "buy and use a good scope"! Most new MSH minerals are initially discovered by amateurs using "scopes" - not electron microprobe equipment or X-ray diffractometers! As John Cianciulli can attest, there probably remain F/SH minerals that were overlooked in pre-scope days. In fact, there are two or three new ones in the works for the F/SH list thanks to good use of a scope (with a little help from Jim Rumrill's "counter"!) [Cianciulli, 2000].

Of course, in the end, you must also have access, directly or indirectly, to someone who can perform the analyses. For all new and many "known" species this will be very time consuming and expensive. In this regard, MSH collectors currently have a distinct advantage. There are at least three or four Canadian institutions with one or more mineralogists actively engaged in (at least part time) studies of minerals from MSH. In addition, because of the similarity of minerals found at MSH and at other actively studied alkaline intrusives, in particular in the Kola peninsula and Greenland, many other mineralogists work with MSH specimens. In this respect, the uniqueness of the F/SH deposits is perhaps a disadvantage. (But even for MSH, the pace of "scientific progress" often seems painfully slow to collectors.)

However, do not suppose that recent additions to the MSH list have been of the flyspeck variety. *Au contraire*, most of the recent additions to the MSH list have been gigantic when compared to, e.g., the new species described in [Mandarino, 1997]. Most are indeed micros, but nearly all are well crystallized and clearly discernable under the microscope. Particularly attractive are the recent finds of thomasclarkite-(Y), horváthite-(Y), khomyakovite and manganokhomyakovite for all of which MSH is the type location.

Among the soon to be published, "UK106" (IMA approved 1999) is of particular interest because very fine specimens were found last summer with entire "plates" covered with beautiful silky white to pale pink sprays up to 2 cm across.

Speaking of "type" locations, this is another "objective" criterion mentioned earlier. However, the formal definitions of holotype, cotype etc. are very recent [Dunn and Manarino, 1988]. Most "first descriptions" predate these concepts. And where are the type localities for gold, or even

calcite and galena? (See [Blackburn and Dennen, 1997] for some interesting information on the names of these and many other species.)

In practice, counts of "first described from" are probably of more interest - although even such lists must exclude the three minerals just mentioned as well as many others (Plini Secunda not withstanding). The word "type" is a common and convenient, if perhaps misleading, term for such lists.

If we exclude Lovozero with it's 70 type species and Khibiny with 64, it would seem that F/SH once more takes "list honors". Dunn lists 69 species as having been first described from F/SH (including willemite and johannsenite) [Dunn, 1995, p. 326-7]. Laurium, despite it's ancient history, has a mere 9 [Wendel, 1999a]. (Publish or perish!)

Among the "just right" contenders, Grube Clara has just 13 type species [Horváth, 2000a] and MSH boasts "only" 44 [Horváth, 2000b, 2000c].

The MSH list includes two species for which MSH is not the "principal" type locality, the six IMA approved but unpublished species, and one ("tetranatrolite") that is currently in limbo. However, the MSH count is likely to increase substantially. The MSH analysis pipeline already has more than 40 other "unknowns", several of which are nearing IMA submission. (MSH "unknowns" are identified with a label such as "UK110". Some of them come in two or more varieties which are likely to be distinct species. If these varieties are counted separately, the current total of those still not published or identified is about 54.)

Not all of the MSH unknowns will become new species. Some have extremely variable compositions or poor crystallinity. Others are not of sufficient quantity or quality to permit complete description as new species. Some of these may make the "list" if and when better specimens are found or they are characterized from some other location. Others will turn out to be duplicates or mixtures, as has happened in the past. (For example, UK96 = UK106.) But more unknowns are added almost every year.

Will MSH "surpass" F/SH in the type list as well? Given the backlog of unknowns and the track record that these have had in producing new type species - precisely half of the unknowns resolved so far have become type species - it seems possible but by no means certain.

And there is another place I have not yet mentioned, but of particular interest to F/SH collectors, namely Langban. While the total count for Langban is "only" 261, as of 1999, the count of type species had reached 65 [Holtstam and Langhof, 1999].

Other localities with exotic mineralogy, while not particularly high in total species, can also have high type counts. For example, Schneeberg in Saxony, Germany, known for iron and silver but also rich in unusual cobalt and bismuth minerals, is the home of 35 type species [Schlegel, 2000]. (One of these is bismuth, via "first description" by Agricola - in 1545!)

The Siberian platinum and palladium site of Noril'sk, no slouch in the total species category with about 280, had 27 type species as of 1995 [Tvrdy et al, 1995]. As of 5/94, "Vesuvius" claimed 56 type species - out of a "mere" 180 or so in total [Preite, 1994]. And there are localities such as Tsumeb where the provenance of many "type" species appears to be uncertain. (Out of 200 total species, [Bartoli, 1996] lists 25 as holotypes and another 25 - including tsumebite! - as "holotype probable" - whatever that means! However, it is not at all uncommon for the exact provenance of specimens to be uncertain due to "company rules" prohibiting collection by miners, etc.]

Two other "objective" measures we have not yet discussed are counts of "unique" species and fluorescent species.

The "unique" count for F/SH is an impressive 35 [Dunn, 1995, p.324-5] – more than the total count of species at many another classic site.

However, while well documented for F/SH, this count is subject to almost instant revision and is even more slippery than the count of type species. Apart from the difficulty of doing an exhaustive search of the published literature, there is the very real possibility that a mineral previously unique to some locality may be confirmed at one or more other localities, but not be formally reported in a journal or even at a conference. One could be very strict and regard such unpublished reports as irrelevant but the reality is that such work is often "unpublishable", if for no other reason than lack of resources, without in any way being invalid. I shall steer clear of any speculation in this area.

While perhaps less slippery than the unique count, the total count of fluorescent species also suffers from the same incompleteness of published data, etc. Suffice it to say that I have yet to see a longer or more extensively validated list than the F/SH list maintained by Dick Bostwick [FMM, 2000]. F/SH truly remains and will likely remain the "Fluorescent Capital of the World".

Before leaving the discipline of numerology there is yet one more type of list that may be of interest - namely the list of species common to two locations.

Despite the very great differences in origin and history of the deposits at F/SH and MSH, they do have, perhaps surprisingly, about 105 minerals (including "biotite" and "orthoclase") in common.

Of course, most of these shared species are ubiquitous minerals such as calcite and quartz. But there are a few surprises: barylite, ganophyllite and kutnohorite. More subjectively, among the species that F/SH is known for, MSH also boasts excellent willemite, sphalerite, zircon and aegirine. Both also have "interesting" vesuvianite and F/SH has the MSH classics analcime, genthelvite, natrolite, pectolite, rhodochroste and siderite although these are not very spectacular here.

Langban and F/SH share 134 minerals. Considering the oft stated similarity of these two sites, it may be surprising that this count is not higher when compared to the count for clearly *dissimilar* MSH and F/SH.

Khibny and Lovozero, on the other hand, have a whopping 193 in common (based on the lists from *Lapis*).

Go figure - and let us know what *you* come up with.

ACKNOWLEDGEMENT:

My sincere thanks to László Horváth for sharing his latest information on several of the sites and for numerous helpful comments and suggestions.

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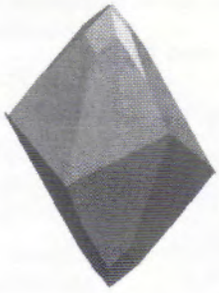

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Some Observations on Midrange Ultraviolet Response of Franklin-Sterling Hill Minerals

by Claude V. Poli and John Cianciulli

Photography by Gary Grenier

For many years now the fluorescent mineral collector has had a choice between *longwave* and *shortwave ultraviolet* lamps. Almost all of our observations of fluorescent minerals have been based on exposure to ultraviolet light within these two wavelength regions. Now more available to fluorescent mineral collectors, the *midrange ultraviolet light* is gaining in popularity. As with all wavelengths, mineral fluorescent responses are variable. Some minerals have been found to fluoresce better under *midrange* and in some cases specimens fluoresce a completely different color than under *shortwave* or *longwave*.

The following observations were made using a midrange lamp UVP 57 with a peak output of 302 nm manufactured by Ultra Violet Products, Upland, California. Each specimen was examined by a group of several individuals, Claude Poli, John Cianciulli, Lee Lowell, Farrah Fawcett, and Carol Durham and agreed on how to describe the color of fluorescent response. F = Franklin Mine; SH = Sterling Hill Mine; FMM = Franklin Mineral Museum Inc.; *best response midrange* = brightest response of the specimen as compared to its response to the other two ultraviolet wavelength regions. Except where noted, only the midrange response is reported.

Aragonite - ***bright blue-green*** (SH - C. Poli coll., # 1277)

Barite - ***bright cream*** (F,SH - C. Poli coll., uncatalogued specimens and SH - FMM #1484)

Bustamite - ***dull red*** (F - C. Poli coll., uncatalogued specimen)

Calcite - ***cream, orange-red, crimson, blue-green, blue*** (F,SH - C. Poli coll. specimens, # 1230 shown in Figures 1a and 1b)

Chabazite - ***green*** (SH - FMM #5077)

Charlesite - ***blue***, *best response midrange* (F – FMM , uncatalogued specimen formerly in the Kraissl/Lemanski coll., shown in Figures 5a and 5b)

Clinohedrite - ***pale orange*** (F - C. Poli coll., uncatalogued sprcimens)

Cuspidine - ***dull violet*** (F - C. Poli coll., uncatalogued specimen)

Diopside - ***yellow-orange*** (F,SH - C. Poli coll., uncatalogued specimens)

Dypingite - ***blue***, *best response midrange* (SH – FMM #466 formerly in the Spex/Gerstmann coll.)

Epsomite - ***violet***, *best response midrange* (SH – FMM #5944 formerly in the E.P. Cook coll.)

Esperite - ***greenish-yellow*** (F - C. Poli coll. #997)

Fluorapatite - ***dull-orange, and peach*** (F,SH - C. Poli coll. uncatalogued specimens)

Fluorite - ***blue-green*** (F,SH - C. Poli coll. uncatalogued specimens)

Gypsum - Large clear platy gypsum fluoresces ***pale yellow*** around edges, *best response midrange* (SH – FMM #5572 formerly in the Kraissl/Lemanski coll.)

Fine granular opaque white gypsum fluoresces ***yellow to orange*** (SH – FMM #5575 formerly in the Kraissl/Lemanski coll.)

Small crystals fluoresce ***pale orange***, *best response midrange* (F – FMM #1466 formerly in the Spex/Gerstmann coll.)

Hardystonite - ***blue-violet and lavender*** (F - C. Poli coll. #1281; FMM #5717, 5720; and 5715 formerly in the Kraissl/Lemanski coll.

Hedyphane – ***orange-brown*** (F - FMM specimen #5942, hedyphane analyzed by Lawson H. Bauer, formerly in the K. Fisher coll.)

bright orange like sphalerite, *best response midrange* (F – C. Poli coll. #1299 shown in Figures 2a and 2b; FMM #1288,5578,5926, and 5920)

Hyalophane – **tan** (F - FMM #5403)

Hemimorphite - ***lime green*** - recent find with trace U (SH - C. Poli coll. uncatalogued specimen);

Cream to yellow (SH - "maggot ore", FMM specimen # 5487 formerly in the Kraissl/Lemanski coll. and 5828, "stalactic ore" formerly in the Wm. Prall coll.)

Hydrozincite - ***moderate white*** (F,SH - C. Poli coll. uncatalogued specimen);

Blue with yellow margins, *best response midrange* (SH - FMM specimen #5810 formerly in the Bolitho coll.)

Johnbaumite - ***burnt orange*** (F - C. Poli coll. uncatalogued specimen)

orange (F – specimen on loan to FMM from Dr. S. Kuitems was found on Buckwheat Dump by Pete Fawcett in 1985)

Manganaxinite - ***moderate red*** (F - C. Poli coll. uncatalogued specimen)

red-orange (F - FMM #5703 formerly in the E.P. Cook coll.)

Margarosanite - ***bright red, bright red with orange streaks, dull pink*** (F - C. Poli coll. uncatalogued specimens, and FMM # 6117 shown in Figures 3a and 3b)

Margarite - ***cream yellow***, *best response midrange* (F - FMM #6134, white mass of plates, matrix for dravite crystals, formerly in the E.P. Cook coll.) note: green variety responds poorly in most cases.

Microcline - ***grayish-green*** (F - C. Poli coll. uncatalogued)

dull powder blue (F - examination of FMM specimens)

Meionite - ***dull peach*** (F,SH - C. Poli coll. uncatalogued specimens)

Minehillite - ***violet*** ,brighter than SW response (F - C. Poli coll. #1500)

blue, *best response midrange* (F - FMM uncatalogued specimen formerly in the Szenai coll., crystals on gray feldspar shown in Figures 4a and 4b)

Monohydrocalcite – ***bright green***, *best response midrange* (SH - FMM #471 formerly in the Spex/Gerstmann coll.)

Nasonite – ***yellow cream***, *best response midrange* (F - FMM #5963 massive nasonite, formerly in the E.P. Cook coll.)

Norbergite - ***dull orange*** (Franklin marble, uncatalogued specimens in C. Poli coll. and FMM coll.)

Pectolite - ***dull peach*** (F - C. Poli coll. uncatalogued specimen)

dull orange (F - FMM # 5556 formerly in the Kraissl/Lemanski coll.)

Phlogopite – ***dull yellow*** (numerous specimens in the FMM coll.)

Powellite - ***bright*** yellow (F - C. Poli coll. uncatalogued specimen)

Prehnite – ***dull pink to yellow*** (F – FMM #5844, formerly in the Kraissl/Lemanski coll.,and 6094 formerly in the E.P. Cook coll.). Note: many prehnite specimens fluoresce yellow midrange especially those with pectolite, roeblingite and xonotlite-hancockite.

Roeblingite - ***dull pink*** (F - C. Poli coll.; FMM #6329 nodule also has red shortwave response, formerly in the Kraissl/ Lemanski coll.)

bright cream *best response midrange* (F - FMM uncatalogued nodule, formerly in the Spex/Gerstman coll.)

Scheelite - ***pale yellow*** (F - C. Poli coll. uncatalogued specimen)

Yellow-orange [F (Trotter Dump) - FMM # 5888 formerly in the H.W. Reibman coll.]

Sphalerite - ***pumpkin orange*** (F,SH - C. Poli coll. uncatalogued specimens)

Sphalerite var. Clieophane - ***neon blue*** (F,SH - C. Poli coll. uncatalogued specimens)

Talc - ***dull green*** (SH – FMM #1251 formerly in the Spex/ Gerstmann coll.)

Turneaureite - ***pumpkin orange*** (F - C. Poli coll. uncatalogued specimen)

dull orange (F - FMM specimen #1293 formerly in the Spex/Gerstmann coll.)

illemite - ***green*** (F,SH - C. Poli coll. uncatalogued specimens)

Wollastonite - ***dull orange, dull peach*** (F,SH - C. Poli coll. uncatalogued specimens)

Xonotlite - ***dull violet*** (F - C. Poli coll. uncatalogued specimen)

powder blue (F - FMM #5853 formerly in the Kraissl/Lemanski coll.)

Zincite - ***bright yellow to white*** (SH - C. Poli coll. uncatalogued specimens)

Znucalite - ***neon green***, *best response midrange* (SH - FMM#1987 formerly in the Spex/Gerstmann coll.)

The observations are based on a small number of samples and though the preliminary results are eye opening, a systematic study has yet to be done. Phosphorescence was an aspect not addressed in this article. The wider availability of midrange lamps will undoubtedly open an exciting new frontier in the world of mineral fluorescence.

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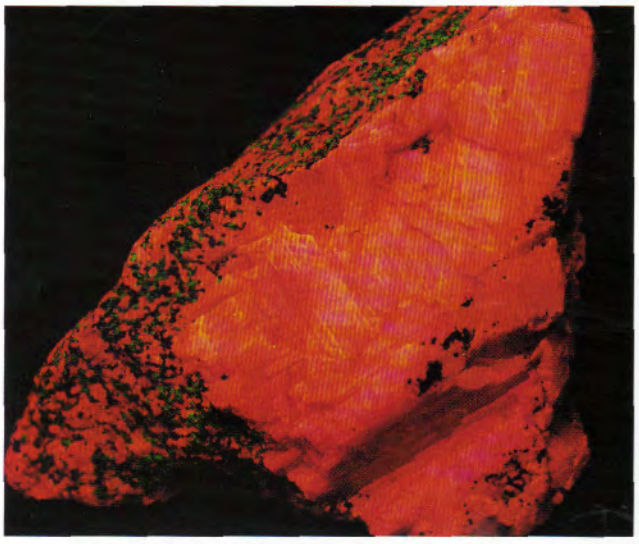


Figure 1a. Shortwave fluorescent response. Red = calcite. Specimen measures 5 x 4 in.,

C. Poli coll. 1230.

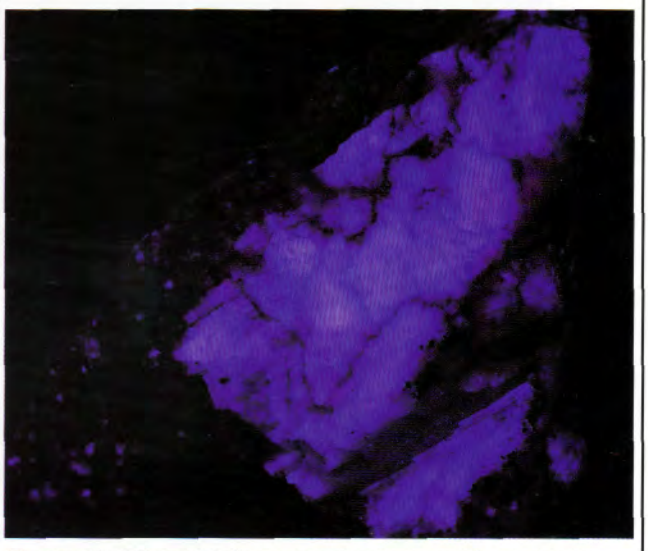


Figure 1b. Midrange fluorescent response of specimen shown in Figure 1a. Blue = calcite.

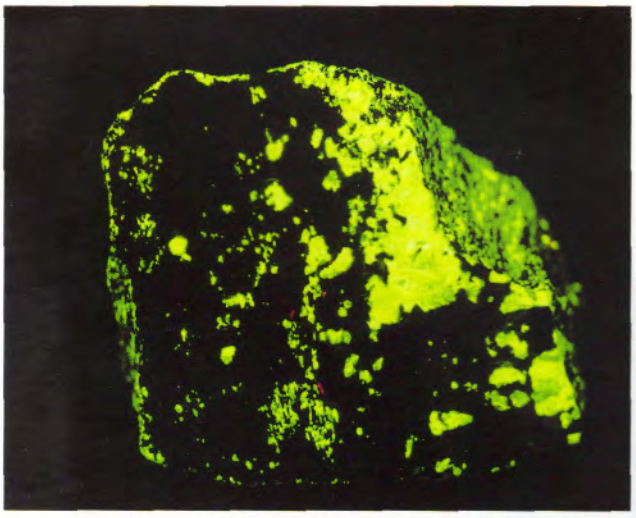


Figure 2a. Shortwave fluorescent response. No response = Hedyphane, green = willemite.

Specimen measures 3 x 3 in., C. Poli coll. 1299.

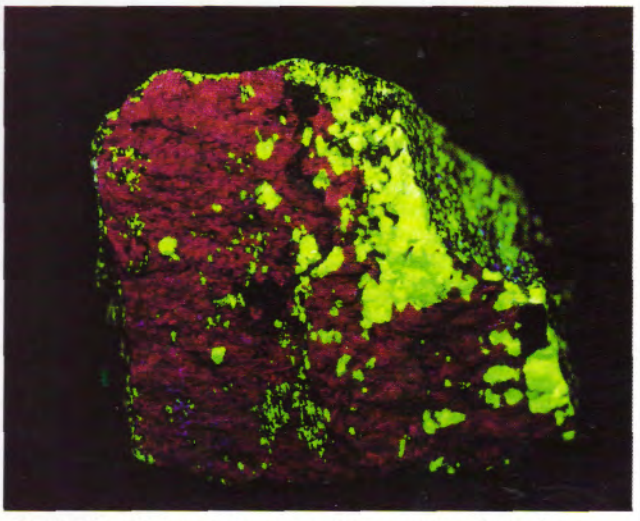


Figure 2b. Midrange fluorescent response of specimen shown in Figure 2a. Orange = hedyphane, green = willemite.

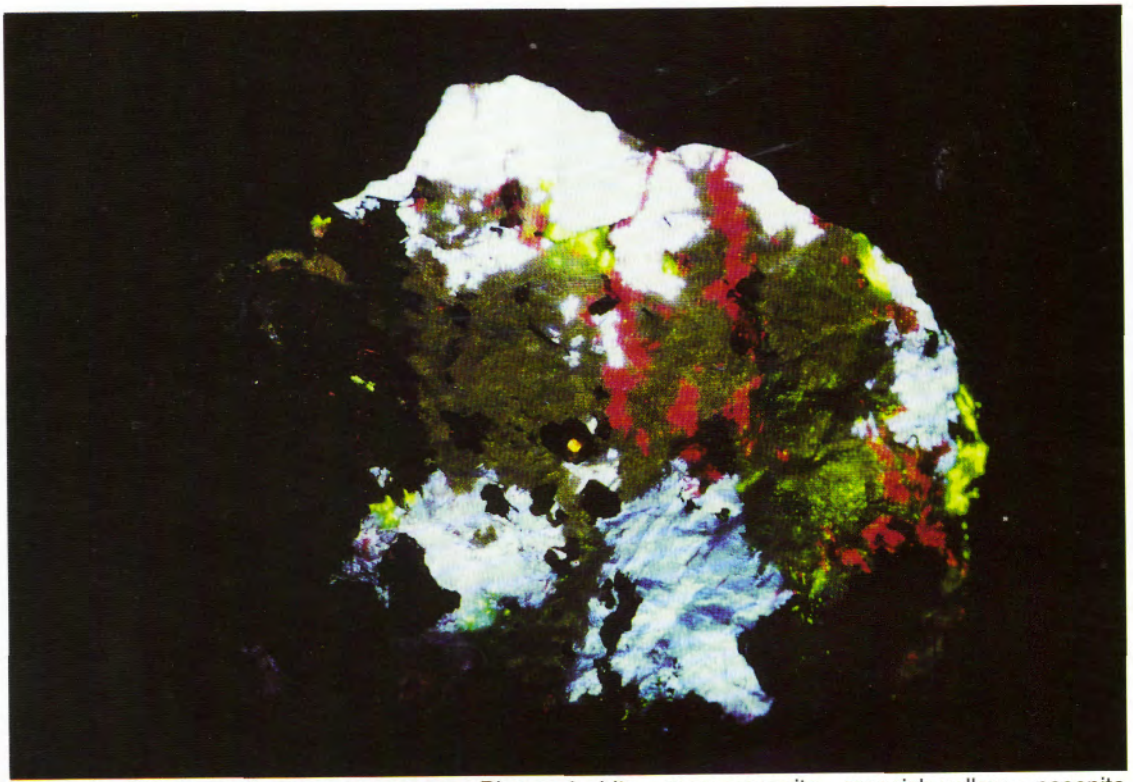


Figure 3a. Shortwave fluorescent response. Blue and white = margarosanite, greenish-yellow = nasonite, red = axinite, green = willemite. Specimen measures 6 x 4 in.,

FMM 6117.

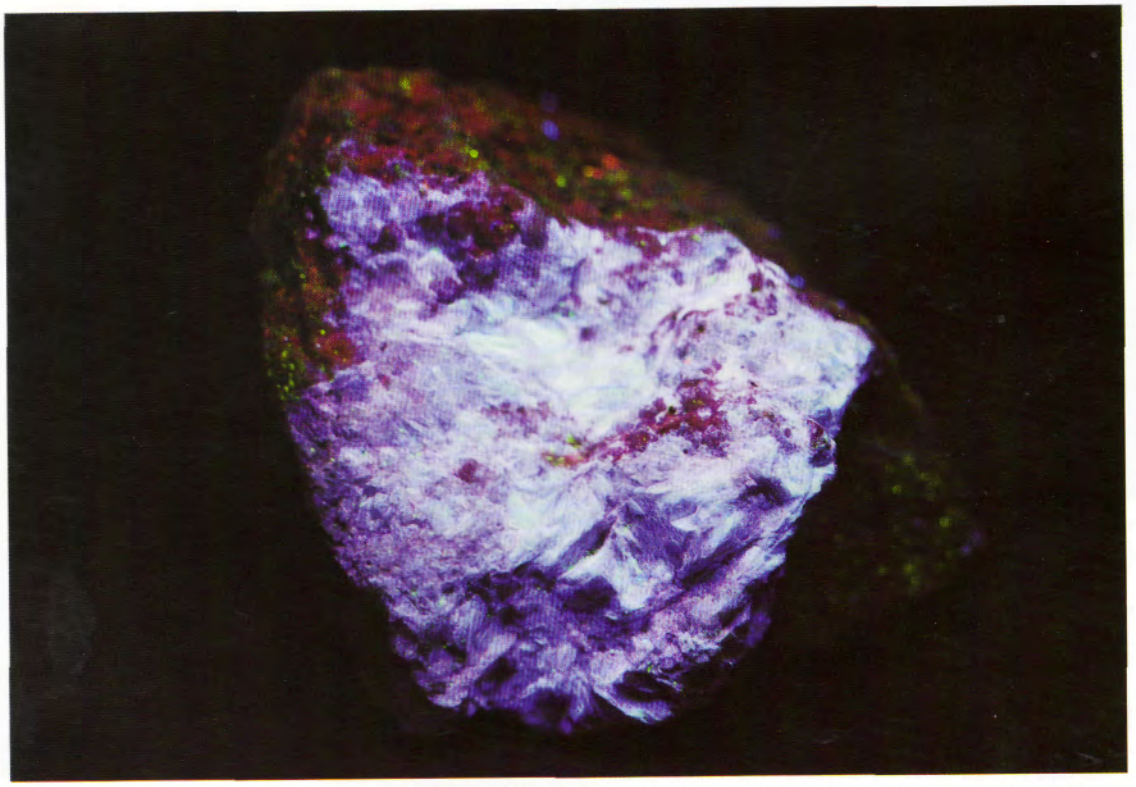


Figure 4a. Shortwave fluorescent response. Blue-white = minehillite. Specimen measures 1.75 x 2 in.. FMM uncatalogued specimen.

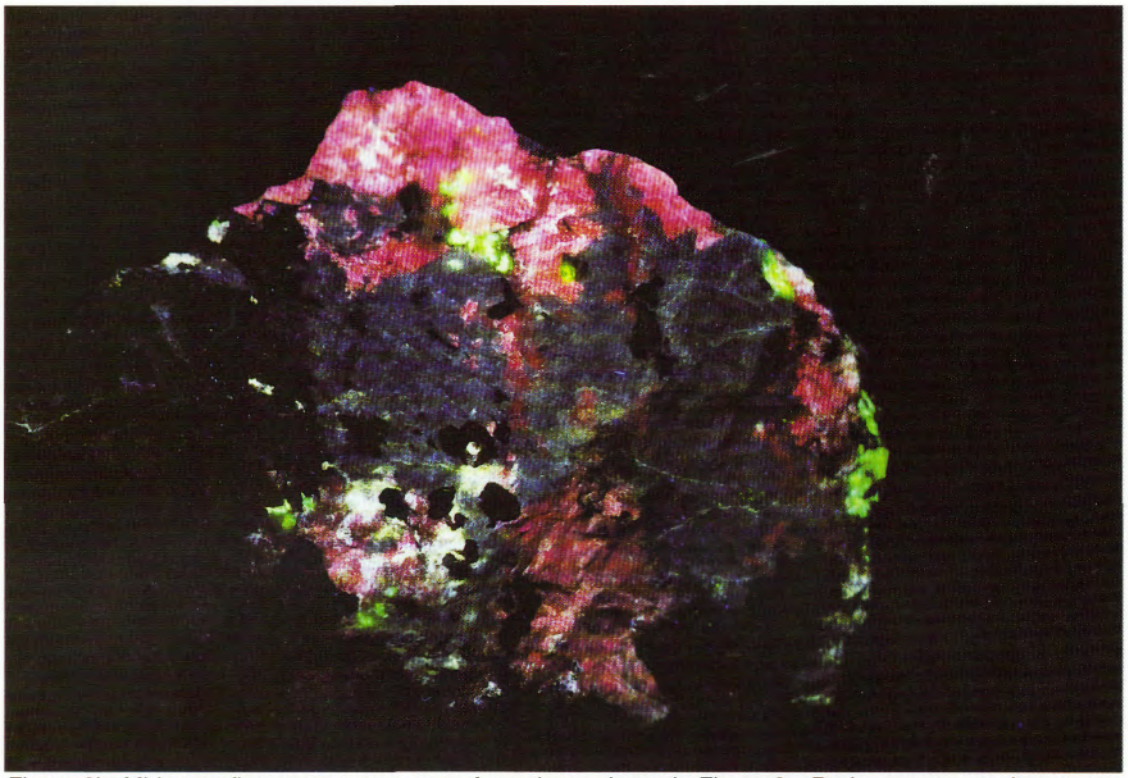


Figure 3b. Midrange fluorescent response of specimen shown in Figure 3a. Red = margarosanite, green = willemite.

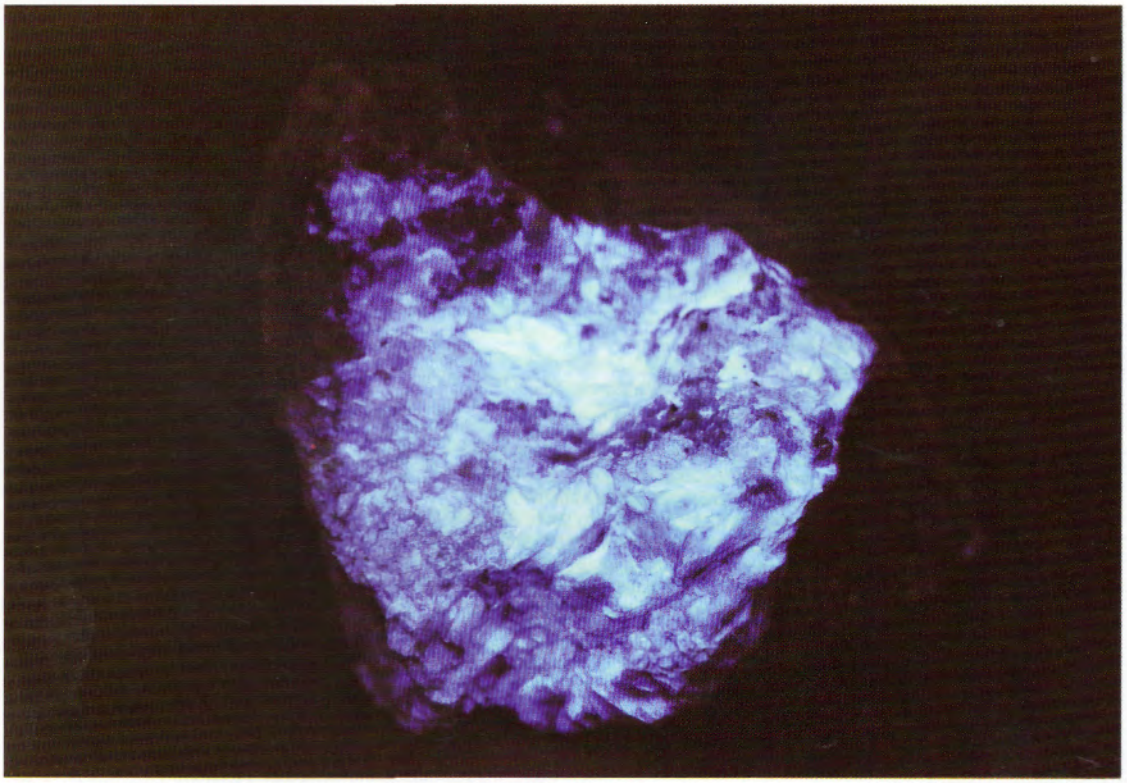


Figure 4b. Midrange fluorescent response of specimen shown in Figure 4a. Blue, blue-white = minehillite.

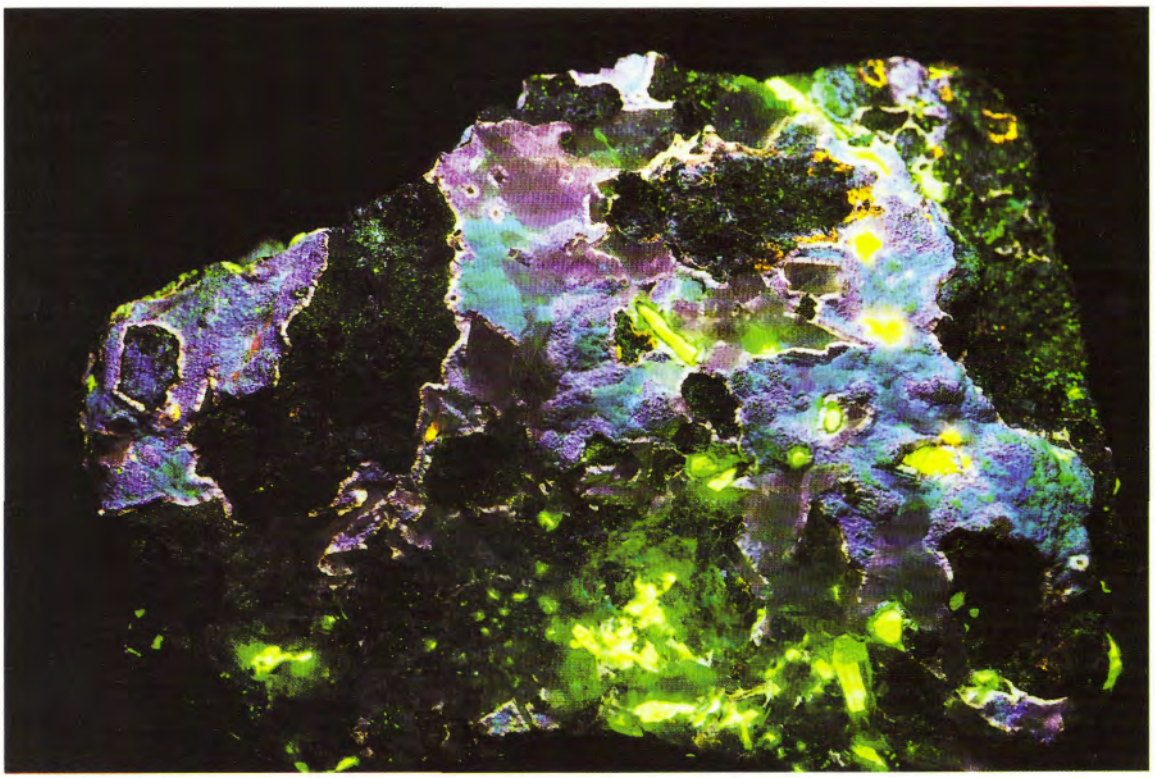


Figure 5a. Shortwave fluorescent response. Blue = charlesite, pink = prehnite, yellow-orange = clinohedrite, green = willemite. Specimen measures 6 x 4 in.

FMM uncatalogued specimen.

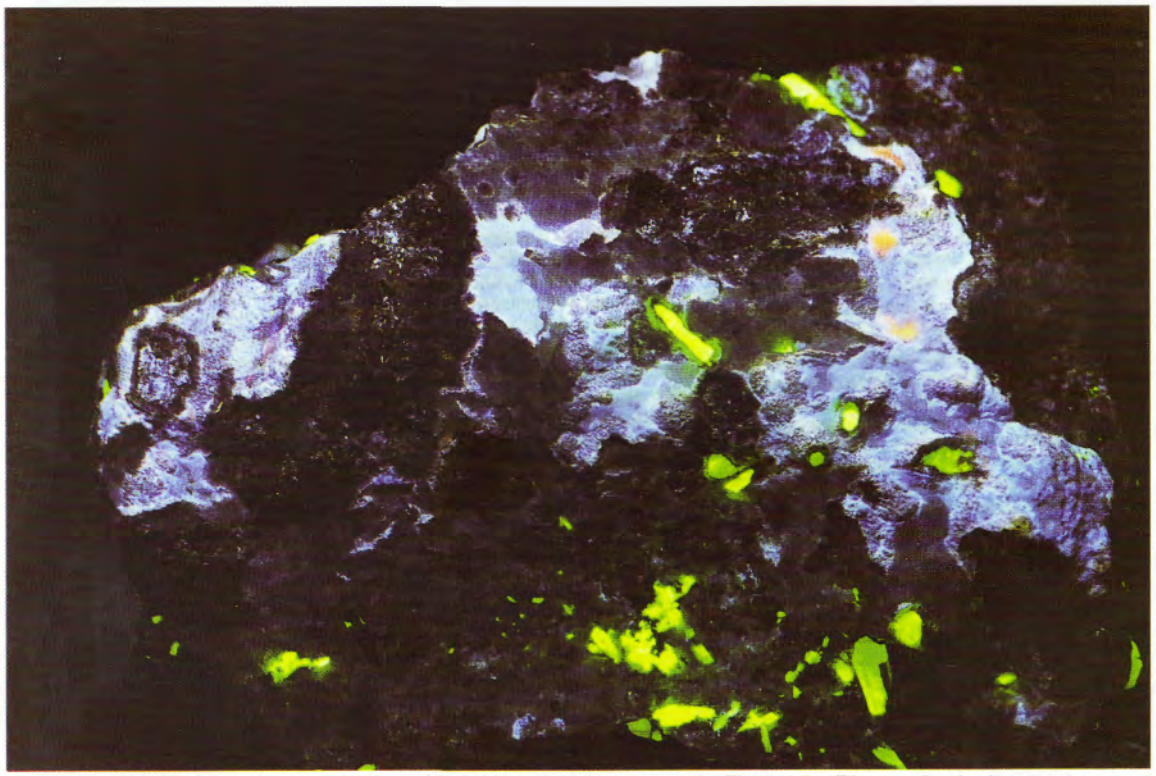
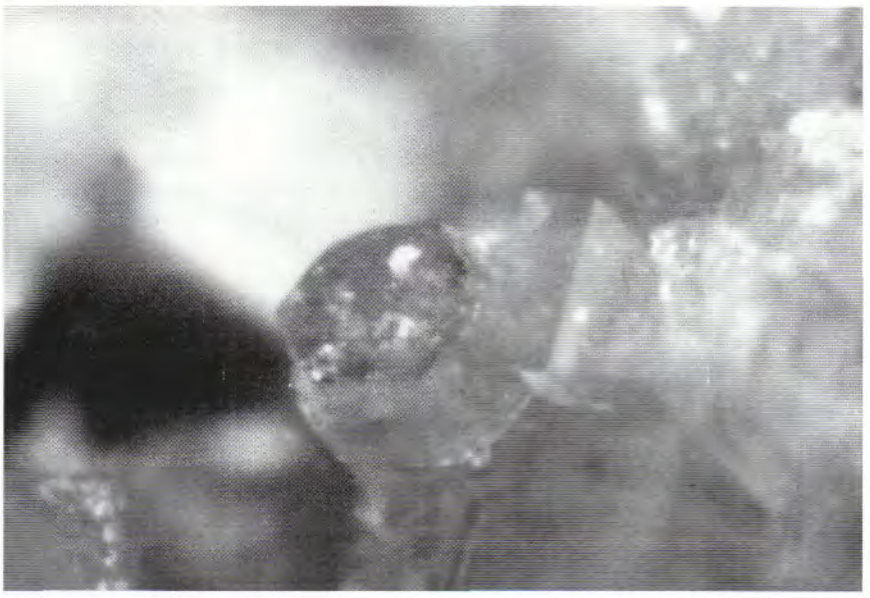


Figure 5b. Midrange fluorescent response of specimen shown in Figure 5a. Blue = charlesite, orange = clinohedrite, green = willemite.

SYNCHYSITE-(Ce) FROM THE BUCKWHEAT DUMP

FRANKLIN, NEW JERSEY

by Gene Bearss and John Cianciulli



INTRODUCTION

Synchysite - (Ce), $CaCe(CO_3)_2F$, has now been found in the Buckwheat Dolomite at Franklin and is a mineral new to the Franklin-Sterling Hill deposit. Its occurrence represents the second reported species containing rare earths from the enigmatic Buckwheat Dolomite. The first reported rare earth species from the Buckwheat Dolomite was monazite-(Ce)

Synchysite-(Ce) was first found in 1901 in Bastnas, Riddarhyttan District, Vastmanland, Sweden and was named for "confounding." The synchysite from this first occurrence was found associated with allanite, cerite, and fluocerite in narrow layers in a contact with metamorphic amphibole. It has been found in numerous mining districts around the globe. A recent notable occurrence of the species is Mont Saint-Hilaire, Quebec, Canada.

PHYSICAL AND OPTICAL PROPERTIES

Synchysite-(Ce) is monoclinic (pseudohexagonal). It is transparent, translucent, or opaque with a light yellow to brown color and a vitreous or glassy luster. Hardness is 4.5 and specific gravity is 3.9. (Palache et al, 1951). Optically, synchysite-(Ce) is uniaxial (+); indices are $w = 1.643$ or 1.674, $e = 1.73$ or 1.770, birefringence 0.087 or 0.096. (Fleischer et al, 1984).

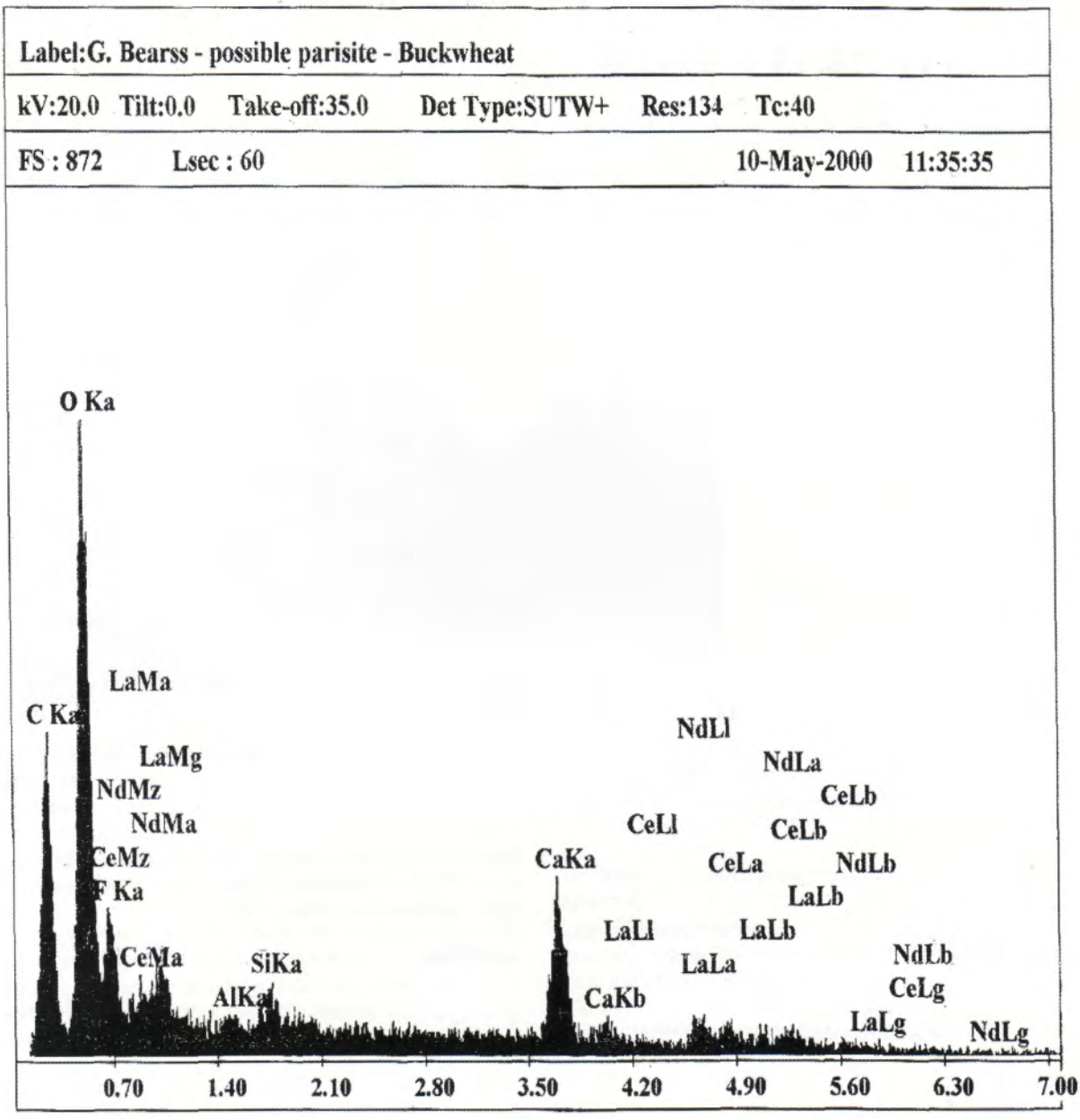
OCCURRENCE

Specimens of a mineral later identifed synchysite-(Ce) were collected by one of the authors (G.B.) on the Buckwheat Dump behind the Franklin Mineral Museum, Franklin, New Jersey. The author (G.B.) found his first specimen in 1987. This specimen contains two opaque crystals about 0.5 mm in length. The crystals are partially coated with mica and associated with pyrite, and sphalerite on dolomite crystals. A second specimen was found in 1988, and was used in the analysis detailed below. On this specimen, the synchysite-(Ce) occurred as a 1 mm, amber colored crystal and is shown in the above photograph. The crystal is pseudohexagonal and resembles other rare earth carbonate minerals, e.g., parisite, from other localities. Three other specimens of this mineral were collected by the author (G.B.) on the Buckwheat Dump between 1991 and 1997. In 1993 a specimen was found among specimens acquired by the author (G.B.) from Steven Kiss. This was a miniature size specimen that had eight light amber colored synchysite-(Ce) crystals associated with mica on dolomite crystals. The largest of these crystals is about 0.1 mm in size. All of the crystals are transparent. One crystal was sacrificed for an acid test to see if the mineral was in fact a carbonate, it was. A total of six specimens were found by the author (G.B.).

ANALYSIS

1997 Mike Swanson used a direct vision spectroscope to analyze the crystal from the second specimen that was found in 1988. The absorption spectrum indicated of one or more rare-earth elements. The specimen was then sent to Tony Nikischer. Tony performed semiquantitative energy dispersive spectral analysis (EDS) on the crystal. The results are presented in Figure 1. Tony was able to determine that the material was a calcium rare earth fluorcarbonate belonging to one of the parisite-rontgenite-synchysite phases. Tony recommended destructive x-ray diffraction (XRD) be performed to identify the correct phase. The sample was subsequently sent to Mr. Andy Roberts, x-ray mineralogist of the Geological Survey of Canada (GSC) for x-ray diffraction analysis. The crystal was found to be synchysite-(Ce) [GSC reference number is 78982]. Copies of the EDS results are in the Franklin Mineral Museum research file. The scanning electron microbe (SEM) data shows slightly more La than Ce. This may be due to averaging software used with the SEM. Synchysite-(La) has not been found to date. A rare earth analysis will be performed to determine the dominant rare earth. Until such studies are completed, this mineral new to Franklin will be referred to as synchysite-(Ce).

So far few synchysite - (Ce) specimens have been recognized. All seem to occur in the Buckwheat dolomite



Element	Wt %	Z	A	F
CO2	63.34	1.0480	0.3580	1.0008
F2O	12.54	0.9685	0.1585	1.0001
Al2O3	1.22	0.9596	0.5183	1.0009
SiO2	1.95	0.9876	0.6395	1.0012
CaO	7.24	0.9592	0.9848	1.0153
La2O3	6.02	0.7377	1.0889	1.0000
Ce2O3	5.11	0.7418	1.0885	1.0000
Nd2O3	2.58	0.7404	1.0862	1.0000
Total	100.00			

Figure 1. Energy dispersive spectrum of synchesite-(Ce).

like many other interesting mineral species. There may be more specimens reposing in collections of Buckwheat Dolomite. Happy hunting!

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Acknowledgements: The authors would like to thank Mr. Andy Roberts of the Geological Survey of Canada for XRD analysis; Mr. Anthony Nikischer for EDS analysis; Mr. Mike Swanson for his spectroscopic examination and Mr. Lee Lowell for research of the literature.

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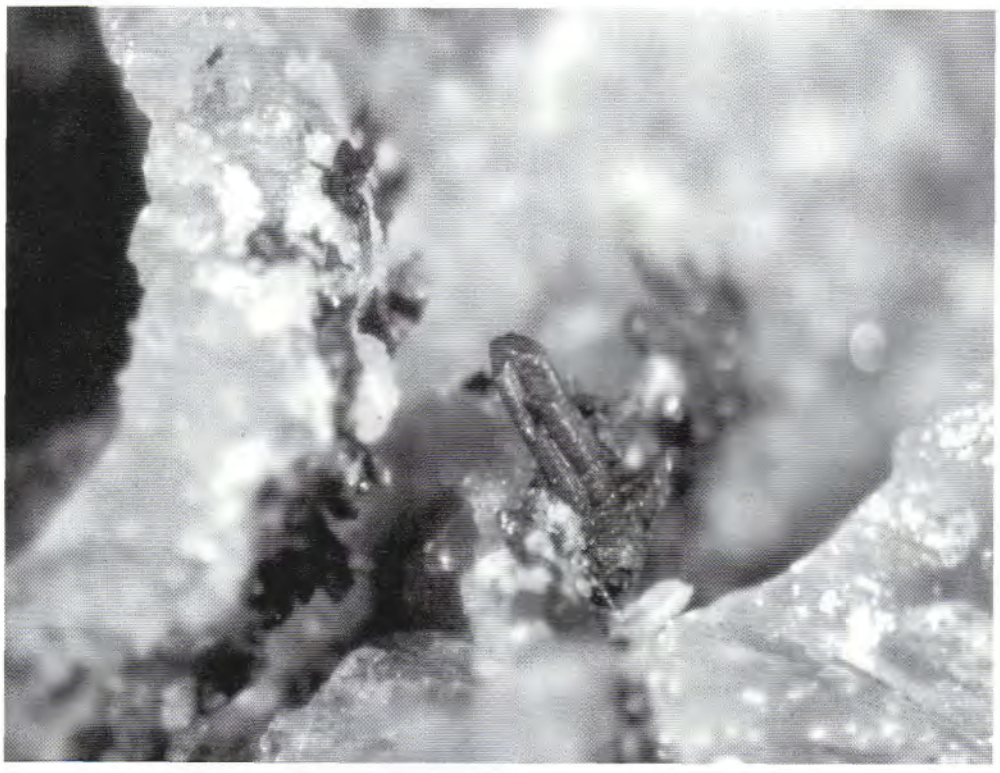
THORUTITE FROM THE FRANKLIN MINE

FRANKLIN, NEW JERSEY

by John Cianciulli and James Rumrill



Twinned prismatic crystals (1mm long) of thorutite, and quartz crystal in cavity in feldspar. Field of view is 4x5mm.

Photo by Gene Bearss

INTRODUCTION

Thorutite $(Th,U,Ca)Ti_2(O,OH)_6$ has now been found at Franklin, New Jersey, and is a species new to the locality. It was first discovered in 1947 at the Kutyur-Tyube thorium occurrence near the Urusai Peak, Sokh River basin, northern slope of the Alai Range, S. Kyrgyzstan where it has been found in 2cm size crystals. It is named for its composition (Gotman et al, 1958). According to Josef Vajdak, mineralogist, "Franklin, New Jersey is only the second locality in the entire world where this mineral has been confirmed".

PHYSICAL AND OPTICAL PROPERTIES

Thorutite is monoclinic and always metamict. It is translucent with a black color, brown on thin edges and a resinous luster. Thorutite has a pale brown streak, a hardness of 5 to 6 and a measured density of 5.82; density of synthetic $ThTi_2O_6$ is 6.0. Optically, Thorutite is isotropic, $n > 2.1$. (Gotman et al,1958). *It should be noted that the metamict nature of Thorutite produces the observed isotropic optical property (J.C.).

OCCURRENCE

Specimens containing a mineral later identified as thorutite was brought to my (J.C.) attention by James Rumrill and Gene Bearss in the fall of 1997. Thorutite was found in specimens originally collected in the late 1960's by Steve Kiss; additional specimens were found in 1997 by James Rumrill on the Buckwheat Dump. When the specimens were first examined, they were thought to be thorite because of its low level radioactivity and similar visual appearance to known and verified examples of thorite. Thorutite from the Rumrill and Kiss finds occurs as small dark brown prismatic and euhedral crystals up to 1 mm in length (freshly broken surfaces of damaged crystals are black) in tiny cavities in cracks and seams of etched gray feldspar, calcite and quartz. Some of the tiny cavities contain remnant thorite on their edges. These cracks and seams have a weathered appearance. The feldspar fluoresces dull-red short wave ultraviolet and the calcite exhibits poor to no fluorescence in the studied specimens. The feldspar can be confused with calcite because of their similar daylight color. The calcite effervesces in hydrochloric acid and has a distinct rhombohedral cleavage that distinguishes the calcite from the feldspar. The quartz occurs as rounded grains up to 2 cm^2. Thorite in addition to being present on the edges of the tiny cavities is also disseminated throughout the assemblage as glassy-orange anhedral crystals and weathered brown crusts on crack surfaces. Other associated minerals are arsenopyrite, sphalerite, graphite and talc. Prismatic arsenopyrite

crystals 0.75 mm in maximum dimension are abundant in and around the crusts of thorite. The arsenopyrite appears to be contemporaneous with thorutite forming in and along cracks with altered-looking thorite. Although arsenopyrite occurs in the same rock with thorutite and appears to be of the same generation, the last minerals to form, these two minerals are not intimately intermixed in the assemblage. Graphite and talc are present in very minute amounts between grains of feldspar and quartz. Nonfluorescent sphalerite is present as colorless to yellow embedded grains and small masses in the matrix and does not appear to have formed in the cracks. Based on visual examination of specimens from the Rumrill and Kiss finds, it apparent that thorutite is of a single assemblage. The thorutite specimens from the Rumrill find were extracted from a boulder that contained diabase. Specimens from this find were removed from an area about 10 cm from the contact of the thorutite bearing assemblage with diabase (popularly known as "camptonite" by Franklin-Sterling Hill mineral collectors).

ANALYSIS

Mr. Josef Vajdak sent two samples of the thorutite find to the Czech Geological Survey. Two top mineralogists of the Czech Geological Survey, Dr. Frantisek Veselovski and Ing. Petr Ondrus, were able to determine that the metallic prismatic crystals of one sample was arsenopyrite, and the brownish-black crystals in the other sample was thorutite. Since thorutite crystals are metamict they were heated to 1000° C, then slowly cooled to reconstitute the crystals for x-ray diffraction (XRD) study. XRD data was found to be consistent for thorutite. To check the XRD result they performed a scanning electron microprobe (SEM) on the sample. The SEM data supported the XRD results identifying the mineral as thorutite. The SEM data also showed the presence of lead (Pb). The role Pb plays in the thorutite has not yet been determined and it is a subject for further study.

XRD and SEM data are stored in the mineral research file at the Franklin Mineral Museum Inc. archive.

Acknowledgments: The author would like to thank Mr. Josef Vajdak of Pequa Rare Minerals and his colleagues Dr. Frantisek Veselovsky and Ing. Petr Ondrus: also the Czech Geological Survey for their analysis of this material. We would also like to thank Mr. James Rumrill and Mr. Gene Bearss for providing material for study; Mr. Anthony DenUyl and Dr. Pete J. Dunn for assisting in the research of reference publications.

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28th Annual New Jersey Earth Science Association Gem and Mineral Show

What does one expect to see when you hear that $1,000,000 in gold will be on display? Perhaps a pile of bullion or sacks of gold coin? No, the highlight of this year's show was truly a thing of beauty in the eyes of the beholder. World class crystallized gold and gold nuggets from around the country coalesced in a central display area in one very well guarded room in the Hardyston School – Wow! It was grand enough to amaze even the most callused old prospector among us. These cases were surrounded by fine variety of mineral and antiquarian items including some of my favorites: the Franklin Mineral Museum case of connoisseur Franklin New Jersey classics such as hodgkinsonite and barysilite, Rutger University case of willemites from Franklin and Sterling Hill New Jersey. This area also accommodated children only displays and micromount displays. Outside the central display room was a large series of display cases covering everything from lapidary skills, cabbing, sphere making and egg carving to " An Illustration of a Franklin Mineral" – a specimen/painting combo of a franklinite/willemite by John Sinkankas from the Bob Jones collection. Many fine thematic cases were put together for the show including three cases devoted to pyrite, and several on the "all that glitters is not..." theme, native silvers of large proportions by Bob and Pat Hauck, a noteworthy double cases of colorful fluorites by the Greipels, Franklin and Sterling Hill species, Limecrest corundums, fine North American agates including a nice suite of New Jersey agates by Mark Leger, pyritized fossils, and even humble feldspars were elevated to fine distinction in John Geiges case.

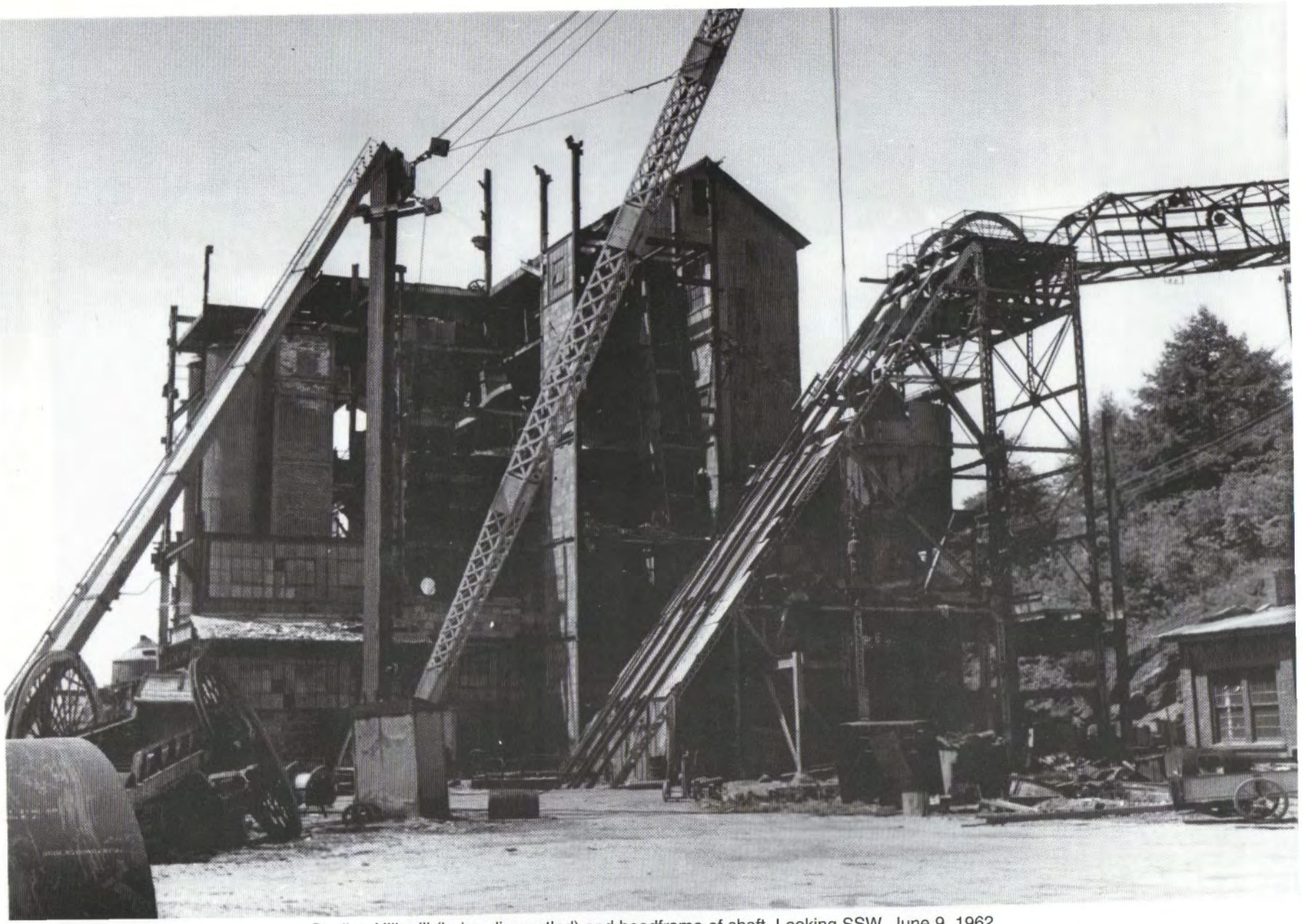
The dealer area in the Hardyston School was filled and several new faces were present. There was a well-visited commercial exhibit by Southdown, Inc., owner and operator of the Limecrest Quarry. One new face was American Vignettes who was doing a brisk business in collectible paper items associated with various mining companies such as stocks and bonds. Microscope dealer Absolute Clarity and Calibration was glad to show off high tech setups that combined the microscope with video, camera and computer. An old friend, Bob Jenkins of Cosas Preciosas had gold specimens from new finds in Colorado and California and interesting Langban species deaccessioned from his collection for sale. Rocko Minerals had many fine selections of New York State classics including some fine Herkimer diamond scepters, Balmat magnetites and sphalerites. C. Carter Rich had his usual selection of venerable old timers from European classic localities and US.

Overall the layout at the Hardyston School was well arranged, roomy, and attractive. Out in front on the crescent drive were a handful of dealers seemingly lost from the main pack of outdoor dealers at the Little Center. This situation I am told will be remedied next year by having all the outside dealers in one spot. Because the show was in two locations across busy routes 517 and 23, it took about an hour Saturday morning for the public to realize how the shuttle bus system worked. It took about 15 min. to get to either location once you figured out when the buses were coming. You parked your car in one place and thus, the danger of crossing these two busy roads on foot was eliminated.

At the Little Center, the outside dealer area was filled to capacity with people hawking their wares. My wife found several lapidary gift items and my son spotted a fine Muso, Columbia emerald crystal in matrix at a price beyond the family budget. The indoor area was packed with dealers and customers. Many wondered why so many people flocked to Fred Parker's booth where they formed a waiting line to get a glimpse and an opportunity to acquire mysterious Franklin and Sterling Hill items held in tightly closed and guarded flats. Fred had announced the sale of several lots of specimens before the show. A feeding frenzy ensued. Something new and blue came from Pequa Rare Minerals with the unveiling of bright blue sprays of a new mineral species, chetlemanskiite. For those interested in fluorescent species, both Hewin Minerals and Ward's Fluorescent Minerals were amply stocked. It was interesting to compare Arizona willemite/calcite specimens with our own New Jersey material. To me the most interesting new fluorescent specimens were at Graeber and Hines Minerals booth. These were 1 to 2 cm transparent light mint green grossular crystals from Merelani, Arusha, Tanzania. They fluoresced quite brightly in shades of yellow, orange and peach under longwave, midrange and shortwave ultraviolet. Bill Butkowski of the Mineral Cabinet had several fine Chinese calcites, some new finds of Uruguayan amethysts of deep purple color, and a selection of fine esthetic specimens of zeolites from India. I noted several dealers had a variety of gem pegmatite minerals from China that rival Brazilian and Pakistani material. There were a few stunning Chinese pyromorphites.

Walking off the dealer floor and into the darkened chamber created for the fluorescent display was a total sensory change. There were 21 cases of attractive local and worldwide fluorescent specimens to completely appease the most jaded collector. Yes, I found myself returning there several times. I enjoyed the many delightful comments by the viewers as they marveled at the cases.

With 38 indoor dealers and about 75 outdoor dealers between the two sites there was no excuse for any collector to go home empty handed. Thanks to all who worked so hard on the show and those who participated in sharing by displaying their specimens.



Sterling Hill mill (being dismantled) and headframe of shaft. Looking SSW. June 9, 1962

Miner's Day

By Lee Lowell

The museum's "Open House" tradition began in May 1969 and has been held annually ever since. The official name of these "Open Houses" has changed several times over the years. In 1972, Bill Wurst, a board member, suggested that the event be renamed "Miners Reunion Day". The board accepted this idea and each May a day is set aside to honor the miners from Franklin and Sterling Hill with ceremonial speeches, a buffet, and a concert by the famous Franklin Band.

And so on May 7th under warm, sunny skies, about 100 guests gathered on historical grounds to honor the miners and the museum volunteers. This year's event was titled, "Annual Volunteer Appreciation and Miner's Day Tribute". Thanks to the efforts of the museum manager Doreen Longo, Jack Baum, and several volunteers, an excellent spread of food and drink was provided, followed by the music of the Franklin Band.

Board member Dick Bostwick handled the "master of ceremonies" duties with his usual entertaining style. Museum President, Steve Phillips, welcomed the guests. The Curator, John Cianciulli, acknowledged the work of the volunteers. Dr. Tom Turner, superintendent of the Franklin school, presented the awards for the mineral project winners as judged by Jack Baum, the museum Curator Emeritus. Tonya Collison of the Hamburg school won First Place for her project titled, "Rocks and Minerals of Sussex County". She was rewarded with a trophy and a $100 US Savings Bond.

Dick Bostwick spoke eloquently on the heritage of the Franklin and Sterling Hill mining district. He introduced the retired miners in attendance and had some of them speak a few words. He emphasized their contributions to the mining and mineralogy of the area.

Bill Wurst spoke briefly on the museum's origins and also gave credit to the miners for their contributions. He said that in all the years for this event, it rained only once and added that God provided another beautiful day for this affair.

With the ceremonies ended, the Franklin Band offered a variety of wonderful music. ●

Ron Mishkin (Tema Hecht photo)

Award Winners: (l. to r.) School Supintendent Tom Turner, Tonya Callison, Christopher Peck, Tyler Peacock, Elsa Thyren, and Kiwianian & FMM past President Bill Wurst (Tema Hecht photo)

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Books and Other Publications

Cooper, Susan B., and Dunn, Pete J. (1997) Magnificent Rocks: The Story of Mining, Men, and Minerals at Franklin and Sterling Hill, New Jersey. Privately printed. $15.00 ($3.00 postage)

Dunn, Pete J. (1997) The Story of Franklin and Sterling Hill. Privately printed. $15.00 ($3.00 postage)

Dunn, Pete J. (1995) Franklin and Sterling Hill, New Jersey: the world's most magnificient mineral deposits. Privately printed. Part One, bibliography and chapters 1-3; Part Two, chapter 4-12; Part Three, chapters 13-17; Part Four, chapters 18-23; Part Five, chapters 24-26, appendices, and indices; First Supplement, chapters S1-S5; and Second Supplement, chapters S6-S10.

$30 each (+$ 5.00 postage) for Parts One through Five, $25.00 each (+ $5.00 postage) for First and Second Supplements, or $200.00 (+ $15.00 postage) for the complete set of seven.

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Shuster, Elwood D. (1927) Historical Notes of the Iron and Zinc Mining Industry in Sussex County, New Jersey. Privately printed. Franklin Mineral Museum reprint. $3.00 (+$0.75 postage)

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