THE PICKING TABLE

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Volume 51, No. 1 – Spring 2010

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The Franklin-Ogdensburg Mineralogical Society, Inc.

OFFICERS and STAFF 2010

The *Picking Table* welcomes comments in letters to the editor. Please include your name, title, company address and daytime phone number. Writers should disclose any connection or relationship with the subject of their comments. We reserve the right to edit letters for length and clarity and to use them in all print and electronic editions. Prospective authors should address correspondence to:

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THE PICKING TABLE

Volume 51, No. 1 – Spring 2010

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The *Picking Table* is the official publication of the Franklin-Ogdensburg Mineralogical Society, Inc. (FOMS), a nonprofit organization, and is sent to all members. The *Picking Table* is published twice each year and features articles of interest to the mineralogical community that pertain to the Franklin-Ogdensburg, New Jersey area.

Members are encouraged to submit articles for publication. Articles should have substance and be cohesively written and submitted as a double-spaced Microsoft Word document to ***thepickingtable@gmail.com***

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

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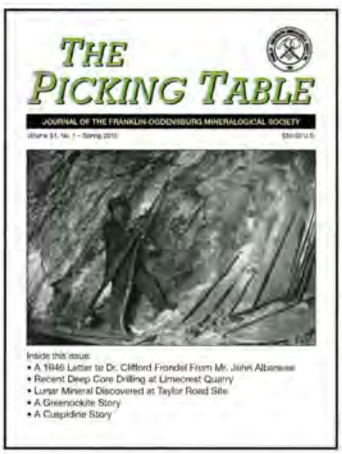
About the Front Cover



This photograph was taken about 1918 in the Franklin Mine. It's a one-of-a-kind photo from the collection of Sydney Hall, who gave it the title, "Drilling a Stope." This is a view of a typical event on a typical day in the mine. The miner, probably an immigrant from Eastern Europe or Cornwall, England, is dressed in the dungaree pants and jacket the miners usualy wore. He is a "drill runner," meaning that he has learned his trade well enough to be in charge of his own drill. His hands and clothes are as dirt-laden as can be, and he is looking forward to the end of the shift, when he can take the man skip from the cold and damp depths of the mine back to his bungalow toward the north end of town, where he will treasure a good hot soaking in his bathtub. He wears a canvas hat with a state-of-the-art carbide lamp; its wavering flame, with its quiet hiss, is all that separates him from immersion in total darkness. When he turns on his pheumatic drill his working place is filled with noise. He is drilling a pattern of holes into which the "power monkey" will insert dynamite and fuses for blowing the rock apart, into a pile as seen at the bottom of this image. From the looks of the broken ore underfoot, he may be drilling a raise to another level, and pieces of that ore may have made it into his lunch pail, to add to his collection at home: pieces that today may be considered unique and priceless.

Note the plank he uses to brace the foot of the drill. Wood was used extensively throughout the mine for many other purposes than supporting the immense weight of the ore above. This plank would have been sent down via the North Timber shaft at the north end of Palmer Plant #2, after perhaps being cut by the timber gang at the Ding Dong shaft, after being trucked down from Wawayanda in Vernon.

Photo and historical perspective courtesy of William R. Truran.

President's Message

William R. Truran
2 Little Tarn Court
Hamburg, NJ 07419

FOMS 27th President, William R. Truran

Hello again, Bill Truran here with the FOMS president's message. I hope you have all enjoyed our normal activities and have, as I, appreciated greatly our first 50 years of life as a club. Not many clubs have lasted as long as ours has. Now as we embark on our second half century, I feel compelled to look at how our long-term sustainment will be planned. While each and every one of our members is cherished for their experience and efforts over many years of membership, in regard to the next fifty years, we need to find others to carry on the club's activities. We need to hasten new members to come into the fold.

Here are some ideas that have evolved and are described below for us to consider and perhaps actualize.

1) We need to create a more tangible 'presence' for FOMS. For starters, I feel we need to get some file space and put our financial matters on record and in a central location so the records are there for others in the future to be able to use as historical archives. Much has been lost in the past and this is not good. File space may be considered at FMM or SHMM, and we need to pursue that.

2) In getting with the times, we need to establish a web presence. This can assist in the first issue just stated.The web can become a platform for daily or periodic discussions, as well as a bulletin board for club activities such as meetings and field trips; it can also serve to alert members of event cancellations due to weather. We can stretch out our legs or shape our future by utilizing different web pages (such as a history site, or a specialty specimen site); and may find much interest in a particular aspect of the FOMS livelihood that people would congregate toward. Interests that we can not even fathom at this time may generate much interest in various aspects of the FOMS experience. There is interest afoot in putting the Franklin and Sterling Hill mineral species list on the Internet, with descriptions and photos in white light and under UV. This endeavor can be elaborated upon with time, and could also become a showcase for members' specimens.

3) I feel it is of great matter to have our three vehicles of preserving and broadcasting the Franklin and Sterling Hill story tied more closely together. FMM is the repository of the many outstanding features of our area, SHMM highlights the mining aspect, and FOMS supports those who wish to collect minerals. There are about 36,000 visitors per year to SHMM, about 40,000 visitors per year about 25,000 to FMM, and several hundred collectors and specimen aficionados in FOMS. We need to form a tighter association between these three organizations. As Lincoln said: twigs are stronger when together than when apart. The three also complement each others' attributes. Some ideas here on this—maybe more common website referrals and links, leveraging the abilities of FOMS and FOMS associates in creating new knowledge on the Mineral Capital, FOMS grabbing the many visitors and keeping them active after their visit.

4) FOMS is perhaps best know for the *Picking Table*. Its high quality and timely publication are critical and need to be kept up. Perhaps we can also streamline the *PT* by moving the schedule to our website.

5) We need to extend our boundaries. Other mineral clubs are reaching out in new ways, and we should be more creative in sharing our assets with the world. Our presence on the World Wide Web would facilitate this. One can imagine webcasts of our meetings, as well as having a library of recorded lectures that can be seen on demand. Picture a FOMS meeting on a Saturday afternoon, with a world-wide audience.

Another area we can expand into, perhaps with the help of our local historical societies, is the history of our community of miners and immigrants.

Franklin and Sterling Hill's fluorescent treasures are currently on view in Princeton at the old governor's mansion, Morven Museum. This exhibit was jointly arranged by the Geosciences Department of Princeton University and the Sterling Hill Mining Museum. There have also been discussions about Princeton loaning specimens to the Franklin Mineral Museum, supplementing its already superb displays.

In closing, let me say that I wish all the best for the many friends we have in our club, and am grateful for the common interests we share, here in the Fluorescent Mineral Capital of the World.

From the Editor's Desk

Fred Young
234 Warbasse Jct. Road
Lafayette, NJ 07848

As the *Picking Table* begins its 51st year of publication we wish you all a healthy and happy new year and offer you our 2010 New Year's resolution and prediction.

Our resolution is to continue publishing a journal that is, as was noted by a prominent local FOMS member after reading the 50th anniversary issue, "fun to read, entertaining, and educational."

Our prediction is that articles will be published in future *PT*s describing new mineral assemblages and new mineral species and the geologic processes that created this mineral deposit will be explored as a result of new research underway.

This research is being supported by various geologists, mineralogists, university professors and industry scientists.

As was noted by New Jersey geologist Richard Volkert in a recent *PT* article; "Scientific inquiry is an important part of our lives and a priority we must instill in the next generation."

As this issue goes to press research on the mineralogy and geology of the Franklin and Sterling Hill area is continuing on three fronts: specimen analysis, (see page 14), the post metamorphic cooling history of various minerals and the post metamorphic history of faulting in the Sterling Hill ore body within a tectonic framework.

Various minerals in the zinc deposits were formed at different times and at different temperatures. By using isotope techniques a cooling curve may be determined that might construct a timeline of formation of some of the major minerals at Franklin and Sterling Hill.

At least part of the mineralization history of the Sterling Hill deposit is tied to its history of faulting. Research in this area will provide important information on the geologic processes that led to the formation of the mineralization.

As a result of earlier research into the age of the Franklin Marble - see *PT* Vol. 50., No. 2 Fall 2009 (page 36-40) - we can now make this statement: "1050 to 1025 million years ago is the actual time of formation of the world-famous Zn deposit at Franklin and Sterling Hill."

We also now can refer you to the abstract on this page regarding the origin of the deposits.

The complete paper, published in the journal Economic Geology Vol. 104 pp 1037 to 1054, can be purchased by connecting to the following link: http://econgeol.geoscienceworld.org/

We thank you for being loyal FOMS members and invite you to stay with us as we begin our next half century of exploring the fascinating Franklin and Sterling Hill mineral deposits.

Economic Geology, v. 104, pp. 1037–1054

Stable Isotope and Petrologic Evidence for the Origin of Regional Marble-Hosted Magnetite Deposits and the Zinc Deposits at Franklin and Sterling Hill, New Jersey Highlands, United States

WILLIAM H. PECK,[1,†] RICHARD A. VOLKERT,[2] ADAM T. MANSUR,[1,*] AND BRET A. DOVERSPIKE[1]

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Abstract

Mesoproterozoic marble in the New Jersey Highlands hosts small magnetite deposits that occur in discrete groups along linear trends and are concentrated mainly in the western part of the region. Magnetite also forms a layer structurally beneath the Zn-Fe-Mn orebody at the Franklin mine. Marble host rocks are interlayered at Fe and Zn-Fe-Mn deposits with bimodal metavolcanic rocks (amphibolite and rhyolitic gneiss) that were deposited synchronously in a back-arc basin developed on the eastern margin of Laurentia between 1.3 and 1.25 Ga. Magnetite in the deposits ranges from massive to disseminated and is characterized by low Ti, variable Mn, and locally high S. Concentrations of As, V, Sb, and Zn are enriched in magnetite compared to marble host rocks and associated metavolcanic rocks. Carbon and oxygen isotope ratios of the marbles are consistent with water-rock interaction between the marble protolith and a mixture of igneous fluids and seawater. Regional geology, petrology, and isotope data indicate that Fe was introduced into the carbonate protolith as low-temperature Fe oxides and hydroxides via hydrothermal fluids discharged along basinal fracture zones on the sea floor. Related marble-hosted Zn-Fe-Mn deposits at Franklin and Sterling Hill contain the assemblage willemite + zincite + franklinite. Stable isotope compositions of the Zn deposits are consistent with alteration of host rocks by water-rich fluids, preserving protolith carbon isotope ratios. Stable isotope modeling suggests that Zn silicate + oxides or hydroxides represent an appropriate protolith for the high-grade Zn ores.

Alteration of metavolcanic rocks at the Fe deposits, combined with the isotope data and other petrologic and geochemical evidence, document the presence of an extensive hydrothermal system of Grenville age centered in the western Highlands. Metals precipitating from this hydrothermal system were responsible for Fe in the marble-hosted magnetite deposits and Zn in the deposits at Franklin and Sterling Hill from the same or a related hydrothermal system. Underplating of the back arc by mafic magma provided the heat to melt the lower crust and drive the hydrothermal system, resulting in carbonate-hosted Fe and Zn ore deposits and associated bimodal volcanism.

Franklin-Ogdensburg Mineralogical Society, Inc.

Spring and Summer 2010 Activity Schedule

Saturday, March 20, 2010
9:00 AM - Noon — F.O.M.S. Field Trip — Collecting at the Taylor Road site.
Meet at the Franklin Mineral Museum. Park, and walk from there. Fee charged.

10:00 AM - Noon — F.O.M.S. Micro Group — Franklin Mineral Museum.
B.Y.O. microscope and minerals. Call Ralph Thomas for information: 215-295-9730.
1:30 PM - 3:30 PM — F.O.M.S. Meeting — Franklin Mineral Museum.
Lecture: *Copper Mineralization in the Newark Basin of North-Central New Jersey*, by Dr. John Puffer.

Saturday, April 17, 2010
9:00 AM - Noon — F.O.M.S. Field Trip — Collecting at the Braen quarry
(a.k.a. Franklin quarry) Cork Hill Road, Franklin N.J.
If gate is open, drive through and park on the left of the gate. Please don't block the roadway.

10:00 AM - Noon — F.O.M.S. Micro Group — Franklin Mineral Museum.
1:30 PM - 3:30 PM — F.O.M.S. Meeting — Franklin Mineral Museum.
Lecture: *Results of Recent Deep Drilling at the Limecrest Quarry,* by Richard Volkert.

Saturday and Sunday, April 24 and 25, 2010
SPRING SHOW WEEKEND
38th Annual N.J.E.S.A. Gem & Mineral Show
held in conjunction with the the **15th Annual F.O.M.S. Spring Swap-and-Sell**.
Sponsored by the New Jersey Earth Science Association, The Sterling Hill Mining Museum,
and the Franklin-Ogdensburg Mineralogical Society, Inc.
Franklin Middle School, Washington St., Franklin, N.J.
N.J.E.S.A. Show hours: Saturday, 9:00 AM to 5:30 PM; Sunday, 10:00 AM to 5:00 PM.
Swap-and-Sell hours: Saturday, 8:00 AM to 5:30 PM; Sunday, 9:00 AM to 5:00 PM.
Admission $5.00 per person, children under 14 free with paying adult.
[For Swap-and-Sell information, contact Chet Lemanski after 8:00 PM at (609) 893-7366.]

**Sterling Hill Garage Sale, Christiansen Pavilion, Sterling Hill Mining Museum.
Saturday and Sunday: 10:00 AM to 3:00 PM.

BANQUET AND AUCTION
Saturday evening at the GeoTech Center, Sterling Hill Mining Museum.
Admission limited to 60 people. Social hour from 5:30 to 6:30 PM,
followed by an all-you-can-eat buffet from 6:30 to 7:30 PM.
Banquet Tickets are $17.00 each and include: all food, coffee, tea, and soft drinks. **B.Y.O.B.!!**
Silent Auction from 5:30 PM to 7:30 PM. Live Auction at 7:45 PM.
Both auctions are for the benefit of all three show sponsors:
N.J.E.S.A., F.O.M.S., and the Sterling Hill Mining Museum.

FIELD COLLECTING
**Sterling Hill Mining Museum.
Organized by the Delaware Valley Earth Science Society (DVESS).
!!!!!Schedule: Saturday, 9:00 AM to 11:00 PM!!!!!
$20 per person includes extended mine tour and registration.
$1.50 per pound for material collected.
Preregistration required; see www.uvworld.org for more information.

Sterling Hill Mining Museum, **Sunday only.
Collecting on the the Mine Run dump and in the Fill quarry, Passaic pit , and "Saddle" area.
9:00 AM to 3:00 PM **(Open to the public!)**
Fees for mineral collecting: $5.00 admission plus $1.50/lb for all material taken.

Sunday, May 2, 2010
**Noon —Annual Volunteer Appreciation and Miner's Day Tribute at the Franklin Mineral Museum, including special events and a concert by the famous Franklin Band.

Saturday, May 15, 2010
9:00 AM - Noon — F.O.M.S. Field Trip — Collecting at Hamburg quarry, Eastern Concrete Materials, Inc.
Meet at the Scale House to sign releases.
Hard hats, leather shoes (preferably steel tipped), gloves and glasses required.
10:00 AM - Noon — F.O.M.S. Micro Group — Franklin Mineral Museum.
1:30 PM - 3:30 PM — F.O.M.S. Meeting — Franklin Mineral Museum.
Lecture: *Mineral Day at the 1939-40 New York World's Fair,* by Mitch Portnoy.

Saturday, June 5, 2010
**7:00 PM - 10:00 PM — Spring Night Dig and Mineral Sale at the Buckwheat dump, Franklin.
Sponsored by the Franklin Mineral Museum. Open to the public – poundage fee charged.
Eye protection, flashlight, and UV lamp advised.
For more information contact the Franklin Mineral Museum: (973) 827-3481.

Saturday, June 19, 2010
9:00 AM - Noon — F.O.M.S. Field Trip — Collecting on the Buckwheat dump. Fee charged.
10:00 AM - Noon — F.O.M.S. Micro Group — Franklin Mineral Museum.
1:30 PM - 3:30 PM — F.O.M.S. Meeting — Franklin Mineral Museum.
Lecture: *Russian Mineral and Lapidary Treasures,* by John Sanfaçon.

** 9:00 AM – 3:00 PM and 6:00 PM – 11:00 PM — Sterling Hill Mining Museum.
Day and Night Collecting on the Mine Run dump and in the Passaic and Noble pits.
Fees for mineral collecting: $5.00 admission plus $1.50/lb for all material taken.
(Open to Sterling Hill Mining Museum members only).

Sunday, June 20, 2010
9:00 AM to 3:00 PM — F.O.M.S. Field Trip — Limecrest quarry, Limecrest Road, Sparta, N.J.
Meet 15 minutes before starting time at the gate. We will enter as a group and the gates will be closed.
Hard hats, leather shoes (preferably steel tipped), gloves and glasses required.

Scheduled activities of the F.O.M.S. include meetings, field trips, and other events. Regular meetings are held on the third Saturdays of March, April, May, June, September, October, and November, and generally comprise a business session followed by a lecture. F.O.M.S. meetings are open to the public, and are held at 1:30 PM, usually in Kraissl Hall at the Franklin Mineral Museum, Evans St., Franklin N.J. (check listings for exceptions).

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

****Activities so marked are not F.O.M.S. functions but may be of interest to its members. Fees, and membership in other organizations, may be required.**

Any information in this schedule, including fees, is subject to change without notice.

Compiled by Tema Hecht <thecht@att.net>

Field Trip Report, Fall 2009

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

9-19-09 Taylor Road Dump, Franklin, N.J.

The Taylor Road site is owned by the Franklin Mineral Museum and contains a great amount of waste rock from the early years of the Franklin mine. This site has become a productive one in recent years for certain suites of minerals.

Twenty-plus collectors were present, and several of them went home with some fine sphalerite specimens. The majority of these specimens were in a nearly black matrix, and the sphalerite occurred as either layers adjacent to veins of quartz, or as small isolated lenses and pods. The sphalerite layers were generally 1-2 cm thick; some specimens, when split along the layer, had surfaces as large as 8 by 15 cm, rich in sphalerite. One exceptional vein piece was about 10 cm thick and produced several cabinet-sized specimens. This sphalerite fluoresced pink, blue, and orange under shortwave, midwave, and longwave ultraviolet light, respectively, and commonly all three fluorescent colors were seen in one specimen. At least one specimen with thin veins of sphalerite and quartz, when viewed under a shortwave lamp, showed small areas of cream-fluorescing quartz along with orange-and-blue-fluorescing sphalerite.

Many specimens of massive multicolored fluorite were found in a dark matrix of andradite, gahnite, and franklinite. The fluorite ranged in color from purple to red to almost colorless, and when freshly exposed, fluoresced and phosphoresced weak green under shortwave ultraviolet light. A notable mineral found within the fluorite masses was apatite-(CaF) in crystals from several mm to 1 cm in diameter. One crystal was 3 cm long! These crystals fluoresced weak orange under shortwave ultraviolet light.

Several dark brown andradite crystals 1 cm to 2 cm in diameter were found in a matrix of white calcite. Large rounded crystals of andradite, as much as 20 cm in cross-section, were also seen. Nobody went home this day with empty buckets!

10-17-09 Buckwheat Dump, Franklin, N.J.

Rained out.

11-21-09 Franklin Quarry, Franklin, N.J. (owned and operated by Braen Aggregates L.L.C.)

This trip was attended by twenty-nine FOMS collectors, in good weather and with high hopes. Collecting was restricted to the front quarter of the Franklin quarry, near and left of the weigh station, in and around the lower pit, because the Braen Co. was working in the main body of the quarry. That being said, we were very grateful to be allowed to collect this day! With diligent searching almost every collector went home with a specimen of norbergite, or tremolite crystals. Norbergite and some dark chondrodite were found for the most part in subhedral grains up to 4 cm in diameter, but most were less than one cm across, and arranged in layers up to 10 cm thick. Interestingly, these norbergite/chondrodite grains showed three distinct fluorescent hues under shortwave ultraviolet light: pale yellow, yellow, and bright, saturated orange. I observed a few 1 cm norbergite crystals with reasonably sharp crystal faces, but that was the exception this day. There were even some specimens with elongated norbergite grains that were 4 cm long by 1cm across, with no external crystal morphology.

Many collectors went home with small cabinet-sized dark purple fluorite masses that came from a meter-sized boulder that several people dismantled. I observed some 1.5-cm fluorite crystals in calcite pods that were not successfully removed but exploded into fragments when the rock was broken. Numerous specimens of 1-cm to 2-cm pyrite crystals in marble went home this day, as did unusual "presentations" like one fist-sized specimen with two parallel 1-cm-thick veins of pyrite. The most unusual pyrite of the day was a fracture filling with small disks or "suns" of flattened pyrite as much as 1 cm in diameter.

Many pieces of marble contained pale brown phlogopite crystals and plates, some quite transparent when backlit. The crystals were as large as 4 cm across and under shortwave ultraviolet light fluoresced dull brown to bright pale yellow. Several specimens of phlogopite, apparently pseudomorphs after tremolite crystals as much as 7 cm long, were recovered. Layers of small phlogopite plates in marble were associated with spinel crystals as much as 1 cm in diameter, though most were in the 1-5 mm range and quite dark, almost black, due to included graphite. A few small, pale lavender spinel crystals were also found.

Graphite crystals as much as 2 cm in diameter were recovered; they were very attractive as black plates against the stark white Franklin Marble. Only one intact uvite crystal was seen: a brown, well-formed crystal 1.5 cm across. Many collectors found dark gray tremolite crystals as much as 1 cm in diameter and as long as 7 cm. These fluoresced creamy blue under shortwave ultraviolet light. Several diopside-containing specimens were observed. Most of the diopside grains were subhedral, white to pale green, and fluoresced bright blue under shortwave ultraviolet light. Also found were diopside crystals near layers of orange norbergite grains, with one very large diopside crystal that measured 8 cm by 11 cm.

All told, those who attended were rewarded for their efforts and grateful for the opportunity to be out in the field. Even the pair of curious ravens that flew overhead throughout the day would agree it was a fine outing!

FOMS Field Trip, Franklin Quarry, November 21, 2009

Photos by Jim Rumrill

There are two working levels at present in the Franklin quarry an upper main level and a lower level. These collectors are on a slope connecting the two levels. Collecting on the upper level was restricted to the small zone in front of the piles.

Plenty of fresh Franklin Marble boulders were present on the slope just below the main level. A fine 1.5-cm uvite crystal was found here.

Collectors examining pieces of purple fluorite from a boulder near the access road. The pump area is just behind them.

Collectors' cars were parked in the lower level where most of the collecting area was located. Many norbergite specimens were found on this outing.

A Forensic Analysis of Purported Greenockite (Cadmium Sulfide) From Sterling Hill

Donald Halterman, Jr.
7366 S. Redwood Rd., #94
West Jordan, UT 84084

Greenockite is a rare mineral, composed of cadmium sulfide and crystallizing in the hexagonal system. Where it occurs, it is often associated with lead and zinc sulfide ores. In the last several years, local collectors have been gathering a dull, fine-grained, yellow material from the Sterling Hill mine and representing it as greenockite (Figure 1). As far as is known, nearly all of this material was taken from the footwall rock of the east limb of the orebody along the eastern margin of the Passaic pit, or from the "saddle area" between the Passaic and Noble pits. Though the color and luster of this material are suggestive of fine-grained greenockite coatings, the apparent lack of an immediate source for abundant cadmium and sulfur suggested a need for further exploration.

Figure 1. Dull yellow mineral crust on weathered calcite, labeled as greenockite, featured in an eBay ad; size, 5 cm. Author's collection; photo by Christopher J. Stephano.

Greenockite is soluble in hydrochloric acid, yet material similar to that in Figure 1 did not react when immersed in a 37% solution of HCl. Observation of the mineral under a polarizing light microscope revealed that the yellow coating is composed of aggregates of much smaller crystals. Further testing was performed by Chris Stephano at the University of Michigan, using a scanning electron microscope with an energy dispersive spectrometer (EDS). Most EDS systems provide reliable spectra for elements heavier than boron. In the spectral graph shown in Figure 2, a scan of the yellow material reveals a composition of iron, silicon, and oxygen, with minor sodium. Calcium is also present, though this may be residual from the underlying calcite. However, neither cadmium nor sulfur was detected. While it is unfeasible to positively identify the species with the data given, it is definitely not greenockite.

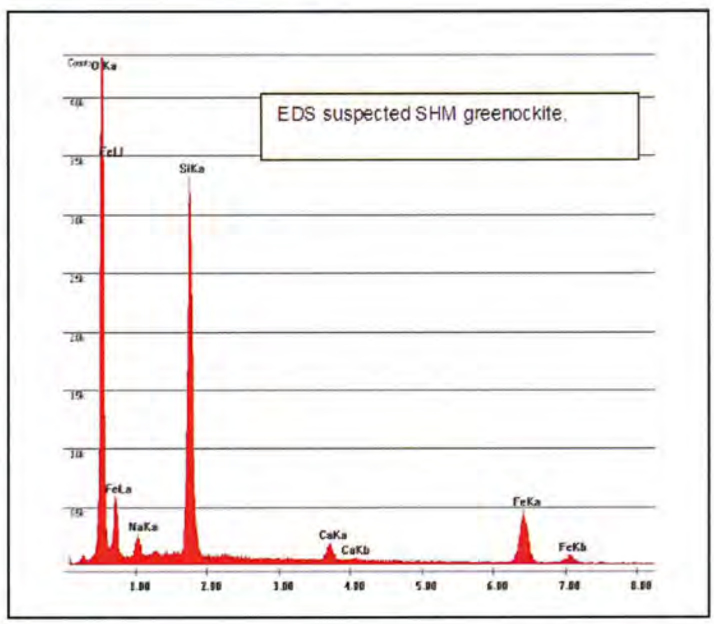


Figure 2. EDS spectrum of unidentified yellow material from the Sterling Hill Mine. The material contains iron, silicon, oxygen, and minor sodium. The calcium is most likely trace material from the underlying calcite. No cadmium or sulfur was detected. Spectrum by Christopher J. Stephano.

When attempting to identify an unknown, it helps to research the locality to discover what minerals have been found there and how to recognize them. Part of this research includes studying the assemblage, or associated minerals, with which the various species occur. Some reading and simple tests would have indicated that this yellow mineral could not be greenockite.

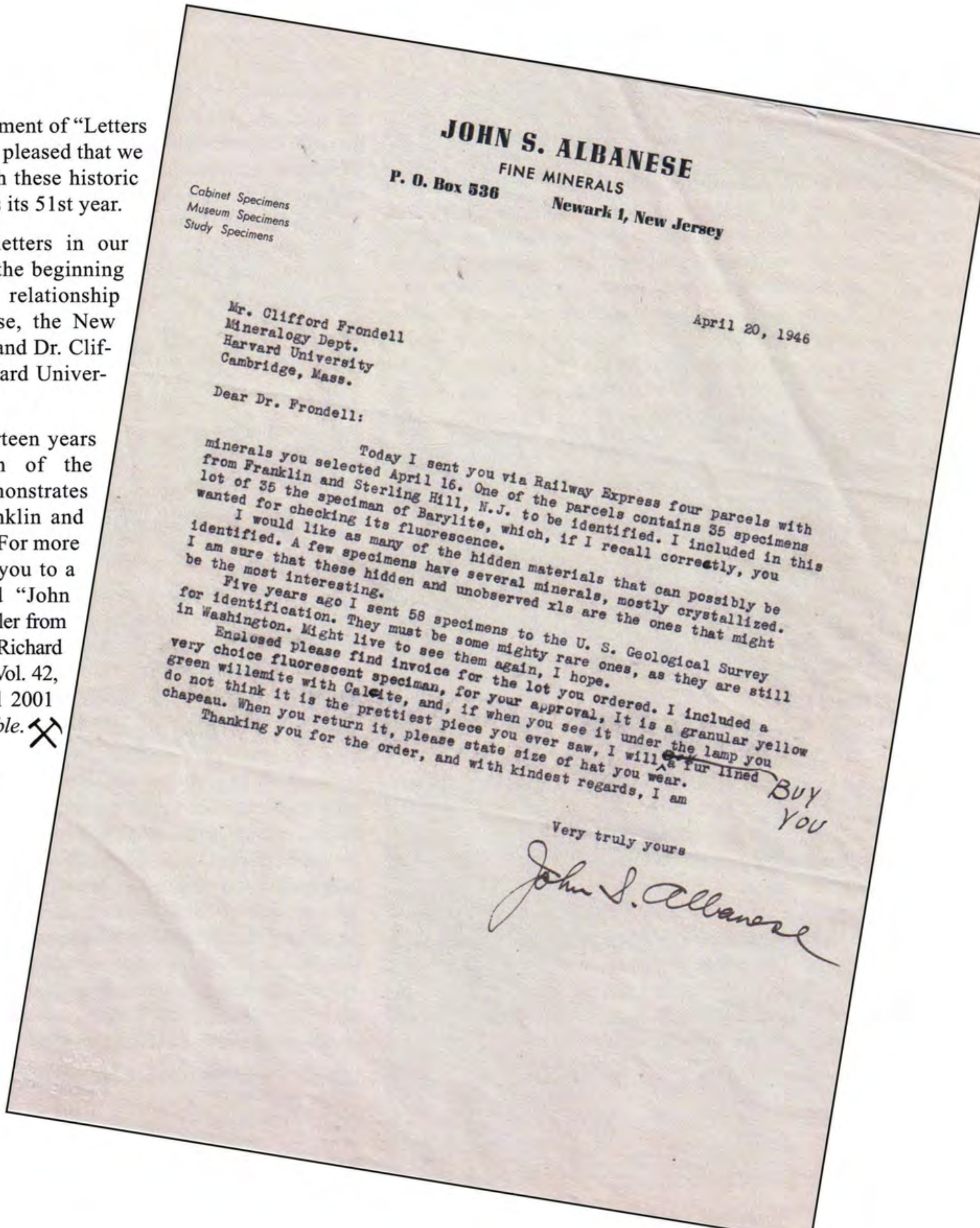
Letters From the Past

George Elling
758 Charnwood Drive
Wyckoff, NJ 07481

This is our sixth installment of "Letters From the Past". We are pleased that we can continue to publish these historic letters as FOMS begins its 51st year.

One of the earliest letters in our archives, this records the beginning of the long-lasting relationship between John Albanese, the New Jersey mineral dealer, and Dr. Clifford Frondel, the Harvard University professor.

Written more than thirteen years before the formation of the FOMS, it clearly demonstrates earlier interest in Franklin and Sterling Hill minerals. For more information, we refer you to a short biography titled "John Albanese, a Mineral Dealer from New Jersey" written by Richard Hauck and published in Vol. 42, No. 1 - The Spring/Fall 2001 issue - of the *Picking Table*.



JOHN S. ALBANESE
FINE MINERALS
P. O. Box 536 Newark 1, New Jersey

Cabinet Specimens
Museum Specimens
Study Specimens

April 20, 1946

Mr. Clifford Frondell
Mineralogy Dept.
Harvard University
Cambridge, Mass.

Dear Dr. Frondell:

Today I sent you via Railway Express four parcels with minerals you selected April 16. One of the parcels contains 35 specimens from Franklin and Sterling Hill, N.J. to be identified. I included in this lot of 35 the speciman of Barylite, which, if I recall correctly, you wanted for checking its fluorescence.

I would like as many of the hidden materials that can possibly be identified. A few specimens have several minerals, mostly crystallized. I am sure that these hidden and unobserved xls are the ones that might be the most interesting.

Five years ago I sent 58 specimens to the U. S. Geological Survey for identification. They must be some mighty rare ones, as they are still in Washington. Might live to see them again, I hope.

Enclosed please find invoice for the lot you ordered. I included a very choice fluorescent speciman, for your approval. It is a granular yellow green willemite with Calcite, and, if when you see it under the lamp you do not think it is the prettiest piece you ever saw, I will ~~eat~~ BUY YOU a fur lined chapeau. When you return it, please state size of hat you wear.

Thanking you for the order, and with kindest regards, I am

Very truly yours

John S. Albanese

Deep Drilling at Limecrest Quarry, Sparta, New Jersey:

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Trenton, NJ 08625

INTRODUCTION

The opportunity to see below the ground, especially if it is deep into the subsurface, is every geologist's dream. Quarries provide an excellent means of doing this. However, most quarries in New Jersey extend no more than a couple of hundred feet below ground surface, severely limiting the depth to which bedrock is visible. Geophysical techniques involving seismicity, magnetism, gravity, or electricity also enable geologists to image the subsurface. Unfortunately, the results of these techniques are often ambiguous, and no bedrock samples are available for inspection. Drilling to retrieve rock core is the only reliable method of determining the type of bedrock that underlies the ground, as well as a precise record of the stratigraphic order in which it occurs, and the presence of faults or other structural features that may have affected the rock. In addition, drill core provides a permanent and tangible record of the subsurface geology that is available for both current and future scientific study.

Most drilling in New Jersey is at shallow depths of a few hundred feet or less, and is done mainly for water wells, environmental issues, or to locate abandoned mine workings. Because coring bedrock is expensive, drilling typically produces rotary cuttings of very small rock chips. These become mixed during drilling and are of limited use, unless the geology is uncomplicated and the rock is of the same type. Such is not the case in the New Jersey Highlands where the geologic relationships of the oldest rocks in the state are extremely complex and the rock types are quite variable.

Recently, the Riverbank Power Corporation in Toronto, Canada, selected a number of sites in the United States to evaluate for suitability of a below-ground alternative energy storage and power generation facility known as Aquabank™. For further information on this technology, the interested reader is referred to the Riverbank website at www.riverbankpower.com. Following preliminary drilling at a site under consideration in Maine, the Limecrest quarry in Sparta, New Jersey, was chosen by Riverbank as the next site to be evaluated. If the bedrock beneath the quarry was deemed suitable, the Aquabank™ facility would be constructed at a depth of about 2,000 ft. below ground surface, beneath the existing water-filled quarry. Construction of an ambitious project of this scope requires a precise understanding of the bedrock and its engineering characteristics. The only way to acquire the necessary bedrock information is to drill a series of core holes, each to a depth exceeding that of the proposed Aquabank™ facility. It seemed that the dream of every geologist was about to be realized.

LIMECREST QUARRY (FORMERLY LIME CREST QUARRY)

Limecrest quarry is located in Sparta Township, Sussex County, along the extreme western edge of the New Jersey Highlands. The quarry was first opened in 1906 as the Crestmore quarry by Thomas Edison for use as a source of high-calcium lime. It closed soon after, and remained inactive from 1908 until 1919 when it was reopened by the Limestone Products Corporation of America (Breskin, 1922). The quarry was then worked nearly continuously until 2003, when the pumps were turned off and the quarry was allowed to fill with groundwater. Since then only the upper benches have been quarried.

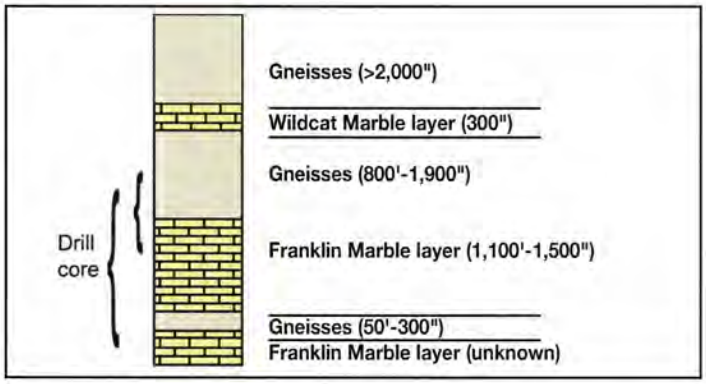

Figure 1. Stratigraphic column of Precambrian gneisses and marble from the area of the Limecrest quarry. Rocks exposed at the quarry are within the short bracket, and those penetrated by the drill core are within the long bracket. Thicknesses shown (Hague et al., 1956) are not true thicknesses of the rock units, but rather estimates based on calculated thicknesses from outcrop information (J.L. Baum, 2009, personal communication).

Most of the Limecrest quarry is developed in the Franklin Marble, although the upper quarry benches expose various gneisses that directly overlie the marble (Fig. 1). Dating of zircon from rhyolitic gneiss immediately above the marble at Limecrest yielded a U-Pb age of 1299 million years (Volkert et al., in press), that provides an age for the time of formation of the gneiss as well as the marble. Rocks at Limecrest older than 1050 million years were metamorphosed at a temperature of 754° ± 41°C, calculated using calcite-graphite thermometry of the quarry marble (Peck et al., 2006). This temperature estimate is similar to metamorphic temperatures of 769° ± 43°C calculated from marble throughout the Highlands (Peck et al., 2006). The youngest Precambrian rocks at the quarry are granite pegmatites composed of quartz+feldspar+clinopyroxene (hedenbergite) ± scapolite ± titanite that yielded a U-Pb titanite age of 998 to 989 million years (Volkert, 2004). The pegmatites are undeformed and were intruded into the marble after it and the gneisses were metamorphosed. Contacts between the marble and pegmatites exhibit reaction zones generally a few inches thick composed of various calc-silicate minerals.

Until now, the thickness of the Franklin Marble at Limecrest was unknown. Drilling of six 150-foot-deep core holes beneath the quarry floor in 1997 to determine marble reserves provided only a minimum thickness for the marble of about 300 ft. Furthermore, the type and thickness of the bedrock beneath the marble at Limecrest has never been established with certainty. Based on geologic mapping of the Sparta area, Drake and Volkert (1993) interpreted faulted Precambrian gneisses south of the quarry, that crop out from Andover nearly to Limecrest, to indicate that the Franklin Marble and gneisses at the quarry had been cut at depth by a thrust fault that transported the Precambrian rocks westward over younger, 500-million-year-old Paleozoic dolomite. Southwest of Andover, in Green Township, Baum (1967) similarly interpreted Precambrian marble and gneiss there to be thrust westward over Paleozoic dolomite based on drilling by the New Jersey Zinc Company. Baum (1967) named the fault intercepted in the drillhole the Tranquility thrust fault, and Drake and Volkert (1993) tentatively correlated the thrust fault at Limecrest quarry to the same fault. However, because Paleozoic rocks immediately west of the quarry appear to be in their correct stratigraphic order, and also because the Paleozoic rocks normally rest on top of the Precambrian rocks and not beneath them, acceptance of the Tranquility thrust fault has not been enthusiastic. Drilling a few deep coreholes at Limecrest quarry was going to provide a wealth of important geologic information and also clear up a longstanding geologic controversy.

RESULTS

Three core holes were proposed at Limecrest, each of which was to be rock cored to a depth of 2,200 ft. below ground surface. These included: DR1, on the south side of the quarry; DR2, on the west side; and DR3, on the north side (Fig. 2). All of the drilling was performed by Forage Mercier of Val D'Or, Quebec, using a custom-designed drill rig (Fig. 3). Drilling of hole DR2 took place from 7/24/09 until 8/3/09 to a total depth of -2,204 ft., and hole DR1 was drilled from 8/4/09 until 8/11/09 to a total depth of -1,997 ft. The decision was made by Riverbank not to drill Hole 3 for reasons discussed later. Upon completion of the drilling, each of the core holes was grouted shut in accordance with New Jersey state regulations (Fig. 4).

Detailed logging of the drill core from both holes was performed by the author and the results are shown in Figure 5. Logging involved classifying the core by rock name and mineralogy, and then characterizing it using uniform standards for color, grain size, texture, rock fabric, structure (fracturing, faulting, folding), and other miscellaneous features. Core hole DR2 drilled (top to bottom) 80 ft. of Paleozoic dolomite, 813 ft. of marble (Fig. 6a) and minor granite pegmatite (Fig. 6b), 431 ft. of gneiss (Fig. 7), and 99 ft. of interlayered marble and gneiss before penetrating a thrust fault (Fig. 8) at a depth of -1422 ft. About 782 ft. of Paleozoic dolomite (Fig. 9) was encountered beneath the thrust fault. Core hole DR1 drilled (top to bottom) 495 ft. of gneiss, 816 ft. of marble and minor granite pegmatite, and then 282 ft. of interlayered marble and gneiss before encountering the same thrust fault at a depth of -1593 ft. About 404 ft. of Paleozoic dolomite was drilled beneath the thrust fault.

Because the marble and gneiss at Limecrest are not flat, and instead dip toward the southeast at an angle from horizontal, the drilling thickness is not the actual thickness of the bedrock. This is calculated from the angle of dip of the metamorphic foliation (banding) in the marble and gneiss. Measurements were recorded in drill core from 55 foliations each in holes DR2 and DR1, and their dip angles average 23° and 36°, respectively. Using these angles, the thickness calculated for Franklin Marble at Limecrest is 745 ft. to the west in DR2 and 655 ft. to the east in DR1. No folding of the marble was noted in the drill core; therefore, these likely represent the actual thickness of the Franklin Marble layer.

Figure 2. Locations of core holes DR1, DR2, and DR3 shown in relation to the present-day Limecrest quarry in Sparta. This and subsequent photos by Rich Volkert.

Figure 3. Forage Mercier drill rig and the principal driller at core hole DR1, at the south corner of the quarry.

Figure 4. Cement truck grouting and sealing core hole DR2 upon completion of the drilling.

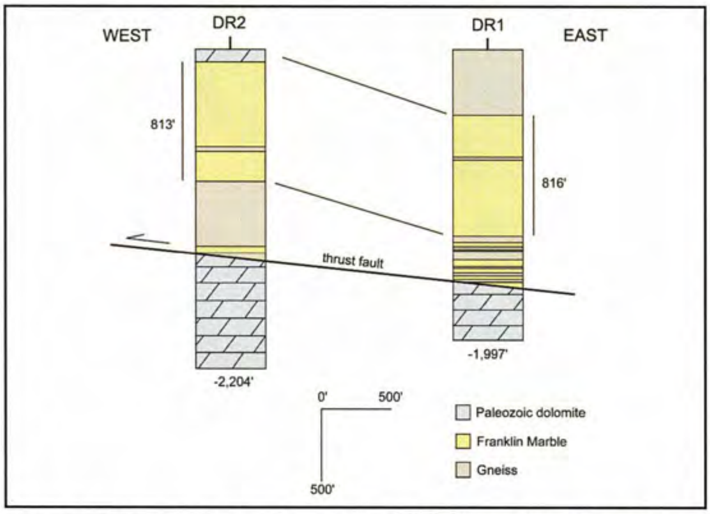

Figure 5. Generalized cross sections and drilling thicknesses of the bedrock penetrated in core holes DR2 and DR1 at Limecrest quarry. Sections were constructed from lithologic logs using the rock core from each drillhole. Arrow shows the westward direction of transport of the Precambrian rocks on the thrust fault.

Figure 7. Drill core of strongly foliated (banded) gneiss penetrated in hole DR1.

Figure 6a. Drill core of typical Franklin Marble penetrated in holes DR2 and DR1.

Figure 8. Close-up of thrust fault between Precambrian gneiss (top) and Paleozoic dolomite (bottom) in drill core from hole DR2. Fault plane in the core dips at an angle of about 60°, but the dip becomes much gentler to the east of the core hole. Pencil tip points to the fault contact.

Figure 6b. Drill core of greenish-gray granite pegmatite intruding Franklin Marble in hole DR1. Note the irregular contacts of pegmatite against the marble.

Figure 9. Drill core of Paleozoic dolomite encountered beneath the thrust fault in hole DR2.

Most of the marble drilled at Limecrest was remarkably similar to that which was quarried. That is, the marble is white to light gray, medium to coarse grained, calcitic, and displays a mineral banding defined mainly by graphite, mica (phlogopite and biotite), diopside, and norbergite. Other minerals that are more randomly disseminated include amphibole, garnet, scapolite, pyrite, and pyrrhotite. However, marble encountered at the bottom of DR1, from -1362 to -1531 ft., about 100 to 200 ft. beneath the main Franklin Marble layer, is much finer grained and sparsely mineralized. It forms layers that range in thickness from about 3 ft. to 37 ft., and that contain numerous thin layers of diopside-rich metasedimentary gneiss that is gradational into the marble. Because the marble is cut off by a thrust fault, its thickness and variability both texturally and mineralogically remain unknown.

Drilling at Limecrest quarry ultimately confirmed the presence of a thrust fault at the western edge of the New Jersey Highlands as proposed by Baum (1967) and Drake and Volkert (1993). Equally important, drilling also permitted the precise identification of the bedrock formations above and beneath the fault, as well as a refinement of the structural relationships of bedrock beneath the quarry (Fig. 10). Projecting the drill core data from DR2 to DR1 (Fig. 5) indicates that the Tranquility thrust fault beneath the quarry dips gently toward the southeast at less than 10°. Because the dolomite formations drilled beneath the thrust fault in hole DR1 become older with depth, Precambrian gneiss and possibly more marble likely occur beneath the dolomite. However, the geology is further complicated by the interpreted presence of another thrust fault beneath the one that was drilled (Fig. 10).

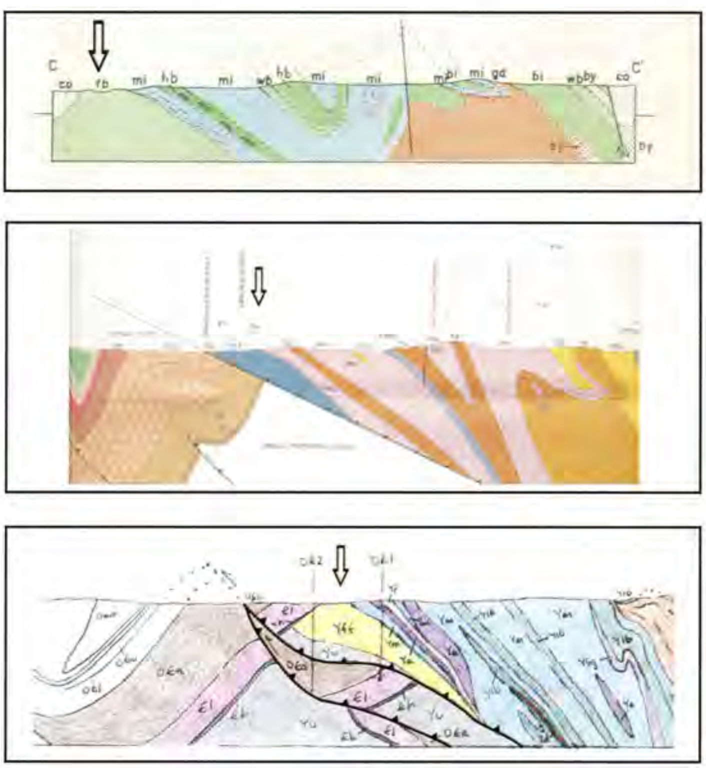

Figure 10. The evolution of geologic interpretations for Limecrest quarry as depicted in cross sections viewed with west to the left. Data sources are (top to bottom): Hague et al. (1956); Drake and Volkert (1993); and Volkert and Monteverde (2009). The latest interpretation emphasizes the importance of drilling in areas of complex geology. Arrow points to the surface location of Limecrest quarry in each cross section. Thrust faults are bold lines with barbs.

The presence of Paleozoic dolomite that was highly fractured (Fig. 9) and weakened by faulting at the depth of the proposed underground Aquabank™ facility ultimately rendered the Limecrest site unsuitable for development of the project. Because dolomite is a permeable rock that does not have the same hydrogeologic or engineering characteristics as the Precambrian gneisses and marble, the ability to create a water-tight cavern beneath the quarry was unfeasible. Thus, Riverbank decided against the added expense of drilling a third core hole as originally planned. The fact that both core holes intersected a thrust fault, as postulated by previous geologic work, highlights the importance of detailed and accurate geologic mapping in providing a solid framework upon which engineering and geotechnical decisions should be based.

ACKNOWLEDGMENTS

I am grateful to Bob Metsger for his thorough and helpful review of the article, and to Fred Young for suggesting this article for the *Picking Table*. Eugene Mulvihill, Joe Klemm, and Tom Talmadge of Limecrest Developers, LLC are thanked for providing unrestricted access to the drill core.

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Lunar Mineral Found at Franklin, New Jersey

Tony Nikischer and Joe Orosz
(On behalf of) The Hudson Institute of Mineralogy

Specimen #TS35 of the Taylor Road pyroxferroite, seen as the pale layer near top edge of specimen, richly impregnated with gahnite and other minerals. Specimen and photo by Joe Orosz.

The mineral pyroxferroite, first described from the Sea of Tranquility on the Moon, has recently been confirmed from Franklin, Sussex Co., New Jersey. Samples of pyroxferroite were originally collected within Apollo XI mission rocks, and the mineral was described as a new species in 1970. Recent work on pyroxmangite and related species found at Franklin, New Jersey, unequivocally confirms the presence of the iron analogue at the locality, bringing the total number of species found at Franklin and Sterling Hill to an astounding 357 as of this writing!

Ironically, the discovery of pyroxferroite at Franklin is not the first U.S. locality for the species, and it has been confirmed from several other foreign localities. While the Franklin discovery is not a unique terrestrial occurrence, it is worthy of mention due to the ongoing interest in Franklin mineralogy. First, however, a bit of history:

When the Fe-dominant species was first analyzed and subsequently published as a new lunar mineral in 1970, it was proposed that the well-known Mn end-member pyroxmangite, and the new Fe end-member pyroxferroite, be considered a series (the pyroxmangite-pyroxferroite series), and that the demarcation point between them would rest at the point where Fe=Mn. The lunar material was shown to be a calcian pyroxferroite, but a review of the literature pertaining to the existing Mn end-member, pyroxmangite, disclosed that five analyses of known pyroxmangite specimens, including samples from the type locality at Iva, South Carolina, were, in fact, pyroxferroite based on their Fe:Mn atomic ratios. Hence, the "new" lunar mineral was immediately shown to exist here on Earth as well, but it took the establishment of the pyroxmangite-pyroferroite series designation to uncover that fact. (There are a few other type locality minerals that are similarly confusing, but that's another topic for a later date!)

The discovery of this mineral at Franklin, New Jersey, is a direct result of the curiosity of the authors, the diverse and readily available reference collection at Excalibur Mineral Corp., and the subsequent analytical work performed under the auspices of the Hudson Institute of Mineralogy on the authors' behalf.

The mineral was found at the Taylor Road site in Franklin, Sussex Co., New Jersey, by one of the authors (JO). The Taylor Road site is currently owned by the Franklin Mineral Museum. It is typical of the various dump sites in the Franklin area, containing both waste-rock such as dolomite, and ore material like franklinite with fluorescent calcite and willemite. Pyroxferroite was found here as a layer of vitreous tan to yellow platy material up to 30 mm thick (specimen TS35). The assemblage in which the pyroxferroite was found is complex and quite variable in hand-sized specimens. The one characteristic mineral of this assemblage is gahnite, which appears as dark, nearly black (green in thin section) microcrystals up to 6 mm across. The gahnite crystals are both disseminated and in thin layers giving hand specimens a striped appearance. The identity of gahnite was established by X-ray diffraction (XRD). Other minerals observed in the assemblage include:

Apatite (species undetermined) occurs as grey masses and euhedral crystals which fluoresce orange-brown under short wave UV (XRD).

Calcite has been found as micrograins in thin sections (EDS).

Clinopyroxene (species undetermined) is found as light to medium brown platy material (XRD).

Feldspar (species undetermined) occurs as colorless to white, well-cleaved masses up to several cm that fluoresce blue under short wave UV.

Fluorite appears as small red-brown grains and masses (XRD).

Galena occurs as small grey grains with metallic luster (XRD).

Garnet (likely andradite but species undetermined) appears as brown grains up to 10 mm across.

Quartz appears as grey to white layers of micrograins in thin sections.

Pyroxmangite in this assemblage appears essentially identical in color and morphology to pyroxferroite.

Scheelite has been reported as part of this assemblage as white-to-cream fluorescent grains, but it has not been seen by the authors.

Sphalerite occurs as glassy, colorless grains and masses that typically fluorese blue, white and orange.

Willemite has also been found as micrograins in thin sections (EDS).

Curious as to the nature of the platy, somewhat beige to yellowish mineral found in the above-described assemblage, small masses of the material were extracted from specimen # TS35 in the collection of one of the authors (JO) and subsequently powdered, and were then studied by X-ray diffraction. The powder was examined using a Scintag XDS 2000 powder diffractometer employing a Cu K-alpha radiation source. Settings used to obtain the pattern were 45 kV and 40 mA for the X-ray source. The diffraction pattern was run through a search match routine and showed a near-perfect match to ICDD file 20-0001 pyroxferroite. A good match to ICDD file 25-147 ferroan pyroxmangite was also seen. A comparison to ICDD file 29-895 synthetic pyroxmangite was relatively poor.

While the X-ray data suggested a ferroan pyroxmangite or pyroxferroite, a chemical study was needed to precisely determine the species. First, several grains of material were extracted from specimens similar in appearance to TS35 described above, and a thin section from an additional sample was prepared. Utilizing a Phillips 525-M Scanning Electron Microscope (SEM) equipped with an EDAX CDU super ultrathin window EDS detector and computer system, the authors found both pyroxferroite and pyroxmangite in the samples. Operating conditions were set at 20 kV throughout the analyses to maximize Mn:Fe peak responses. Typical EDS analyses of these two phases showed:

CHART 1		
	Random Taylor Road PYROXMANGITE	Random Taylor Road PYROXFERROITE
Oxide	Wt %	Wt %
MgO	4.5	6.0
SiO2	50.2	52.2
CaO	4.3	1.4
MnO	**23.2**	**12.1**
FeO	**12.3**	**23.0**
ZnO	4.4	5.2
Totals	98.9	99.9

Random grain analyses of Taylor Road pyroxmangite-pyroxferroite series minerals.

In addition, a sample of material from Iva, South Carolina was obtained from the Excalibur inventory and analyzed as well, showing a mid-range composition in the series but clearly Fe-dominant as historically demonstrated. Samples of pyroxmangite from Japan were also analyzed and confirmed:

CHART 2		
	Gifu Pref. Japan PYROXMANGITE	Iva, S.C. PYROXFERROITE
Oxide	Wt %	Wt %
MgO	0.8	0.4
Al2O3	0.1	0.9
SiO2	46.0	48.2
CaO	0.4	0.2
MnO	**51.4**	**21.5**
FeO	**1.2**	**28.7**
Totals	99.9	99.9

Analysis of Excalibur Mineral Corp. specimens in pyroxmangite-pyroferroite series.

Now convinced that both species could be easily separated chemically by focusing on the Fe:Mn ratio, individual grains from the powdered XRD sample from specimen # TS35 were analyzed. Four grains were sampled and all showed nominal to pronounced Fe-dominance, and the average of these four analyses showed:

CHART 3	
	Average* TS 35 PYROXFERROITE
Oxide	Wt %
MgO	2.3
SiO2	49.0
CaO	3.5
MnO	**15.1**
FeO	**21.2**
ZnO	8.8
Totals	99.9

Average of four (4) pyroxferroite analyses from specimen # TS-35.

Hence, while we can analytically confirm the presence of pyroxferroite in sample # TS35, our random sampling of identical appearing material showed that one or both phases could be present, and there was no visual distinction that could be made between the Mn- or Fe- dominant phases. While this is unsatisfying news for local collectors without a microprobe handy, it nonetheless properly cautions the labeling of specimens from Taylor Road as definitively one species or the other without a proper analysis.

Permission for field collecting at the Taylor Road site has occasionally been granted by the Franklin Mineral Museum to local mineral clubs such as the Franklin-Ogdensburg Mineralogical Society, but only on specific days and by prior arrangement. Contact the Franklin Mineral Museum at 32 Evans Street, Franklin, New Jersey 07416, phone 973-827-3481 for further information.

Franklin Mineral Museum News

Lee Lowell

Collections Manager, Franklin Mineral Museum
32 Evans Street, Franklin, NJ 07416

On-the-Road Exhibits

During the summer months, the museum received requests for displays at two libraries in New Jersey. The Plainsboro Public Library requested a fluorescent display. Steve Misiur and Lee Lowell selected a suite of fluorescent rocks with fluorescent labels, a display case, and a shortwave ultraviolet lamp for the library's use. library officials came to the museum to pick up this display, which was on loan for several summer months.

The Wayne Public Library called to see if the museum could provide a daylight display of New Jersey minerals. Ray Latawiec and Lee Lowell chose an appropriate selection of rocks and set up a display in the library's lobby. This display was on loan until the fall of 2009.

These exhibits enhance the museum's visibility to the public.

An Official New Jersey Mineral

The museum was informed about an active effort to establish an official state mineral. Twenty-five other states currently have official state minerals. The New Jersey Historical Commission hosts a website discussion group, which is soliciting comments from New Jersey residents for their choices for the state mineral. When Lee Lowell received a copy of comments with favored choices, he sent a message to the site coordinator expressing the opinion on behalf of the museum that franklinite would be the best choice for the official N.J. mineral. Lee suggests that the Franklin and Sterling Hill mineral community contact their state legislators and have them push to approve franklinite as the state mineral. Some may opine that this issue is more important than lower taxes and lower health insurance costs.

A Visit With John L. Baum

In July, 2009, Fred Young and Lee Lowell visited Jack Baum's residence in Hamburg, N.J. As most folks know, Jack worked as a geologist for 32 years for the New Jersey Zinc Company for 32 years. Jack shared some interesting stories about the various N.J. Zinc Company personnel, the miners, and the scientists involved with analyzing the local minerals.

He related his experiences working on exploratory trips to Canada looking for titanium deposits for the Company. Flying into prospective locations in small planes, living in pup tents, and walking over dangerous permafrost grounds were some of the challenging aspects of these trips.

The highlight of our visit was seeing his fluorescent rocks. Spectacular specimens of wollastonite, esperite, johnbaumite, and margarosanite were a sight to see.

Jack's physical stamina is remarkable for a 93-year-old. He stood throughout our three- hour visit. It was a pleasurable experience and we all wish him the best in health for the future.

Hall of Fame Recipient for 2009

The museum's Hall of Fame selection for 2009 was Robert Mayo Catlin (1853-1934). Richard Bostwick coordinates the museum's efforts to select proposed candidates, and the museum board votes for their choice. Catlin's photo and a biography were placed on a plaque, which is mounted on the wall in the museum along with the other Hall of Fame honorees. Catlin was responsible for establishing the top-slice mining method, which made possible the removal of nearly all of the ore and thus made the Franklin deposit more valuable economically. Catlin's contributions to the Franklin community included the establishment of a hospital, an improved water system, paved streets, a community center, a bank, and a general store. He also helped to incorporate law and order in the town of Franklin.

Science Winners Announced

The museum's "Future Scientist Awards" program is an annual event. This event is coordinated by Anne Wronka. Each of the elementary schools and the high school conduct science fairs, and the science teachers from each school selects a winner from their respective schools. The museum provides cash awards and a certificate to each winner at the museum's annual Volunteer Appreciation & Miner's Day celebration. The museum is proud of its role in encouraging students' interest in science.

Fall Mineral Show

The September 2009 mineral show was a success. The attendance was higher than the 2008 show, and the number of dealers was also higher. This is a major fund-raising event for the museum each year, and it is important that this show is successful, for any profits gained from the show are deposited into the Building Fund to pay for building expenses incurred over the years.

Fall Night Dig

The fall night dig on the Buckwheat dump drew 95 collectors. There were more families involved in this collecting event than in the past, which is encouraging. The evening weather was perfect for collecting. Collectors from several states enjoyed this annual event. About 360 pounds of beautiful rocks were hauled away.

Geological Research

The museum continues to provide funding to Richard Volkert of the N.J. Geological Survey for scientific research on the Franklin and Sterling Hill deposits. He is presently studying the age of formation of several minerals during the cooling process in the metamorphic environment. His studies are excellent and they provide new geological information on the local mining district.

Mineral News

Clinochlore was found on the Taylor Road site by Jim Rumrill. He noticed a bright green micaceous mineral on a rock and had it analyzed by the Hudson Institute of Mineralogy's Sid and Betty Williams Laboratory at Tony Nikischer's facility. This is the first find of this mineral at this site. None of the museum's clinochlore specimens are green in color. Jim donated a specimen of this find to the museum. An article by Jim on this find was published in the July, 2009 issue of *Mineral News*.

There may be some more changes to the official Franklin and Sterling Hill mineral species list. Pimelite, which is labeled on many Franklin specimens, may not be a valid name anymore. Willemseite is the suggested name for this mineral despite the fact that the International Mineralogical Association (IMA) made the change several years ago, according to Tony Nikischer, without any scientific analysis to support this change. If this change is verified, it would be a new mineral for the list. Also, there is a suggestion that villyaellenite is now miguelromeroite. The-Franklin and Sterling Hill list committee will have to address these issues and verify the credibility of these changes before the revisions are officially made to the list. Must the Franklin and Sterling Hill mineral list committee march to the unrhythmic drum beat of the IMA? Unfortunately, mineral name changes for the sake of change appear to be a senseless IMA activity.

Volunteers

Thanks to all of those who have assisted the museum without remuneration or services or even a free lunch or dinner. ⚒

Sterling Hill Mining Museum News

Joseph Kaiser
40 Castlewood Trail
Sparta NJ 07871

The Sterling Hill Astronomy Group is open to the public, so anyone can join for a modest annual membership fee. Membership is $25.00 per person or $35.00 for a family, and will provide monthly viewing as well as special event observing. For further information, please e-mail Bill Kroth at wkroth8394@aol.com, or phone 201-933-3029 after 5:00 PM.

The same company that painted the ore bins several years ago submitted the winning bid for painting the West shaft headframe on top of Sterling Hill. Painting will help ensure that the structure will last far into the future. This time the painting was done with brushes, not spray guns, so all the paint went on the structure and not on nearby cars.

Mikki Weiss has passed on her duties as Executive Director of Education to others in the group. She helped establish and coordinate many of the education outreach programs at Sterling Hill Mining Museum. She will still be involved but no longer as the "point of contact."

Pete Gillis led a team of computer experts and electrical engineers to build from scratch a truly one-of-a-kind underground display that simulates the detonation of a drift round with light and sound. The tour guide pushes a button that triggers a sequence of flashing lights in existing drill holes, to the accompaniment of blasting noises. It was necessary to keep the sound level respectable for the sake of our guests, and to prevent the bangs and booms from tripping the nearby seismic monitor, which is operated by the Lamont-Doherty Earth Observatory.

The 21st Century has arrived at Sterling Hill with a Wi-Fi HotSpot. A HotSpot is a venue that offers Internet access over a wireless local area network or LAN. Eric Weis and Jeff Winkler installed the omnidirectional antenna for the museum's wireless Internet connection. The thought is that when access is available in the mine, even more learning opportunities will be available.

The east limb outcrop at the northern end of the fill quarry is being excavated. Good ore specimens have been produced. In addition, the concrete cap was removed from the Marshall shaft, which has since been stabilized by filling it to the level of the water table. The shaft walls, going down twenty feet or so, are all hand-laid fieldstone, and the shaft opening will become another of the museum's exhibits.

The *Pillar of Light* project has received funding and is now in the engineering stage, prior to seeking a construction permit. The fill quarry is already being prepared for the erection of a steel structure around the highly fluorescent ore pillar. The *Pillar of Light* has generous and welcome support from Franklin and Lavina Ellis, and requires only matching funds to bring the project to success.

A professional photographer, Bryan Duggan, is working on a book about the unusual things that can be seen in ultraviolet light. He has made several trips to Sterling Hill and has had several people assist him. The *Pillar of Light* outcrop has been very well captured in his photos. Several images of the museum's display of the elements of the Periodic Table also appear in Bryan's book, which he sees as another way to show what is available at the Sterling Hill Mining Museum.

A videoconferencing center has been set up in the basement of the gift shop as part of the museum's educational outreach program. Help is needed to support and promote this program, as it will allow on-site scientists and educators into remote classrooms.

Various educational opportunities are already available through the Sterling Hill Mining Museum. Dr. Earl Verbeek, SHMM Education Director, can be contacted to discuss particulars at everbeek@ptd.net. Scheduled events are announced on the website at www.sterlinghillminingmuseum.org. The education program embodies four major components: (1) teacher workshops at Sterling Hill, (2) classroom visits, (3) distance learning and (4) educational materials. Some programs embody ideas and sites in the area related to, but not on, the museum grounds. Each of the workshops can be slanted to emphasize one or more curriculum segments. The cost for attendance and materials of scheduled workshops can be found on the museum website.

2009 was a very good year for school tours. Even with the slowdown in the economy, the museum was able to do well. However, we still do not have enough resources to develop some of the teaching programs we would like to have, and will need outside support for this critical activity.

The Super Dig, held on the first day of the NJESA Gem & Mineral Show at the Sterling mine, has proven quite popular. This year it will be held on April 24 from 9:00 AM to 11:00 PM. The Sterling Hill Garage Sale, held on the weekend of the spring and fall mineral shows, always has much interesting material available. On Saturday, June 19, SHMM Foundation members will be able to collect both day and night. Details about these events and other activities at the museum and on its grounds are accessible on the Internet at our website, www.sterlinghillminingmuseum.org.

2009 Franklin-Sterling Gem & Mineral Show, September 26-27, 2009

Tema J. Hecht
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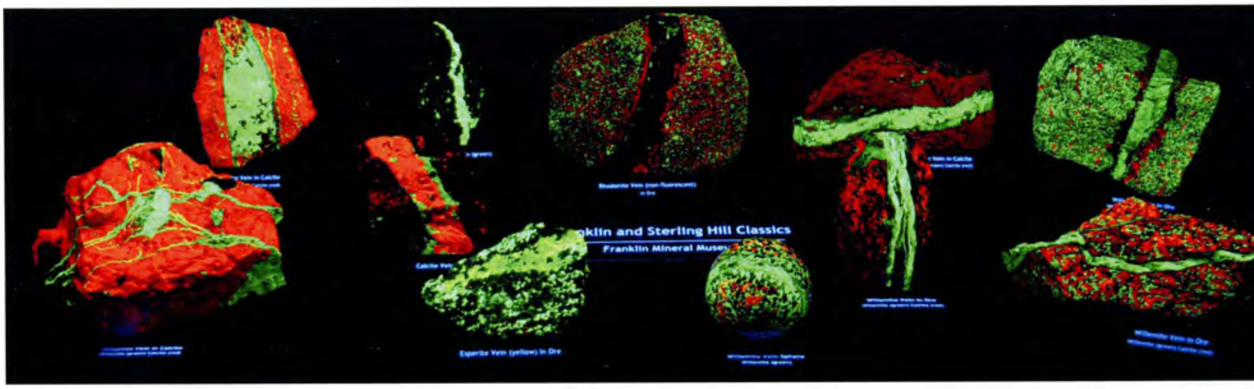
New York, NY 10025
All photos by Tema J. Hecht unless credited otherwise.

Here's the certificate to prove that FOMS has achieved half-century status as a New Jersey institution.

It's our birthday! Sussex County Chosen Freeholder Phil Crabb (on right) presents FOMS president Bill Truran with a Certification of Recognition of our 50th anniversary: closeup on left.

Richard Hauck, FOMS founding member and our second president, cuts our Golden Anniversary cake. The "Godfather," co-proprietor of the Sterling Hill Mining Museum, remembers it all; we've come a long way since 1959, when Franklin was nearly a ghost town, the Sterling Hill mine had suspended operations, and there were no local museums.... or Arby's or Hooters.

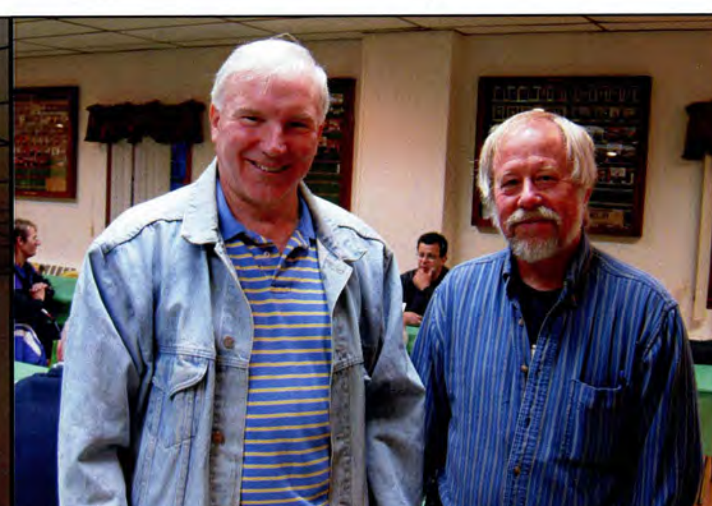


Franklin Mineral Museum displays the world's best fluorescent minerals at the Franklin-Sterling Gem & Mineral Show, September 26-27, 2009.

Richard Bostwick, fluorescent exhibits coordinator, hanging out where he's most needed.

The FOMS banquet is entertained by a 50th anniversary chorus line of beer enthusiasts, upholding a half-century of tradition. Left to right: Earl Verbeek, Mark Boyer, Richard Bostwick, Tema Hecht, and Richard Keller. Paul Carr photo.

Master of Ceremonies Richard Bostwick, exhorting the Franklin-Sterling faithful to whoop it up for another fifty years.



Bill Truran, FOMS president (on left), and Earl Verbeek, Sterling Hill Mining Museum curator and director of education, radiate good cheer at the FOMS banquet.

A Very Good Day at the Buckwheat Dump

Kurt Hennig
80 Main Street, Apt. 5
Franklin NJ 07416

It was a really nice summer to collect minerals this past year in Franklin (2009). It was cool and overcast so it kept the sun from knocking us out. The Buckwheat dump sometimes turns into an oven at that time of year.

My collecting buddy Fred Lubers and I had just finished working at the Sterling Hill Mining Museum's Mine Run dump where we collected sphalerites, beautiful zincites, and really nice specimens of willemite veins in calcite.

Next stop: the dreaded Buckwheat dump. Buckwheat is a tough dig. There's a lot of big rock, and because it's been turned over a lot there's no way to really read it, so basically you just want to go down deep wherever you dig. Every year just before the spring show in April, Steven Phillips, Franklin Mineral Museum president, has the dump turned over. People who go to the show can then collect there and find a nice specimen to take home.

I started digging a large hole in the new trench area because we had already collected a couple of hardystonites there.

I hit a couple of small hardystonites, some nice shot ore, a fist-size esperite in calcite, and a couple of mule shoes from the mules used to pull the ore carts in the old days. It made me appreciate the history of the mines and how hard it must have been to work there.

Then Fred pulled out the first cuspidine. It was a nice big eye in calcite with some hardystonite and willemite. I proceeded to go into a panic state. I bailed out of my hole and started to dig in another hole, hitting large boulders. This is bad because you either have to break them up to remove them, or try and roll them out. After playing that game I went back to my first hole and started digging deeper. I dug for about another two weeks while Fred dug out another fist-size cuspidine and a lot of small and mid-sized hardystonites. At that time I was a little discouraged but kept my sense of humor, and continued to dig knowing that my day would come sooner or later.

Then that day came. The rock was about 10 inches by 7 inches and about 3 1/2 inches thick. When I broke it I thought it was a hardystonite. It had calcite and franklinite, was heavy, and looked like the hardystonite assemblage which I had collected there in the past. I called over to Fred and said, "I got a hardystonite" and showed it to him from about 20 feet away. At that point I think he was feeling bad because nothing was happening for me, plus earlier that day he had pulled out a 60-pound hardystonite.

Well, the end of the day came, and I went up to the hill to the museum to lamp my rock. Expecting to see a three, color hardystonite, I saw a very bright orange and red and green rock. I couldn't believe it! Then I checked the other pieces and one was nicer than the last. Only a fellow collector would understand my excitement.

So if you have some free time and want to get a good workout, come on down to the Buckwheat dump and have some fun.

Cream of the Fluorescent Mineral Collectors Crop.
Top row l to r:
Steve Kuitems, Mark Leger, Claude Poli.
Center row l to r:
Fred Lubbers, Mark Boyer.
Front row l to r:
Denis DeAngelis, Kurt Hennig.

Photo by Tema J. Hecht.

A Rare Franklin Classic

The orange-yellow-fluorescing mineral in the photo is cuspidine, associated with red-fluorescing calcite and green-fluorescing willemite. Few specimens of this caliber are known, and this may be the brightest and most attractive display-size example to have come from Franklin. It was found by Kurt Hennig in 2009 on the Buckwheat dump, the most prolific local source of this unusual and uncommon mineral. (Cuspidine has also come from the Mill Site and the Parker mine and dump, but is not known from Sterling Hill) Adding to the rarity of this specimen is its beauty under shortwave and midwave ultraviolet light.

The specimen measures 6 1/4 x 2 x 2 5/8 inches (16 x 5 x 6.5 cm) It weighs 2.0 lbs (0.9 Kg).

Kurt Hennig collection. Photo by Dr. Earl R. Verbeek.