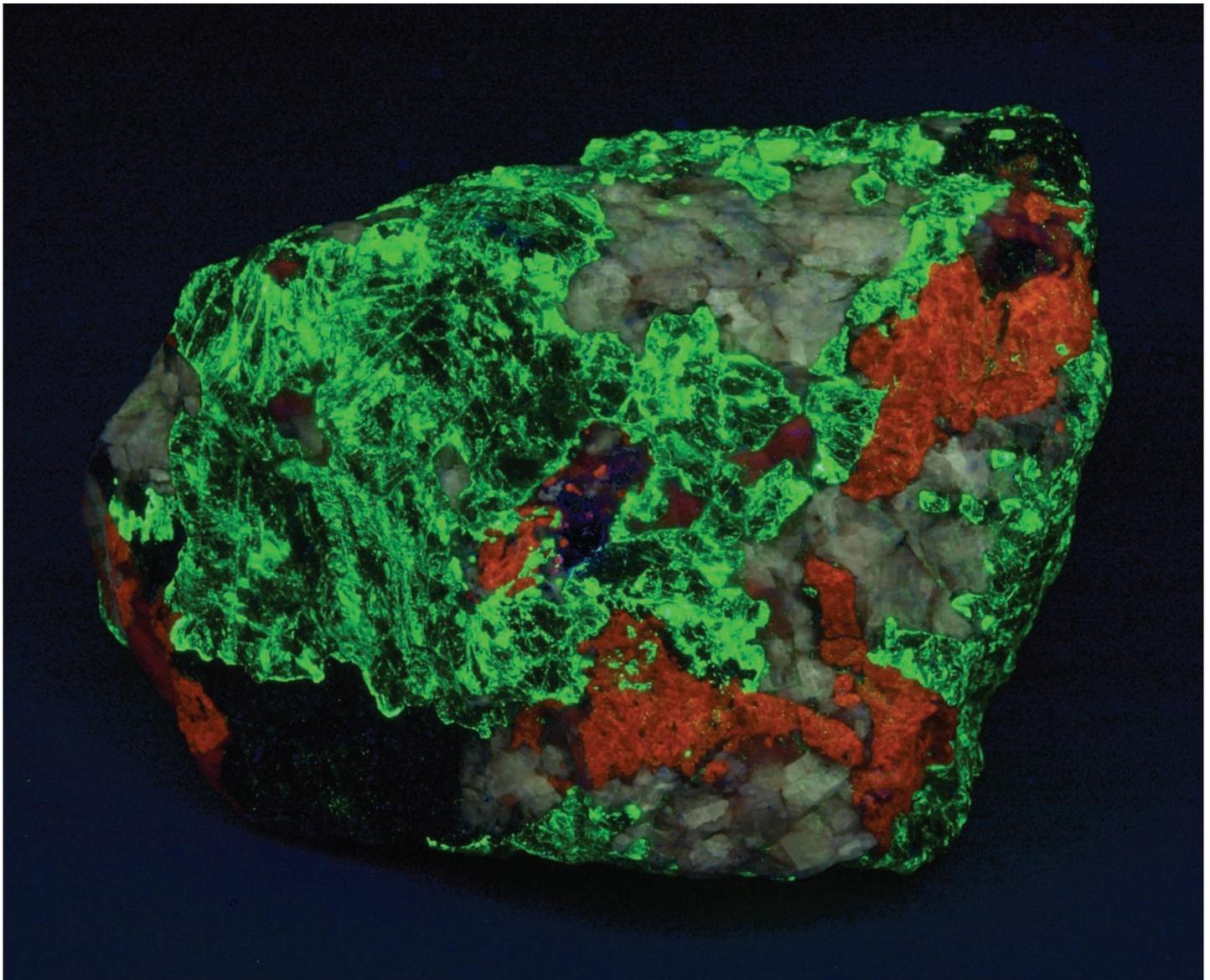


THE PICKING TABLE

JOURNAL OF THE FRANKLIN-OGDENSBURG MINERALOGICAL SOCIETY

VOL. 58, NO. 1 – SPRING 2017

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- **THE 60TH ANNUAL FRANKLIN-STERLING GEM & MINERAL SHOW**



THE FRANKLIN-OGDENSBERG MINERALOGICAL SOCIETY, INC.

OFFICERS AND STAFF

PRESIDENT

HAROLD (PAT) HINTZ

6 Helene Drive
Randolph, NJ 07869
C: 862-219-0229
pathintz1@aol.com

VICE PRESIDENT

GARY MOLDOVANY

116 Lafayette Street
Hackettstown, NJ 07840
C: 862-268-1596
gsmoldovany@gmail.com

SECOND VICE PRESIDENT

GARY KERSTANSKI

PO Box 703
Goshen, NY 10924
C: 845-978-4141
glowrocks703@gmail.com

SECRETARY

TEMA J. HECHT

600 West 111th Street, Apt. 11B
New York, NY 10025
H: 212-749-5817
C: 917-903-4687
thecht@att.net

TREASURER

DENISE KROTH

85 Beaver Run Road
Lafayette, NJ 07848
W: 973-209-7212
Denise.Kroth@shmmuseum.org

TRUSTEES

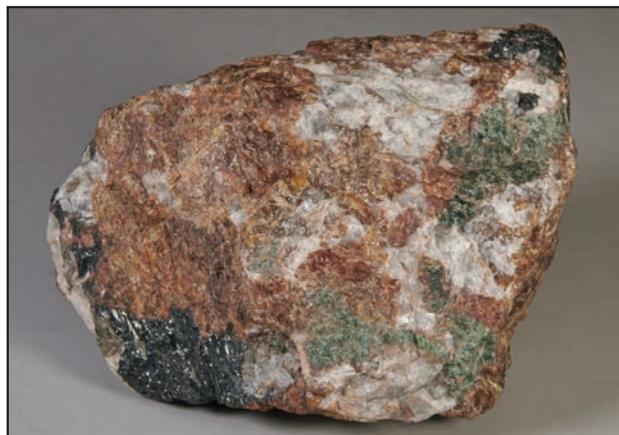
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A daylight view of the same specimen shown on the front cover. The green mineral is svabite. Associated minerals include barite (white), willemite (brown), and franklinite (black). See "About the Front Cover" on the next page for details. *Earl R. Verbeek photo.*

THE PICKING TABLE



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PUBLISHER

THE FRANKLIN-OGDENSBURG
MINERALOGICAL SOCIETY, INC.

MANAGING EDITOR

RICHARD J. KELLER, JR.

EDITORS

RICHARD C. BOSTWICK
MARK BOYER
TEMA J. HECHT
EARL R. VERBEEK, PhD

PHOTO EDITOR

TEMA J. HECHT

ART DIRECTOR

CAITLIN WHITTINGTON

PRINTING

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Denise Kroth, Treasurer, FOMS
85 Beaver Run Road
Lafayette, NJ 07848
treasurer@fomsnj.org

ABOUT THE FRONT COVER

Anhedral masses of svabite (fluorescent orange) with coarse-grained barite (white), willemite (green), and minor nonfluorescent franklinite. This is one of several carefully analyzed specimens that led to the restoration of svabite to the list of minerals present in the Franklin-Ogdensburg area. A daylight image of this same specimen is shown on the previous page. Earl R. Verbeek specimen and photo; 3.3 × 2.4 × 1.8 inches (8.5 × 6 × 4.5 cm).



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 be submitted as Microsoft Word documents to Richard J. Keller, Jr. at: PTMemberFeedback@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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FRANKLIN-OGDENSBERG MINERALOGICAL SOCIETY

SPRING AND SUMMER 2017 ACTIVITY SCHEDULE

COMPILED BY TEMA J. HECHT

600 WEST 111TH STREET, APT. 11B

NEW YORK, NY 10025

thecht@att.net

SATURDAY, MARCH 18, 2017

All events cancelled due to inclement weather.

1:30 PM – 3:30 PM

FOMS Meeting

Sterling Hill Mining Museum, GeoTech Center.
Lecture: *Newly Restored Video of Mining Methods at Sterling Hill*, by Jeff Osowski and Ron Mishkin.

SATURDAY AND SUNDAY, APRIL 1 AND 2, 2017

****28th Annual North Jersey Gem, Mineral & Fossil Show**

Midland Park High School,

250 Prospect St., Midland Park, N.J.

Saturday: 10:00 AM – 6:00 PM

Sunday: 10:00 AM – 4:00 PM

Admission: \$5.00 per person;

\$4.00 per senior adult;

free admission for children under 12 and uniformed scouts.

6:00 PM

****Annual Museum Members-Only**

Mineral Sale and Auction

Franklin Mineral Museum.

FRIDAY, SATURDAY, AND SUNDAY, APRIL 7–9, 2017

****6th Annual NY/NJ Mineral, Fossil,
Gem & Jewelry Show**

New Jersey Convention & Expo Center,
97 Sunfield Ave., Edison, N.J.

Friday: NOON – 9:00 PM

Saturday and Sunday: 10:00 AM – 6:00 PM

Admission: \$12.00 ages 12 and over (good for all 3 days);

\$10.00 for children aged 4 to 11 (good for all 3 days);

free admission for children under 4 years old.

SATURDAY AND SUNDAY, APRIL 29 AND 30, 2017

45th Annual NJESA Gem & Mineral Show

Held in conjunction with the

22nd Annual FOMS 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.

NJESA Show hours:

Saturday, 9:00 AM – 5:30 PM; Sunday, 10:00 AM – 5:00 PM

Swap-and-Sell hours:

Saturday, 8:00 AM – 5:30 PM; Sunday, 9:00 AM – 5:00 PM

Donation: \$6.00 per person,

children under 14 free with paying adult.

SATURDAY, APRIL 15, 2017

9:00 AM – NOON

FOMS Field Trip

Sterling Hill Mining Museum.

Collecting permitted on the Mine Run Dump
and in the Fill Quarry, Passaic Pit, and “Saddle” area.

\$5.00 admission fee

plus \$1.50 for each pound of material taken.

**Top quality willemite and calcite available
for \$3.00 per pound.**

**Mixed minerals, including hardystonite and wollastonite,
\$6.00 per pound.**

Banquet and Auction

Saturday evening at the GeoTech Center,
Sterling Hill Mining Museum.

Admission limited to 60 people.

Social hour: 5:30 PM – 6:30 PM

All-you-can-eat buffet: 6:30 PM – 9:30 PM

Banquet tickets are \$20.00 each
and include all food, coffee, tea, and soft drinks. **BYOB!!**

Silent auction: 5:30 PM – 7:30 PM

Live auction: 7:45 PM

Both auctions are for the benefit of all three show sponsors:
NJESA, FOMS, and SHMM.

****Annual Super Dig!**

Saturday, April 29, 2017

New Location: The “Mill Site pile” and Buckwheat Dump,
Franklin Mineral Museum, Franklin, N.J.

Sponsored by the Delaware Valley Earth Science Society
(DVESS).

Visit www.superdiggg.com for more information,
schedule, fees, and updates!

(Note: The Buckwheat Dump will be
closed to collecting on Sunday.)

****Sterling Hill Garage Sale**

Saturday and Sunday, April 29 & 30, 2017

10:00 AM – 3:00 PM

Christiansen Pavilion, Sterling Hill Mining Museum.

****Collecting on the Mine Run Dump and in the
Fill Quarry, Passaic Pit, and “Saddle” area.**

Sterling Hill Mining Museum, **Sunday only, April 30.**

9:00 AM – 3:00 PM (**Open to the public!**)

Fees for mineral collecting:

\$5.00 admission plus \$1.50/lb for all material taken.

SUNDAY, MAY 7, 2017

NOON

****Annual Volunteer Appreciation
and Miners Day Tribute**

Franklin Mineral Museum.

Including special program and a concert by
the famous Franklin Band.

!!! Attendance by invitation only !!!

SATURDAY, MAY 20, 2017

8:45 AM – NOON

FOMS Field Trip

Collecting at the Braen Franklin Quarry,
Cork Hill Road, Franklin, N.J.

If gate is open, drive through and park to the left of the gate.

Please don't block the roadway.

Meet at the scale house to sign releases. Hard hats,
leather shoes (preferably steel-toed), gloves,
and safety glasses **required**.

Participants MUST arrive by 8:45 AM to register!
Members will then be escorted to the collecting site.

Latecomers prohibited!

1:30 PM – 3:30 PM

FOMS Meeting

Franklin Mineral Museum.

Lecture: *The Hamburg Mine and Lang Shaft*, by Phil Crabb.

SATURDAY AND SUNDAY, MAY 20 AND 21, 2017

****North Jersey Mineralogical Society Swap & Sell**

Both days: 9:00 AM – 5:00 PM

Sterling Hill Mining Museum.

SATURDAY, JUNE 17, 2017

9:00 AM – NOON

FOMS Field Trip

Collecting at the Hamburg Mine/Lang Shaft (private property)

Meet at the Franklin Mineral Museum at 8:30 AM *sharp*,
where participants will be escorted to the location.

1:30 PM – 3:30 PM

FOMS Meeting

Franklin Mineral Museum.

Lecture: *The Old Days of Collecting at the Franklin Mill Site*,
by Jim Chenard.

MINERAL OF THE MONTH — ZINCITE

Bring your specimens for show-and-tell
and discussion after the lecture.

6:00 PM – 10:00 PM

****Night Collecting on the Mine Run Dump and
in the Passaic Pit and “Saddle” area.**

Sterling Hill Mining Museum.

Fees for mineral collecting:

\$5.00 admission plus \$1.50/lb for all material taken.

Eye protection, flashlight, hammer (carpenter's
claw hammers not allowed), and UV lamp advised.

!!! Open to Sterling Hill Mining Museum members only !!!

✕ ✕ ✕ ✕ ✕ ✕ ✕ ✕ ✕ ✕

Scheduled activities of the FOMS 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. FOMS meetings
are open to the public and are held at 1:30 PM, usually in
Kraissl Hall at the Franklin Mineral Museum,
30 Evans St., Franklin, N.J. (check listings for exceptions).

Most 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 membership in other
organizations, may be required. Any information in this
schedule, including fees, is subject to change without notice.

President's Message

HAROLD (PAT) HINTZ

6 HELENE DRIVE
RANDOLPH, NJ 07869
Pathintz1@aol.com

My 35-year professional career started with my being a chemist, but morphed into environmental and safety management. As I neared retirement I looked for a leisure-time activity and joined the Morris Museum Mineralogical Society and shortly afterward the Franklin-Ogdensburg Mineralogical Society. That year, for Christmas, a friend gave me a book about fluorescent minerals, and I was hooked.

I met Mark Cole (www.minershop.com) at the 2008 fall Franklin show. He introduced me to Howie Green, and the two of them have dragged me to Greenland, Sweden, and Tucson multiple times when I wasn't climbing around on the Buckwheat Dump in Franklin or the Mine Run Dump at Sterling Hill. A short ten years later, my wife keeps asking, "What are we going to do with all these rocks?" In discussion with other collectors I find this question is not unique to my wife.

So it is with great anticipation we recognize that the long dry spell of winter inactivity is almost over. Behind the scenes the usual suspects have been hard at work lining up exciting digs, speakers, and spring show specials, something for each of us depending on our interests. In May, Sussex County Freeholder Phil Crabb will tell us all about his property. Why should we care? Because that's the site of our June dig, and the word

on the street is that the Franklin orebody can be seen there in some of its original outcrops. Rich Keller, Earl Verbeek, and Bernie Kozykowski have walked the property with Mr. Crabb, and Rich has already scooped up specimens from the surface.

For those of you who can't wait until the FOMS dig in June, check out the Super Dig (see www.SuperDiggg.com) to be run in conjunction with the 45th Annual NJESA Gem & Mineral Show on the last weekend of April. This year the dig will be on the Buckwheat Dump at the Franklin Mineral Museum instead of at Sterling Hill. The dump will be turned over, and adventurous individuals can sign up for collecting on the Mill Site pile.

Speaking of the NJESA show, often called the Franklin spring show, Jim Van Fleet has been actively soliciting vendors far and wide for the FOMS-sponsored outdoor Swap and Sell. Besides the usual vendors, if we're lucky some individuals will have cleaned out their basements and garages, and we'll see some rocks and minerals that haven't seen the light of day for a while. As always we are looking for volunteers to help at this show by manning the club table, etc., as the show is always a good opportunity to meet fellow collectors and even learn something new. I hope to see many of you there. ✂

From the Editor's Desk

RICHARD J. KELLER, JR.

13 GREEN STREET
FRANKLIN, NJ 07416
FranklinNJ@hotmail.com

Well, I guess you can say that the FOMS spring 2017 season got off to a "rocky" start. The March nor'easter made the Taylor Road Dump an unsafe location for collecting. SAFETY FIRST!!

But nothing will be lost. The Taylor Road Dump is a place we've been to many times, and will continue to visit. We've been assured the March speaker can return to speak in the fall.

This current issue of *The Picking Table* includes the much-anticipated second part of Richard Bostwick's article on fluorescent minerals from Franklin and Sterling Hill. We experienced a slight delay in its completion due to the inclusion (again!) of svabite in the list of local fluorescent mineral species. For years we've had tantalizing hints, via

semiquantitative chemical analyses, that svabite does indeed exist here, but we lacked robust proof. Now we have it...and for a peek at one example, see the front cover of this issue.

Also in this issue is a wonderful inclusion of a FOMS member's recollections of his visit to the Buckwheat Dump back in the 1960s. The article is further enhanced by color photos that the author was able to furnish. The images were a bit faded due to age, but luckily Earl Verbeek knows how to breathe life back into them. I can only hope we have more members out there who will submit additional articles like this one.

Enough said. Sit back and enjoy the new issue of *The Picking Table*. ✂

Happenings at Sterling Hill

WILLIAM KROTH

PRESIDENT, STERLING HILL MINING MUSEUM

30 PLANT STREET, OGDENSBURG, NJ 07439

bill.kroth@shmmuseum.org

As the Sterling Hill Mining Museum matures, we have, in ever-increasing amount, the talent, experience, reputation, and finances to expand our offerings beyond those for the general visiting public. This year, for example, we are developing educational programs in partnership with the Picatinny Arsenal STEM (Science, Technology, Engineering, and Mathematics) initiative. We have dozens of science teachers scheduled to attend our GEO STEM program through the Picatinny Arsenal outreach. Many of the teachers who will attend this summer's program will come from the Montclair, New Jersey, school system. Their exposure and familiarization with Sterling Hill, and increase in geological and technical knowledge, will benefit both their students and our museum for years to come. And we hope to expand our association with Picatinny and continue to offer tailored, advanced tours for teachers year-round from all parts of the state.

We have also instituted a scholarship program for Ogdensburg residents who are graduating seniors majoring in STEM studies. Four \$2,500 scholarships will be awarded by the SHMM each spring to students from the three local high schools as they enter college. This is one way of giving back to our community while supporting science education. We will be starting this program with the graduating class of 2017.

Next, we have taken another step in bringing laboratory instruments to the Sterling Hill Mining Museum to increase our ability to identify minerals, and perhaps discover minerals new to this area, or even new to science. There was a flurry of new minerals discovered in the area during the 1970s and 1980s by John Kolic, Ewald Gerstmann, and Pete Dunn. If we could just get one or two more new minerals to our list *by our own staff*—now that would be a major accomplishment! Likely candidates for study will be the hundreds of specimens from the John Kolic collection that he was unable to identify. Alan Rein is spearheading this program, and we hope to have our next piece of equipment here in the spring for a trial run.

Finally, in the next few weeks as you drive into the Sterling Hill complex, a new focal point will greet you. Located at the end of our driveway, just before the pavilion, you will see our freshly restored, 1942 N4B metal caboose. Many have asked, “Are you folks switching gears and expanding to become a train museum?” The answer is **no**—we are simply showing the critical aspect of rail transportation of ore from Sterling Hill to the smelters at Palmerton, Pennsylvania. Prior to closing in the 1980s, the Sterling Hill lower property was visually more of a

railroad yard than a mine, with track, switches, locomotives, and rolling stock covering most of the surface.

As winter 2017 ends, we have much progress to show on our 1942 caboose. The wheel sets (trucks) are sitting in their final position, waiting to receive the caboose cab. They have been carefully sandblasted and painted black, and now sit on the 40-foot-long siding that was installed by volunteers from the New York, Susquehanna and Western Railway. Although the caboose cab still sits on the flatbed trailer we used to transport it to Sterling Hill, most of the difficult work has been completed.

Our biggest problem was serious corrosion on all sides and end panels at floor-level height around the whole perimeter of the car. So we carefully cut out a 12-inch-high band of existing caboose outer panel and replaced the “Swiss cheese” with new, 1/8-inch-thick sheet metal. Also necessary for attaching these panels, we replaced more than 350 5/8-inch-diameter rivets. We fabricated new grab bars for the roof, a new chimney structure, and new roof walkways, all according to details from old photos and dimensions that we gleaned from visits to other surviving caboose examples.

Period-correct kerosene lamps have been purchased along with the proper gauges and bronze whistles. And one of the best finds was a 1940s-era, genuine caboose wood-burning stove that will replace the “incorrect” oil-burning unit that it arrived with. Our wood-burning stove is a beauty, with all of the proper tie-down hardware that was necessary for stability on the railroad.

Matthew Vincent of Northeast Furniture Studio in Franklin, New Jersey, will install new tongue-and-groove pine that will make the interior look superb. The caboose's exterior is now in red-brown primer. We have about 6 hours of very mild body-filler work to perform to get our repairs virtually invisible. And we will be applying its final dark red original exterior color in the spring. We were fortunate to find a pristine chip of original paint to use as a color match.

We plan on setting the caboose on its trucks the next time we have a crane on-site. Now the amount of remaining work can be counted in days, not weeks. And I thank the many folks involved in the thousands of man-hours to make it one of the best train restorations anywhere!

So with maturity comes responsibility. I am proud to be associated with Sterling Hill and the many folks who are making such important contributions. Thank you all. ✕

An Image From the Past



Here is a rare view of the “backside” of Franklin’s famous zinc mines, circa 1920s or ’30s, looking toward the east from the vantage point of Mine Hill. In the foreground, in the area of the old Trotter Mine, is a rail spur of the Mine Hill Railroad that served the backfill operations of the N.J. Zinc Co. The rail spur terminates in the vicinity of Double Rock. The open pit behind the spur is the collapsed section of the Taylor Mine’s underground mining of the East Limb of the Franklin orebody known as the North Chamber. The North Chamber was a huge stope with a ceiling 100 feet above its floor. The ground above this chamber was collapsed, under the direction of superintendent C.M. Haight, to provide backfill for mined-out workings elsewhere in the Franklin Mine. During this time some of the Trotter-area shafts were used for taking fill and timber underground. The open pit at the right side of the photo is the northern part of the Buckwheat Open Cut. The present-day Buckwheat Road runs just beyond the precipice of these open workings. The large pile of rock in the mid-distance is waste rock deposited by the former Taylor Mine aerial tram, which was dismantled prior to 1910. The tram’s 100-foot-tall east tower stood on the hill nearby this pile. During World War II, this waste pile was processed as low-grade ore. Whatever rock remained of this pile is the present-day Taylor Road Dump, a favorite spot for FOMS field trips. In the far distance in the middle of this photo is Brick Row, built as miners’ housing in the late 1870s, which still stands today. *Photo is used courtesy of the Franklin Mineral Museum archives.* ✕

The 60th Annual Franklin-Sterling Gem & Mineral Show

SEPTEMBER 24-25, 2016

STEVEN M. KUITEMS, DMD

14 FOX HOLLOW TRAIL

BERNARDSVILLE, NJ 07924

The two black-and-white photos in the show program triggered a bit of curiosity on my part about the early Franklin shows: What specimens were being displayed, and what was the show like in that seminal era? Many current FOMS members can recall participating in the same Franklin Armory location, but in a much later time frame. The original Kiwanis display was well labeled, with both crystal and ore specimens present, and the 1965 show had interesting two-sided beveled cases with at least one case clearly displaying many specimens containing mineral bands and veins in massive ore. But what else was there? Who displayed? These may be subjects for research and future articles, but the tradition continues 60 years later. Both the Franklin and the Sterling Mines are long closed, but the minerals still remain; so on to the show report.

There were seven daylight exhibits, with Steven Misiur serving as the exhibit coordinator. The Franklin Mineral Museum's case was titled "Zincite" and showed an excellent cross-section of both Franklin Mine and Sterling Mine examples. Two rarely exhibited types were the foliated form of zincite from the Franklin Mine and the druse of microscopic orange zincite in a cavity from the North Orebody of the Sterling Mine. There were also three fine crystallized forms of zincite: one with hodgkinsonite from the Franklin Mine and two Sterling Mine examples, one in mcgovernite and one long crystal with hetaerolite. The second "Zincite" case was placed by Dick and Elna Hauck, with a notable miniature three-dimensional zincite crystal from Franklin, a large specimen of finger-like nodules of zincite in parallel orientation, and a massive red brick-like specimen of nearly pure zincite from the Sterling Mine.

Mark Mayfield displayed a case called "Paintings and Minerals" that was a first for him and the viewers alike. Mark's format was to match personally collected specimens with a painting behind each specimen. My favorite was a Franklin tabular rhodonite crystal about 4 cm tall, matched with a painting five times larger. Your reporter's case was simply titled "Franklin Classics," with an emphasis on purple-colored local species. Of note was a 16-cm-wide specimen that showed numerous prismatic crystals and masses of purple-red leucophoenicite on ore from the Franklin Mine. Steve Sanford's case was called "Attractive Pieces That Are Still

Instructive, Part 2." Steve still surprised me with several new geologically interesting polished samples from the Franklin Mine, in particular the brown andradite porphyroblasts in laminated gray calcite, and an intriguing slab showing wall-rock fragments separated off the wall and seeming to float out into a willemite vein.

"Willemite Classics" was the title of Mark Boyer's excellent selection of willemites from both Franklin and Ogdensburg. A fine large cabinet specimen of blue-green shot ore drew my eye to his top row, and an unusual gray-blue-colored willemite from the Franklin Mine was center left, while to its right was a fine sphere of very gemmy pure green willemite, also from the Franklin Mine. The last exhibit was an oversized case (not mentioned in the show bulletin) placed by Ken Reynolds titled "Rhodonite." Ken showed both tabular crystals and massive forms of rhodonite from both the Franklin and Sterling Mines. Of note was a Franklin specimen that showed tabular crystals that intersected at a slightly acute angle, stacked vertically on each other. Perhaps some form of twinning produced this regular arrangement of crystals, very intriguing indeed.

The fluorescent mineral exhibits were coordinated by Richard Bostwick with eleven cases, all under shortwave ultraviolet light. The Franklin Mineral Museum's case was titled "I'm Feeling Blue"; viewers were challenged to name all the blue-colored Franklin-Ogdensburg fluorescing species they could think of while viewing the display. There were bright blue-white margarosanites, subtle blue fluorite grains in calcite, and an absolutely brilliant blue diopside cobble



Zombie Zinc, a favorite libation at the FOMS banquet.



No drugs at this party, honest! L to R, Ally Davaris, Freddie Lubbers, and Rich Bostwick at the FOMS banquet.



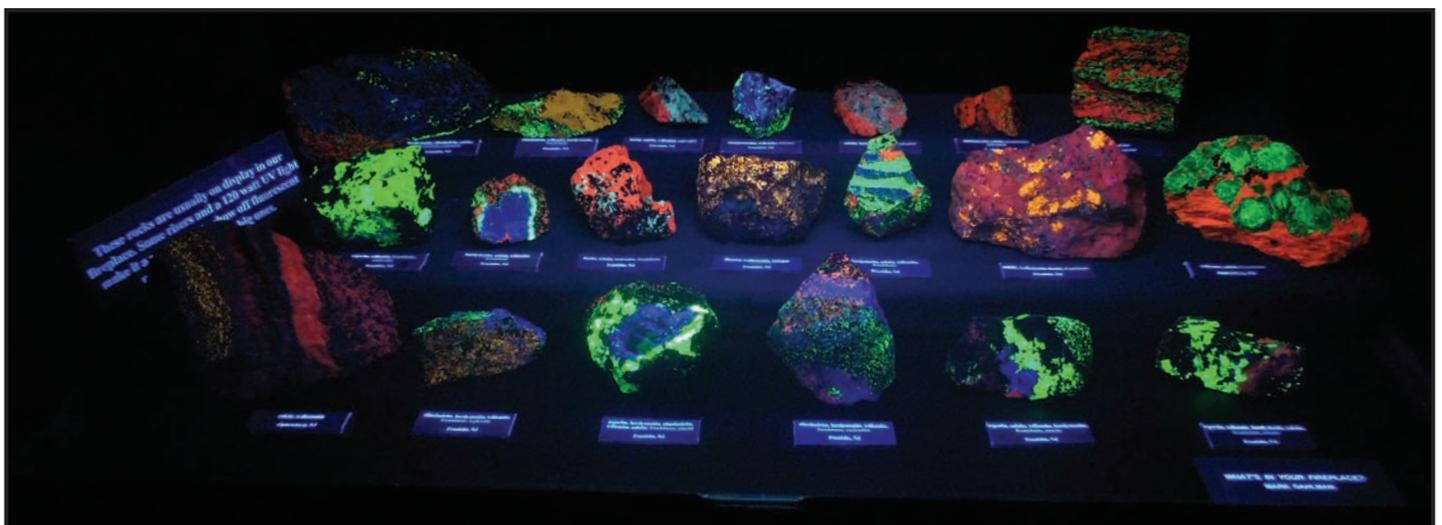
Ken Reynolds and fiancée Heather Fischer after winning a prize specimen at the after-dinner FOMS auction.

from an unnamed gravel pit in Franklin. The Sterling Hill Mining Museum displayed a case called “Wollastonite From Sterling Hill” that was replete with vivid shades of orange to yellow fluorescent wollastonite, some grading from one extreme to the other on the same specimen as the manganese concentration changed.

Steven and Daniel Kuitems’ case was titled “Franklin Delights”; the emphasis was on form and color variations in the green, orange, and red spectral ranges from both the local zinc mines. Denis DeAngelis’s case was called “Shortwave Sunshine,” and it truly shone with brilliant specimens. There seemed to be a blue emphasis highlighted by very bright blue margarosanites and one of the brightest Franklin microclines I have observed. One other specimen of note

was a peculiar yellow-green-colored, crescent-shaped band formed by an admixture of calcite and willemite against the normally expected, red-fluorescing calcite and green-fluorescing willemite.

Claude Poli put together a case titled “Remembering Gerry: Specimens From the McLoughlin Collection.” Top and center was a huge specimen of calcite, hardystonite, and clinohedrite fluorescing in bands of red, violet, and orange. Claude told the story of this find; it was Gerry’s largest specimen of hardystonite et al., recovered at a dig on the Franklin Mill Site No. 2, and was one of Gerry’s best personally collected finds. Alex Kerstanski exhibited a case titled “Extraordinary Esperites and More,” with many large esperites and clinohedrite specimens that his grandfather had collected as



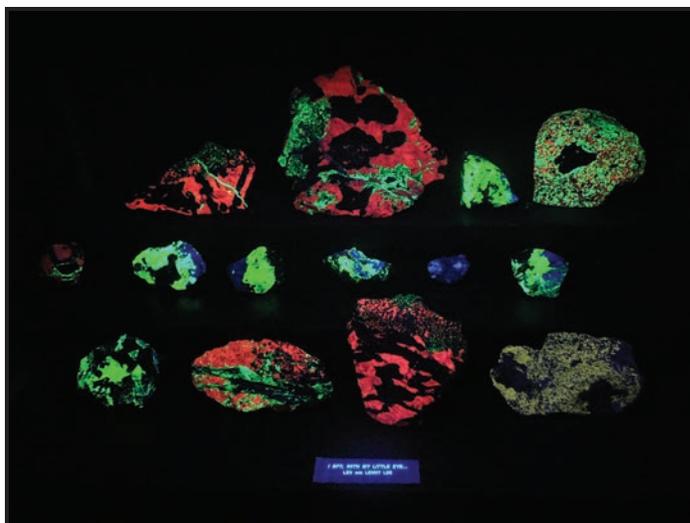
Mark Dahlman’s fine display of specimens that normally reside in his fireplace at home. Imagine seeing *this* every night instead of dancing flames!

a miner in the Franklin Mine. Many textures and forms of esperite were displayed along with three large orange-faced clinohedrite specimens.

Mark Dahlman, our FOMS president, titled his case “What’s in Your Fireplace?” Can you imagine watching Mark’s home fireplace with all twenty of these showy specimens inserted in the black fireplace chamber and the ultraviolet lights turned on? Well, he brought them here to our show so we could experience their beauty. Two fine violet hardystonites with yellow esperite outer bands caught my eye with their ringlike structure, while I was quite mesmerized by a specimen of large green color-zoned willemite crystals against red calcite from the Sterling Mine.

For the eyes and mind, Len and Lenny Lee’s case was titled “I Spy, With My Little Eye...” This was a caseful of fascinating mimetoliths, where the viewer had to find the shapes and mentally figure out what they represented. I especially liked the blue-fluorescing diopside specimen that very clearly looked like a monkey’s face. “The Many Colors of Franklin and Ogdensburg” was the title of Andrew K. Mackey’s case. An interesting feature of Andrew’s display was a range of very bright, nearly monochromatic, fluorescent mineral colors from an absolutely pure red calcite sphere to bright orange and yellow wollastonites from Franklin and Ogdensburg to a very subtle blue-gray-fluorescing plate of aragonite crystals.

Howard Green presented a case called “Fluorescent Minerals of Sweden: My Summer Vacation × 6.” The colors were dominated by bright red-fluorescing calcite and several green-fluorescing willemite specimens, while pale-green-fluorescing cymrite, pink-fluorescing johnbaumite, and tiny bright blue-fluorescing swedenborgite crystals were the rare finds I noticed. Pat Hintz had the second Swedish case titled



Len and Lenny Lee’s display of mimetoliths challenged viewers to stretch their imaginations. Is that a dragon?

“Swedish Fluorescents: Franklin’s Cousins.” In addition to the previously mentioned species, Pat’s case included bright red-fluorescing dolomite (our local dolomite is dull red), barytocalcite with shades of bright red fluorescence, and pale yellow-fluorescing wollastonite (quite a bit paler than most of our local specimens). Note that Swedish margarosanite is quite similar in its blue fluorescence to our Franklin specimens.

While there may not have been as many displays this year as in the early show years, this 60th show was a joyous celebration of color in both white light and shortwave ultraviolet light. Thanks to all who contributed and made this show possible.

All photos by Tema Hecht. ✂



Auctioneer Dick Hauck, instructing a banquet attendee to raise his bid... or else, assisted by chief enforcer Jim Van Fleet.



Juan Gonzalez, who did in fact raise his bid and seems happy anyhow.

The Sterling Hill Mining Museum, Inc.



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30 Plant Street, Ogdensburg, NJ 07439

Museum phone: 973-209-7212

Fax: 973-209-8505

Web: sterlinghillminingmuseum.org

DON'T MISS THE RAINBOW ROOM!



Schedule of operation:

April 1 through November 30, Museum store is open 7 days a week, 10:00 AM to 3:00 PM. General public tours at 1:00 PM. Group tours may be scheduled by appointment at other times during the day.

December 1 through March 31, **WEEKENDS** - Museum store is open 10:00 AM to 3:30 PM and general public tours are at 1:00 PM (weather permitting). Group tours may be scheduled during weekdays by appointment (weather permitting). Please call if you have any questions.

In April, May, June, September, October, and November, tours at 1:00 PM or by appointment.

The temperature in the mine is 56°F.



The Franklin Mineral Museum



32 Evans Street/P.O. Box 54, Franklin, NJ 07416

(Between Main Street and Buckwheat Road)

Phone: 973-827-3481

www.franklinmineralmuseum.com



Exhibited by means of guided tours: Franklin-Sterling Hill mineral specimens, educational exhibits in mining methods and history, including a life-size replica of underground workings, artifacts, gemstones, zinc uses, and a 32-foot-long fluorescent mineral display.

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Mineral collecting on the Buckwheat Dump. Ample parking. Picnic grounds. Gift shop offering for sale: local and worldwide minerals, fluorescent specimens, agate slabs, onyx carvings, UV lamps, hammers, mineral books, T-shirts, postcards, and much more.

Separate admission fees to the Museum and the Buckwheat Dump. Admission to the Museum includes guided tour.

OPERATING SCHEDULE:

Open to the public

March – Weekends Only

April 1 – December 1

Monday through Friday: 10 AM – 4:00 PM

Saturday: 10 AM – 5:00 PM

Sunday: 11 AM – 5:00 PM

Closed Easter, July 4th, and Thanksgiving

Groups by reservation, please

Franklin, New Jersey

“The Fluorescent Mineral Capital of the World”

Fluorescent Minerals of Franklin and Sterling Hill, N.J., Part 2

A 2016 CHECKLIST BASED ON OBSERVATIONS OF CONFIRMED SPECIMENS

RICHARD C. BOSTWICK
600 W. 111TH ST., APT. 11B
NEW YORK, NY 10025
rbostwick@att.net

INTRODUCTION TO PART 2

Part 1 of this checklist appeared in the fall 2016 issue of *The Picking Table*. For reasons of space and to avoid repetition, this second half of the checklist, from J to Z, omits the introduction, historical overview, acknowledgements, and bibliography in Part 1. A list of abbreviations in the text (e.g., SW = shortwave UV) has been retained to make the text more intelligible for new readers.

We recommend having a copy of the fall 2016 *Picking Table* on hand. The introduction and historical overview should be read to understand the background and scope of the checklist. And since this checklist can be considered the tip of a rather large iceberg (there's a lot more to the subject), the bibliography will be useful for anyone wishing to follow up this checklist by further reading.

ABBREVIATIONS USED THROUGHOUT THIS CHECKLIST

FL = fluoresce, fluoresces, fluorescing, fluorescence.

PH = phosphoresce, phosphoresces, phosphorescing, phosphorescence.

UV = ultraviolet radiation, also known as ultraviolet light, the portion of the electromagnetic spectrum adjacent to and shorter in wavelength than 400 nanometer (nm) visible violet light: energy from 100 to 400 nm in wavelength.

SW = shortwave ultraviolet radiation, also known as UVC: energy from 100 to 290 nm in wavelength. Most of the output of the filtered mercury-arc shortwave lamps used today is at 254 nm.

MW = midwave ultraviolet radiation, also known as midrange UV and UVB: energy from 290 to 320 nm. UVB is widely used for tanning lamps, which peak around 305 nm.

LW = longwave ultraviolet radiation, also known as black light and UVA: energy from 320 to 400 nm. Most LW display lamps peak at 366 nm, though some peak at 350 nm. LW "flashlights" peak at 390 nm.

BL = blue light, peaking at 445 nm (Mazel and Verbeek, 2014).

Note: UV-blocking goggles should always be worn when using SW, MW, and LW lamps. BL-blocking goggles must be used with BL lamps in order to observe fluorescence.

THE FLUORESCENT MINERALS OF FRANKLIN AND STERLING HILL

Johannsenite: Brushy epitaxial overgrowths of johannsenite on rhodonite, from Franklin, FL "muted dull orange" LW and moderately bright orange BL (Mazel and Verbeek, 2014).

Johnbaumite: FL bright to weak orange SW, weaker MW and LW, no PH. Johnbaumite is the OH-dominant arsenic apatite of the district and is found at Franklin and Sterling Hill. Johnbaumite is almost always gray, but pale green johnbaumite has been verified in a specimen from the Franklin altered calcsilicate assemblage (P. Chin, written communication). Turneaureite (q.v.) is also gray, but is found at Franklin and not at Sterling Hill. Also, its exceptionally bright FL and the presence of orange calcite in the matrix serve to distinguish turneaureite visually from most johnbaumite and gray fluorapatite.

Johnbaumite at Franklin occurs in several assemblages described in Dunn (1995). Since in white light and UV johnbaumite from Franklin generally resembles gray fluorapatite, which is relatively abundant at Franklin, the best way to single out probable specimens of Franklin johnbaumite is by becoming familiar with analyzed examples. Even so, visual similarity to authentic johnbaumite specimens is not a guarantee of mineral identity.

At Sterling Hill there are four visually distinctive johnbaumite assemblages, two found close to each other before the mine closed, and two found in the early 1990s after the mine was reopened for specimen recovery. The first two assemblages were found by John Kolic, the drill runner in 1570E stope on 1200 level and in the next cut above; specimens from these two finds are quite different in appearance and FL.

The find on 1200 level has gray johnbaumite crystals and crystal cross-sections that FL bright orange SW in a matrix of bright orange-red-FL calcite associated with cream-FL barite, green-FL willemite, zincite, sonolite, and adelite. The best of these, especially those with barite, are generally considered the most photogenic johnbaumite specimens from Franklin or Sterling Hill. Specimens from the first cut above 1200 level have a matrix of bright orange-red-FL calcite, often with zincite, but johnbaumite/fluorapatite from this find usually has weak orange FL. Note that analyses of apatites from 1570E stope revealed visually identical gray apatite on both sides of the johnbaumite/fluorapatite boundary, and apatites from two finds in the early 1990s are also ambiguous in that respect. One such find, made in 1991 near the keel of the orebody on 600 level, includes orange-FL apatite grains as large as 3 cm, some of which are zoned in both daylight and fluorescent color: white in the center with bright orange FL, and around their edges, dark green with weak orange FL. These zoned apatite grains are associated with cream-FL barite, orange-yellow-FL zircon, orange-FL sphalerite, spessartine, and black mica in a matrix of orange-red-FL calcite. A less showy find of apatite, some of which was white (analyzed as johnbaumite) and some pale gray (analyzed as fluorapatite), was made in 740 crosscut on 700 level near one of the better localities for fluorescent wollastonite. This locality is described in detail in Jenkins (1994); there johnbaumite occurs as bright-orange-FL grains and small crystals associated with barite and piemontite in epidote-rich veinlets bordering the wollastonite-bearing assemblage, while less brightly FL fluorapatite grains occur with wollastonite grains in calcite in the wollastonite-bearing assemblage itself.

Junitoite: FL pale yellow LW; an extremely rare mineral from Franklin, found in small bladed crystals with clinohedrite, calcite, aragonite, and hemimorphite.

Magnesiohornblende: FL greenish-blue SW. Greenish grains and masses in nonfluorescent Franklin Marble. Another locally found amphibole that fits this general description is pargasite (q.v.), but there are few verified specimens of either mineral from the formal Franklin Mining District. Note that there are many amphibole specimens from the Franklin Marble, in the district, and outside of it (as in the Lime Crest Quarry), with similar appearance and FL. The vast majority of these have not been analyzed, but sight-identified as edenite, fluoro-edenite, and other amphiboles, so caution must be used in labeling them.

Margarite: FL weak white (“gray”) SW, MW, and LW, when stacks of margarite plates are viewed edge-on. Margarite has been reported as FL blue SW and LW, but

this may be due to violet-blue light emitted by UV lamps reflected from the flat, shiny surfaces of margarite plates. A brittle mica, usually greenish-blue to bluish-green in color, margarite is found in the Franklin Marble as curved plates with pearly luster. Its best-known occurrence is the corundum-arsenopyrite assemblage in the Franklin Marble, found in the motor shanties on 340 level and 430 level in the Sterling Mine. Margarite can still be collected at the Braen Franklin Quarry on Cork Hill Road.

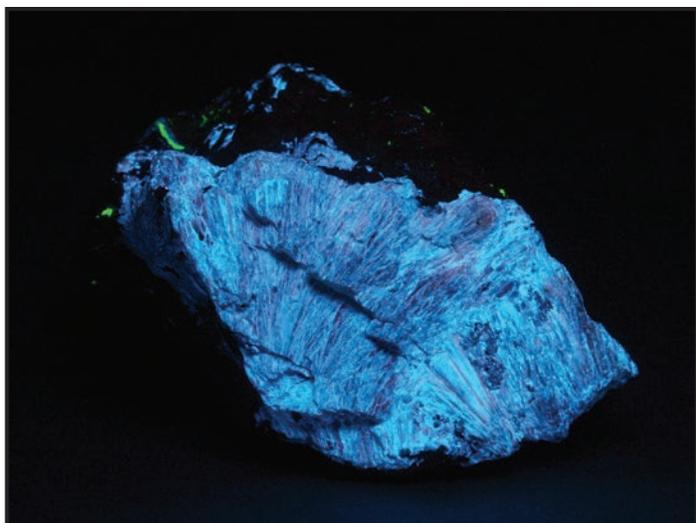
Margarite has been observed to FL yellow under 445 nm BL (Mazel and Verbeek, 2014) but as with other minerals whose FL may have a blue component, the goggles used to observe BL-activated FL block blue light, and the actual FL and perceived FL may differ.

Margarosanita: Complex fluorescence! FL bright pale blue SW, often with red-FL zones, and less often with white-FL and pink-FL zones. FL moderately bright red MW, also orange. FL weak red LW, also orange.

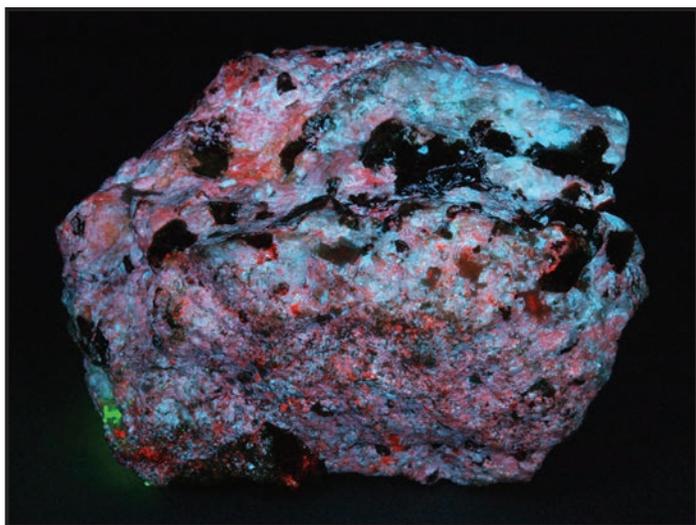
For collectors of fluorescent minerals, margarosanita has the greatest mystique and desirability of the so-called “Parker Shaft” minerals, and its rarity and bright blue FL SW have made it among the most sought-after fluorescent minerals from Franklin. Most margarosanita occurs as thin plates, disseminated and in seams in white feldspar that FL weak red SW, and can be associated with one or more of these minerals: willemite, clinohedrite, axinite-(Mn), prehnite, pectolite, nasonite with datolite, xonotlite, and calcite. Margarosanita is also found in solid platy masses that commonly show mixed blue and red FL SW.

Particularly prized are margarosanita specimens from the minehillite assemblage, found during the mining of the Palmer Shaft pillar in the last few years of the Franklin Mine. Plates of margarosanita form seams in pale gray microcline, associated with orange calcite, minehillite, and fibrous wollastonite mixed with pink nonfluorescent grossular. This is the assemblage with so-called “fish-scale” margarosanita in parallel rows of curved plates, and radial aggregates of curved plates. Margarosanita in both forms FL blue and red SW, but red and rarely orange MW.

Margarosanita was always rare on the Franklin dumps and was one of the scarcer minerals found at the site of Franklin Mill No. 2, also known as the Mill Site. However, one notable find was made by collectors digging around the old bandstand in Shuster Park, across Parker Street from the current Franklin firehouse, which was built on the site of the Parker Mine and Parker Dump. Shuster Park margarosanita specimens have bands of blue-FL margarosanita mixed with white feldspar and associated with green-FL willemite, andradite, and hendricksite, in a matrix of red-FL calcite.



Margarosanite (FL blue, red SW) with minor willemite (FL green SW). Very rich crystallized margarosanite showing curved platy habit (a.k.a. “fish-scale margarosanite”) with radiating structure, in a vein from the minehillite assemblage at Franklin. The matrix is medium-grained gray feldspar, and the margarosanite ranges in thickness from 0.1 to 0.6 inches (several mm to 1.5 cm). The specimen is 3.1 × 2.8 × 1.8 inches (8 × 7 × 4.5 cm) in size, and the photographed face measures 2 × 1.6 inches (5 × 4 cm). No. 475 in John Kolic’s collection, acquired by and on display at the Sterling Hill Mining Museum.



Solid platy margarosanite (FL blue, red SW) from Franklin, with nonfluorescent andradite and small amounts of green-FL willemite and nonfluorescent hendricksite. Now in the collection of the Sterling Hill Mining Museum, this specimen, 3.5 × 2.6 × 2.0 inches (9 × 6.5 × 5 cm) in size, was acquired from Ewald Gerstmann by John Kolic, and was no. 11 in John’s collection.

Marialite: FL orange SW of moderate brightness, pink LW. A member of the scapolite group, found in the Franklin Marble. From the district it is known in two analyzed specimens, one at the National Museum of Natural History and the other at Harvard.

Mcallisterite: FL cream SW. An efflorescent mineral associated with starkeyite, hexahydrite, and gypsum, on ore from Sterling Hill.

Meionite: FL pinkish red, cherry-red, or orange-yellow SW and MW; FL moderately bright to weak orange-yellow LW, or weak blue. Meionite is the dominant member of the scapolite group here, found in the calcsilicate units associated with both orebodies and in the Franklin Marble. It is sight-identified by its dull luster and striated appearance on broken surfaces. Gray meionite that FL pinkish red or cherry-red, associated with blue-FL microcline, willemite, and calcite, was relatively abundant on the Franklin dumps. A specimen of red-FL SW and weak blue-FL LW meionite has been shown to FL yellowish cream under BL (445 nm blue light, Mazel and Verbeek, 2014).

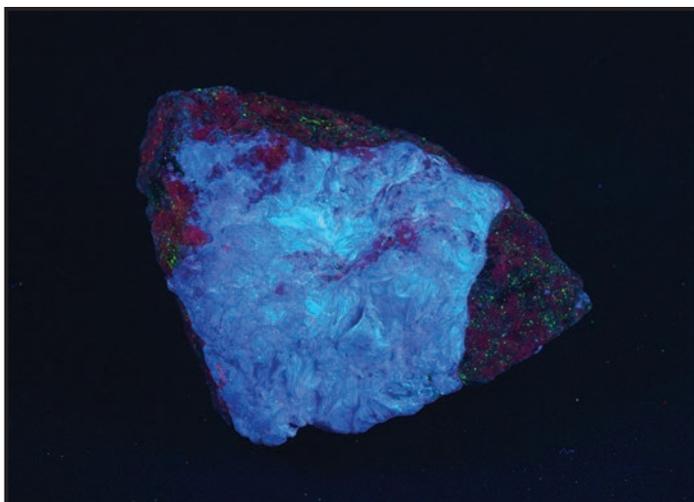
Meta-ankoleite: FL green SW; rare. A secondary uranium mineral from Sterling Hill, found as small yellow crystals on a vein surface in ore.

Metalodèveite: FL green SW; rare. A secondary uranium mineral from 340 level at Sterling Hill, found as small yellow crystals in vugs in a weathered carbonate vein.

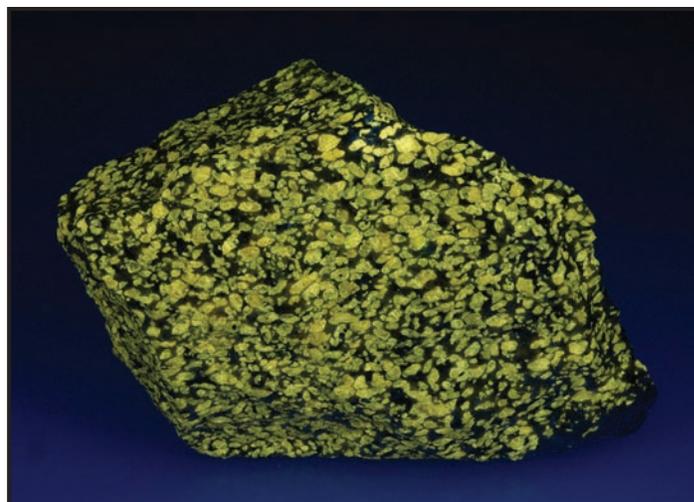
Microcline: FL blue of moderate to weak brightness SW, or FL weak to very weak red SW. Microcline is the most abundant feldspar in both orebodies, where it is common in calcsilicate assemblages. At Franklin, green microcline (var. amazonite) is abundant on the dumps and commonly FL blue; examples that FL fairly bright blue are attractive, especially when associated with red-FL calcite. Green microcline is also collected for its daylight color. However, much microcline from the district is pale green to gray, FL weak red SW, and is “undercollected” as a result. Magenta-FL microcline has been reported from a pegmatite body at the Braen Franklin Quarry (Betancourt, 1993).

Minehillite: FL violet-blue of moderate brightness MW, weak violet SW, weaker pale yellow LW. A colorless platy mineral that resembles brucite, minehillite is found at Franklin in what is called the minehillite assemblage, where it occurs with gray microcline, allanite, margarosanite, calcite, fibrous wollastonite, grossular, and apophyllite. Minehillite is best distinguished by its relatively bright violet-blue FL in MW, which makes it stand out from the matrix (Cianciulli, 2000).

Monohydrocalcite: FL green of moderately bright intensity SW, PH white. A postmining mineral activated by small amounts of uranyl. The first find at Sterling Hill was glossy pale yellow crusts deposited by water coming out of drill holes, and was nicknamed “snot on a rock.” In the



Minehillite plates (FL violet-blue MW) on red-FL feldspar from the Franklin minehillite assemblage. A small but extremely rich example of this rare mineral, found only in this assemblage and most easily identified by its relatively bright fluorescence in midwave UV. Franklin Mineral Museum no. 2083, 2.4 × 2.0 × 1.6 inches (6 × 5 × 4 cm).



Grains of norbergite (FL yellow SW), thickly clustered in nonfluorescent calcite from the Braen Franklin Quarry on Cork Hill Road. Visible under LW are red-FL grains of corundum or spinel. Mark Boyer collection no. 1262, 5.5 × 4.3 × 2.4 inches (14 × 11 × 6 cm).

early 1990s, about the time the water rose to the 800 level, weakly FL wollastonite grains in nonfluorescent calcite were found on that level near the shaft station. Where the rock had been cracked and exposed to groundwater, thin white crusts of green-FL monohydrocalcite had formed on the wollastonite grains.

Nasonite: FL weak pale yellow SW and MW in most specimens. Another of the rare lead silicates from the Franklin altered calcsilicate assemblage, nasonite is noted for its white color and greasy luster. Its FL can be difficult to observe, with two exceptions. One is transparent nasonite crystals viewed end-on (down the C axis) under SW; the FL is obvious and the effect is similar to that of optical fibers. The other exception is a mixture of nasonite with datolite, which FL fairly bright yellow SW and is associated with fluorescent margarosanite, prehnite, and axinite-(Mn). Such specimens are rare, displayable, and highly prized.

Newberyite: FL “cream” SW. A rare postmining mineral from the east limb of Sterling Hill’s North Orebody, found as white coatings with niahite on lean ore rich in sussexite and pyromorphite. Newberyite and niahite typically occur elsewhere as alteration products of bat guano. How these two minerals formed on ore in the deepest part of the Sterling Mine is a matter for conjecture, as bats in the mine lived in the upper levels where old mine openings allowed them to come and go.

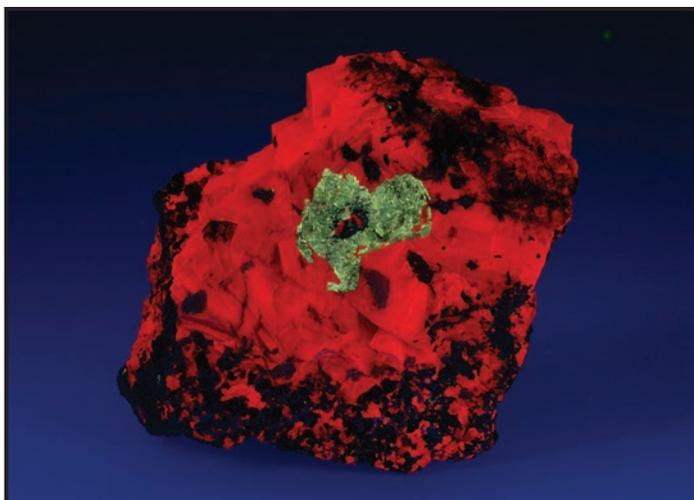
Norbergite: FL bright to weak yellow SW, less bright MW. The most abundant fluorescent mineral in the Franklin Marble, pale yellow to brownish orange in daylight, found mostly as grains in calcite, rarely as crystals. Darker-colored norbergite

is visually indistinguishable from lighter-colored chondrodite (q.v.) and has similar FL. Unusually bright and rich specimens of norbergite, with small grains of red-FL (LW) corundum or spinel (ID not determined), have been found at the Braen Franklin Quarry.

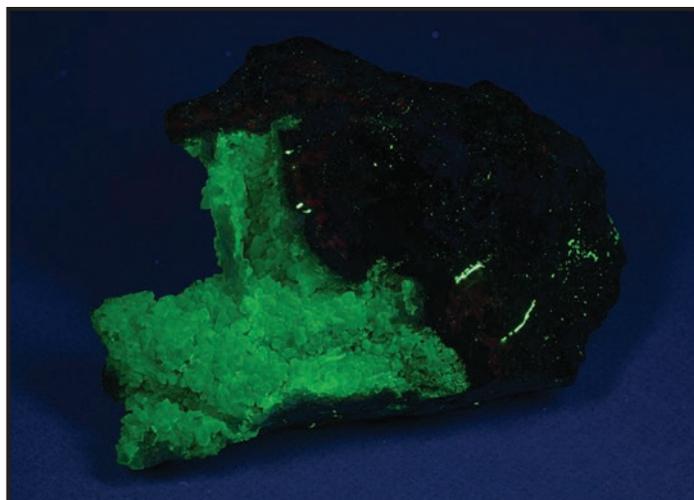
Opal: FL fairly bright green SW. Uranyl-activated, found as thin transparent coatings on calcite and other minerals from the Franklin Marble, the Buckwheat Dump, and elsewhere in the district (E. Verbeek, written communication). Not rare but usually overlooked. Nonfluorescent opal has previously been reported from the Buckwheat Dump.

Pargasite: FL moderately bright greenish-blue SW. A green amphibole found in the Franklin Marble. Magnesiohornblende (q.v.) is another green amphibole from the Franklin Marble and has similar FL. There are more green amphiboles in the Franklin Marble that may or may not FL, but conclusively identified examples are scarce. When labeling FL amphiboles from the marble, either compare them with analyzed examples, or submit the mineral in question for analysis.

Pectolite: FL, PH moderately bright orange SW, less bright MW. Instead of being a white fibrous mineral, as it is in Paterson and most other localities, pectolite from Franklin forms glassy white-to-colorless grains, while the prehnite that it typically accompanies occurs as curved white plates with pearly luster and pinkish-orange FL SW. At Franklin these minerals often occur together as part of the altered calcsilicate assemblage, and mixtures of the two have been called “pectoprehnite,” which is not a valid mineral species.

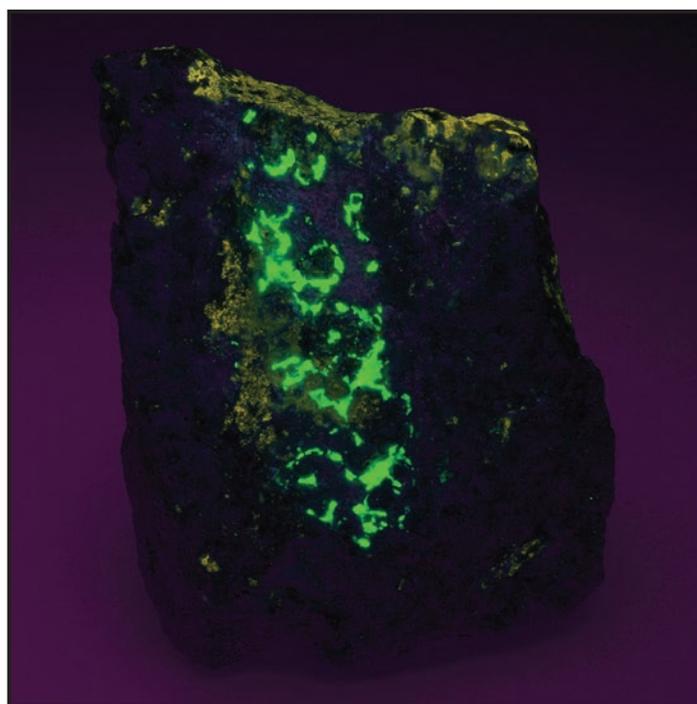


A 0.8-inch (2 cm) grain of powellite (FL yellow SW) in red-FL calcite with nonfluorescent dark green amphibole, from the gravity tram 20 feet below 180 level in the Sterling Mine. Richard Bostwick specimen, 2.8 × 2.4 × 1.8 inches (7 × 6 × 4.5 cm).



Drusy quartz crystals (FL green SW, activated by uranyl) lining a solution cavity in altered, brecciated franklinite-calcite ore from the Sterling Mine. 4.7 × 3.1 × 2.0 inches (12 × 8 × 5 cm), Franklin Mineral Museum no. 170.

Pharmacolite: FL, PH white SW, MW, LW; rare. Reported by Dunn (1995) as FL weak violet LW. A postmining mineral from Sterling Hill that occurs as very small transparent radiating crystals on red-FL calcite, associated with picropharmacolite (q.v.).



Colorless hyalite opal (FL green SW, activated by uranyl), with norbergite (FL yellow SW), in nonfluorescent calcite. From Whispering Woods Lane on Sterling Hill, just over the borough line from Ogdensburg to Sparta, but still part of the Franklin-Ogdensburg mining district. Franklin Mineral Museum no. 7308, 3.1 × 2.4 × 1.6 inches (8 × 6 × 4 cm).

Phlogopite: FL moderately bright to weak yellow SW. The most abundant mica in the Franklin Marble, its fluorescent brightness is often dependent on grain size, with fine-grained aggregates FL the brightest while larger crystals FL weakly or not at all. Phlogopite's color ranges from colorless to pale green, tan, brown, and dark brown. Dark brown phlogopite occurs in both orebodies but has not been observed to FL.

Picropharmacolite: FL, PH white SW, MW, LW. A rare postmining mineral from Sterling Hill that occurs as white radiating clusters of acicular crystals as much as 1 cm across, associated with pharmacolite (q.v.) on a matrix of red-FL calcite.

Powellite: FL bright to moderately bright yellow SW and MW, weaker LW. Powellite occurs in two forms in the Franklin and Sterling Hill area: as an alteration product of molybdenite, usually yellow-FL coatings that form rims on molybdenite plates; and as yellow-FL masses and grains in calcsilicate assemblages. There is no doubt that the fluorescent coatings on molybdenite are powellite, but solid masses and grains of powellite look exactly like scheelite (q.v.) and FL exactly like scheelite with 5% or more molybdenum. These minerals form a continuous series between pure CaMoO_4 (powellite) and pure CaWO_4 (scheelite), with molybdenum (Mo) and tungsten (W) substituting for each other. Since high-Mo scheelite FL like powellite, the two minerals in masses and grains cannot be told apart without analysis.

Both forms of powellite are found in skarn assemblages from both mines, though nearly all Franklin powellite specimens have been collected on the dumps and Sterling Hill powellite

specimens have been found in the mine. Under combined SW and LW, the most photogenic powellite from the area is from the gravity tram between Sterling Hill's 180 and 340 levels, where it occurs with fluorescent calcite and sphalerite. The largest grains of powellite from both mines exceed 3 cm in maximum dimension.

Prehnite: FL moderately bright orange to bluish orange to lavender-pink SW, with little or no FL MW and LW. It does not PH. Franklin prehnite does not resemble prehnite from Paterson and most other localities worldwide but occurs in the altered calcsilicate assemblage as white curved plates with pearly luster. It is often associated with pectolite (q.v.), and can occur with axinite-(Mn), margarosanite, and other minerals from this assemblage.

Pyromorphite: FL weak orange MW. A member of the apatite supergroup, pyromorphite occurs as small crystals and crusts and is a weathering product of galena from the Noble Pit at Sterling Hill.

Quartz: FL moderately bright to weak "cream," yellow, pale orange, and yellowish green SW, less bright MW and weaker LW. The green FL is probably due to the uranyl ion, and a few radiating quartz specimens of unusual brightness and good quality are said to have been found on Sterling Hill's 1850

level. Fluorescent quartz in the author's collection is almost entirely from Sterling Hill, and the yellow-FL and orange-FL varieties share a color shift toward orange from SW to MW and LW. As quartz can transmit UV, care should be taken not to confuse FL in the quartz with FL from an underlying mineral.

Rhodonite: Rarely FL weak deep red SW, MW, LW, and BL. Most rhodonite from Franklin and Sterling Hill is nonfluorescent, but some examples of deep-colored rhodonite crystals in veins from Franklin exhibit weak red FL under UV. Brighter red FL can be seen in the same rhodonite crystals under 445 nm BL (Mazel and Verbeek, 2014).

Roebblingite: FL moderately bright to weak red SW with brief red-orange PH; may FL and PH weakly MW and LW. Roebblingite is one of the rare "Parker Shaft Suite" minerals and its FL and PH, when present, are less bright than those of typical Franklin calcite but similar enough so that calcite in that assemblage has been sight-ID'd as roebblingite and vice versa. Roebblingite's FL and PH are now considered to be intrinsic but were noticed at least 60 years ago and thought to be due to "admixed calcite," because soaking roebblingite in dilute HCl caused these fluorescent properties to disappear. In fact, dilute HCl decomposes roebblingite as well as calcite, but the emission spectra of the two minerals are different. Roebblingite is noted for its resemblance in daylight to coconut meat, and some

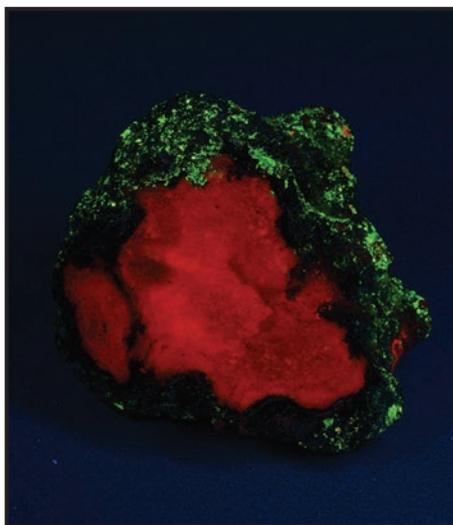
roebblingite nodules, with their reddish "rinds" of hancockite, appear hand-polished as some collectors cannot help fondling them.

Samfowlerite: FL weak red SW, MW, LW; very rare. Samfowlerite occurs at Franklin as 0.5-mm colorless crystals on crusts of garnet microcrystals, or associated with barite plates and clinocllore.

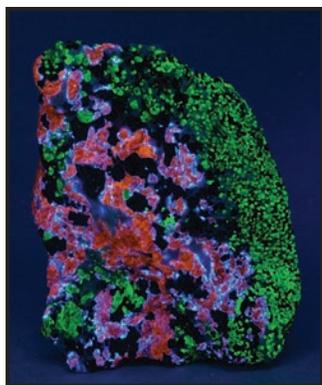
Scheelite: FL bright yellow to "cream" to white SW and MW, rarely bright blue SW; also FL orange-red BL. Most scheelite from Franklin and Sterling Hill has enough molybdenum substituting for tungsten to make it FL the same yellow hue as powellite (q.v.). However, as the molybdenum content of scheelite drops below about 5%, its FL changes to "cream" (pale yellow), then white (0.3% Mo), then pale blue (0.14% Mo), then blue as its Mo content approaches zero. The major find of yellow-FL



Franklin classic: a nodule of white fine-grained roebblingite with a "rind" of brick-red hancockite. The color and texture of roebblingite have been compared to white porcelain and/or coconut meat. Both species are among the rare lead-bearing minerals that were brought out of the Franklin Mine through the Parker Shaft in the 1890s. While such nodules are considered typical of roebblingite, it more often occurs with other members of the so-called Parker Shaft suite, including xonotlite, ganophyllite, hendricksite, axinite-(Mn), etc. 2.4 × 2.2 × 1.2 inches (6 × 5.5 × 3 cm). Earl R. Verbeek specimen.



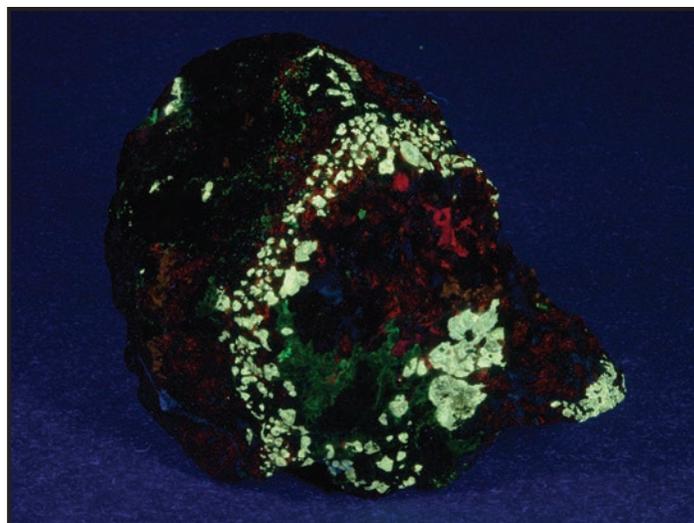
Roebblingite generally fluoresces red SW (as seen here) with brief red-orange phosphorescence. Its FL and PH are identical to those of typical calcite from the Franklin and Sterling Hill orebodies but weaker, and caution must be used in distinguishing roebblingite from calcite on that basis. Note that hancockite is nonfluorescent, and so is some roebblingite. 2.4 × 2.2 × 1.2 inches (6 × 5.5 × 3 cm). Earl R. Verbeek specimen.



Sphalerite grains (FL orange and blue LW) in a sphalerite-calcite pod, in granular ore composed of green-FL willemite and nonfluorescent franklinite, shown here under combined LW and SW. Sterling Mine, Ogdensburg, 5.1 × 4.0 × 2.4 inches (13 × 10 × 6 cm). Earl R. Verbeek specimen.



"Golden sphalerite" (FL orange-yellow with blue highlights LW) with minor willemite (FL green SW) plus nonfluorescent franklinite and serpentine, photographed under LW and SW. East limb, North Orebody, Sterling Mine, Ogdensburg, 4.7 × 3.1 × 2.8 inches (12 × 8 × 7 cm). Earl R. Verbeek specimen.



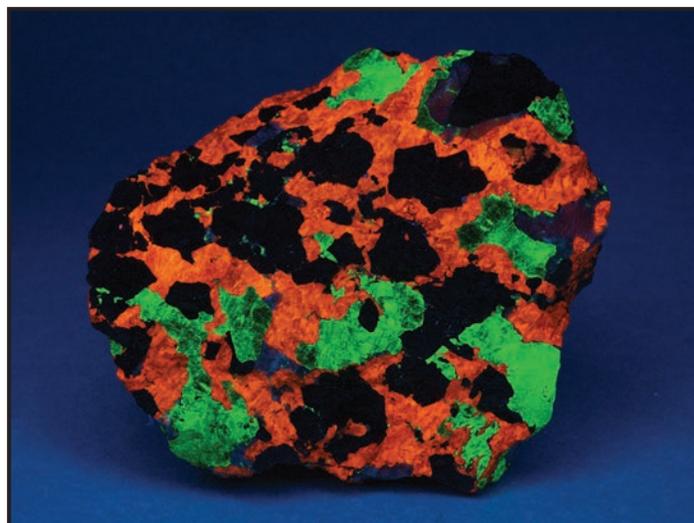
Cream-FL scheelite, green-FL willemite, red-FL calcite, orange-FL fluorapatite, and blue-FL microcline under SW, in veins in fine-grained black rock ("tactite") from the Trotter Dump in Franklin. A fine example of an unusual five-color fluorescent assemblage. Sterling Hill Mining Museum specimen, 5.0 × 3.7 × 1.8 inches (12.5 × 9.5 × 4.5 cm).

scheelite at Franklin was from the Trotter Dump, where it occurred as grains several mm across in veins in fine-grained black rock ("tactite"), often associated with fluorescent willemite, calcite, fluorapatite, and microcline. Scheelite in these specimens has been observed to FL orange-red in BL (Mazel and Verbeek, 2014). The earliest analyzed find of Franklin scheelite in the 1960s was later determined to be powellite, a reminder that careful analysis is necessary to distinguish tungsten-rich powellite from molybdenum-rich scheelite.

At Sterling Hill, small (1 mm) scheelite crystals that FL "cream," white, or blue were found in vugs with fluorite, nonfluorescent axinite-(Mn), and actinolite (Jenkins, 2000). In the Franklin Marble, blue-FL scheelite has been found as sub-mm grains in nonfluorescent calcite from the Braen Franklin Quarry, and outside the formal Franklin-Ogdensburg area in the Lime Crest Quarry as grains as much as 1 cm across.

Smithsonite: FL, PH fairly weak pale yellow SW, MW, LW. Although one would expect smithsonite to be common in weathered areas of the Franklin and Sterling Hill orebodies, analyzed specimens are extremely rare. One such example in the author's collection, from Franklin, has waxy blobs of white smithsonite on a weathered face of silvery sphalerite, but for every genuine smithsonite from the area there are dozens of specimens dubiously labeled as such. Of the few that have been analyzed, most are calcite.

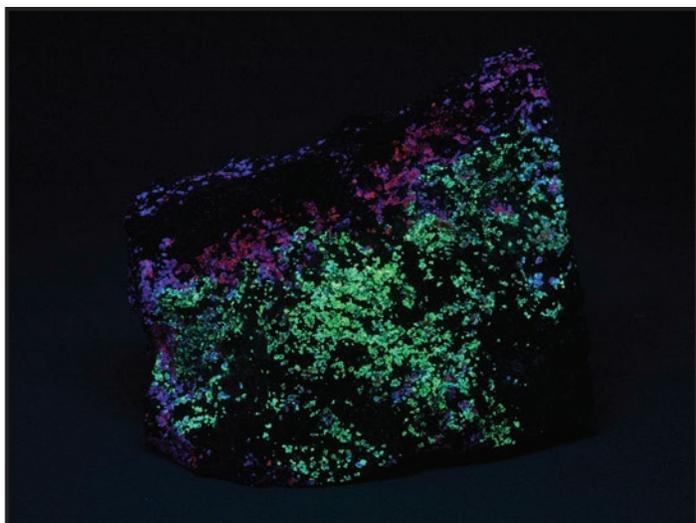
Sphalerite: FL and PH orange, blue, orange-yellow, yellow-orange, green, lavender, and pink, generally of moderate brightness LW but typically weaker MW and weakest SW.



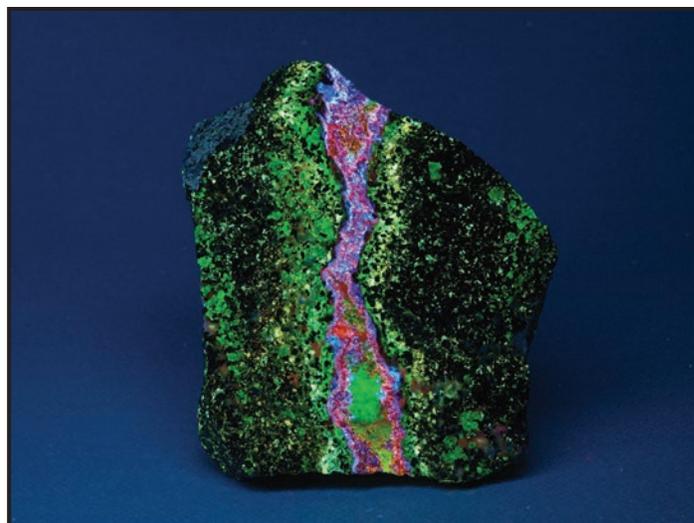
Sphalerite (FL orange) with willemite (FL green), calcite (FL weak red), and nonfluorescent franklinite, all under MW. Rich ore from the west limb of the North Orebody, Sterling Mine, Ogdensburg. 4.7 × 4.0 × 2.0 inches (12 × 10 × 5 cm). Earl R. Verbeek specimen.

Most sphalerite from the district FL orange or blue, with both fluorescent hues present in many specimens. FL in the orange-yellow to yellow-orange range is less common, but one variety from the east limb of Sterling Hill's North Orebody has merited the nickname "golden sphalerite" for its distinctive orange-yellow FL and PH.

Green FL of local sphalerite has been reported but should be double-checked as some "green-FL sphalerite" has been analyzed as willemite. The varietal name *cleiophane*, which originally was given to colorless iron-free sphalerite from



Sphalerite (FL green, blue, and deep pink LW), Sterling Mine, Ogdensburg. A distinctive example of the “mint-green” fluorescence of sphalerite from Sterling Hill, in the same specimen as its more common pink and blue fluorescences from this locality. 4.0 × 3.1 × 2.2 inches (10 × 8 × 5.5 cm). Mark Boyer specimen no. 2312.



Sphalerite-zincite vein in zincite-rich ore under LW: sphalerite (FL orange, blue), zincite (FL yellow), willemite (FL green), and hydrozincite (FL weak blue, in upper left corner of specimen), from 180 level in the west limb of the Sterling Hill orebody, Sterling Mine, Ogdensburg, 4.7x 3.1 × 1.6 cm (12 × 8 × 4 cm). Earl R. Verbeek specimen.

Franklin (Henry, 1853), is used locally to mean blue-FL sphalerite, though much orange-FL sphalerite from both orebodies is colorless and most local sphalerite is iron-free.

In white light, the color of sphalerite from these orebodies ranges from colorless (“silvery”) to pale yellow to pink to reddish-orange to pale green to darker green to maroon, gray, brown, black, and very rarely (at Sterling Hill) pale blue. So-called “oil-green” sphalerite, massive and in crystals from Franklin, FL weak orange, while brown sphalerite from the Buckwheat Dolomite and elsewhere in the area is nonfluorescent. Some sphalerite from the area is triboluminescent, a phenomenon most likely to be noticed on night digs when a rock containing sphalerite is hammered. A less destructive way to stimulate triboluminescence in sphalerite is to stroke it with hard plastic, such as a credit card, or with a paper clip.

Fluorescent sphalerite is not uncommon at Franklin and can still be collected on the Buckwheat Dump, while sphalerite comprises about 1% of the ore at Sterling Hill. The unique richness and range of colors in local sphalerite, whether in daylight or under SW, MW, and LW, is now becoming truly appreciated. In past decades, addicts of Franklin FL were drawn to the bright colors of the local fluorescent classics under SW UV, not so much to the less intense FL and PH of sphalerite and other minerals more sensitive to other UV wavelengths. Fortunately SW lamps are now augmented by new and more powerful MW and LW lamps, allowing sphalerite and many other local minerals to be appreciated and properly displayed. More collectors are willing to acquire

and display good specimens of what once were “exotic” minerals, and many sphalerite specimens from Franklin and especially Sterling Hill include additional minerals that FL. In the case of sphalerite veins from Sterling Hill, fluorescent willemite, calcite, zincite, fluorite, and hydrozincite can all be present. When vein specimens with these combinations are seen under two or three UV wavelengths, they are truly mind-blowing, and examples from Sterling Hill with intricate patterns of showy FL have acquired the appropriate nickname “Persian Rug.”

Here’s some perspective: While sphalerite is by far the most abundant and important ore of zinc worldwide, most of it is brown to black, rich in iron and nonfluorescent. Iron-free sphalerite, which often FL, is relatively rare. The range of fluorescent colors in Franklin and Sterling Hill sphalerite is matched only by sphalerite from the Horn Silver Mine near Frisco in Beaver County, Utah. For those unfamiliar with the varieties of fluorescent sphalerite, the Thomas S. Warren Museum of Fluorescence at the Sterling Hill Mining Museum has two displays, one of worldwide sphalerite (including specimens from Franklin and Sterling Hill) and one consisting entirely of sphalerite from the Horn Silver Mine. Both should be seen to be appreciated and compared.

Spinel: FL moderately bright to weak cherry-red LW, weaker MW and SW. Pink octahedral crystals of fluorescent spinel in nonfluorescent calcite are occasionally found in the Franklin Marble, notably from the Lime Crest Quarry, and small crystals have been found within the district in the Braen

Franklin Quarry and the Fowler/B. Nicoll Quarry in Franklin. Blue spinel is nonfluorescent. The cherry-red fluorescences of pink spinel and pinkish-red corundum (ruby) are similar, but corundum forms hexagonal crystals.

Starkeyite: FL, PH white SW, MW, LW; rare. A white, powdery component of the efflorescent mineral assemblage described under mcallisterite.

Strontianite: FL violet SW; rare. Found as radial clusters of small white acicular crystals in vugs in “carbonate zone” specimens from Franklin.

Svabite: FL orange SW, weak orange MW. Yes, it’s back on the list. In brief, svabite from Franklin was first described by Bauer and Berman in 1935, and for 45 years any orange-FL arsenic-rich Franklin apatite went by that name. Then in the late 1970s Pete Dunn began his investigations of Franklin and Sterling Hill minerals with analytical techniques not available in the 1930s, and in 1980 Dunn and colleagues described the new apatite species johnbaumite (q.v.), and in 1985, turneaureite (q.v.). Both are orange-FL arsenic apatites, but in his 1995 monograph Dunn mentioned that although numerous analyses of arsenic-rich apatites from Franklin and Sterling Hill had been conducted, none matched svabite, a closely related apatite species described from Sweden in 1892. This is why svabite was then dropped from the list of Franklin and Sterling Hill mineral species.

Then in 2012 Laura Crimmins, a graduate student at Miami University in Ohio, completed a master’s thesis that analyzed

29 samples of apatite from the Franklin Mining District via electron microprobe, X-ray diffraction, and Raman analysis, and found four of them to be svabite. Her thesis recently came to the attention of the editors of *The Picking Table*, and details about known specimens of svabite from Franklin and Sterling Hill will appear in a separate article to be published in the fall 2017 issue.

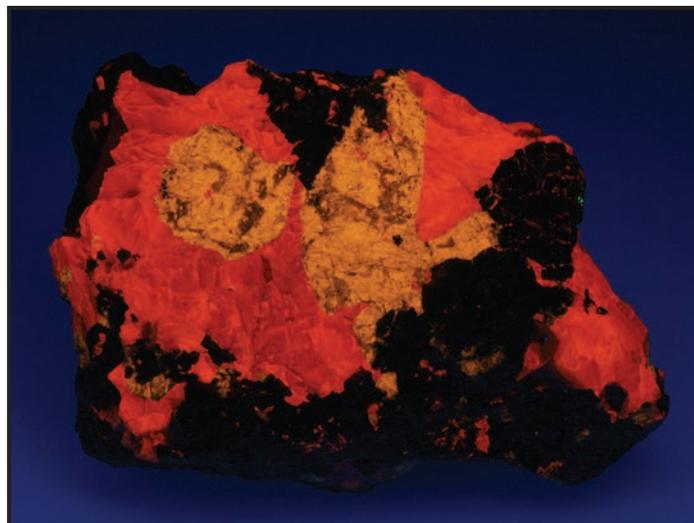
Talc: FL yellow of moderate brightness SW, MW, LW. A soft mineral, slippery to the touch and easily scratched with a fingernail, fluorescent talc is found in hydrothermally altered assemblages at Franklin and Sterling Hill, notably in a few Franklin specimens of radiating willemite, and in Sterling Hill’s North Orebody, where “golden sphalerite” can occur with green talc.

Thomsonite: FL weak pale yellow SW; very rare in analyzed specimens. The FL of Franklin thomsonite was observed in a verified specimen with a cluster of white parallel acicular crystals of thomsonite, rimmed with prehnite in a matrix of ganophyllite, mica, and garnet.

Tilasite: FL fairly weak pale yellow SW; very rare. The tilasite specimen originally observed for its FL had 4-mm milky white crystals of tilasite in a cavity in a friedelite-rich vein from Sterling Hill. A more recent find (Van Fleet and Verbeek, 2016) consists of tiny (sub-mm) grains of yellowish-tan tilasite in “thin veins of altered kutnohorite and calcite” in dense franklinite-rich ore from Sterling Hill. This tilasite FL yellow-orange of moderate brightness LW, weaker MW.



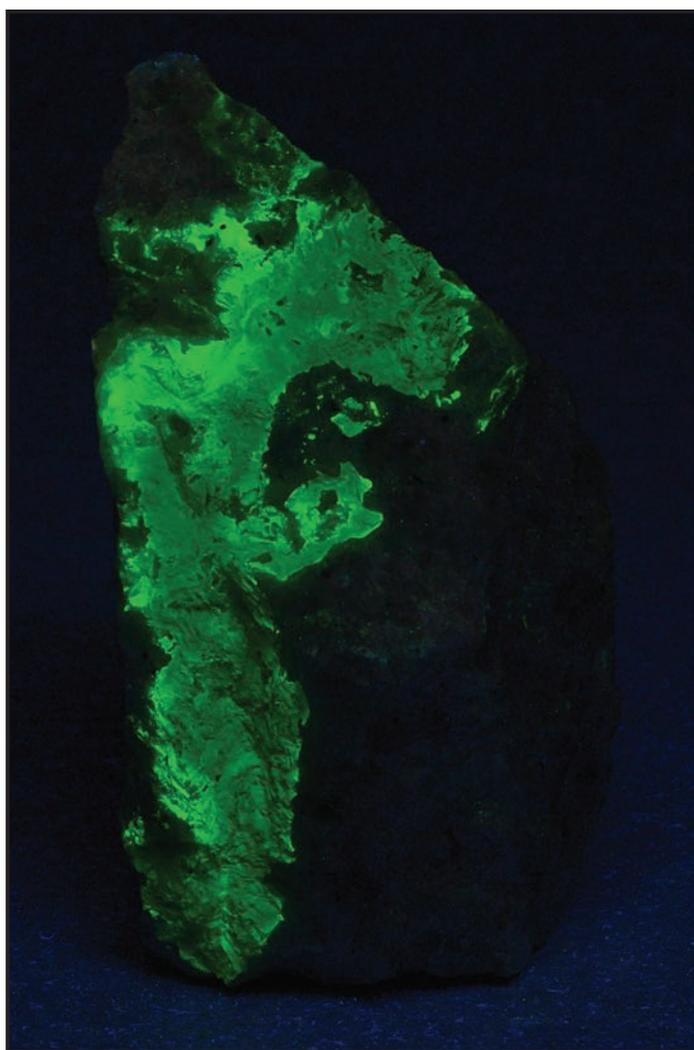
Gray turneaureite with orange calcite and brown andradite, from Franklin. Although Franklin is but one of several type localities for turneaureite, this visually distinctive assemblage is typical of all Franklin turneaureite specimens, whether found in the Franklin Mine or in small amounts on the Parker Dump and at the site of Mill No. 2. Lawson Bauer analyzed this gray apatite as svabite, and older specimens are often labeled as such. Marilyn Grout specimen, 6.5 × 4.1 × 2.0 inches (16.5 × 10.5 × 5 cm).



Turneaureite (FL orange SW, no PH) with calcite (FL and PH orange-red SW). Turneaureite is the brightest-fluorescing apatite from Franklin or Sterling Hill, well-matched with its matrix of brightly fluorescing calcite. This is one of the best display specimens from Franklin, and is from the collection of Marilyn Grout. 6.5 × 4.1 × 2.0 inches (16.5 × 10.5 × 5 cm).

Titanite (a.k.a. sphene): FL weak yellow-orange SW. Crystals of typical form, tan to dark brown in color and from a few mm to 5 cm in size, are found sporadically in gneissic and other silica-rich areas of the Franklin Marble, from quarries and within both zinc orebodies as well as in local magnetite deposits. Most titanite is nonfluorescent, but lighter-colored titanite crystals are the most likely to FL.

Tremolite: FL fairly bright pale blue SW, weak yellow MW and LW. Tremolite and diopside are the two most abundant blue-FL minerals in the Franklin Marble, but diopside is a pyroxene that occurs in generally equant to sub-equant grains with blocky cleavage, while tremolite is an amphibole that usually occurs in slender prismatic crystals with diamond-shaped cross-sections. Some tremolite crystals are coated with plates of yellow-FL phlogopite.



A thin, patchy coating of yellow uranospinite (FL green SW), a secondary uranium mineral, on nonfluorescent graphitic marble from 1220 crosscut, 1100 level, Sterling Mine, Ogdensburg. Collected in 1981 by John Kolic, now in the collection of the Sterling Hill Mining Museum. 3.3 × 2.8 × 2.0 inches (8.5 × 7 × 5 cm)

Turneaureite: FL bright orange SW, moderately bright orange MW, and weak orange LW; no PH. From Franklin, in an eye-catching and distinctive assemblage whether seen in white light or SW. Turneaureite is pale gray, with the brightest FL of any of the local apatite supergroup minerals, and occurs with orange calcite whose orange-red FL balances the intensity of turneaureite's orange FL. The assemblage commonly includes andradite and magnetite and is distinctive enough to be accurately sight-identified. Good Franklin turneaureite specimens are highly prized, and are in the same league as platy margarosanite and First and Second Find Franklin wollastonite.

Until recently, turneaureite from Franklin was believed to have been restricted to one or a few finds in the mine. However, at least six specimens are known from the Parker Dump (personal communication, Mark Boyer), and turneaureite was also found on the site of Mill No. 2 ("the Mill Site") by Kurt Hennig shortly before Franklin House, an apartment block for seniors, was built on the property.

Turneaureite, a chlorine-dominant arsenic apatite, was described as a new mineral in 1985, but prior to that, authentic Franklin specimens were thought to be svabite, $\text{Ca}_5(\text{AsO}_4)_3\text{F}$, a fluorine-dominant arsenic apatite. Analytical methods for quantifying fluorine, chlorine, and hydroxyl have much improved, and recently svabite (q.v.) has been found to occur at both Franklin and Sterling Hill.

Uranospinite: FL moderately bright green SW, less bright MW and LW. A secondary uranium mineral found as pale yellow crusts on graphitic marble from the 1100 level, Sterling Hill. Not unlike green-FL monohydrocalcite in appearance.

Willemite: The second most abundant ore of zinc at Franklin and Sterling Hill, widely distributed in nearly every mineral assemblage at both orebodies. Though most willemite from Franklin is green in white light, most willemite from Sterling Hill is "red" — a range of colors from tan to reddish-tan, brick-red, and reddish-brown. So-called red willemite from the district is also called troostite, an old and obsolete name for manganese-rich willemite. Willemite from the district can also be colorless, white, black, and nearly every color in the spectrum, including many colors and visual textures with local nicknames such as "claret willemite" and "sea-foam willemite." The Franklin Mineral Museum displays a wide variety of willemite from the area, massive and in crystals.

Almost all willemite from both mines FL bright to very bright yellowish-green SW, generally brightest when willemite is green, white, colorless or pale yellow, and less bright in darker-colored willemite. Overall, willemite's yellowish-green FL is brightest SW and weaker MW and LW. An exception of sorts is "apple-green" willemite, a perennial favorite of collectors,

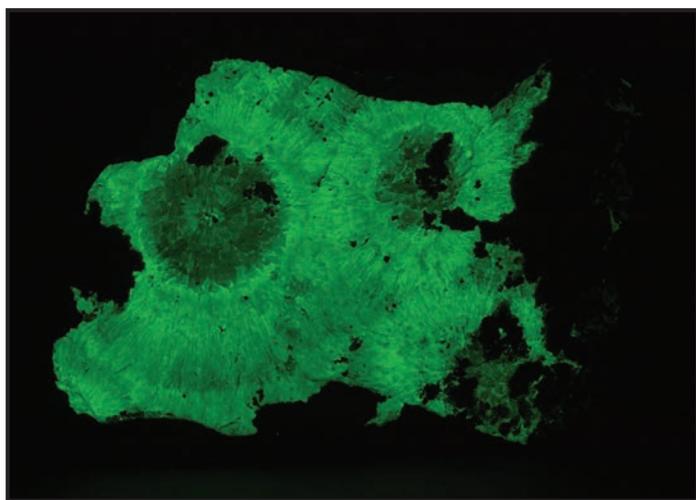
as its green color in white light intensifies in sunlight, and its bright green FL in all UV wavelengths makes it appealing in any display of fluorescent minerals.

Willemite often PH to a greater or lesser degree, and some varieties are famous for their vivid, long-lasting PH, notably radiating white willemite in dolomite-lined “carbonate veins” at Franklin and rarely at Sterling Hill. Some specimens with willemite present in the matrix and in veins exhibit two shades of green FL, typically yellowish-green in the matrix and green in the vein.

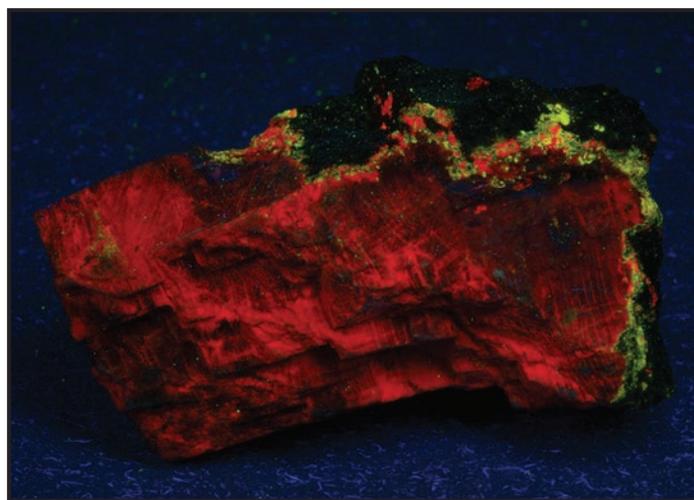
The combination of orange-red-FL calcite and yellowish-green-FL willemite, a.k.a. “red-and-green,” was amazingly abundant at Franklin and is still plentiful at Sterling Hill.

Typical “red-and-green” specimens have small (2-4 mm) grains of willemite and franklinite in calcite, but the two minerals occur together at both mines in an apparently endless variety of fluorescent textures and patterns. Only a few of the better-known types can be described here.

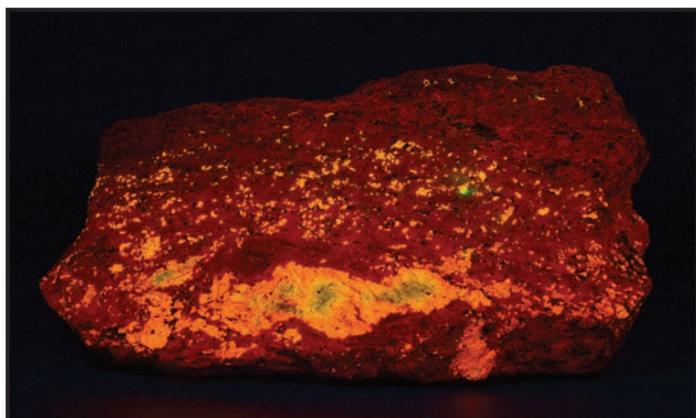
One of the best-known types of “red-and-green” came from the Franklin orebody on and above the 750 level and was named for the 800 loading pocket below the level where many specimens were recovered. Typical “800 Pocket” specimens have irregular large grains of pale green willemite in calcite. “Christmas Tree Ore” and “Polka Dot Ore” are old Franklin terms for rounded inclusions of fluorescent willemite and calcite in a nonfluorescent matrix, as those inclusions look like



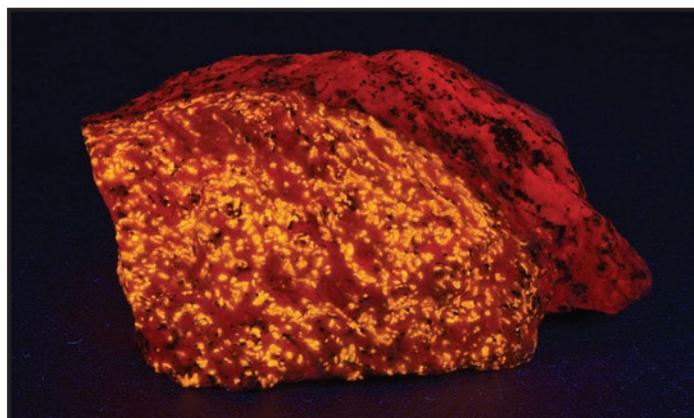
An exceptionally large and impressive example of radiating willemite (FL and PH green SW) from Franklin, with willemite rosettes as much as 9 cm in diameter. From the collection of New Jersey Zinc Co. geologist John L. “Jack” Baum, who donated this specimen to the Franklin Mineral Museum. 6.7 × 4.0 × 4.0 inches (17 × 10 × 10 cm).



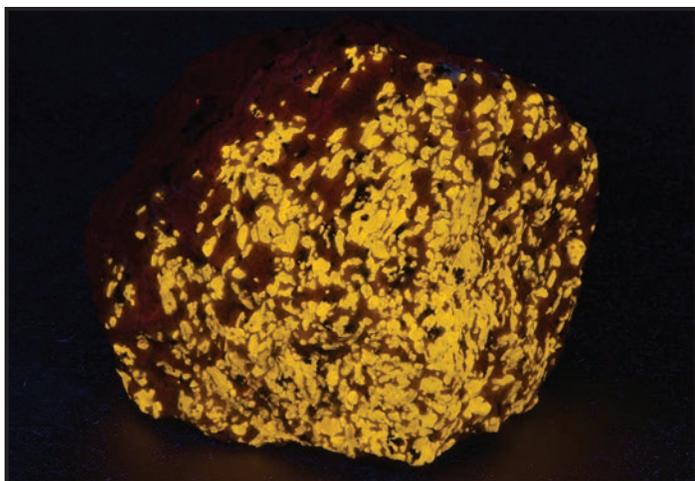
Secondary willemite (FL yellow SW), a weathering product of nonfluorescent sphalerite, in calcite (FL red SW). Once called “beta-willemite” (not a valid mineral name), yellow-FL willemite was found in small amounts at multiple locations in the Sterling Mine in Ogdensburg, but is very rare from Franklin. 2.6 × 1.4 × 1.2 inches (6.5 × 3.5 × 3 cm). Former Richard J. Keller, Jr. specimen.



“Green-eyed” wollastonite, with large grains that FL bright orange SW near their edges, grading through yellow to moderately weak green at their cores, in red-FL calcite. Sterling Mine, Ogdensburg. Franklin Mineral Museum FMM-7312, 12.2 × 5.9 × 2.6 inches (31 × 15 × 6.5 cm).



Wollastonite grains (FL bright orange SW) in red-FL calcite from the Sterling Mine, Ogdensburg. Probably from the 340 level, but characteristic of brightly fluorescing wollastonite grains in calcite from 1680 level, 700 level, and other places near the orebody, up to and including the surface exposures. 4.9 × 3.0 × 1.8 inches (12.5 × 7.5 × 4.5 cm). Mark Boyer specimen no. 491.



Wollastonite grains (FL orange-yellow to yellow SW) in weakly red-FL calcite. The orange-to-yellow fluorescence of wollastonite and the red fluorescence of calcite both depend on the presence of manganese for the hue and intensity of their fluorescences. Orange-FL wollastonite contains more manganese than yellow-FL wollastonite, and the color shift can be evident in individual wollastonite grains at both Franklin and Sterling Hill. Note that the amount of wollastonite collected at Sterling Hill and the range of manganese in that wollastonite (and consequent fluorescent hues) are both much greater than in wollastonite recovered at Franklin, and worthy of collector interest. This specimen measures 3.3 × 3.0 × 1.8 inches (8.5 × 7.5 × 4.5 cm) and is FMM-SR13 in the collection of the Franklin Mineral Museum.

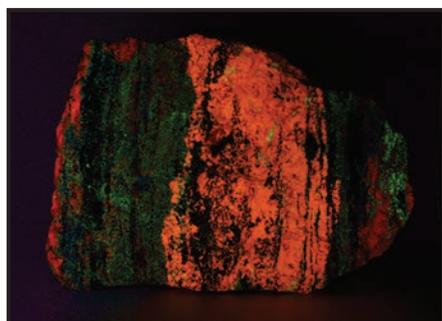
Christmas tree ornaments under SW. (Poikilitic texture is what geologists call it.) “Polka Dot Ore” has retained its meaning to some extent but “Christmas Tree Ore” has now been applied to any specimen with fluorescent willemite and calcite (Boyer, 2012).

One of the most unusual Franklin varieties of willemite and calcite has been dubbed “peaches and cream,” another mineral mixture best enjoyed under several UV wavelengths in turn. These specimens feature willemite microcrystals disseminated

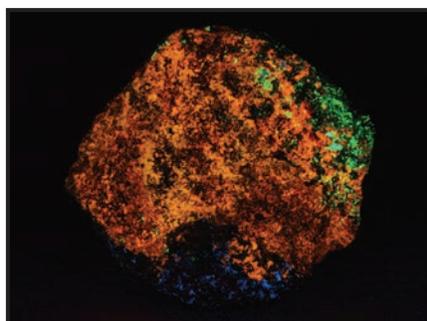
in calcite, in a dolomite matrix with small grains of sphalerite. Due to the presence of willemite, in SW the calcite appears to FL and PH green. In MW the specimens FL a mixture of green from the willemite and red and pink from the calcite, while in LW they FL a wider range of color from red to orange to yellow to green, accented with blue-FL sphalerite grains in the dolomite. A superb example, once in the collection of Harry Wain (Raytech’s founder), was photographed by Earl Verbeek, and white light and LW photos of the piece are on the back cover of *The Picking Table*, Vol. 53, No. 1.

A notorious Sterling Hill variety of willemite and calcite is “Dead Zone Willemite.” Such specimens feature conventional red-and-green ore cut by a 1-cm wide vein or veins of green-FL willemite with nonfluorescent borders of similar width. A superb “Dead Zone” specimen with two such willemite veins can be seen in the fluorescent mineral exhibit of the Franklin Mineral Museum.

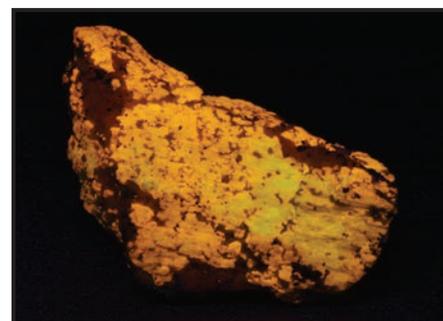
Another popular variety is radiating willemite, with its strong and persistent PH and attractive appearance in daylight and under SW UV. Most radiating willemite specimens from the district came from a network of dolomite veins in the footwall of the Franklin orebody, cracks where hydrothermal solutions formed layers of gray dolomite and brown serpentine on either side, with space in the middle for seed crystallization of nearly pure willemite with just the right amount of manganese. Rosettes of willemite crystallized from the center out, like the rosettes in willemite glaze used by potters. At Franklin the rosettes reached diameters of five or six cm. Some have white centers with brown rims of serpentine, or are white with brown spots. The long-lived PH of radiating willemite from Franklin impressed Kunz and Baskerville in 1903, and the legend arose that a dedicated mineral collector could read an entire *New York Times* by the PH from one Franklin radiating willemite. Good specimens of radiating willemite from



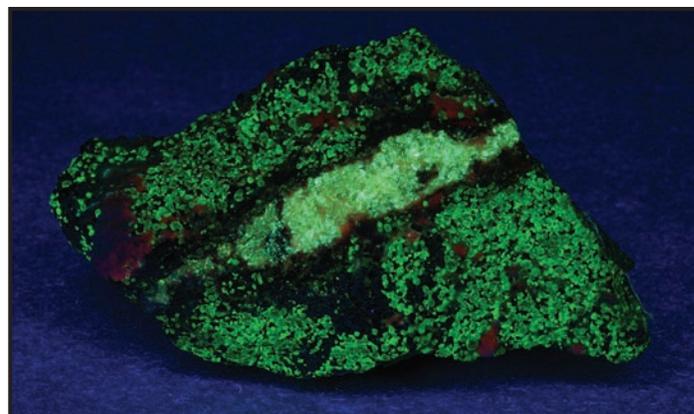
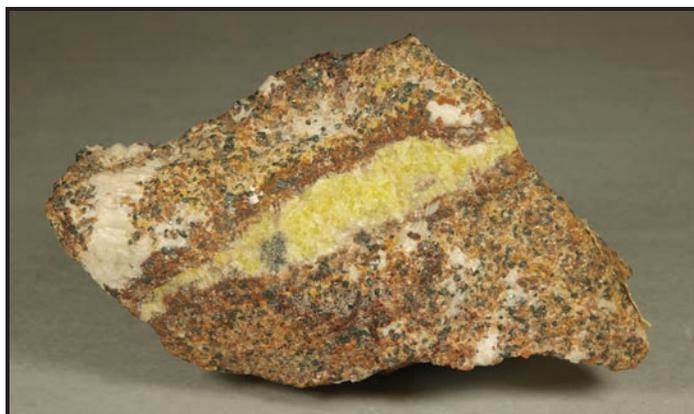
The largest known specimen of First Find wollastonite from Franklin under SW: wollastonite (FL orange), calcite (FL red), willemite (FL green), bustamite (FL weak red), and hardystonite (FL violet). Once in Ewald Gerstmann’s collection, now the centerpiece of the Franklin Mineral Museum’s fluorescent display. 15.4 × 10.6 × 5.1 inches (39 × 27 × 13 cm), FMM-1614.



Fibrous wollastonite, FL orange and red-orange SW, with blue-FL margarosanite and green-FL willemite. A large showpiece from the Franklin minehillite assemblage, now in the Franklin Mineral Museum’s display, and originally in the collection of Steve Chuka, son of a Franklin miner. 7.9 × 7.1 × 7.1 inches (20 × 18 × 18 cm).



Second Find wollastonite from Franklin, with large grains that FL orange around their rims and orange-yellow at their centers in SW, in red-FL calcite. 5.7 × 3.3 × 1.4 inches (14.5 × 8.5 × 3.5 cm). From the collection of Harry Wain, founder of Raytech.



A pod of secondary yellow zincite (FL yellow SW) in granular ore composed of green-FL willemite with nonfluorescent franklinite and zincite with red-FL calcite. 5.1 × 2.8 × 1.8 inches (13 × 7 × 4.5 cm). Richard Bostwick specimen.

Sterling Hill do exist but are rare; an exquisite example was found and regularly displayed by John Kolic.

Among the less flashy but still intriguing varieties of willemite from Franklin and Sterling Hill is willemite that FL and PH moderately bright pale yellow to orange-yellow SW. Incorrectly called “beta-willemite,” this variety is known from multiple limited occurrences at Sterling Hill but is extremely rare from Franklin. The most sought-after attractive specimens from Sterling Hill have crystal druses of yellow-FL willemite altering from nonfluorescent olive-green sphalerite, in a matrix of tan-colored, red-FL calcite. Yellow-FL willemite was also found in nearby Andover at an abandoned iron mine and has been labeled as coming from Sterling Hill, but Andover willemite specimens can be distinguished by their silicate-rich matrix and the presence of malachite and/or quartz.

The rarest variety of fluorescent willemite from Franklin FL and PH pale blue SW and is found in carpets of small, colorless, acicular crystals in and near the larsenite assemblage. The activator is lead (personal communication, Glenn Waychunas).

Wollastonite is one of the major fluorescent minerals from Franklin and Sterling Hill. It FL bright to moderately bright orange, yellow-orange, orange-yellow, and yellow, best SW and weaker MW and LW, with a distinctive PH that has a brief bright “flash” like that of calcite, usually redder in hue than its FL, followed by weaker, longer PH. However, weaker FL with pink, lavender, and other hues, plus weak but persistent PH, have been seen in wollastonite from Sterling Hill.

Wollastonite from Franklin has been classified into different finds, most of which came from the Franklin mine between 1944 and 1954. First Find wollastonite specimens have solid masses and thick veins of bright “pumpkin-orange”-FL wollastonite associated with FL willemite, calcite, and bustamite. Second Find wollastonites often have rounded masses of wollastonite that FL orange around their rims and orange-yellow in the center, and are in a matrix of FL calcite with hardystonite, clinohedrite,

and willemite. Specimens from both these finds are rare and highly prized, as are examples of fibrous wollastonite from the minehillite assemblage, especially when these include “fish-scale” or radiating margarosanite. Until quite recently the minehillite assemblage had been the only wollastonite find to include margarosanite. However, wollastonite with margarosanite, in contact with massive franklinite and altered calcsilicate minerals, has recently been reported (Boyer, 2013).

Third Find wollastonite from Franklin is the one most collectors know, as hundreds of specimens were recovered. In Third Find specimens, wollastonite is in rectangular grains from 1 cm to 5 cm long, often with cream-FL grains of barite 1 cm or smaller, in red-FL calcite. There are also a few wollastonite specimens from the Buckwheat Dump, some of good quality, but these are rare.

Sterling Hill wollastonite is less well known than Franklin wollastonite but far more abundant. In the 1970s when the Sterling Mine was in operation, miners and staff with portable UV lamps located fluorescent wollastonite in the footwall of the east limb of the orebody in several localities from 340 level down to at least 1680 level. Much was carried out under jackets and in lunchpails by the time the mine closed in 1986. When the Hauck brothers bought the property in 1989, specimen recovery underground began almost immediately. The 340 level locality that had already been worked for wollastonite was again exploited, and significant new finds were made on 600 and 700 levels. Wollastonite was also found on the surface, on the east side of the saddle between the Passaic and Noble pits where lower-grade specimens can still be collected. Between all these finds, tons were recovered.

In 2003 an anomalous find of wollastonite that FL and PH weak pink was made by Mark Boyer on Sterling Hill, north of the zinc orebody, when properties along Whispering Woods Lane were being developed. The wollastonite boulder was found among boulders of Franklin Marble rich in norbergite, diopside, and tremolite, and its source is not known.

Many Sterling Hill wollastonite specimens are not as attention-getting as the better-known Franklin examples, due in part to the small size of the wollastonite grains. However, the full range of fluorescent patterns and colors is remarkable. Typical Sterling Hill wollastonite occurs as 1- to 3-mm grains in calcite, but as the manganese content in these specimens varies, the FL of wollastonite and its calcite matrix varies from bright orange-FL wollastonite in red-FL calcite to wollastonite that FL bright orange-yellow or bright yellow in calcite that FL weakly or not at all. All these fluorescent variations are present in some specimens. For connoisseurs of the unusual, diligent collecting on the east limb exposure by Pete Gillis and others has yielded wollastonite in a variety of FL hues, including pink and lavender, often with long-lasting PH. Much wollastonite collected on the surface is enhanced by green-FL coatings, probably uranyl-activated, and by other FL minerals including blue-FL fluorite (personal communication, James Van Fleet).

The best Sterling Hill wollastonite specimens are not well-known but can be impressive. One of the more remarkable finds consists of large grains (1.5 cm x 5 cm and larger) of “green-eyed” wollastonite, which FL orange with green-FL cores, in red-FL calcite; a fine example was photographed by Earl Verbeek and is pictured on the back cover of the fall 2012 *Picking Table*. Also prized are “lightning bolt” specimens from 1680 level that feature bright green-FL willemite veinlets cutting variably FL calcite dotted with orange-yellow-FL wollastonite grains. A find on 600 level yielded large wollastonite masses of tightly clustered cm-sized wollastonite grains, each grain orange-FL on the outside and yellow-FL on the inside, in a matrix of red-FL calcite. The largest known specimen of this type can be seen in Zobel Hall at the Sterling Hill Mining Museum.

Xonotlite: FL, PH moderately bright violet SW, weaker MW and LW. Not uncommon as white coatings with axinite-(Mn), margarosanite in feldspar, and other minerals of the Franklin altered calcsilicate assemblage. Occasionally seen as “nests” several cm across of altered tan acicular xonotlite crystals that are 1 cm or more in length.

Zincite: FL moderately bright yellow LW and MW, less bright SW. Zincite, the third most abundant zinc ore mineral from these deposits, is generally bright red to dark red in color and is nonfluorescent. However, yellow and colorless secondary zincite, in pods and veins and slips in zincite-rich areas, often FL yellow, best LW. Some specimens with yellow zincite veins, seen under SW, MW, and LW, include as many as five additional fluorescent minerals: blue-violet-FL fluorite, orange- and blue-FL sphalerite, green-FL willemite, red-FL calcite, and blue-FL hydrozincite. Most of the best examples of yellow zincite veins were found on the upper levels of the west limb of the Sterling Hill orebody. In addition to these vein

occurrences, hydrothermally altered zincite occurs as fine-grained orange and yellow films, crusts, and cavity fillings that FL yellow. FL zincite is rare from Franklin.

Similarly FL man-made zincite has been recovered from smelters and slag dumps where zinc ore was processed. One notable locality familiar to many older rockhounds is the N.J. Zinc Company’s slag dumps in Palmerton, Pa., where among the many forms of zincite to be found were botryoidal green crusts resembling New Jersey prehnite. More recently, large gemmy zincite crystals with excellent FL have been imported from dismantled zinc smelters in Poland. Collectors take note: Slag specimens are not always labeled as such when sold.

Zircon: FL orange of moderate to weak intensity SW, MW. Zircon occurs at Franklin in the calcsilicate units within the orebody, in Buckwheat Dump microcline, and in the magnetite deposits. At Sterling Hill it has been found with fluorapatite, sphalerite, barite and spessartine on 700 level, in the corundum and margarite find on 340 level, and on the saddle between the Noble and Passaic pits. Usually it is found in crystals and can be identified by its FL and crystal shape. Zircon crystals have also been found in microcline-rich boudins from the Lime Crest Quarry.

Znucalite: FL fairly weak green SW, weaker MW. Formerly known as UK 14, it forms pale-yellow flowstone crusts, largely consisting of hydrated dolomite, on graphitic nonfluorescent calcite from the safety exit on 2350 level in Sterling Hill’s North Orebody. In a few specimens the green FL of znucalite is complemented by blue-FL hydrozincite.

When znucalite was discovered in the mine, fresh specimens were canary-yellow and had moderately bright green FL, but the yellow faded and the FL diminished as the specimens dried (Bostwick, 1991). It has since been noted that exposure to SW UV in a display further reduces the fluorescent brightness of znucalite, though it is somewhat restored by taking the specimen off display. North Orebody miners referred to znucalite as “The Green Slime,” a nickname coined by miner John Anderson.

Mineral nomenclature in this fluorescent mineral checklist conforms to the 2015 list of local mineral species compiled by the FMM Mineral List Committee. Neither scrupulous accuracy nor completeness can be guaranteed in a checklist of this scope, but comments and information are welcome and should be e-mailed to rbostwick@att.net.

Minerals from A through H, plus the Introduction, Historical Overview, Acknowledgements, and Annotated References for this checklist appeared in Part 1 of this article, published in the fall 2016 issue, Vol. 57, No. 2, of *The Picking Table*.

All photos by Earl R. Verbeek. ✕

Buckwheat Dump, 1963

STEPHEN C. CLARK

P.O. BOX 242

BEL AIR, MD 21014

steveclark1952@verizon.net

In late fall, 1963, while staying at the summer home of my grandparents in Highland Lakes, my father and I took our first and only trip to the Buckwheat Dump in Franklin to collect mineral specimens. I was 11 years old at the time, and although memories from such an early age tend to slip away in later life, my recollection of this trip was permanently retained. I recall walking down a hill from the parking lot (I am hazarding a guess that this is now the location of the Franklin Mineral Museum) to the bottom of the dump and seeing an enormous pile of rocks. My father and I began to collect specimens. He was an engineer by trade but had an interest in many things—qualities he imparted to me. Our collecting tools were rudimentary (essentially household hammers and chisels), and safety equipment, well, nonexistent, as evident from the photographs.

We did acquire several specimens, all of which have been lost to time. I clearly remember one mass of calcite with grains of franklinite and willemite scattered within (the iconic “Christmas tree” ore). We did not own an ultraviolet lamp, so the rainbow of Franklin colors that might have been produced was beyond our reach.

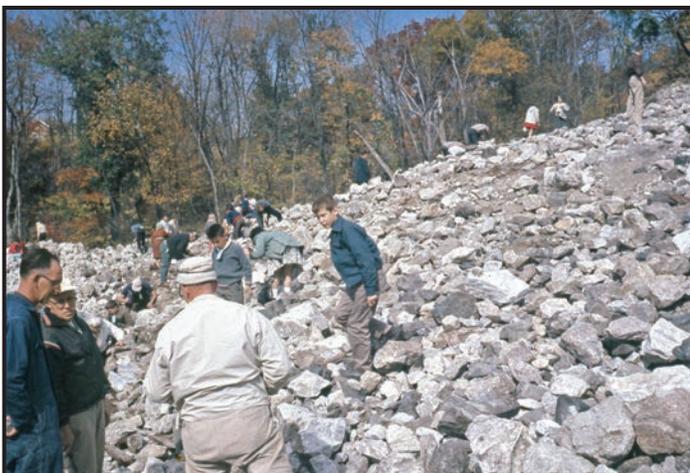
I recall a small wooden shed at the bottom of the hill where collectors could go to view their finds in darkness. I don’t recall viewing anyone’s specimens in there, but have to believe we would not have left the dump without doing so.

I share these photos with *The Picking Table* readership for several reasons. Some of the people in the photos might be identifiable to you; also, although the dump during this

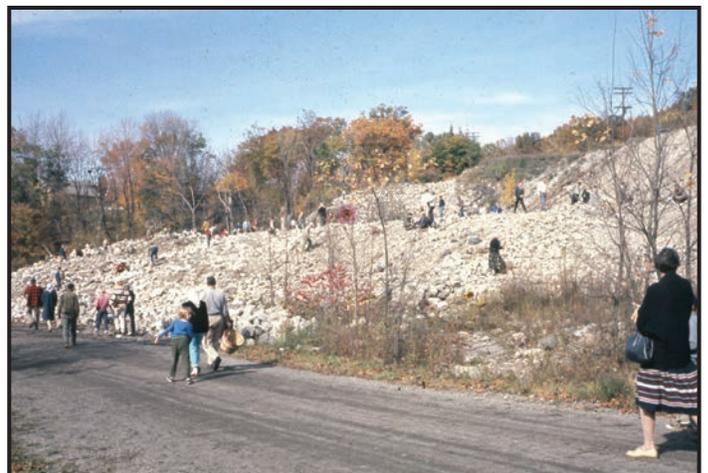


Stephen Clark (in blue jacket) with his dad, descending the trail from Evans Street to the Buckwheat Dump.

time period must surely have been photographed by others, every photo is unique in its perspective, and these images thus preserve a small part of the history of Franklin and the Buckwheat Dump. Lastly, my father passed away three years after these photos were taken. These photos—derived from seven 35-mm slides in all—would eventually have been lost to time, as were the rocks we gathered that day, but their digitization by the Franklin Mineral Museum, addition of the images to the museum archives, and the publication of some of them in this issue of *The Picking Table* will ensure their preservation. Enjoy! ✂



Stephen Clark (center, in blue jacket) collecting on the Buckwheat Dump.



Collectors on the Buckwheat Dump, ca. 1963.



A portion of an uncommonly large, tetrahedral crystal of genthelvite (fluorescent green) in a matrix of coarse-grained, red-fluorescent calcite with minor franklinite, from a trench near the entrance to the Passaic Pit from the Fill Quarry at Sterling Hill. This fine specimen, shown above under combined longwave and shortwave ultraviolet light, was found in October 2006 by Richard J. Keller, Jr. It is now on loan to the Franklin Mineral Museum. The inset photo shows the pale green daylight color of the genthelvite. Specimen measures $7.9 \times 4.7 \times 3.5$ inches ($20 \times 12 \times 9$ cm); the genthelvite crystal measures 3.3 inches (8.5 cm) on edge. *Earl R. Verbeek photos.*

