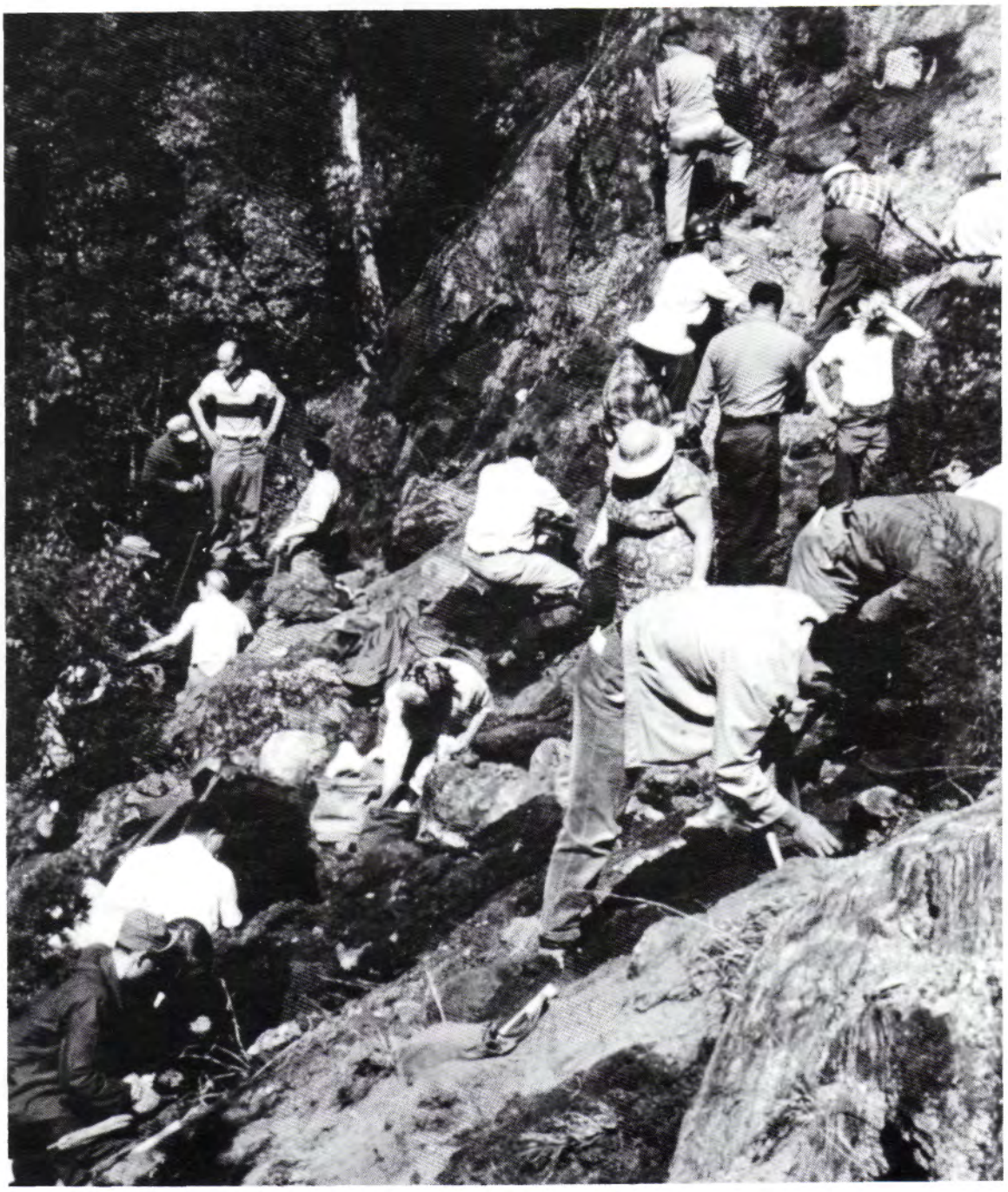
THE PICKING TABLE

JOURNAL OF THE FRANKLIN-OGDENSBURG MINERALOGICAL SOCIETY, INC.



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Anyone interested in the minerals, mines, or mining history of the Franklin-Ogdensburg, New Jersey area is invited to join the Franklin-Ogdensburg Mineralogical Society, Inc. Membership includes scheduled meetings, lectures and field trips; as well as a subscription to *The Picking Table*. Dues are $15 for individual and $20 for family memberships. Please make check or money order payable to **FOMS**, and send to:

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THE PICKING TABLE

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The Picking Table is published twice each year, in March and September, by the Franklin-Ogdensburg Mineralogical Society, Inc. (FOMS), a non-profit organization.

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

Articles related to the minerals or mines of the district are welcome for publication in *The Picking Table*. Prospective authors should contact the Editors at the address listed above for further information.

Subscription to *The Picking Table* is included with membership in the FOMS. For membership, back-issues, and information on available publications, see the opposite page and the inside back cover.

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

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VOLUME 39 NUMBER 1 SPRING/SUMMER 1998

C O N T E N T S

ABOUT THE COVER

F.O.M.S. field trip into the Noble Pit at Sterling Hill on May 21, 1966, photographed by John Medici. These were the glory days of the F.O.M.S., which then had over 700 members. These trips ceased a few years later, and the Sterling Hill open pits were not opened again to collectors until June 3, 1995, this time under the aegis of the Sterling Hill Mining Museum.

Spring 1998 Activity Schedule

Saturday, March 21, 1998
10:00 A.M. - Noon — F.O.M.S. Micro Group, Franklin Mineral Museum
1:30 - 3:30 P.M. — F.O.M.S. Meeting and Lecture, Franklin Mineral Museum
The Janet Annenberg Hooker Hall of Geology, Gems, and Minerals at the National Museum of Natural History, by Steven Kuitems, D.M.D.

Saturday, April 18, 1998
9:00 - Noon — F.O.M.S. Field Trip — Mine Run Dump, Sterling Hill Mining Museum
This field trip is open to all F.O.M.S. members, but a $1.00/lb. fee will be charged.
10:00 - Noon — F.O.M.S. Micro Group — Sterling Hill Mining Museum
1:30 - 3:30 P.M. — F.O.M.S. Meeting and Lecture — Franklin Mineral Museum
Franklin Minerals and Memories; Slides from the Collections of Alfred Standfast,M.D., and Russ DeRoo, by Lee Lowell
**6:30 P.M. - 9:00 P.M. — Night Collecting on the Mine Run Dump, Sterling Hill, for members of the Sterling Hill Mining Museum Foundation *only.* Fee: $1.00/lb.

Saturday and Sunday, May 2 and 3, 1998
The Sixth Annual F.O.M.S. Swap-and-Sell, Sterling Hill Mining Museum grounds
Hours: Saturday, 7:30 A.M. to 6:00 P.M.; Sunday, 9:00 A.M. to 5:00 P.M.
For dealer information, contact Chet Lemanski after 8:00 P.M. at (609) 893-7366.
PLUS OTHER SPECIAL EVENTS OPEN TO THE PUBLIC:
**Saturday, May 2, at 1:00 P.M.: Dedication of Joe Cilen Street at the Sterling Hill Mining Museum.
**Saturday, May 2, at 6:00 P.M.: Auction Dinner at the Ogdensburg Firehouse, an all-you-can-eat Italian-style buffet for $10.00 per person, followed by the Third Annual Sterling Hill Mining Museum Auction at 7:00 P.M.
**Sunday, May 3, at Noon: Miners Day and Open House at the Franklin Mineral Museum, including a concert by the famous Franklin Band.

Saturday, May 16, 1998
9:00 A.M. - Noon — F.O.M.S. Field Trip — Buckwheat Dump, Franklin Mineral Museum
1:30 P.M. - 3:30 P.M. — F.O.M.S. Meeting and Lecture — Franklin Mineral Museum
Geology of the Franklin Marble and Some of its Quarries, by Warren Cummings.

Sunday, May 17, 1998
9:00 A.M. - 3:00 P.M. — F.O.M.S. Field Trip — Lime Crest Quarry, Limecrest Road, Sparta, N.J. This is an invitational field trip hosted by the F.O.M.S., and is open to members of mineral clubs which carry EFMLS membership and liability insurance. Proof of EFMLS membership/insurance required. Proper safety gear a must.

Saturday, May 23, 1998
**8:00 A.M. - 3:00 P.M. — Field trip to the Passaic and Noble Pits, Sterling Hill, for members of the Sterling Hill Mining Museum Foundation *only.* Fee: $1.00/lb.

Saturday, June 20, 1998
9:00 A.M.- Noon — F.O.M.S. Field Trip — Franklin Quarry, Cork Hill Rd., Franklin
1:30 P.M. - 3:00 P.M. — F.O.M.S. Meeting and Lecture, Franklin Mineral Museum
The Franklin Mineral Museum Collections and Archival Holdings, by John Cianciulli

F.O.M.S. field trips are open only to F.O.M.S. members aged 13 or older.
Proper field trip gear required: hard hat, protective goggles or glasses, gloves, sturdy shoes.
**Activities so marked are not sponsored by the F.O.M.S. but may be of interest to its members; for such functions, fees and memberships in other organizations may be required.

From the Editors' Desk

WE THINK WE CAN, WE THINK WE CAN...

As the next-to-last step in getting *The Picking Table* back on schedule, this issue is at least being printed in the same season for which it was intended, even if it is going to the printer three months late, in June of 1998. The next issue, for the Fall/Winter 1998 season, is planned to go to the printer on schedule in early September, and will be in your hands before the Franklin-Sterling Gem & Mineral Show. It certainly hasn't been easy, but we're getting there. Support from the F.O.M.S. officers, board members, and general membership, from George Elling on down, has been absolutely essential to our efforts. We thank you for the sharp prods as well as the offers of help and expressions of confidence; all were necessary to remind us how important *The Picking Table* is to the F.O.M.S.

IN THIS ISSUE

Everything we promised for this issue is here. The Lime Crest quarry, the largest window into the Franklin marble, is examined in two of its aspects; John Jaszczak describes its graphite crystals in an article reprinted from *Rocks & Minerals*, and Warren Cummings examines the recent finds of Mississippi Valley Type (MVT) mineralization there. In a separate article Warren also describes an unusual find of fluorapatite crystals from another quarry in the area.

Franklin and Sterling Hill's connections to the Internet are investigated by co-editor Tema Hecht; we realize not all of you are wired into cyberspace, but those who are may be astonished at the amount of information already out there on Web sites which directly pertain to our local mines and minerals. Tema also browsed through the general topics of *fluorescence* and *willemite* on the Web, and what came up ranged from the familiar to the peculiar and into the realm of the bizarre. You don't have to be hooked up to the Net personally to enjoy what can be found there through serendipity and persistence.

Dr. Steve Kuitems has again provided remarkably detailed *Field Trip Notes*; they're the best argument we have for getting out to the F.O.M.S. field trips. If you think you've seen it all, or that nothing is coming off the dumps and out of the quarries, you obviously haven't been collecting lately. And please let John Cianciulli and Joe Kaiser remind you what's been going on at our two local museums; *it's all important.*

This issue reprints three more peer reviews of the Pete Dunn monograph, *Franklin and Sterling Hill, New Jersey: the world's most magnificent mineral deposits.* Outside perspectives on this major work can help us understand its real stature. Do you have your copy yet?

By the way, Dr. Dunn's one-volume *The Story of Franklin and Sterling Hill,* announced in our last issue, is already in its second printing. Intended for the general reader, this account of the area's minerals, mines, and men is already attracting a wide audience. Here we announce a parallel version (short title: *Magnificent Rocks)* specifically intended for students in grades four through eight. Pete Dunn and co-author Susan Cooper, a teacher in the Ogdensburg school system, have teamed up to produce a book which should be in every middle school library in New Jersey. Like Dr. Dunn's other books, *Magnificent Rocks* is available from the Franklin Mineral Museum, the Sterling Hill Mining Museum, and (by mail) the F.O.M.S.

THE PICKING TABLE IN COLOR, "PARKER SHAFT MINERALS," AND THE COLOR FUND (!!)

We are pleased to announce plans for the first color issue of *The Picking Table.* This fall, the Lord willing and the creek don't rise, your copy will include an article defining that exotic domain which has fascinated and obsessed collectors for over a hundred years: "Parker Shaft minerals." This account will be accompanied by four pages of color photos of the mineral which for many epitomizes the mystique of Franklin: roeblingite. Early rumors of this project stimulated a few squawks, which boiled down to the question, "why would you waste F.O.M.S. resources on publishing color photos of a white mineral?" In the first place, even if roeblingite is white, the minerals associated with it are not, and many of the roeblingite assemblages are quite colorful; secondly, the unique visual texture of roeblingite is better represented in color; thirdly, roeblingite does not fluoresce white, and neither do most of the minerals associated with it (fluorescence is part of the mix); and fourthly, the extra cost of printing in color is being borne by private contributions, a practice borrowed from the magazine *Rocks & Minerals.* Hence the recently announced F.O.M.S. Color Fund, intended to support the printing of color photos in this and selected future *Picking Tables.*

The Color Fund was started many years ago by Lee Areson, but the high costs of color separations at that time stymied efforts for a color *PT.* Advances in high-resolution computer scanning of color photos have now made such a thing possible, or so we believe. This first color issue is, frankly, an experiment. If you like it, please let us know. If color sounds like a good idea to you already, or if after seeing the first color issue you would like to see another, please contribute to the Color Fund. Checks can be made out to F.O.M.S. and mailed to: F.O.M.S. Color P/T Fund, C/O John Cianciulli, Box 146, Franklin NJ 07416. Contributors will be acknowledged in the pages of *The Picking Table.*

40TH ANNIVERSARY ISSUE - ALSO IN COLOR?

1999 will mark the 40th anniversary of the F.O.M.S. We would like to dedicate an issue of *The Picking Table* to that occasion by celebrating Franklin and Sterling Hill minerals in all their colorful glory, as seen, understood, and appreciated by those who collect them. We want this issue to be for collectors, about collectors, and by collectors. In other words, we hope YOU will a pick a congenial topic which fascinates you - a mineral, or group of minerals, or a specific collecting site and its minerals, or some other topic which reflects your knowledge and love of our local minerals - and then we want you to write about it. If you have color photos, so much the better; if not, we have access to many excellent photos taken by our best photographers: Henry Van Lenten, Doc Standfast, Omer Dean, Gary Grenier, etc. Please help with this so it can be your *Picking Table*, through and through! Call us to discuss your interests at (212) 749-5817; we really, truly, need to hear from you.

Message from the President

George Elling
758 Charnwood Drive
Wyckoff NJ 07481

The F.O.M.S. remains a vibrant force in the mineral world and we should be proud of our heritage. Along with our zest for its minerals, both Franklin and Sterling Hill have a wealth of history behind them. It is our society in conjunction with both the Franklin Mineral Museum and the Sterling Hill Mining Museum that will keep these unique mineral deposits from fading from memory.

As we enter 1998 we look forward to another year of field trips and informative speakers. We also have an opportunity to revisit the famous Trotter Dump which will be made available to select mineral groups in the future. Exploratory diggings there in 1997 yielded several excellent specimens.

In 1997 we had a productive year and an excellent Franklin show which was highlighted by a most informative presentation by Dr. Carl Francis, Associate Curator of the Harvard Mineralogical Museum. Earlier, in 1996, the Tucson Gem & Mineral Show had featured fluorescent minerals, and feedback indicated that displays by F.O.M.S. members there were the "hit of the show."

While our society's future remains bright we must seek out new members and find ways to cultivate younger collectors. *The Picking Table* has been behind schedule but the editor assures us that we will be back on a two-a-year schedule starting in 1998. We also hope finally to have our first color feature later in 1998, and an expanded color issue of *The Picking Table* is being planned for our fortieth anniversary in 1999. Here's to a great 1998!

Local Notes

NEWS FROM THE FRANKLIN MINERAL MUSEUM

John Cianciulli, Assistant Curator
Franklin Mineral Museum, Inc.
P.O. Box 54
Franklin NJ 07416

The big story for 1997 has been the long-awaited consolidation of the local collections. For the most part, the specimens are out and may be observed systematically. There is some labeling and other fine-tuning yet to be done. The impact of seeing the local collections by species rather than randomly displayed is nothing short of awesome! Eventually a case map of our holdings will be made available. All local holdings are presently being numbered, measured, cataloged, and located. The general collection is presently being put on a database from the already existing card file. Over 7000 specimens will be processed.

The fall mineral show was a great success. At a time when most mineral shows seem to be losing ground, FMM's annual show seems to be holding its own. This year the Museum added a new feature to the show: we filled Kraissl Hall with a variety of good local material for sale. This new idea was received with great enthusiasm and was a success.

There were some personnel changes in 1997. Carol Hunsinger resigned her position as manager to move to Kentucky. Steve Sanford resigned at the end of the season to move to New Mexico. Both will be sorely missed. Good luck to both! The position of manager has been filled by Mrs. Doreen Longo from Vernon, N.J. Doreen has had extensive management training and experience, and changes are already being noticed at the Museum. Attendance is up and merchandise sales are improving. The position of Manager's Assistant has yet to be filled.

New projects are under way: reorganizing the fluorescent display; creating a presentation for Al Jehle's world-famous mine pearls; and renovating Kraissl Hall, which includes installing a 30'-long case there. New exhibits will include a Lawson Bauer exhibit, the evolution of the ultraviolet light from iron spark to the present, and more.

NEWS FROM STERLING HILL

Joe Kaiser
40 Castlewood Trail
Sparta NJ 07871

Those who have visited the mine since last July may have noticed a new and much needed paved driveway. On May 2, 1998, at the 8th Annual Spring Swap-and-Sell, a special dedication of the new roadway will give a permanent name to this improvement, "Joe Cilen Street." The Third Annual Sterling Hill auction will be held that evening.

There is a new development being planned for Sterling Hill. The Rock Discovery Center will be expanded to include a laboratory experience. The Museum has received a $35,000 challenge grant from the Merck Foundation to develop the basement rooms of the 1916-1960 Sterling Mill. The $70,000 raised with the grant will be used to clean, paint, install doors and windows, provide utilities, and obtain the equipment necessary to produce a first-class teaching facility.

There is a miniature stamp mill in the foyer of the exhibit hall. Bob Hauck found this one in Nova Scotia after checking an ad in Northern Miner, a mining industry trade journal. It was small enough to be carried into new or remote prospecting areas.

On May 23 there will be collecting at the Passaic and Noble pits, for Foundation members only.

FIELD TRIP REPORT

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

NOBLE PIT, STERLING HILL
Sterling Hill Mining Museum Foundation Field Trip
Sept. 7, 1997

Augite var. "jeffersonite" - Some sharply crystallized specimens were collected, including many cabinet-sized examples with crystals 4 x 10 cm and even larger.

Azurite - Microcrystals and small masses of azurite were found in a heavily weathered franklinite-dominant matrix with small amounts of malachite.

Chrysocolla - Small amounts were found in porous weathered augite during the collecting of "jeffersonite." The blue color, glassy luster, and lack of reaction to acid indicate chrysocolla. Also present in the weathered augite were small vugs with millimeter-sized cerussite crystals.

Dendrites (a descriptive term, not a mineral species) - Black to dark brown dendrites are often found coating fracture surfaces in calcite. As the calcite surfaces are generally stained ochre to bright yellow in color, these specimens can be quite beautiful.

Epidote - A green seam in white microcline was split open, yielding two 12 x 18 cm faces covered with tiny epidote crystals in parallel growth.

Meionite - Very good specimens of pale green scapolite were found, showing typical crystal cross-sections 4 x 4 cm in size. This material fluoresces moderate red in shortwave ultraviolet radiation, and moderately strong blue-white under longwave ultraviolet radiation. As marialite has never been reported from Sterling Hill, the species is almost certainly meionite.

Wollastonite - Moderate amounts of wollastonite were found both at the top of the saddle on the north side of the Noble Pit, and part-way down the access road from the Passaic Pit up to the saddle. Most of this wollastonite fluoresces strong yellow in shortwave ultraviolet radiation; the calcite matrix is generally nonfluorescent.

STERLING HILL MINE RUN DUMP
F.O.M.S. Field Trip
Sept. 20, 1997

[Editors' note: As material has been and is being brought to the Mine Run Dump from the surface and underground workings all over the Sterling Hill property, and is found side by side with collectors' accumulations of material from the Franklin mine dumps and marble quarries, the Lime Crest quarry, and quite possibly anywhere in the world, some caution must be exercised in assigning specific localities to specimens found there. While the proprietors have tried to segregate the incoming streams of material, and have put up signs to distinguish them, in the heat of collecting there is inevitably some migration of specimens from one heap to another. The pile with the sign "Mixed Minerals from World-Wide Localities" is the most diverse, containing Buckwheat Dump willemite and calcite cheek by jowl with Paterson prehnite, Bound Brook calcite, Mexican agate, and Sicilian sulfur, to name a few.

If you collect on this dump and have any question whatever about the origin of a specimen you find, consult the experienced collectors who are usually present there. While it is fairly easy to separate Franklin-Sterling Hill material from lapidary-grade agate, Canadian hackmanite, or trap-rock minerals, the job becomes progressively more difficult as you try to distinguish Franklin specimens from Sterling Hill ones, or attempt to sort miscellaneous Franklin Marble minerals by quarry. In any case it is good practice to label all specimens found here "Mine Run Dump, Sterling Hill," rather than just "Sterling Hill." The potential for confusion down the road is enormous.

The following descriptions are of material believed to originate from Sterling Hill.]

Actinolite - fibrous green mm-sized crystals of actinolite studded with cerussite microcrystals were found in a matrix of weathered andradite and augite. Coarser actinolite crystals as much as 1 cm long imbedded in red-fluorescing calcite were also noted.

Aurichalcite - This was found in small amounts as bright blue microcrystals associated with hemimorphite, cerussite, galena, goethite, actinolite, clay, and an unidentified dark green drusy crust, in a matrix of weathered augite.

Calcite - Elongated crystals of calcite occur here as jackstraw groups in vugs in massive calcite. Unlike their matrix, which fluoresces a typical red under shortwave ultraviolet radiation, these crystals fluoresce white under shortwave and longwave ultraviolet radiation. They are accompanied by 1-3 mm crystals of hemimorphite, as well as galena and goethite. Similar crystals found on an earlier field trip here were subjected to energy-dispersive XRF analysis by Tony Nikischer of Excalibur Minerals, and have a fair amount of lead substituting for calcium.

Cerussite - One unusual specimen of weathered galena with sphalerite and goethite had numerous vugs lined with cerussite microcrystals.

Epidote - millimeter-sized prismatic crystals of epidote were found coating a seam in augite with calcite, quartz, and cerussite.

Fluorapatite - This was found in several specimens including one 8 cm across, coated with clay but evidencing numerous small crystals with weak orange fluorescence under shortwave ultraviolet radiation.

Friedelite - Masses of friedelite and nonfluorescent calcite were found with vugs of friedelite microcrystals accompanied by hemimorphite crystals as large as 5 mm.

Galena - An excellent 2 x 2 cm specimen was found containing small crystals of sphalerite and cerussite, botryoidal hydrozincite, and an unidentified vitreous orange coating.

Graphite - Well-formed graphite crystals 1 mm across were found as inclusions in 1-cm radiating groups of hemimorphite crystals.

Hydrozincite - one distinctive 6-cm specimen was found with botryoidal crusts of brightly fluorescent hydrozincite. Included

are crystals of fluorapatite which fluoresce weak orange under shortwave ultraviolet radiation, hemimorphite, aurichalcite, clay, and cerussite in crystals ranging up to 1 cm across.

Illite - This clay mineral has been identified as a component of the earthy tan clay from the Noble Pit which is commonly associated with the weathered augite/galena/cerussite assemblage. X-ray microanalysis of illite was done by Tony Nikischer of Excalibur Minerals.

Malachite - One 5-cm specimen of franklinite-willemite-calcite ore contained vugs with 1-2 mm spheres and radial aggregates of malachite.

BUCKWHEAT DUMP
F.O.M.S. Field Trip
October 18, 1997

As a result of the March 1997 dump turnover, many "fresh" pieces of vuggy Buckwheat dolomite have been exposed. On this field trip these vugs contained: clinochlore in greenish foliated masses; goethite in brown to black clusters of radiating crystals; drusy quartz and clear quartz crystals up to 4 mm in length; pyrite crystals of varied habits, including spheres with radiating structure and hollow centers; rutile in thin black needles; sphalerite in small, well-formed black crystals; and silvery white talc coating dolomite crystals.

Other than the abundant dolomite, masses of bright pink bustamite were found, associated with black augite having prominent cleavage. Blue-fluorescing hydrozincite was seen as a white coating on half of a 12 x 15-cm face of a piece of diabase, associated with cubic microcrystals of pyrite. Moderate amounts of typical sherry-colored fluorite turned up, often associated with fluorescent sphalerite. One fluorite specimen was found that apparently had been exposed to light on one side only: the unexposed side had dark-amber-colored fluorite which fluoresced and phosphoresced green under shortwave and longwave ultraviolet radiation, while the other side had lighter-colored fluorite which fluoresced a weak violet. [Editors' note: to preserve the green fluorescence of this fluorite, such specimens must be preserved away from light.]

As on the March 22, 1997 field trip, the rare mineral lennilenapeite was found as thin greenish-gold coatings on cracks in microcline-quartz pegmatite. The find was described in more detail on page 8 of the 1997 *Picking Table* (Vol. 38, combined issue). Since that time the "pale-green micaceous mineral" found with lennilenapeite has been subjected to X-ray microanalysis by Tony Nikischer of Excalibur Minerals; it is muscovite.

STERLING HILL MINE RUN DUMP
Sterling Hill Mining Museum Foundation Field Trip
Oct. 18, 1997

This was a nocturnal collecting trip, held from 6:30 to 9:30 P.M. Some nice pieces were collected, including a 21.5 lb., 20 x 40 cm wollastonite with orange-yellow-fluorescing wollastonite grains in gneissic bands in nonfluorescent calcite.

A large (11.5 lbs., 15 x 20 cm) and unusual fluorapatite was found, in large grains associated with franklinite and red-fluorescing calcite. The fluorapatite, whose identity was confirmed by optics at the Franklin Mineral Museum, has a lavender/pink fluorescence under shortwave ultraviolet radiation, which is unlike the orange fluorescence considered typical for this mineral.

Bright-blue-fluorescing hydrozincite specimens brought over from the Passaic Pit were found, some associated with sphalerite, goethite, and cerussite, and others with quartz and hemimorphite.

In the section of the dump set aside for Lime Crest material were some surprisingly good examples of fluorescent hydrozincite, up to 15 cm in size. The matrix is white nonfluorescent calcite with some sphalerite present, and the hydrozincite is apparently a recent weathering product of that sphalerite.

LIME CREST QUARRY
F.O.M.S. - Hosted Field Trip
Oct. 1, 1997

Allanite - A couple of well-formed tabular crystals of allanite about 2 cm long were collected in their typical matrix of microcline-quartz pegmatite. These were fairly radioactive. Most attempts made to recover intact crystals of this brittle metamict mineral fail, as the crystals shatter easily.

Chondrodite -Anhedral orange-brown grains of nonfluorescent chondrodite ranging up to 1 cm in diameter were collected in gneissic bands 6 cm wide, in a typical matrix of white marble.

Hydrozincite - One attractive medium-sized specimen was noted to have thin hydrozincite coatings on a matrix of calcite with included sphalerite and phlogopite. Hydrozincite is scarce at Lime Crest but not unexpected, and appears to be the result of in-situ weathering of sphalerite from the MVT-type mineralization found here in recent years.

Meionite - Pegmatite contact zones yielded abundant massive scapolite in shades of pale yellow, pale blue, and lavender-pink. This material is not only attractive in hand specimens but may also have lapidary potential.

Thorite - Over twenty specimens of thorite were collected from a microcline-quartz-pyroxene pegmatite boudin. The thorite masses are for the most part reddish-brown grains as much as 1 cm across, generally surrounded with a radiation halo. A portable radiation detector confirmed their radioactivity. The smaller grains are often a distinct orange color, and some have cubic outlines; these are similar in appearance to the classic specimens of thorite var. orangite from Langesundfjord, Norway.

Serpentine (a descriptive term, not a species) - yellow and green translucent masses and films of serpentine are found along the contacts between pegmatite and marble. As with the scapolite mentioned above, this material may have lapidary potential.

Titanite - dark brown 1-cm crystals were found in a matrix of gray-green microcline, dark green augite, and quartz. Due to the lack of contrast between the titanite and its dark-colored matrix the crystals can be hard to find, but the bright luster of the titanite crystal faces in direct sunlight often gives them away.

FRANKLIN QUARRY
F.O.M.S. Field Trip
November 15, 1997

No information is available for this field trip.

F.O.M.S. FIELD TRIP SAFETY RULES AND REGULATIONS

Field trips are an essential activity for the F.O.M.S., and every member should be aware of the rules which govern them. This version was updated in 1995 after careful review by the F.O.M.S. Field Trip Chairman and officers. All members should be familiar with these rules and regulations, not only for their own safety and that of others, but also to maintain the excellent safety record of the F.O.M.S., which has given its members access to many unique and important collecting localities.

1. INSURANCE COVERAGE. The F.O.M.S. maintains liability insurance coverage for its members under a policy sponsored by the Eastern Federation of Mineralogical and Lapidary Societies (EFMLS). Non-F.O.M.S. members who are guests at any collecting event sponsored by the F.O.M.S. must be able to demonstrate that they are covered by club-sponsored EFMLS liability insurance or its equivalent.
A. Events are restricted to F.O.M.S. members unless otherwise advertised.
B. Participating organizations in F.O.M.S.-hosted collecting events must provide proof of liability insurance coverage in advance.
C. All participants in F.O.M.S.-hosted collecting events must be able to present proof of membership in a covered organization in order to be admitted.
NOTE: the F.O.M.S. maintains lists of current members and of organizations covered by EFMLS liability insurance. An EFMLS membership card alone is not sufficient.

2. WAIVERS OF LIABILITY. It is the responsibility of all F.O.M.S. members and authorized guests to sign Waiver of Liability statements before entering a collecting area. The privilege of collecting is dependent on fulfilling this requirement. All persons entering the collecting area must personally sign such a release or releases, absolving the property owner, the F.O.M.S., and its officers of any responsibility for injury, loss of life, and property damage or loss.

3. POSTED TIMES. Collecting begins no sooner than, and lasts no later than, advertised collecting times. The F.O.M.S. Field Trip Coordinator and/or his/her designated representative(s) are the only F.O.M.S. officials who may designate a variation of the advertised collecting hours.

4. ELIGIBILITY. Children under 13 years of age are ineligible for collecting events unless otherwise authorized by the F.O.M.S. official in charge. Persons who appear intoxicated or under the influence of drugs, or whose judgment or physical ability to collect appears to be impaired, are also ineligible to collect.

5. COLLECTING AREA LIMITS. Collecting is restricted to areas within boundaries. Areas which are off-limits to collecting may be indicated by signs, fences, ropes, etc., or the instructions of the F.O.M.S. safety staff. Collecting is strictly prohibited within 30 feet of a vertical or overhanging rock wall; in areas above mine entrances; within three feet of a cliff edge, ledge, or quarry bench; and on an incline either above or below a collector who is already in position.
Vehicles are restricted to authorized parking areas; exceptions may be made only by the F.O.M.S. official in charge.

6. CLOTHING. Proper footgear, headgear, gloves, and safety goggles or safety glasses are not only a good idea but mandatory! Your health is more important than any mineral specimen. Rugged boots or shoes, preferably with steel safety toes, should be worn. Collectors wearing sneakers, sandals, or other flimsy footgear will be denied access to the collecting area. Hard hats should be worn on all collecting trips, and MUST be worn on all trips to operating quarries or on other field trips so designated. Gloves should be worn to protect the hands when breaking or handling rock. Safety goggles or glasses (with shatterproof lenses) should always be worn when breaking rock, or when other collectors nearby are doing so.

7. TOOLS. Proper tools should be used. Choose substantial rock or masons' crack hammers, sledgehammers, and cold chisels for breaking rock. Common carpenters' hammers, wood chisels, screwdrivers and the like are unacceptable since they can break or chip when used on rock. Mushroom heads on chisels should be ground away to prevent flying metal chips.

8. OTHER PRECAUTIONS. Field collecting is a privilege, not an excuse to abandon common sense. Use caution when reaching between rocks and into crevices - snakes hide there! Familiarize yourself with poison ivy - the itch won't quit. When ascending or descending a rock pile, be extra careful; such rocks are often loose. Don't rely on grabbing small rocks for climbing leverage. Use the buddy system, and never collect alone; always remain within shouting distance of another collector. Carry a first aid kit. In hot weather, bring sun-blocker and carry a supply of drinking water plus salt tablets. If a hard hat is not required, wear a hat which provides protection from the sun. Walk carefully when ascending or descending; in particular, climb out of deep quarries slowly. And....don't throw anything, particularly rocks!

9. RESPECT FOR PROPERTY. Watch those cigarettes and matches in wooded or grassy areas. DO NOT LITTER! Carry all your trash out with you. Don't break glass bottles, as they can cause flats on quarry vehicles. Don't leave metal tools behind, as they can cause severe damage to rock-crushers. Above all, do not touch, deface, damage, or vandalize quarry equipment; this can not only terminate field trip privileges for the F.O.M.S. but also lead to lawsuits.

10. COMPLIANCE AND PENALTIES. F.O.M.S. safety staff members wear fluorescent greenish-yellow armbands, and have authority to warn violators or expel them from the collecting area. Failure to observe F.O.M.S. safety rules and regulations and failure to obey the instructions of an F.O.M.S. safety staff member are alike considered violations of F.O.M.S. protocols and are grounds for immediate eviction from F.O.M.S. events. Repeat violators will be barred from future field trips.

❖ ❖ ❖ ❖ ❖ ❖ ❖

Collecting under F.O.M.S. auspices is not a right but a privilege. Some field trip areas are open to collecting only because of the F.O.M.S.'s excellent safety record, and injury or property damage on a field trip could lead to permanent canceling of that trip. When you collect, please watch out not only for yourself but also for your fellow collectors AND the F.O.M.S.; you are also protecting the collecting privileges of future generations of collectors.

The Franklin Mineral Museum

Evans Road/P.O. Box 54, Franklin, NJ 07416
(between Main Street and Buckwheat Road)
Phone: (201) 827-3481

Exhibiting by means of guided tours Franklin-Sterling Hill mineral specimens, educational exhibits in mining methods and history including a life-sized replica of underground workings, artifacts, gem stones, zinc uses, and a 32-foot-long fluorescent display. Included in the tours is the Jensen Memorial Hall built especially to contain the Wilfred Welsh collections of fossils, Native American relics, and world-wide minerals and rock specimens assembled for teaching purposes.

Mineral collecting on the Buckwheat Dump. Ample parking, and picnic grounds.

Offering for sale: minerals, fluorescent specimens, micromounts, mineral sets, amethyst crystal groups, agate slabs, onyx carvings, UV lamps, hammers, lenses, mineral books, 35mm slides of fluorescent minerals by Henry Van Lenten, T-shirts, patches, postcards, dinosaur models, crystal growing kits, and refreshments.

Operating Schedule:
Open to the public
March 1 to December 1
Monday through Saturday: 10AM - 4 PM
Sunday: 12:30 PM - 4:30 PM
Closed: Easter, July 4th, and Thanksgiving
Groups by reservation, please

Admission fees:
Adults: *$4.00*
Grammar & High School Students: *$2.00*
Separate admission fee to the Buckwheat Dump is the same as the Mineral Museum fee. Admission to museum includes guided tour.

Franklin, New Jersey
"The Fluorescent Mineral Capital of the World"

The Sterling Hill Mining Museum, Inc.

30 Plant Street Ogdensburg, NJ 07439
Museum phone: (201) 209-7212

DON'T MISS THE RAINBOW ROOM!

Featuring acres of things to see indoors, outdoors, and underground, including:
Antique mining equipment displays
Mining memorabilia displays
Historical buildings
Underground guided tours
Gift Shop - stocked with minerals, books, T-shirts, caps, etc.
Food concession and picnic area, and much more!

On the last Sunday of each month (or other times for groups by prior arrangement) a collecting site will be open for a nominal additional fee. Contact the mine office for details.

Learn about the importance of the mining industry in northwestern New Jersey. See historic mine workings!

Schedule of operation:
April 1 through November 30, 7-days-a-week 10 A.M. to 5 P.M.
Open March & December on weekends or by appointment, weather permitting.
In April, May, June, Sept., Oct. & Nov., tours at 1:00 p.m. and 3:00 p.m.
In July and August, tours at 11:00 A.M., 1:00 P.M., and 3:00 P.M.
The temperature in the mine is 55 degrees F. year round; tours last 1½ - 2 hours.

Admission prices:

Adults:	**$8.00**
Children:	**$5.00**
Senior Citizens:	**$7.00**

Call for group rates

41ST FRANKLIN-STERLING GEM & MINERAL SHOW
Sept. 26-28, 1998

This year's show took place in near-ideal conditions, combining bright fall weather and an excellent turnout of dealers, swappers, exhibitors, and even spectators. Again we must emphasize the multiplexish character of the event, which flows all weekend between the main show in the Franklin School buildings, the F.O.M.S. Swap & Sell on the school grounds, the Franklin Mineral Museum nearby, the Franklin Heritage Museum on Main St., and the Sterling Hill Mining Museum two miles southwest in Ogdensburg. (Omitted in this list is the Saturday night tidal surge to the F.O.M.S. banquet and auction at the Ogdensburg Firehouse.)

For those of you who attended the show part-time, exhibitor and dealer set-up happened in the Franklin School on Thursday afternoon, and the main show was open during school hours on Friday to organized groups of local schoolchildren. At 5:00 P.M. on Friday the doors are opened to the public, innocents and hardened collectors alike. The main show's exhibits, as is customary, were split into ranks of "daylight" and fluorescent cases. Signs led you past a long row of the former to the darkened stage door, behind which lurked 11 of the latter and two dealers in fluorescent minerals. (The 20 remaining "inside" dealers were a few steps away in the well-lit gym.) Altogether 5 museums and 19 private collectors put in exhibits, a fairly remarkable total considering that by tradition all minerals and memorabilia are of local origin. An exception this year was Dick and Elna Hauck's case of antique souvenir spoons from varied mining areas, the most remarkable (to your editors' eyes) being the California Gold Rush spoons with windlasses and ore buckets as part of the design. However, this remains ***the*** show to see key specimens from private collections of Franklin-Sterling Hill minerals. There are always many mindbogglers on view, reflecting the fact that even after nearly two centuries of important local specimens being dispersed to museums and collections throughout the world, the preponderance of local minerals (in both quality and volume) is still in local hands.

The Franklin School again proved an ideal location for the show, with a volunteer staff providing breakfast, lunch, and snacks in the school cafeteria, and out on the Swap & Sell field by means of a hot-dog cart. This year the east end of Washington St., which used to be the main entrance to the school off Route 23, was blocked and filled in, so all traffic had to work its way around to the school through back streets. However, the end result was more orderly parking (managed this year by the Boy Scouts) and a greater degree of safety for pedestrians.

Saturday morning, well before the main show opened at 9:00, the F.O.M.S. Swap & Sell was in full cry out in the schoolyard. This year on Saturday over 100 "swappers" bought space, yielding an incredible mish-mosh, potpourri, Irish stew, or what-have-you of mineral and memorabilia offerings, running the gamut from Grandpa's carbide lamp to the latest self-collected Herkimer diamonds. (The Sunday swap scene was less wild and wooly, but not by much.) Unlike the more sedate scene inside the gym, where carefully selected dealers deacess carefully selected specimens in a dignified atmosphere, the ambience at the Swap & Sell is more chaotic, the mineral labels and prices more experimental, and the general effect much more raffish. How nice to have both worlds a few steps apart, for the price of one admission ticket! Joe Polityka's review of the 1997 show, in *The Mineralogical Record*, Vol. 29, No. 2 (March-April 1998), pp. 133 and 136, describes some of the mineral highlights found at the show, the swap, and the Franklin Mineral Museum.

The F.O.M.S. banquet on Saturday night, now an all-you-can-eat Italian Buffet dinner hosted by the Ogdensburg Fire Dept. was a bargain at $12.50 with soft drinks and beer included. Fellowship abounded, to put it politely. Dr. Carl Francis, Associate Curator of the Harvard Mineralogical Museum, returned some dignity to the affair as he spoke about "Franklin - Outside the Box," encouraging us to bring unconventional thought and outside perspectives to the consideration of our own favorite minerals and mineral assemblages. Following this, veteran auctioneer and all-around good sport Vandall King auctioned two of Joe Cilen's actual joke books, a camouflage "boonie hat" swiped from one of the younger banqueters, and, if memory serves, some mineral specimens. This is definitely one of those "don't miss it if you can" events.

The Franklin-Sterling Gem & Mineral Show, in all its polymorphous perversity, is more or less indescribable. However, the following photos may help to give a sense of the show and a few of the many people who make it happen.

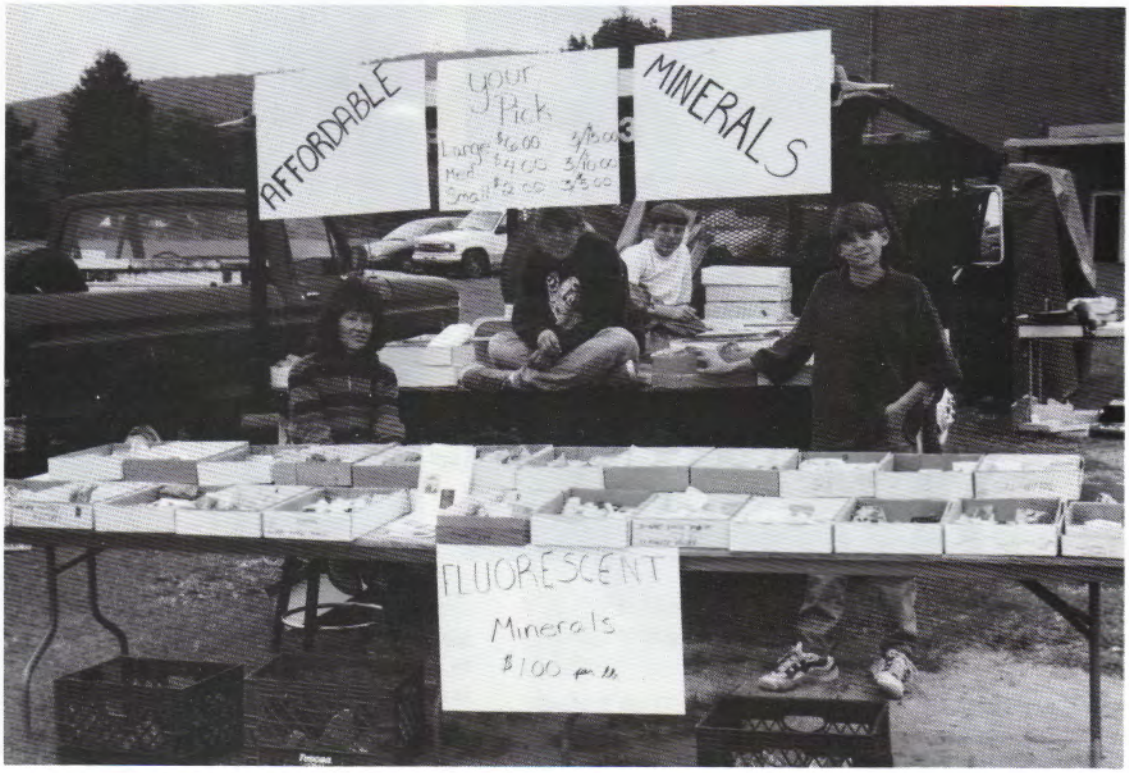
Guardians of the gate: from left, Ava Sanderson, her son Luna, and Farrah Fawcett.
Tema Hecht photo.

41ST FRANKLIN-STERLING GEM & MINERAL SHOW
THE MAIN SHOW

Mineral dealers and their customers, warm and dry inside the gym of the Franklin School. Ed Wilk photo.

The Franklin Heritage Museum displays local memorabilia. Tema Hecht photo.

Bob Hauck's case of Sterling Hill ore, and then some. Herb Yeates photo.

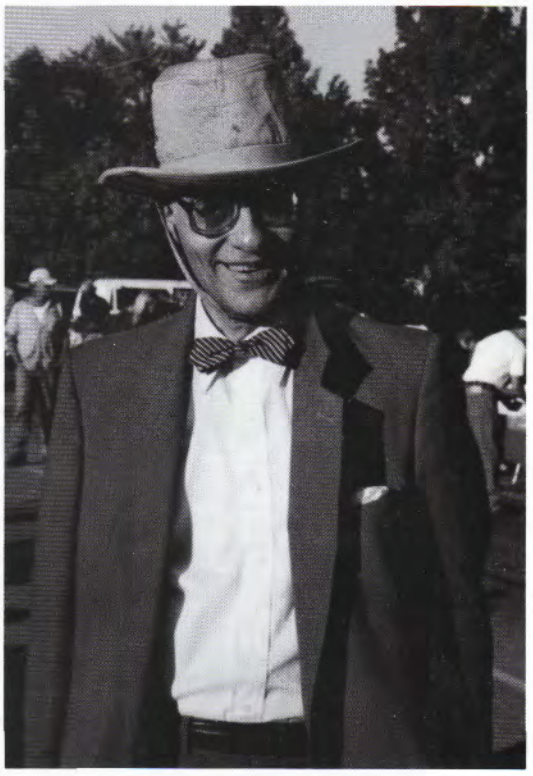


Good deals abound at "Affordable Minerals," the Phillips family enterprise, while...

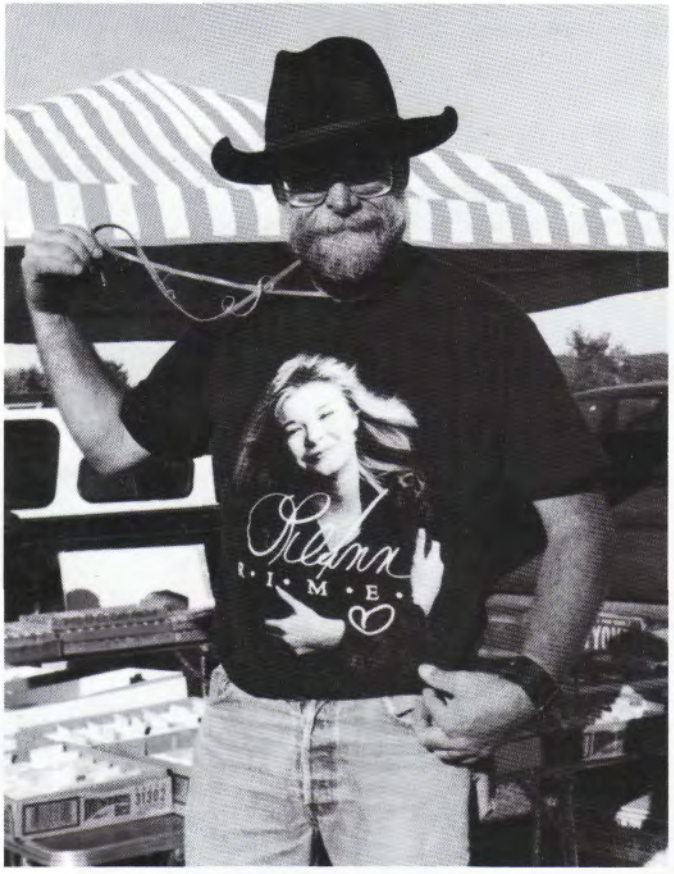
...Steve Phillips (on right) takes a break with Swap & Sell honcho Chet Lemanski.
Richard Bostwick photos.

41ST FRANKLIN-STERLING GEM & MINERAL SHOW
PERSONALITIES AT THE SWAP & SELL

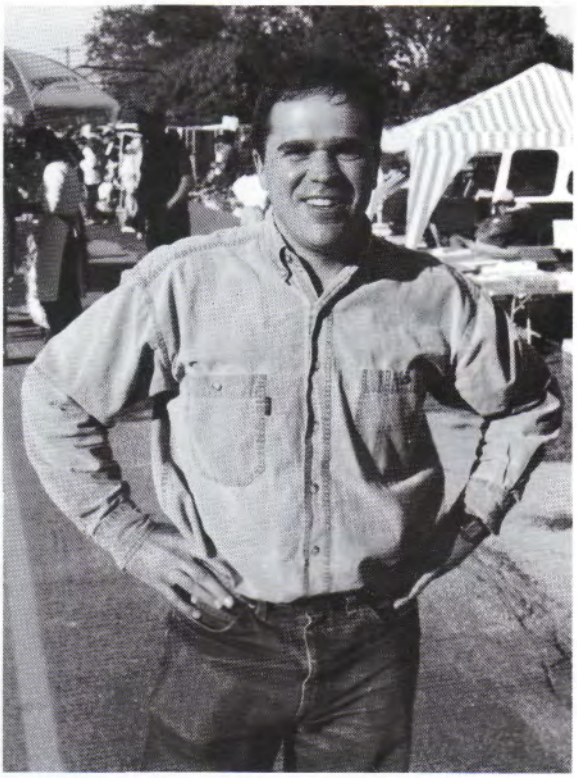
Bob Rosenblatt of Rocko Minerals, and his daughter Jennie. Richard Bostwick photo



Fashionably dressed Manhattan socialite Alex Mann. Richard Bostwick photo.



DuPont geologist and proprietor of Coisas Preciosas, Dr. Robert E. Jenkins II, with friend.
Richard Bostwick photo.



George Polman, fluorescent mineral mogul of Phoenix, Arizona. Richard Bostwick photo.

41ST FRANKLIN-STERLING GEM & MINERAL SHOW
F.O.M.S. BANQUET & AUCTION

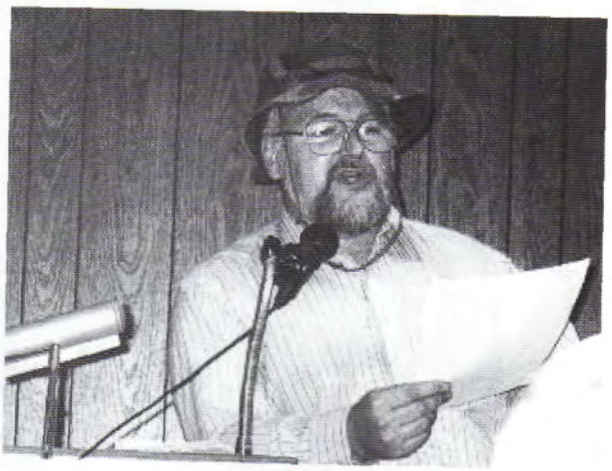
Jack and Augusta Baum. Herb Yeates photo.

Intense discussion during the banquet (pitcher contains beer).
Herb Yeates photo.

Maureen Woods and Dick Hauck.
Herb Yeates photo.

Joe Kaiser and Elna Hauck inventory items for the auction. Herb Yeates photo.

Steve Misiur, Gary Grenier, Ron DeBlois, and Jim Chenard enjoying the auction. Herb Yeates photo.



Auctioneer Van King in the process of auctioneering a rare hat. Herb Yeates photo.

FRANKLIN HERITAGE MUSEUM OPENS

On May 29, 1997, the Franklin Historical Society opened its Franklin Heritage Museum in the restored Time Office of the New Jersey Zinc Company at the old mill site on Main Street. The museum has many treats for the visitor who wants a sense of Franklin's complex past, including many early photos and postcards, mining artifacts (such as one of the old "widowmaker" column drills), relics of local businesses such as bottles from the bottling works, and uniforms from the 19th-century Franklin Band and the more recent Franklin Miners semi-pro football team. The dedication, which was held in conjunction with the local Soap Box Derby and an antique show, was a gala affair, with speeches by N.J. State Senator Robert Littell and Franklin Mineral Museum Curator John L. Baum.

The Franklin Heritage Museum is open from noon to 4:00 P.M. on Saturdays and Sundays from April through October. There are some interesting items for sale, including commemorative pins and mugs from the dedication, historical photos, and a 90-minute videotape which reproduces an old New Jersey Zinc informational movie with much footage shot underground. Museum memberships are available, and the museum has its own newsletter, *The Zinc Town Times*, edited by Melissa Trythall.

The museum's phone number is (973) 209-1232. During the week further information about the museum can be obtained by phone during the day from John Sowden at the Franklin Rental Center, (973) 209-4107, or in the evening from Richard Fletcher, (973) 579-0028. The museum's webpage URL is:

http://www.serve.com/FranklinNJ/

Balloons, bunting, and politicians mark the opening of the Franklin Heritage Museum. Flanking sign, on left, Sussex County Freeholder Richard Durina and N.J. State Senator Robert Littell. On right, museum president Jim Van Tassel, Jr. Lee Lowell photo.

Crowds mill about on Franklin's Main Street in front of the newly opened Franklin Heritage Museum. Lee Lowell photo.

SEEK AND YE SHALL FIND: A MINERALOGICAL JOURNEY, AND THEN SOME, THROUGH THE INTERNET

Tema J. Hecht
600 W. 111th Street
New York, NY 10025

Whether we like it or not, computers and the Internet are here to stay. Many private homes have computers with access to the 'net, libraries are now putting their catalogs on-line, and businesses can be found on the Web. Home shopping on television seems ancient compared to what is available through the Internet. Purchases can be made with a touch of your keyboard (and a credit card), banking can be done at home, and you can communicate, through electronic mail (e-mail), with people all over the world.

If you have ever "surfed" the Web, or have heard people talk about it, you will know that there is a tremendous amount of information to be found. Much of the material is useful and correct. But BEWARE! Much is incidental, ridiculous or downright wrong, though amusing at times. Remember, anyone can create their own Web site, so it is up to the user to sift the wheat from the chaff.

I have utilized Netscape Navigator/Communicator to do my browsing. The search engines I have employed when looking in Netscape include Infoseek, Yahoo, Lycos, and Excite. I have searched various keywords such as *fluorescent minerals*, *willemite*, *ultraviolet*, and *franklinite*. Each search engine will have different results. I was astonished to realize how much information exists. If you know the URL (Uniform Resource Locator), which in effect is the address of a particular site, you will be taken there immediately by your browser without having to plow through perhaps hundreds of other "hits" on your subject. On the other hand, it might be amusing to see what's there. I found subjects ranging from legitimate mineral museums and dealers, thief detection powders, and detective and science fiction stories, to a site (*Ask the Rabbi)* about whether glow-in-the-dark toys are allowed on the Sabbath. By the way, some Web sites are not searchable at all. One just has to know the URL (address) to get there.

Two of the key sites about Franklin and Sterling Hill are the *Franklin Mineral Museum Home Page*, and Herb Yeates's page *Franklin Minerals*. Herb's Web site is one of the most complete and accurate sites I have seen so far. One of the links on Herb's site is *Palache On-Line*. Both the Franklin Mineral Museum page and Herb's page list the season's events of the F.O.M.S., the Franklin Mineral Museum, and the Sterling Hill Mining Museum.

This article by no means describes all the Internet has to offer on the subjects of Franklin and Sterling Hill, fluorescent minerals, and related topics. In fact, I have the feeling that it is only the tip of the oresberg, so to speak.

FRANKLIN AND STERLING HILL ON THE WEB

Let's start with the obvious, the *Franklin Mineral Museum's Home Page*, URL:

http://www.geocities.com/CapeCanaveral/Lab/6347/

At the top left of the page, when printing out, and also on your screen, you will see in brackets the header, *rockman's Home Page*. "Rockman" is none other than John Cianciulli, the Assistant Curator of the Franklin Mineral Museum. This Home Page has a photo of the zinc miner sculpture in front of the museum. There are also 4 internal links which give you more information: 1) **Franklin Museum**. This link gives some history about the museum and its collections, and includes photos; 2) **Activity Schedule**. This is the current F.O.M.S. schedule of events; 3) **Franklin Mineral & Gem Show**. This link announces the upcoming show, with dates and times. There is a map of the area indicating the show location and other important sites to visit in and near Franklin, including the Sterling Hill Mining Museum; and 4) **Collecting on the Buckwheat Dump**. This link has photos of fluorescent minerals, and children collecting on the dump. There is also an external link on the Franklin Mineral Museum's Home Page, **More on Franklin**. This link leads to Herb Yeates's Web site.

The heading for Herb's Home Page is *Franklin Minerals: the minerals of Franklin and Sterling Hill, New Jersey*. The URL is:

http://super.win.or.jp/~yeates/

and the page title is *Franklin Minerals*. This is an important site if for no other reason than that Herb has a link, **Palache On-Line**. He has entered USGS PP 180, *The Minerals of Franklin and Sterling Hill, Sussex County, New Jersey*, in its entirety, and it is now available for anyone with access to a Web Browser. Other links attached to Herb's home page include: **Introduction to the**

world's most beautiful minerals. This touches briefly on the Franklin area with links for more information. Then there is **Fluorescence**. This page gives us a description of what fluorescence is, with a photo of the Rainbow Tunnel at Sterling Hill. One can click on mineral names also and view photos of these minerals under an ultraviolet lamp. And if you are homesick for the Franklin area just click your mouse on **Local Museums**, where you can see photos of the Franklin Mineral Museum and the Sterling Hill Mining Museum. As an added bonus, there are images of John Cianciulli and Richard Hauck at their respective institutions. Also look at the **Events** link, where Herb has some wonderful photos of scenes from the 1997 Franklin-Sterling Gem & Mineral Show.

Another Web site has a great deal of information about Franklin and Sterling Hill though this site is neither official nor complete. Its page title is *Franklin/Sterling Hill: Mining History & Minerals*. The URL is:

http://www.angelfire.com/ny/minehist/

In the link **A History of Sterling Hill Mine**, there is a detailed description of the mining activities at Sterling Hill and the people that were/are involved. If you click on **The Sterling Hill Mining Museum: Tours & Programs** you will get a short description of that topic with a wonderful photograph of the "change house" which is now the museum at Sterling Hill. Additional links on this site are **Franklin/Sterling Hill Mineral Species List**, **The Fluorescent Minerals of Franklin & Sterling Hill,** and **Mineral Collecting at Franklin and Sterling Hill**. Again, this Web site is still under construction but worth visiting.

On a similiar topic, there are two other sites with much general information about Franklin and Sussex County. These are the sites of Franklin Borough:

http://www.serve.com/FranklinNJ/fbnj1.htm
and
http://www.serve.com/FranklinNJ/fbnj2.htm

These pages contain links to the Franklin Mineral Museum, Herb Yeates's Home Page, the Franklin Historical Society Web site, local weather forecasts, etc.

ROCKHOUND AND FLUORESCENT MINERAL WEB SITES

We now enter the shadowy world of more general information about fluorescent minerals and minerals overall. Some of the sites address specific topics, while others touch on almost every aspect of the mineral hobby. Those with an interest in fluorescent minerals should start by browsing through the Home Page of the **Fluorescent Mineral Society**:

http://www.uvminerals.org/

It's loaded with information, and explains display techniques, luminescence, where to get ultraviolet lamps, how to join the FMS, etc.

The following sites are mainly for the all-around mineral collector. Though there are some links to fluorescence these pages do not concentrate on it.

A site that you can spend hours searching through is *Bob's Rock Shop*:

http://www.rockhounds.com/rockshop/table.html

This site has many links including, **Snapshots from the Tucson Shows, Software for Rockhounds**, and more. Though many of Bob's links do not deal with fluorescence, it might be entertaining to view them.

Ken Colosky has his own site, *Ken's Fluorescent Minerals*:

http://www.users.interport.net/~kenx/

There you'll find some interesting photographs of fluorescent minerals, as well as information on **The New York Mineralogical Club** and **The Fluorescent Mineral Society**. Ken also has links to various sites, including **John Betts Fine Minerals**.

Another Web site that you may want to explore is *New Mineral Books*:

http://www.minresco.com/minbooks/bindex.htm

Click on a title that interests you, and a detailed abstract will appear, which in most cases is very helpful, and might determine whether you are interested in purchasing the book.

The Mineralogical Record has an impressive Web site:

http://www.minrec.org/1970.html

It has color photos of its covers from 1970, Vol. 1, No. 1, through 1996, Vol. 27, No. 6. When you click your mouse on a particular year the covers for those issues appear along with the contents for each issue. If you don't want to leave the house or your computer, you can always purchase the *Mineralogical Record* on-line!

Many mineral dealers have their own Web sites. Two well-known dealers from our area are *Excalibur Mineral Company*:

http://www.bestweb.net/~excalmin/

and *Charles B. Ward Fluorescent Minerals*:

http://www.fluorescentminerals.com/

Franklin and some of its minerals are also mentioned on the site, *Fabulous Mineral Localities*:

http://mineral.galleries.com/minerals/fablocal.htm

On *Bill's Best Fluorescent Mineral Site*,

http://www.zdnet.com.au/yil/con...depts/billsbest/plminerals.htm

there is a short article, *Best Place to Collect Fluorescent Rocks and Minerals*. To quote Bill, "New Jersey may be the Rodney Dangerfield of states, but it has, in addition to many other unique attributes, the town of Franklin. Here and in neighboring Ogdensburg, you can find mineral deposits that are unique in all the world." The article goes on to discuss (with enthusiasm but little precision) the ores and fluorescent minerals that can be found in the area.

Sometimes specific events and personalities are enshrined on the Internet. Last winter Conrad Grove, a reporter for the Philadelphia Inquirer, accompanied Ralph Thomas and Alex Kane on an excursion to Sussex County. Grove's article, *N. Jersey mines' minerals offer unique light show*, is dated February 1, 1998 and appears on one of the newspaper's Web sites:

http://www.phillynews.com/inquirer/98/Feb/01/sports/OUT01.htm

The article begins with Ralph Thomas and Alex Kane setting out on a snowy winter morning to collect minerals in the Franklin-Ogdensburg area. As Alex and Ralph make their way to northern New Jersey, Alex says, "Maybe Elvis will even show up," and continues, "Why is it, Ralph, that when we get together we hallucinate?" Mr. Grove goes on to interview many of the better-known personalities in the area, including Richard and Robert Hauck, Robert Jenkins, John Baum, and Nick and Irene Zipco.

I enjoyed this article and think that it would be well worth your time to finish reading it on the Internet.

ON THE BIZARRE AND NOT-SO-SERIOUS SIDE OF THE WEB

Search "fluorescence" and your search engine will boldly go where no mineral collector has gone before. UV lamp in hand, you will encounter pets, thieves, detectives, Rabbis, and Star Fleet officers, all of whose actions are affected by fluorescence. Again, let the user beware. Some of the information in these sites is accurate and timely, while some is a century old and should be taken in context, and some is downright wrong. The following items merely reflect the diversity of what is on the net, and the delights as well as the perils of browsing.

Those of you who own cats, and suspect your pet has dermatophytosis or ringworm, should look at *The Cat Doctor, Dr. McFarland's Notebook*:

http://www.catdoctor.com/noteboo.htm

Here is your chance to put your long wave ultraviolet lamp to work on something other than those beautiful fluorescent minerals. To see if your cat is infected with one type of ringworm fungus, shine your longwave lamp on the part of your cat that's suspect. "Hairs infected will often fluoresce bright green under ultraviolet light." This "test is only positive about 50% of the time since there are other strains of ringworm."

Before you run to the neighborhood vet, though, make sure that your cat hasn't rolled in any green willemite dust from your collection in the basement.

As for dogs, *Welcome to Spot the Dog's Website*,

http://homepages.together.net/~spotdog/index.htm

which features **Reflective Protective Outerwear for Dogs**. The Spot page continues with, "See Spot. See Spot run. See Spot run in the woods..." It goes on to ask how safe your dog is running around the neighborhood without protective wear. "The vest and collarband are fluorescent orange to provide maximum visibility day and night. They both feature 3M Firecoat reflector strips for extra evening protection" (in case your dog has a hot date?). Who could ask for anything more?

Now that your pets are eternally grateful to you for their care, keep your family safe and antiseptic with the *Esencia Ultraviolet Toothbrush Sterilizer*:

http://www.maxpia.com/net/esencia.htm

We are asked, "Do you know that toothbrushes and razors are swarming with pathogenic baceteria that cause various diseases?" And we are told that "Bathrooms are used primarily for a family's sanitary needs" and that in our bathrooms, "family members can communicate contagious diseases through toothbrushes." Some of the features of the **Esencia Plus Toothbrush Sterilizer** are: sterilization and reflux functions, automatic repetitive sterilization functions, razor disinfecting function, and (my favorite) pleasant melody function.

There are many possible uses for items sold by *The Spy Store*:

http://www.spyproducts.com/Theftpowders1.html

How about Ultraviolet Thief Detection Powder for $24.95? It is "designed for thief detection and identification for stolen or altered items." The description goes on to explain that the "powder, once touched, remains on fingers and hands, invisible except under UV light." One can also purchase an Ultraviolet Pen for $6.95, which is "ideal for marking currency, personal property, or taking covert notes. The markings remain invisible until examined under," (you guessed it) "an ultraviolet light source." We must not forget Ultraviolet Ink, priced at $29.95, which if you don't have a pen and are really desperate, can be "applied...even with a toothpick." "Applications include re-admission control, coding, inventory control, secret written communications, etc."

The ink fluoresces blue, and if I were you I'd keep it far away from my fluorescent minerals.

Fluorescence and phosphorescence have their spiritual side in *Ask the Rabbi*:

http://www.ohr.org.il/ask/ask034.htm

A concerned Jewish parent writes the Rabbi to ask if it is permitted to put a fluorescent toy that his children received near a light, on the Sabbath, to "charge it," as doing so moves around the toy's electrons. The Rabbi answers that certain Jewish "authorities prohibit turning on an electric light or completing an electrical circut" on the Sabbath, but that "moving around electrons is not prohibited unless it involves a transgression of [the Sabbath], as in the case of an electrical circuit."

My sources confirm that if an incandescent lamp (or ultraviolet lamp) is turned on before the Sabbath begins, you can without guilt expose your toys (or minerals) to the appropriate energy source during the Sabbath. However, if you turn the lamp off during the Sabbath, you should not turn it back on until the Sabbath is over.

Believe it or not, at one time in the past, fluorescence was used to track people in the Mafia involved in the "bootleg booze business." On this site is a story titled *Mafia Fun & Games, The Underbelly of the Mafia*, written by Richard Rhodes, URL:

http://home1.gte.net/rcr/mafia.html

Rhodes describes how a can with fluid that would fluoresce under ultra-violet light, with a jiggle-ball valve, was strapped underneath "Rocky's" car. When "Rocky" went on his illegal night trips, the jiggle-ball "would unseat from time to time and drop some of the fluorescing fluid on the pavement." Rhodes goes on to write that "in theory, we could come along some time after a Mafia car had started out and track it by picking up the fluid droppings with the UV light." As it turned out, Rhodes et al. had a big problem tracking "Rocky" because they didn't realize that "drippings from oil pans contained materials that would fluo-

resce" too. The end of this story will give you a nice chuckle so look it up on the web when you get a chance.

Now we come to a Star Trek science fiction story written by Chris O'Conor. The header is: *Subject: USS SARATOGA: Exit Shakespeare, Enter Verne*, and the URL is:

http://lal.cs.byu.edu/people/bi.../saratoga/199607/19960716-1.html

Here is a paragraph I must quote, and if this gets your interest up, you might want to read the rest of the story.

"'Look at the ceiling,' G'lek prompted, pointing up with his anterior arm. Gradually, the rockface of the tunnel was taking on a blue-violet tinge which seemed to glow of its own volition. 'It's a combined deposit of franklinite and uranium—quite rare. The U-238 is irradiating the naturally fluorescent franklinite, causing the purple to glow.'"

Get it? **Naturally fluorescing franklinite**? Thank goodness this story is fantasy!

Authors of the past wrote about fluorescent minerals too, perhaps more responsibly. Internet browsing under *willemite* turned up two fictional scientist-detectives from the first third of this century who used willemite to solve mysteries. Their names are Craig Kennedy and Don Lamont, and their stories can be found on these two Websites, respectively:

http://www.mtroyal.ab.ca/progra...s/english/gaslight/invisray.htm

http://ebbs.english.vt.edu/vtsf/aw-1.1/0003.html

Mr. Kennedy, in *The Invisible Ray* (1911), uncovers a fiendish plot to rob a wealthy investor, Mr. Haswell, after blinding him with ultraviolet light. The UV tube is in the lab of the villain (Prescott) disguised as part of a bogus machine which is supposed to change copper into gold. Kennedy and his friend (the narrator) are allowed to see this gizmo at work:

"As I looked I could see that Kennedy had been holding concealed in the palm of his hand a bit of what might be a mineral. From my position, I could see the bit of mineral glowing, but Prescott could not.

"'Might I ask,' interrupted Kennedy, 'what that curious greenish or bluish light from the tube is composed of?'

"'That, sir,' replied Prescott slowly, 'is an emanation due to this new force, protodyne, which I use. It is a manifestation of energy, sir, that may run changes not only through the whole gamut of elements, but is capable of transforming the ether itself into matter, matter into life, and life into mind.'"

Then as now, you can sometimes spot a bad guy by the size of his blarney. Once the evil Mr. Prescott is exposed, Kennedy explains:

"'I had carefully satisfied myself that my first suspicions were correct. See that?'

"He held out the little piece of mineral I had already seen in his hand in the alchemist's laboratory.

"'That is a piece of willemite. It has the property of glowing or fluorescing under a certain kind of rays which are themselves invisible to the human eye. Prescott, your story of the transmutation of the elements is very clever, but not more clever than your real story. Let us piece it together. I had already learned from Dr. Burnham how Mr. Haswell was induced by his desire for gain to visit you and how you had most mysteriously predicted his blindness. Now, there is no such thing as telepathy, at least in this case. How then was I to explain it? What could cause such a catastrophe? Why, only those rays invisible to the human eye, but which make this piece of willemite glow—the ultraviolet rays.'

"'These ultra-violet rays...are always present in an electric arc light...They are the friend of man when he uses them in moderation...But they tolerate no familiarity. To let them—particularly the shorter of the rays—enter the eye is to invite trouble. There is no warning sense of discomfort, but from six to eighteen hours after exposure to them the victim experiences violent pains in the eyes and headache. Sight may be seriously impaired, and it may take years to recover. Often prolonged exposure results in blindness, though a moderate exposure acts like a tonic.'

"'Ultra-violet light passes readily through quartz, but is cut off by ordinary glass if it is coated with chromium. Old Mr. Haswell did not wear glasses. Therefore he was subject to the rays — the more so as he is a blond, and I think it has been demonstrated by investigators that blonds are more affected by them than are brunettes.'"

Anyway, you can see what people thought of ultraviolet rays in 1911! Too bad Don Newsome and his UV goggles weren't around for poor old Mr. Haswell.

Our second detective, Don Lamont, uses his willemite specimen for a different purpose. In *The Ark of the Covenant* (circa 1930) he identifies a shipment of bootleg radium for some nervous postal officials. Nowadays we would call in the Hazmat Team, but back then scientists were tough cookies.

"'Just after you left me this morning, I was called up by the Post Office to go down there in a hurry. You know I'm supposed to be all right about explosives ever since I handled that I.W.W. outrage for them in 1925? Well, they had an idea that something of the sort was on again, and they called me in.'

"'When I got down there, I found a group of officials round five black boxes, containing heavy lead cases. I thought their explosives idea was mad, and I pried up the thick lid of one of the cases with a screwdriver. Inside the case was a heap of pinkish salts. I could hardly believe my eyes, for it seemed to me to be one of the radium compounds — either chloride or bromide — with the usual barium impurity in it. I got away from it, quick, and had them shutter all the windows. By good luck I had a tiny scrap of willemite in my pocket, and in the darkness, held above the salts, it gave off a lovely glow. I had no doubt. It was radium—heaps and heaps of it—and worth a fortune!'"

He just happened to have a tiny piece of willemite in his pocket? Excuuuse meee! I thought only we in Franklin did such crazy things!

This next Web site is a MUST for most of you who are serious Franklin collectors, though I warn you it's not for everyone. The site is a spoof of the Franklin mineral community. There is off-color and scurrilous humor which some will find extremely amusing and others will not. This site is *Pearls for Swine*, URL:

http://www.angelfire.com/ny/minehist/humor.html

Pearls for Swine begins, "Last week, a group of mineral dealers specializing in Franklin minerals met to form a trade organization intended to 'promote profit' and 'enhance riches.'...The new trade group is officially called 'The Franklin Ferengi Federation' or 'FFF.' The FFF has adopted as their slogan: 'Buy a rock. Preferably one of the expensive ones.'"

This so-called newsletter goes on to explain the "Rules of Acquisition" that the FFF has adopted. Some of them are: "Once

you have their money...you never give it back;" "Never allow family to stand in the way of opportunity;" "Greed is eternal;" "A mineral dealer without profit is no mineral dealer at all;" "Satisfaction is not guaranteed;" "If they take your first offer, you either asked too little or offered too much;" and "Don't trust anyone who trusts you." There are some wonderful surprises in store for you if you choose to explore this site. For instance, find out who the "ZZMineralogists" are, and check out the warning signs of the dreaded Franklinphilia epidemic. (You, too, might be a Franklinphilic.) Two of the terrible warning signs for this disease are: "You claim you drink a dozen six-packs a day merely to free up beerflats for specimens...and it's the truth!" and "There is more Franklin rock in your basement than there is rock in your basement walls." *Pearls for Swine* is packed full of stuff like this so don't miss it!

To conclude I'd like to quote from a song titled *Ultraviolet (Light My Way)*, music by U2 and words by Bono, URL:

http://personal.eunet.fi/pp/mhalme/uv.htm

Baby baby baby,
Light my way
(Come on)
Baby baby baby
Light my way

Uuuuu...
Ultraviolet (Love)
Ultraviolet (Love)
Ultraviolet (Love)

Happy hunting on the Internet, and don't forget to come up for air, once in a while!

The 41st Annual Franklin-Sterling Gem and Mineral Show

Presented by the Franklin Mineral Museum

Friday, Saturday and Sunday
September 25 - 27, 1998
Hours: Friday, 5:00 P.M. - 9:00 P.M.
Saturday, 9:00 A.M. - 6:00 P.M.
Sunday, 10:00 A.M - 5:00 P.M.
Daily Admission: $4.00 Adults, $2.00 Children.
Two-day tickets:
(Sat. & Sun.) $7.00 Adults, $3.00 Children.
Tickets include FREE admission to
The Franklin Mineral Museum exhibits

Location:
The Franklin School
Washington Avenue
Franklin, New Jersey
(Just off route 23, opposite MacDonald's)
Featuring:
Unique displays of local minerals
Top dealers selling minerals, jewelry, and gems
Large fluorescent-mineral display
Free parking
Cafeteria

For Show information contact
The Franklin Mineral Museum
Evans St., Box 54
Franklin NJ 07461
Phone: (973) 827-3481

During the show, be sure to visit...

THE POND Swap-and-Sell area on the Franklin School grounds all day Saturday and Sunday. THE POND is sponsored by the Franklin-Ogdensburg Mineralogical Society, Inc. For further information about THE POND contact: Chester Lemanski Jr., Phone (609) 893-7366, after 8:00 P.M. please.

After the show on Saturday night...

Attend the F.O.M.S. banquet, held at the Ogdensburg Firehouse on Route 517 (next to the ball field). Socializing begins at 6:30 P.M. and the Italian buffet dinner at 7:00 P.M.
Dress is informal and the atmosphere likewise.
After dinner there will be a lecture by John S. White:
Ramblings about starting the "Mineralogical Record" and some observations about curating.
This will be followed by an auction of mineral specimens and memorabilia.
Tickets are $12.50 and may be reserved by calling Steve Misiur at (973) 209-7212 or John Cianciulli at (973) 827-6671

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Unusual Graphite Crystals

FROM THE LIME CREST QUARRY, SPARTA, NEW JERSEY

Microcrystals of graphite occurring in the Franklin Marble at the Lime Crest quarry, Sparta, New Jersey, exhibit a variety of unusual and interesting morphologies that range from sharp hexagonal crystals to nearly spherical aggregates.

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Because of its extreme softness and flexibility, the common mineral graphite is not often represented in collections by well-crystallized specimens. However, excellent microcrystals can be successfully collected and preserved and can make good micromounts. Some of the best-formed graphite crystals are known to occur up to a few millimeters across in calcite marbles at several localities, including the following:

- Crestmore quarry, Riverside, California (Jaszczak 1991)
- Gouverneur Talc Company No. 4 mine, Harrisville, New York (Chamberlain et al. 1997; Gerdes and Valley 1994)
- Sterling mine, Ogdensburg, New Jersey (Palache 1941; Jaszczak 1994; Dunn 1995)
- Limberg quarry, Pargas, Finland (Jaszczak 1996)

The Franklin Marble at the Lime Crest quarry near Sparta, New Jersey, is also host to graphite crystals of exceptional quality. Besides well-formed, normal-shaped crystals, some very unusual graphite morphologies also can be found at Lime Crest. The geology and mineralogy of Lime Crest have been briefly described by Widmer (1962), Metsger (1977), and Tracy (1991).

Bulk samples of graphite-bearing marble were collected from a graphite-rich zone on the lower level of the quarry by John Rakovan on 29 April 1991 and were generously supplied to the author for examination. Bulk material was subsequently trimmed and examined with an optical stereomicroscope. A dilute solution of hydrochloric acid (HCl) was used to partially etch away the calcite in most specimens in order to expose the enclosed, protected graphite crystals. Although graphite crystals in the marble are known to exceed 1 cm across, the best crystals are typically less than 2 mm across. Associated minerals include crystals of phlogopite, pyrite, pyrrhotite, molybdenite, arsenopyrite, sphalerite, and a few unidentified species. The identities of the pyrrhotite, pyrite, molybdenite, and arsenopyrite were confirmed by the use of energy dispersive spectroscopy* (EDS) capabilities of a scanning electron microscope (SEM) at Michigan Technological University's Institute of Materials Processing. Similar material from Lime Crest was subsequently given to the author by Scott Stepanski. These samples contained graphite crystals in marble with morphologies very similar to those obtained from Rakovan but associated with a somewhat different assemblage of minerals, which appears (but has not been confirmed) to include serpentine, zircon, muscovite, apatite, and diopside, in addition to those minerals already mentioned.

Material similar to that described here should be readily available because quarrying operations continue and organized collecting trips have been permitted. Such material simply requires careful examination to find good crystals. One hand-sized sample can yield many micromounts.

Graphite Morphology

The crystal structure of graphite (Freise 1962) is that of a staggered stacking of sheets of carbon atoms (fig. 1). Within the sheets, the carbon atoms are very strongly bonded together in a two-dimensional honeycomb arrangement, with a C-C bond length of only 1.42Å (1Å = 10^{-8} cm), which is even clos-

Dr. John A. Jaszczak is an associate professor in the Department of Physics at Michigan Technological University, where he conducts research about crystals using computer simulation. He is also adjunct curator of the A. E. Seaman Mineral Museum.

*EDS is a microanalytical tool that analyzes the characteristic X-rays emitted by atoms in the sample when irradiated by an electron beam of suitable energy (see, for example, England 1991).

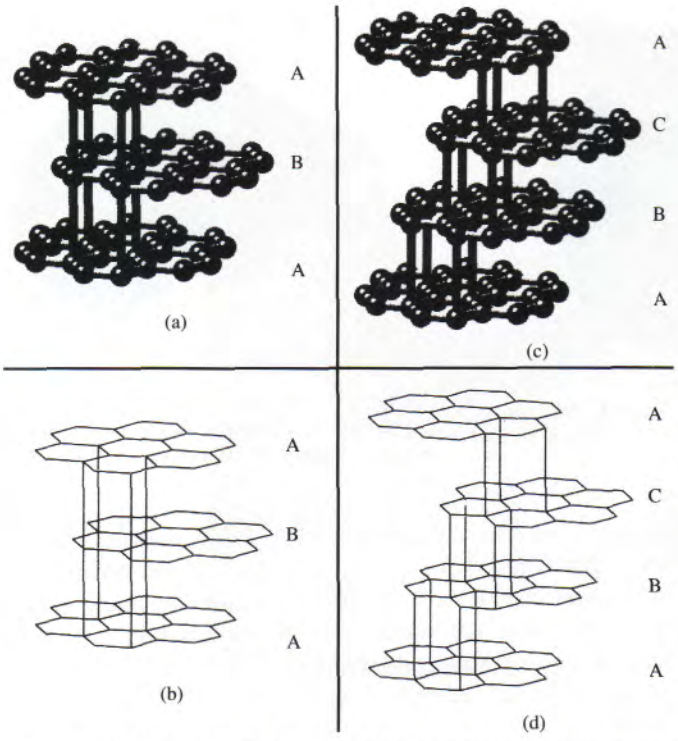


Figure 1. **Idealized "ball and stick" and "wireframe" crystal structures of graphite. (a, b) Hexagonal graphite showing part of the . . .ABABAB. . . stacking sequence. (c, d) Rhombohedral graphite showing part of the . . .ABCABC. . . stacking sequence. Note that the two-dimensional sheets of carbon atoms bonded in a honeycomb pattern and are staggered (displaced normal to the *c*-axis relative to each other) in different ways in the two structures. The vertical "bonds" are an aid to the eye to emphasize the staggering of the sheets. The *c*-axis of the graphite is perpendicular to the sheets, parallel to the vertical "bonds."**

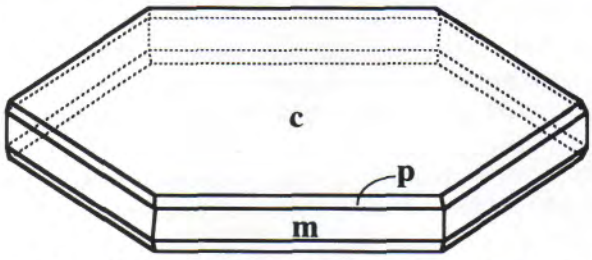


Figure 2. **Idealized graphite crystal showing the basal pinacoid *c*{0001}, the first-order prism *m*{10 $\bar{1}$0}, and the first-order dipyramid *p*{10 $\bar{1}$1}.**

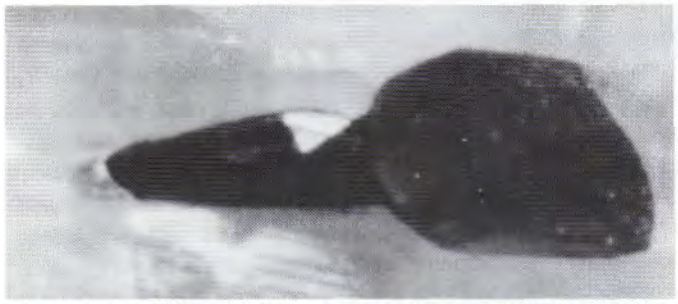


Figure 3. **A well-formed, lustrous graphite crystal (0.6 mm) showing part of one of the typical basal pinacoid faces and oriented to emphasize some of the several modifying faces. The crystal is partially embedded in white calcite and associated with an orange-brown phlogopite crystal. Author's specimen #1556h and photo.**

Figure 4. **An unusually thick graphite crystal with uncommon faces, on a basal pinacoid face of a more typical, striated, tabular graphite crystal (1.3 mm). Author's specimen #1556i and photo.**

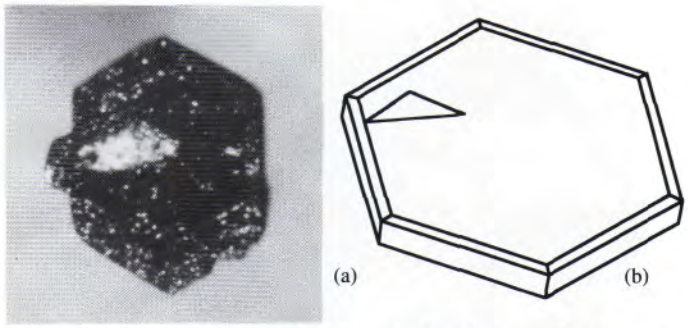


Figure 5. **(a) Graphite crystal (0.6 mm) showing a smaller growth twin (brightly reflecting), twinned according to graphite's most common twin law: by reflection and contact on a {11 $\bar{2}$1} plane. (b) Idealized graphite crystal illustrating the same twin law.**

er than the C-C bond length in diamond. In contrast, the carbon sheets are separated from each other by a relatively large distance, approximately 3.40Å, and are therefore only weakly bonded to each other. This results in graphite's flexibility and softness. Both hexagonal and rhombohedral types (called *polytypes*) of graphite are known, depending on how the sheets are staggered in their stacking sequence. The most common and most stable graphite polytype is the hexagonal, or 2H, polytype, which has its layers staggered in an . . .ABABAB. . . sequence (as in fig. 1). The rhombohedral, or 3R, polytype has its layers staggered in an . . .ABCABC. . . sequence (Laves and Baskin 1956). The rhombohedral polytype is only known as a mixture in predominantly hexagonal crystals and can be induced to form by grinding hexagonal graphite.

As a result of the crystal structure, the symmetry, and the nature of the bonding, the {0001} basal pinacoid faces (*c*-faces) of graphite crystals tend to be the lowest energy surfaces, and growth of the crystals is typically fastest at the edges of the carbon sheets. These factors lead to tabular hexagonal plates being the typical morphology of graphite crystals (Jaszczak 1995). By far the dominant crystal form for graphite at Lime Crest and elsewhere is the basal pinacoid (figs. 2–7).

The *c*-faces of the graphite crystals from most localities are typically highly striated (fig. 4) due to the crystals being mechanically bent and deformed by the various stresses and forces on and in the host rock. The bending of the crystals induces so-called mechanical twinning that is evidenced by the

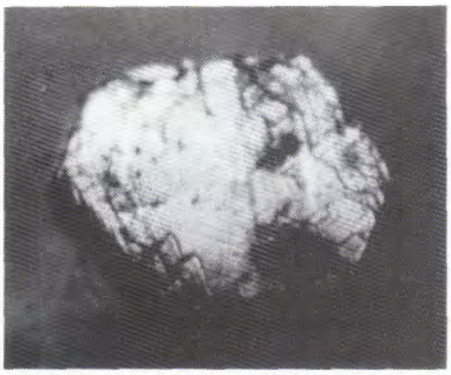


Figure 6. **Graphite crystal (0.8 mm) showing spiral steps on the *c*-face. Author's specimen #1626 and photo.**

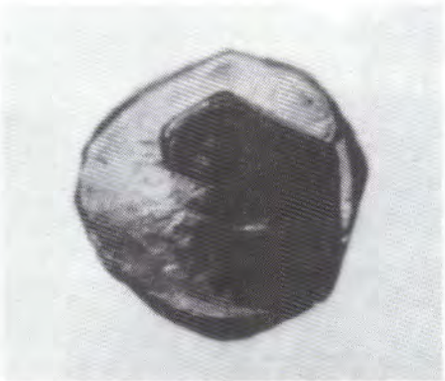


Figure 7. **Graphite crystal (0.7 mm) "macrospiral." Author's specimen #1626 and photo.**

Figure 8. **A 1.1–mm crystal of molybdenite in partially etched calcite with minor pyrite. Author's specimen #1556e and photo.**

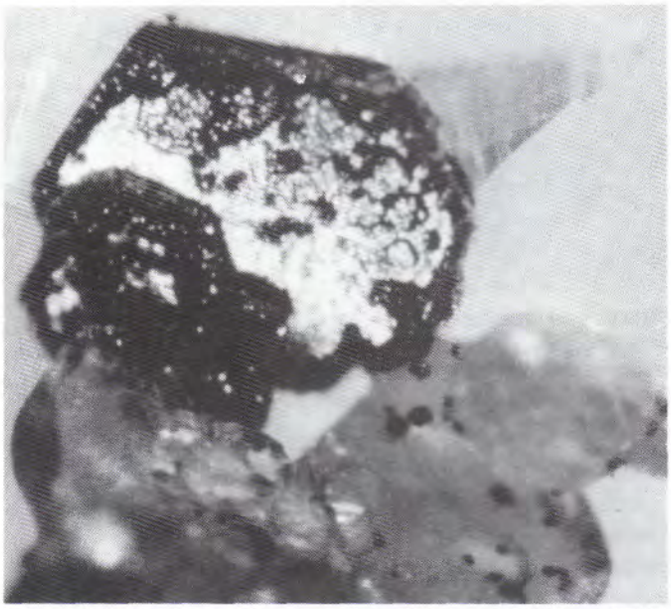


Figure 9. **A well-formed hexagonal graphite crystal (1.2 mm) with a thick secondary overgrowth of graphite. The crystal is on partially etched calcite and is associated with orange phlogopite that is included with tiny graphite spheres, and an unidentified pale green mineral at the mid-lower right. Author's specimen #1556b and photo.**

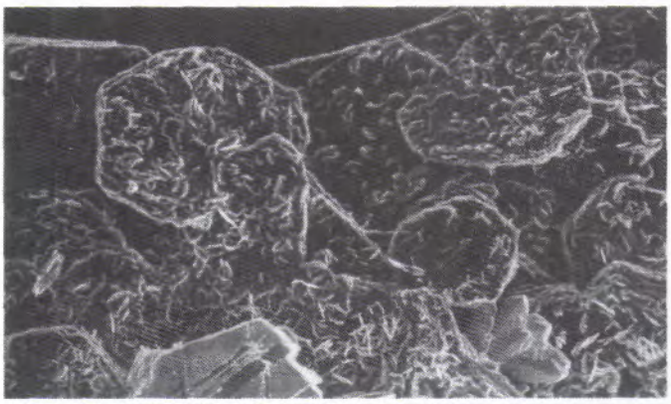


Figure 10. **SEM photo of hexagonal graphite crystals (to approximately 0.2 mm) showing a secondary overgrowth of graphite crystals as minute plates. Associated are a spray of arsenopyrite crystals at the lower right and a plate of pyrrhotite at the lower left. SEM photo by Ruth I. Kramer. Author's specimen #1556.**

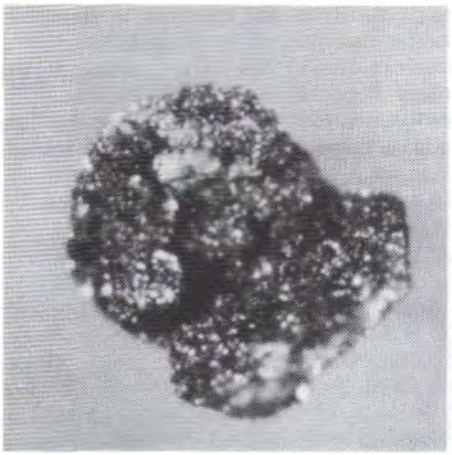
striations on *c*-faces (Palache 1941). Small graphite crystals from Lime Crest, however, can be found with no striations on the *c*-faces, indicating their rare escape from the many factors that could have deformed them. A few crystals have been observed that show growth twins as small triangular crystals protruding from the *c*-faces, as shown in figure 5 (Jaszczak 1991).

A few graphite crystals from Lime Crest have been found that display spiral growth steps on the *c*-faces. The spirals can usually only be observed by orienting the crystals to reflect the light "just right" to make the steps visible and are quite difficult to photograph (fig. 6). Such growth spirals are thought to emerge from defects in the crystal structure called *screw dislocations*, which play an important role in the growth of crystals (Weiner and Hager 1987). A crystal exhibiting a different sort of spiral is shown in figure 7. Rather than just having spiral steps on the *c*-faces, this entire crystal seems to be coiled as a macroscopic spiral, similar to a few turns of a spiral staircase. The overall appearance suggests that the growth of such "macrospirals" also might be related to growth twinning (compare fig. 5).

Occasionally graphite crystals show well-formed prism faces. The prism faces are often striated parallel to the *c*-faces, not because of mechanical twinning, but because of the graphite's layered crystal structure. Only rarely are other crystal forms observed (which have not been measured) as well-formed, lustrous crystal faces as shown in figures 3 and 4.

Molybdenite also occurs in the marble at Lime Crest as lustrous, platy crystals (fig. 8). Although it is much less common than graphite, it can be easily confused with graphite. However, graphite and molybdenite crystals submerged in a shallow bath of water and viewed with a microscope can be readily distinguished from one another by the difference in their color. Compared to graphite, molybdenite shows a distinctly bluish hue. A few graphite crystals have been found with molybdenite overgrown on graphite's *c*-faces. Although both the graphite and the molybdenite have parallel *c*-axes in these samples, an epitactic relationship has not yet been confirmed.

An interesting set of crystals that occur at Lime Crest shows secondary graphite overgrowths on earlier-formed, larger graphite crystals (figs. 9–11). Similar graphite overgrowths



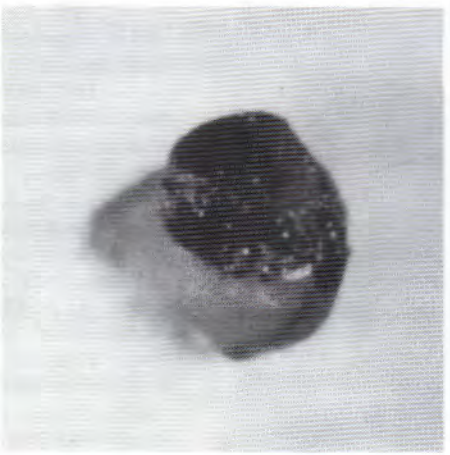


Figure 11 (far left). **A 1–mm graphite crystal (inclined) thickly overgrown by a second generation of graphite to such an extent that spherical clusters appear. Author's specimen #1556g and photo.**

Figure 12 (left). **An aggregate of graphite crystals (0.4 mm) showing a pseudocubic habit, with orange phlogopite on calcite. Author's specimen #1556d and photo.**

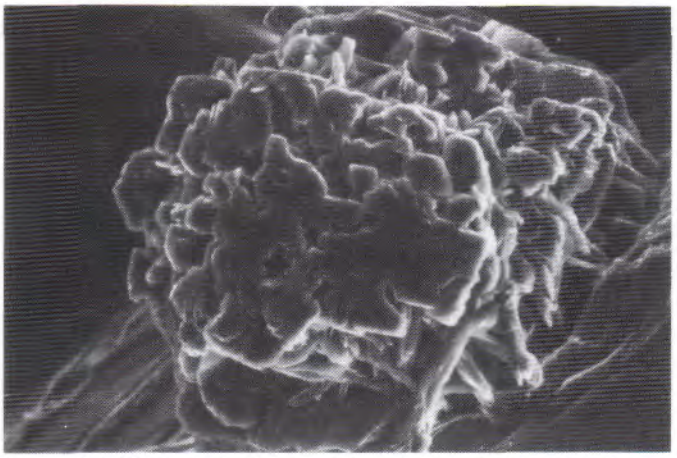


Figure 13. **SEM photo of a graphite pseudocube (nearly 0.1 mm) on phlogopite, partially etched from calcite. Individual graphite crystals in the aggregate seem to be partially aligned. SEM photo by Ruth I. Kramer. Author's specimen #1556.**

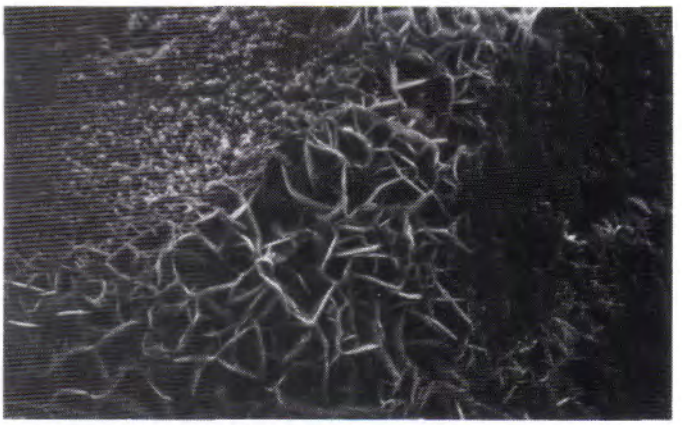


Figure 14. **SEM photo of a somewhat larger graphite pseudocube than shown in figure 13, viewed such that two of the cube sides are at the top left and at the right. In the area of the cube corner at the lower left, the individual graphite flakes appear to be randomly oriented. SEM photo by Ruth I. Kramer. Author's specimen #1556.**

from Precambrian Grenville Series marble at Eagle Lake, Essex County, New York, have been described by Weis (1980). Such overgrowths also have been noted by the author in specimens from the Sterling mine, Ogdensburg, New Jersey; the Treadway quarry, Port Henry, New York; the Limberg quarry, Pargas, Finland; road cuts in Dresden and Putnam, New York; and a road cut south of Gooderham, Ontario, Canada. It is interesting to note that graphite also occurs at all of these localities as spherical aggregates in sizes ranging from microns in diameter at Pargas, up to 1 cm in diameter at the Sterling mine. This correlation suggests a possible relationship between the growth mechanisms, growth conditions, and growth sequence of the graphite spheres and the graphite overgrowths.

A whole spectrum of varying degrees of graphite overgrowth on earlier-formed graphite can be identified in specimens from Lime Crest. At one end of the spectrum are the lustrous crystals with no overgrowth whatsoever. On others, overgrowth is primarily localized on the crystal edges leaving areas of lustrous, earlier-formed graphite still visible (fig. 9). This suggests that either the secondary graphite growth was nucleated by the edges of the earlier-generation graphite, or perhaps the secondary growth took place rapidly compared to the diffusion of carbon to the crystal surface. On still other graphite crystals the whole surface is overgrown by second-generation graphite (fig. 10). At the opposite end of the spectrum are particularly thick overgrowths that seem to produce globular aggregates (fig. 11), similar to overgrowths observed by Weis. In the partially coated crystals the secondary graphite shows some degree of order in its alignment with the substrate crystal; the thickly coated crystals appear to have more randomly oriented overgrowths. The preservation of the delicate secondary crystallites and the undistorted shapes of the first-generation graphite crystals implies that the metamorphic processes that commonly deform rock and distort or destroy the enclosed graphite crystals must have been greatly diminished by the time the secondary graphite crystals formed.

Some of the most unusual graphites observed from Lime Crest are pseudocubic aggregates of crystals that reach up to 0.5 mm across and have a rather velvety luster (figs. 12–14). In shape they are reminiscent of small balls of putty that have been dropped several times on a flat surface, yielding flattened areas separated by rounded corners and edges. It appears, however, that the flattened areas of these graphite aggregates form approximately 90° angles with each other, as would cube faces. The aggregates are still composed of flat crystal flakes (figs. 13 and 14), which shows that the dominant growth mech-

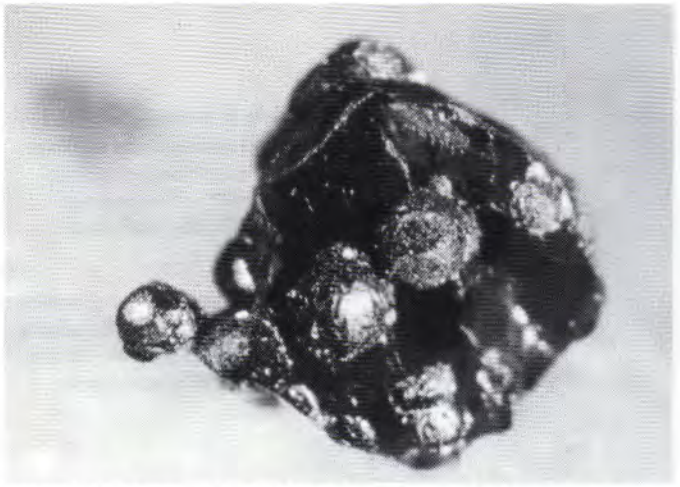


Figure 15. **Cluster of graphite spheres (up to 0.4 mm) on orange-brown phlogopite, partially etched from calcite. Author's specimen #1556c and photo.**

anism is still fastest at the edges of the graphite sheets. The cause of the overall pseudocubic morphology could be pseudomorphism after some other mineral, but this has not been verified.

Finally, distinctly spherical aggregates of graphite occur up to 0.5 mm in diameter and are commonly clustered around phlogopite crystals (fig. 15). It will be interesting to further investigate if these spheres are related to the pseudocubic graphite aggregates or possibly to spherical graphite that is known to occur at a number of other localities, such as Sterling Hill and Franklin, New Jersey; Chilson Hill, New York; Gooderham, Ontario; and others (Lemanski 1991; Dunn 1995; Jaszczak 1995 and unpublished).

ACKNOWLEDGMENTS

I am grateful to John Rakovan and Scott Stepanski for collecting and providing bulk samples for this study. The Limestone Products Corporation of America is gratefully acknowledged for allowing the collection of mineral samples. I also thank Pete J. Dunn, who supplied some useful references, and Michael A. Hawkins, who supplied material from the Treadway quarry for study. Many thanks go to Ruth I. Kramer and the Institute of Materials Processing at Michigan Technological University for SEM time, expertise, and photographs.

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Update on the MVT Pb/Zn Vein at the Lime Crest Quarry

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Observations made during the May 19, 1996 FOMS field trip to the Lime Crest quarry indicate that there is no downdip extension of the Mississippi Valley Type (MVT) lead/zinc mineral assemblage encountered in 1992. Exposure of the mineral-bearing fault zone downdip through ongoing mining in the bench below shows that although spaces filled with secondary minerals of hydrothermal origin are still abundant, they are now dominated by paragenetically early carbonates. Later-deposited barite and fluorite are common, but far less abundant and more localized than in the same zone in the bench above; these two minerals occur in massive or vuggy form and fill spaces in the centers of veins. Pyrite and sphalerite occur sporadically in the new exposures and are never more than a minor constituent. Galena, one of the latest minerals in the paragenetic sequence, is rare, and mostly limited to coatings on sphalerite.

When the broken rock from the intensely mineralized site of 1992 (which elsewhere might have been called an "ore shoot") was removed, a small knoll-like exposure remained in which the Zn/Pb-mineral-bearing structures were exposed. Here the structure was not a simple planar feature but a zone of subparallel or anastomosing veins with numerous lenticular cavities elongated perpendicular to strike/dip. Most of the individual cavities had maximum thicknesses of less than a foot, and maximum length and breadth of one to two feet. These cavities were generally irregular due to multiple generations of brecciation and mineral deposition, with their fillings dominated by carbonates, and with late-stage barite and yellow sphalerite concentrated toward the centers of the veins. Vugs were generally encrusted with abundant individual sphalerite crytals, all corroded and malformed. At the south end of the outcrop coarsely crystalline pyrite, similar to that seen in the May, 1992 exposure, was the principle vug-filling mineral.

Since this entire area was never surveyed it is difficult to determine the spatial relationship of the vuggy exposure described above to the various mineral assemblages seen in blasted rock. The exposure seen in May, 1996 suggests that another exposure seen between 1993 and 1995 was the downdip extension of the massive MVT assemblage encountered in 1992. If this assumption is correct, then the richly mineralized "ore shoot" was a pod highly elongated parallel to strike, relatively narrow in breadth and with a very low plunge. The shape of this "ore shoot" is a flat elongated ellipse with feathered margins.

Localized mineral assemblages like this "ore shoot" are a common feature of secondary-mineral deposition in irregular conduits like faults. "Ore shoots" in a fault tend to occur in dilated portions of the fault zone, which are sites of focused fluid flow. These dilations typically occur at an irregularity in the fault plane such as a warp, roll, splay, or lithologic contact. A more comprehensive treatment of this subject is provided by Peters (1993).

The restriction of most of the Lime Crest quarry's MVT assemblage to localized portions of the fault zone is consistent with what is known, or at least suspected, of 1) the known occurrence of sphalerite, barite, and other epigenetic minerals elswhere in in this structure, 2) the lack of any record of extraordinary MVT mineralization during quarrying updip from the 1992 occurrence, and 3) the barren exposures of the mineral-bearing zone in the quarry walls both north and south of the "ore shoot."

This mineral-bearing fault at the Lime Crest quarry is parallel to and and apparently part of a regional structural trend. The Precambrian highlands and the adjacent Paleozoic rocks are cut by an array of subparallel thrust faults of Alleghanyian age. This broad zone has been termed the "emergent thrust terrane" by Herman and Monteverde (1989). The extent of the fault along which the MVT assemblage is found is unknown, but the fault is easily traceable due to bleaching for for many tens of yards in either direction beyond the site of the "ore shoot." Toward the north end of the quarry the fault zone is obscured by by a ramp-and-road complex, while toward the south end the exposures are older, more weathered, and accessible with difficulty if at all. While practical considerations have prevented mapping of the structure along strike, it is likely that this fault extends throughout the quarry and beyond.

There is good evidence that the spectacular MVT specimens recovered in 1992 were not the first secondary minerals to be collected from this fault zone, as in prior years related assemblages were recovered from large boulders along the base of the east wall of the main level of the quarry. One such assemblage consisted of light-colored vuggy secondary dolomite containing

small lenses of quartz. Vugs in the dolomite and quartz contained abundant sphalerite as well as rutile and muscovite, and the assemblage bore a distinct resemblance to the better-known Buckwheat dolomite from Franklin. The author, who has collected widely at the Lime Crest quarry for many years, has never seen any such vein assemblages in rock that was obviously derived from the bench immediately overlooking the main level of the quarry; this suggests that the vuggy material collected prior to 1992 was derived from the upper benches where the upward extension of the MVT-assemblage-bearing fault may be projected. The sporadic and limited availability of earlier MVT finds in the quarry suggests that their sources were spatially limited, as was the richer 1992 "ore shoot," but the close similarities of these finds suggest they are all related to the same fault zone.

It is unknown what future excavation of this fault zone at the Lime Crest quarry will produce. The "ore shoot" of 1992 may have been unique in its scale, or something bigger and better may lie hidden just beyond current exposures. The most likely scenario is that ongoing mining will sporadically uncover small, isolated pods containing assemblages similar to those already seen. It wil be gratifying if future exposures permit additional collecting, and allow detailed mapping of this interesting fault zone.

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Geologist and author Warren Cummings exercises his back, arms, and discriminating eye at the Lime Crest quarry, Oct. 19, 1997. Steve Misiur photo.

Lime Crest quarry, from quarry floor looking NE. Hand-trucks in foreground. Oct. 19, 1997. Steve Misiur photo.

An Apatite-Diopside-Calcite Calc-Silicate Assemblage from the Losee Metamorphic Suite

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Interesting material sometimes turns up where it is least expected. This was the case in late May of 1996 when apatite and diopside crystals in coarse-grained salmon-colored calcite were found in a massive exposure of Losee metamorphic suite rocks (Drake, 1984). This exposure is in a commercial excavation and so the details of the locality must remain unspecified. The occurrence is reported here because it is in the Franklin-Sterling Hill region. Before a lot of breath is wasted on groans over lack of accessibility, let me add that the amount of material now available is minimal, and existing exposures are deeply weathered and/or buried.

The zone producing the well-crystallized minerals of interest to collectors is a layer of calcite and calc-silicates approximately 3 feet thick, conformable to and enclosed within a massive section of typical layered Losee rocks. Traceable strike length at the time of the find was in excess of 50 yards but the layer probably extends for a significantly greater distance. Within the layer calcite occurs as discontinuous, often iregular lenses, pods, and veins. Most of the calcite masses are conformable or semiconformable to the Losee rocks but some are distinctly crosscutting. One example was seen of what appeared to be a calcite dike extending with marked angularity into the silicate country rock; this dike is reminiscent of the marble dike at Mounts Adam and Eve, Orange County, New York, pictured by Offield (1967, fig. 3) and Kearns (1977, fig. 13). Elsewhere in the layer calcite is a relatively minor mineral interstitial to coarse-grained diopside. In the material which could be examined, invidual masses of calcite were as much as eight inches thick. Although calcite is not continuously present in the calc-silicate zone it is abundant, and may be a once continuous layer which is now fragmented and boudinaged.

At the margins of the calcite pods there is typically a calc-silicate reaction zone which may include diopside, apatite, mica, and quartz. Pyrite and actinolite are widespread but minor components. Diopside and apatite occur as abundant euhedral crystals, occasionally over three inches in length, which extend into the calcite from the adjacent massive calc-silicates or are completely enclosed in calcite. Anhedral to subhedral crystals of mica and quartz were also noted, though quartz was only found at the calcite/calc-silicate contact.

Beneath the diopside-apatite border of the calcite layer, scapolite is concentrated in a layer ranging from over an inch to a foot in thickness. Scapolite also occurs with diopside but away from the calcite/calc-silicate contact. No euhedral scapolite crystals were seen. The bulk of the scapolite has replaced Losee gneiss; in some examples the banding and primary mineral textures of the gneiss are clearly visible, while in others replacement is nearly complete, resulting in massive, fine-grained, yellowish-green scapolite with a sugary texture.

Mineralogical and textural evidence indicate that the calcite/calc-silicate assemblage is a product of Grenville-age metamorphism. The calc-silicates are similar in many respects to those seen at contacts between the Franklin Marble and various siliceous lithologies at the Lime Crest quarry and elsewhere. Conversely, the mineralogy and texture of this find are very much unlike those of any Paleozoic-age fracture filling the author has seen.

The protolith of the calcite/calc-silicate assemblage is, like so many of the Precambrian features of the region, enigmatic. The Losee metamorphic suite, within which the calcite/calc-silicate assemblage occurs as a conformable layer, is interpreted to be a pile of containental volcanics, mostly dacite and tonalite with lesser basalt. Some phases may be the intrusive partial melting products of the volcanics (Puffer and Volkert, 1991). The entire suite is thought to be the basement upon which the metasedimentary sequence which includes the Franklin Marble was deposited (Offield, 1967; Drake, 1984; Volkert, 1993).

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Pete J. Dunn's Monograph: Reviews of *Franklin and Sterling Hill: the world's most magnificent mineral deposits.*

The monograph consists of Parts One through Five, a First Supplement, and a Second Supplement totaling 978 pages in all. Parts One through Five are $30 each and the First and Second Supplements are $25 each, or $200 for all seven volumes. The monograph is available through the Franklin-Ogdensburg Mineralogical Society, Inc. If ordered by mail, each volume carries an additional postage and handling charge of $5.00 each. If the monograph is ordered as a seven-volume unit, the postage and handling charge is $15.00 altogether. Checks should be made payable to F.O.M.S. and mailed to: John Cianciulli, F.O.M.S., 60 Alpine Road, Sussex NJ 07461 or Steven Misiur, F.O.M.S., 309 Fernwood Terrace, Linden NJ 07036.

A detailed prospectus of the monograph is on pages 30-31 of this *Picking Table.*

Review by Wendell E. Wilson, from *The Mineralogical Record*, Vol. 27, No. 3, p. 226 (May/June 1996). Reprinted with permission of the author.

Franklin and Sterling Hill, the type localities for no less than 69 mineral species, rank unquestionably among the world's most extraordinary and fascinating mineralized areas. Collectors and mineralogists have long relied upon Charles Palache's 1935 monograph, *The Minerals of Franklin and Sterling Hill*, as the definitive overview. But a tremendous amount of research has taken place since 1935, not only in the description of new species but in the refinement of knowledge about the minerals known in Palache's time. Consequently a new review of the deposits and their mineralogy has long been overdue. Considering that Pete Dunn has been personally responsible for describing and naming over a *third* of the 69 type species, and is the leading expert on the localities, no one else was about to attempt the huge task.

Happily, after 22 years of work on the project, the great day is finally here! Dunn has published a massive two-volume compendium which (at 755 pages) dwarfs Palache's 135-page monograph.

The first two parts cover primarily the geology and history of iron and zinc mining in the area, abundantly illustrated by maps, diagrams, drawings and historical photos. Details on beneficiation techniques and local culture (i.e. mineral collecting) are dealt with, plus a general review of geochemical aspects, the famous fluorescence of many of the species, and the nature of typical assemblages. Also included is a thorough bibliography containing over 1,300 entires, nearly five times as many as listed by Palache.

The other three parts deal primarily with the descriptive mineralogy of the 348 Franklin and Sterling Hill species, illustrated by 300 crystal drawings and 420 black-and-white photos. The history of each species is reviewed, followed by a careful physical description and a detailed review of the composition (often complex, problematical, or unique to the district). Then the occurrence and paragenesis are discussed, including the various assemblages and how they differ. With the eye of a collector as well as a mineralogist, the author meticulously describes the quality of specimens of each species from different zones and occurrences, and shows many photographs rich in detail; some of the scanning electron micrographs, in particular, are quite stunning in terms of crystal architecture.

The author has chosen to discuss the species not in alphabetical order but in Dana order. Because of the fascinating chemical and structural relationships of the chemical and structural relationships of the minerals, this arrangement is instructive by juxtaposition. But it does mean that readers will need to consult the index constantly in order to locate particular species.

The work concludes with appendices on obsolete nomenclatural terms, local mining terminology, a reprint of a Sterling Mine supplement from 1966, a subject index, a mineral index, and front matter for rebinding the five parts as two volumes.

The two major deficiencies of this work are (1) the lack of any color specimen photography, especially considering the diagnostic value of fluorescence at these deposits, and (2) the binding, which is clearly intended to be temporary until such time as the purchaser can have the volumes hardbound at his own expense. The paper quality is good, but the pages are "perfect bound" (glued along the spine rather than sewn in folded "signatures"). These shortcomings are the result of financial constraints on the author, who produced the books via "desk-top publishing." The binding deficiency is at least in part correctable by the buyer. But we can only lament the omission of color work in an otherwise superb and complete monograph, a sentiment no doubt shared by the author himself.

Franklin and Sterling Hill is a masterwork which surely ranks among the finest topographical mineralogies ever published. It merits a place of honor in every mineralogical library, and in a good custom binding for permanent preservation. The author has earned the gratitude and appreciation of the entire mineralogical community for his decades of research on Franklin and Steling Hill, and for making this work available to the public.

Review by Hans Durstling, from *The Canadian Mineralogist*, Vol. 35, page 1354 (1997). Reprinted with permission.

In this imperfect world, it would be difficult to find another person who can match the massive expertise with which Pete Dunn relates the mineralogy and history of the famous Franklin and Sterling Hill zinc ore deposits of New Jersey. In his preface, Dunn says, "A vast amount of scientific work remains to be done, but this seems like a reasonable time to punctuate my research efforts ... pause, and share most of this magnificent story. This effort is an attempt to set out what happened here in an expository manner."

And that is precisely what Dunn does. It is in fact a story. It runs naturally and smoothly from early developments through a consideration of the mining industry in its flourishing period, to detailed consideration of individual minerals, both the common ones and the rare. Approximately ten per cent of all known mineral species are found here, a claim which, says Dunn, cannot be made of any other locality on earth. More mineral species have been described from this locality for the first time than from any other. About ten per cent of the minerals found in these deposits are unique.

Dunn's exhaustive portrait of these famous mineral deposits is a twenty-year labor of love, self-published in five large volumes, on typing paper, 8 1/2 by 11 inches. Each volume totals *ca.* 160 pages. But do not let that paper detail lead to images of kitchen-table work, of fuzzy mimeographed pamphlets. On the contrary. Typography is crisp, clear, and eminently readable. Extensive and excellently reproduced black and white photographs and drawings, including historical photos of miners and mining facilities, mineral photos, detailed drawings of crystal morphology, and photomicrographs that are stunning, even in black and white, document every aspect of the occurrence. Here, the absence of color is no liability. Good color mineral photographs require specialist mineral photographers; color reproductions, good or bad, are prohibitively costly for a self-published work, and if to save cost, only a few were included, these few, by calling attention to themselves, would detract from the work's overall unity of appearance.

Volume one opens with an extensive bibliography, and follows with a history of Franklin and Sterling Hill mining. Volume two continues this history and moves on to consider regional and local geology, the geology of the ore deposits, and mineral assemblages. Volumes three, four, and five are devoted to detailed mineralogy, beginning with silicates and ending with a chapter on obscure and unnamed minerals.

This compendium is both comprehensive and highly readable. It will be of lasting value to mineralogists and other specialists, including industrial historians.

Review by Si & Ann Frazier, from *Lapidary Journal*, Vol. 51, No. 6 pp. 109-10 (Sept. 1997). Reprinted with permission of the author.

This is a wonderful new book that is unique in many ways, and is, hopefully, a harbinger of a new era in publishing significant books of high-quality content that lack mass-market interest. This book is very important to the world that loves interesting minerals or is interested in the last three centuries or so of America's industrial progress. The zinc deposits of Franklin and Sterling Hill in northwest New Jersey have been of extreme importance, not just as a cornucopia of extremely pure zinc ore in huge quantities, but as the source of the majority of the fluorescent minerals seen in public and private mineral displays. The importance of these deposits to the scientific world is incalculable. More than 340 mineral species have been described from the two localities, which are only about 5 km apart, and which undoubtedly are the result of the same set of unusual geological conditions which have not all been unraveled. About 35 of these species are known from nowhere else in the world and the importance of the deposits to the science of mineralogy is evidenced by the fact that 69 mineral species were first described from there.

Dr. Dunn is probably the world's leading authority on the minerals from this district. He has been actively researching the minerals from Franklin and Sterling for more than two decades and has accumulated a prodigious amount of information. He has also personally described and named more than one-third of those new species. The last time an attempt was made by a great scholar to summarize the important information on this unique deposit was in 1935 by the late Professor Charles Palache, the great Harvard authority. Palache's work was only 135 pages and was published by the Government (U.S.G.S. Professional Paper 180); whereas Dunn's new work dwarfs it at 755 pages (978 with supplements). In addition, Dunn's work has far, far more illustrations.

Dunn has managed to make this important work available by combining publishing innovations from both the 21st and the 18th centuries. By issuing it in paper along with printers instructions for binding, he emulates printers of fine books in the 18th century. This offers distinct advantages over having to put up with the often shoddy bindings favored by modern publishers.

The complete set is a pretty piece of change, but the information contained within it is without equal. The first two volumes deal with the history and description of the deposits, their geochemistry, and mineral assemblages. It includes a bibliography of over 1,300 references. Dunn recommends that these two volumes be bound as one, while the last three volumes, which contain the detailed descriptions of 340 minerals occurring at the two localities, be bound in another.

This is a book that belongs in school, public, and club libraries, not just for its mineralogical content, but also for its historical content. We urge readers to bring it to the attention of their local librarians. Dedicated mineral collectors do not need to be told that they need this book! However, only 500 copies were published, so buying decision should be made quickly.

Announcing Dr. Pete J. Dunn's Monograph

A new monograph, entitled *Franklin and Sterling Hill, New Jersey: the world's most magnificent mineral deposits*, by Pete J. Dunn, began publication on May 20, 1995. It consists of Parts One through Five, a First Supplement, and a Second Supplement. Each is an 8½ x11 inch softcover book; numerous illustrations include black-and-white photographs, line drawings, tables and graphs of chemical data, maps, etc.

Part One contains xiii pages of front matter and 160 pages of text, and includes 23 black-and-white illustrations and 23 line drawings. It consists of a 66-page bibliography; Chapter 1, *Introduction*; Chapter 2, *Historical perspective of local iron mining and processing*; and Chapter 3, *Historical perspective of local zinc mining*.

Part Two contains xvi pages of front matter and 160 pages of text, and includes 133 illustrations. It consists of Chapter 4, *Quarries in the Frankin Marble*; Chapter 5, *Major zinc-mining companies in the Franklin-Sterling Hill area*; Chapter 6, *Beneficiation of the zinc ores*; Chapter 7, *Cultural aspects of Franklin and Sterling Hill*; Chapter 8, *Regional and local geology of the Franklin-Sterling Hill area*; Chapter 9, *Geology and structure of the zinc deposits*; Chapter 10, *Geochemistry*; Chapter 11, *Fluorescence of minerals in ultraviolet*; and Chapter 12, *Mineral assemblages*.

Part Three contains xii pages of front matter and 142 pages of text, and includes 126 black-and-white illustrations, 49 line drawings, and 12 tables of chemical data. It consists of Chapter 13, *Lists of minerals*; Chapter 14, *Descriptive mineralogy*; Chapter 15, *Nesosilicates*; Chapter 16, *Sorosilicates and cyclosilicates*; and Chapter 17, *Inosilicates - chain silicates*.

Part Four contains xii pages of front matter and 164 pages of text, and includes 149 black-and-white illustrations, 48 line drawings, and 22 tables of chemical data. It consists of Chapter 18, *Phyllosilicates - layer silicates*; Chapter 19, *Tectosilicates and silicates with unknown structures*; Chapter 20, *Elements*; Chapter 21, *Sulfides, arsenides, antimonides, and sulfosalts*; Chapter 22, *Oxides and hydroxides*; and Chapter 23, *Halides and carbonates*.

Part Five contains xii pages of front matter and 168 pages of text, and includes 50 black-and-white illustrations, 19 line drawings, and 3 tables of chemical data. Following the text is a duplicate set of front matter for the entire monograph. Part Five consists of Chapter 24, *Sulfates, borates, tungstates, and molybdates*; Chapter 25, *Arsenates, arsenites, phosphates, and vanadates*; Chapter 26, *Unnamed minerals*; Appendix I, *List of obscure or general mineral names*; Appendix II, *Glossary of local terms*; Appendix III, *Sterling mine operations, 1966*; Subject index; and Mineral index.

The First Supplement contains xii pages of front matter and 98 pages of text, and includes 88 black-and-white illustrations, 16 line drawings, plus 6 tables and 2 graphs of chemical data. It consists of Chapter S1, *Chemical data for the east and west limbs of the Sterling Hill orebody;* Chapter S2, *The Passaic Zinc Company;* Chapter S3, *19th-century obserations on geology and mining;* Chapter S4, *Mineral images;* and Chapter S5, *"A Trip to Franklin Furnace" by John A. Manley.*

The Second Supplement contains xiv pages of front matter and 123 pages of text, and includes 74 black-and-white illustrations: photos, drawings, diagrams, and maps. It consists of Chapter S6, *19th-century metallurgical processing of the ores from Franklin and Sterling Hill*; Chapter S7, *Excerpts from the Franklin Furnace Folio*; Chapter S8, *19th-century privately-reported observations on exploration and geology*; Chapter S9, *Rosy scenarios and great expectations*; and Chapter S10, *Zinc mining at Franklin (1890-1900) and at Sterling Hill (1923).*

The Franklin-Ogdensburg Mineralogical Society, Inc., is the sole distributor for the first printing of this monograph. The officers of the F.O.M.S. have set the price without consulting with Dr. Dunn, who receives no income from this publication. Proceeds from sales are divided. For each copy of Parts One through Five sold, $10 is donated to the Research and Education Fund of the Franklin Mineral Museum, which supports Dr. Dunn's research; the F.O.M.S. receives the greater portion of the proceeds with no conditions. For each copy of the First or Second Supplement sold, $5 is donated to this fund.

Parts One through Five are available by mail for $30 each plus $5 postage and handling. The First and Second Supplements are available by mail for $25 each plus $5 postage and handling. The set of seven volumes is $200 plus $15 postage and handling. Checks should be payable to F.O.M.S. and mailed to:

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The Story of Franklin and Sterling Hill

by
Pete J. Dunn
Department of Mineral Sciences
Smithsonian Institution
Washington DC 20560

This publication is an abbreviated version of a monograph entitled *Franklin and Sterling Hill, New Jersey: the World's Most Magnificent Mineral Deposits*, which was published in 5 parts. Two supplemental volumes were published in 1996.

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BOOK REVIEW

Cooper, Susan B., and Dunn, Pete J., *Magnificent Rocks: the Story of Mining, Men, and Minerals at Franklin and Sterling Hill, New Jersey*. Copyright by the authors (1997), and available from Book Distributor, 14 Ravine Drive, Newton NJ 07860. This is an 8.5 x 11" softcover book with viii pages of front matter and 74 pages of text with 79 illustrations including photos, drawings, and maps. The price is $15.00 per copy. *Magnificent Rocks* may also be purchased at the Franklin Mineral Museum and the Sterling Hill Mining Museum, or ordered from the F.O.M.S. for $15.00 plus $3.00 postage.

This is the first account of the mineralogy, geology, and history of the Franklin-Sterling Hill area written especially for children in grades 4-8. Susan Cooper, teacher of "Mrs. Cooper's Super Fifth Grade" in the Ogdensburg School, has teamed up with Pete J. Dunn to write a book combining her educator's insight and skills with his encyclopedic knowledge of the district.

The illustrations and basic organization are borrowed from Dr. Dunn's monograph, *Franklin and Sterling Hill: the World's Most Magnificent Mineral Deposits*, and his one-volume abbreviated version for the general reader, *The Story of Franklin and Sterling Hill*. After a general introduction, the text covers local iron and zinc mining and processing, the zinc-mining communities, and local geology and mineralogy. At the end is a chapter, "Expanding Your Horizons," which describes local museums and mineral shows, as well as major museums outside the area with Franklin-Sterling Hill collections. It also provides a short recommended-reading list and suggests further learning strategies and experiences. At the book's very end is a carefully chosen 20-item bibliography, and at the end of most chapters are two to four "Activity Boxes" with specific suggestions for school projects.

Magnificent Rocks really should have a place in every middle school library in New Jersey, as it is not only teacher-friendly and organized for use as a textbook, but also written at a level and in a tone which will appeal to its intended audience. Unlike many books written for pre-teens it is straightforward and accurate as well as appealing. Certainly it is the best introduction for younger people to this key part of their heritage, the most remarkable mineral locality on earth.

Authors Susan Cooper and Pete Dunn at the 1997 Franklin-Sterling Gem & Mineral Show.
Herb Yeates photo.

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Books and other publications

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

Dunn, Pete J. (1997) The Story of Franklin and Sterling Hill. Privately printed. Detailed description elsewhere in this issue. ***$15.00*** *(+ $4.00 postage)*

Dunn, Pete J. (1995) Franklin and Sterling Hill, New Jersey: the world's most magnificent mineral deposits. Privately printed. Part One, bibliography and chapters 1-3; Part Two, chapters 4-12; Part Three, chapters 13-17; Part Four, chapters 18-23; Part Five, chapters 24-26, appendices, and indices; First Supplement, chapters S1-S5; and Second Supplement, chapters S6-S10. A detailed description of the contents is elsewhere in this issue.
$30.00 each *(+ $5.00 postage)* for Parts One through Five, ***$25.00 each*** *(+ $5.00 postage)* for the First and Second Supplements, or ***$200.00*** *(+ $15.00* postage) for the complete set of seven.

Frondel, Clifford and Baum, John L. (1974) Structure and Mineralogy of the Franklin Zinc-Iron- Manganese Deposit, New Jersey. Economic Geology, **69**, 2, pp. 157-180. Photocopies only are available. ***$2.50*** *(+$1.25 postage)*

Horuzy, Paul (editor) (1990) The Odyssey of Ogdensburg and the Sterling Zinc Mine. Privately printed, Sterling Hill Mining Company. ***$6.50*** *(+$1.75 postage)*

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

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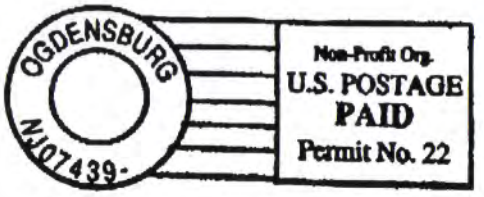

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