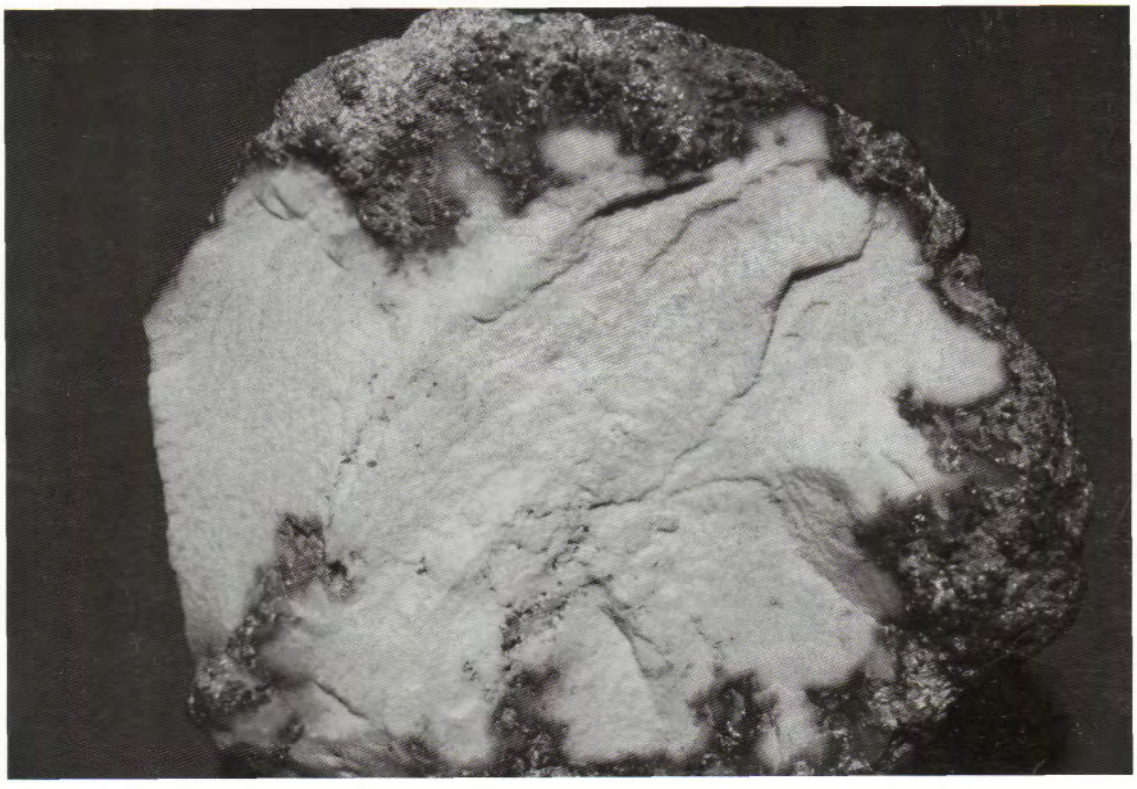
THE PICKING TABLE

JOURNAL OF THE FRANKLIN-OGDENSBURG MINERALOGICAL SOCIETY, INC.



ROEBLINGITE!
PREMIER COLOR ISSUE

VOLUME 39 NUMBER 2 FALL/WINTER 1998 $10.00

The Franklin-Ogdensburg Mineralogical Society, Inc.

Officers and Staff

President
George Elling — 758 Charnwood Drive, Wykoff NJ 07481

First Vice President
Steven M. Kuitems — 272 Arnold Avenue, N. Plainfield NJ 07063

Second Vice President
William Kroth — 240 Union Avenue, Wood-Ridge NJ 07075

Secretary
Tema J. Hecht — 600 West 111th Street, New York NY 10025

Treasurer
John Cianciulli — 60 Alpine Road, Sussex NJ 07461

Assistant Treasurer
Steven C. Misiur — 309 Fernwood Terrace, Linden NJ 07036

Slide Collection Custodian
Edward H. Wilk — 202 Boiling Springs Avenue, East Rutherford NJ 07073

Trustees
John L. Baum (1998)
Philip P. Betancourt (1998)
Richard C. Bostwick (1999)
John C. Ebner (1999)
William Kroth (1998)
Warren A. Langill (1998)
Chester S. Lemanski, Jr. (1998)
Edward H. Wilk (1998)
Lee Lowell (1998)

Committee Chairpersons

Auditing	William J. Trost
Field Trip	Edward H. Wilk, Warren Cummings (assistant)
Historical	John L. Baum
Identification	John Cianciulli
Mineral Exchange	Richard C. Bostwick
Nominating	Philip P. Betancourt
Program	George Elling
Spring Swap & Sell	Chester S. Lemanski, Jr.

Liaison with the Eastern Federation of Mineral and Lapidary Societies (EFMLS)
Delegate — Philip P. Betancourt
Alternate — Richard C. Bostwick

Membership Information:

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:

John Cianciulli, Treasurer FOMS
60 Alpine Road
Sussex NJ 07461

THE PICKING TABLE

EDITORS
Richard C. Bostwick
Tema J. Hecht
600 W. 111th St., #11B
New York NY 10025

EDITORIAL BOARD
John L. Baum
Peter Chin
Omer S. Dean

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.

The FOMS is a member club of the Eastern Federation of Mineralogical & Lapidary Societies, Inc. (EFMLS)

THE PICKING TABLE

JOURNAL OF THE FRANKLIN-OGDENSBURG MINERALOGICAL SOCIETY, INC.

VOLUME 39 NUMBER 2 FALL/WINTER 1998

C O N T E N T S

ABOUT THE COVER

Roeblingite has been driving collectors crazy since 1897, when it was first described from specimens found on the Parker Dump at Franklin. It is one of those unassuming, rare Franklin minerals which distinguishes the genuine Franklin fanatic from the glamorous dilettantes who buy flashy crystal specimens at Tucson. No no no, roeblingite is a ***serious*** mineral, no matter what it looks like; read all about it starting on page 13. This particular roeblingite nodule is from the collection of Peter Chin, and measures about 4 inches across.

Fall 1998 Activity Schedule

Saturday, Sept. 12, 1998

**9:00 A.M. - 3:00 P.M. — Collecting at the Noble and Passaic Pits at Sterling Hill. Restricted to members of the Sterling Hill Mining Museum Foundation. Fee: $1.00/lb.

Saturday, September 19, 1998

9:00 A.M. - Noon — FOMS Field Trip — Collecting on the "Mine Run Dump" of the Sterling Hill Mining Museum, Ogdensburg, N.J. Fee: $1.00/lb.
1:30 - 3:30 P.M. — FOMS Meeting and Lecture — Franklin Mineral Museum
Franklin Minerals Through the Macro Lens, by Steven Kuitems, D.M.D.

Friday, Saturday, and Sunday, September 25-27, 1998

**42ND ANNUAL FRANKLIN-STERLING GEM & MINERAL SHOW
Sponsored by the Franklin Mineral Museum
Franklin Middle School, Washington St., Franklin, N.J.
Hours: Friday, 5:00 P.M. to 9:00 P.M.; Saturday, 9:00 A.M. to 6:00 P.M.; Sunday, 10:00 A.M. to 5:00 P.M. Admission charged.

The Pond Swap-and-Sell, sponsored by the FOMS, takes place outside on the school grounds, all day Saturday and Sunday. Show admission required.

The FOMS Annual Banquet starts at 6:30 P.M. on Saturday at the Ogdensburg Firehouse on Route 517 in Ogdensburg (next to the ball field). Tickets are $12.50 and may be reserved by calling Steve Misiur at (973) 209-7212 or John Cianciulli at (973) 827-6671. The meal is an all-you-can-eat Italian Buffet and all drinks, including soda, beer, coffee, etc., are included (no BYO alcohol, please).
After the banquet there will be a lecture by John S. White:
Ramblings about Starting "The Mineralogical Record" and Some Observations About Curating.
Following Dr. White's talk is an auction for the benefit of the FOMS, with Vandall King as auctioneer. Please bring a good specimen, artifact, book, etc. for this auction.

Saturday, October 17, 1998

9:00 A.M. - Noon — FOMS Field Trip — Collecting on the Buckwheat Dump, Franklin Mineral Museum.
10:00 A.M. - Noon — Micro Group, at the Franklin Mineral Museum.
1:30 - 3:30 P.M. — FOMS Meeting and Lecture — Franklin Mineral Museum.
Geology of Staten Island and Environs (New York City), by Dr. Steve Okulewicz.

**6:30 P.M. - 9:30 P.M. — Night collecting on the "Mine Run Dump" of the Sterling Hill Mining Museum, Ogdensburg, N.J. Restricted to members of the Sterling Hill Mining Museum Foundation. Fee: $1.00/lb.

Sunday, October 18, 1998

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

Friday, November 6, 1998

**7:00 P.M. - 10:00 P.M. — Night Dig on the Buckwheat Dump, for the benefit of the Franklin Mineral Museum.
$10 for the first 10 lbs.; $3.00 per pound for anything over 10 lbs.

Saturday, November 21, 1998

9:00 A.M. - Noon — FOMS Field Trip — Franklin Quarry, Cork Hill Rd., Franklin, N.J.
1:30 - 3:30 P.M. — FOMS Meeting and Lecture — Franklin Mineral Museum.
A Miner's Recollections and Experiences: New Jersey and Abroad, by Ron Mishkin.

FOMS field trips are open only to FOMS 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 FOMS but may be of interest to its members; for such functions, fees and memberships in other organizations may be required.

From the Editors' Desk

BACK ON SCHEDULE?!

At least this ***Picking Table*** for Fall, 1998, is going to the printer in September of that year, and should be in the hands of FOMS members by the time of the Franklin show. Considering that in March, 1998 The Picking Table was a year behind schedule, your editors have come a long way. Even considering that it never should have been late in the first place, we've ***still*** come a long way. Thank you for your patience. We hope the suspense of not knowing what was coming next has sharpened your appetite for this, the much-rumored Premier Color Issue. As before, we thank those who kept the faith.

A WORD ABOUT THIS COLOR ISSUE

Picking Table readers have long expressed a desire for a color issue, but there are some very good reasons why a color issue was not attempted earlier. Chief among them is that until fairly recently, color printing was complicated and expensive. Recent advances in computer scanning and color-printing technology have now brought color within the reach of the FOMS - just barely. A color issue is still substantially more costly than a black-and-white one, hence our Color Fund, which is supposed to bridge the gap with contributions from FOMS members. (Take note that the quantity of color photos which can go into mineral publications with much wider circulation, such as *Rocks & Minerals* and *The Mineralogical Record*, is still determined by contributions to similar funds.) Hence this issue of *The Picking Table* is an experiment, which will succeed or fail depending on the reactions of you, its readers. Your editors hope that you will like it well enough to continue supporting the Color Fund, so we can have an even more colorful *Picking Table* a year from now for the 40th Anniversary of the FOMS.

By the time the Fall 1998 *Picking Table* was ready to go to the press, about $1200 had been given to the Color Fund. Thank you all for your help, and please don't stop now! Future color issues will also depend on your generosity.

Contributors to the FOMS Color Fund:

Greg and Theresa Anderson
Larry Berger
Robert Boymistruk
Denis and Roxane DeAngelis
George Elling
Franklyn and Lavina Ellis
Paul Funk
Gary Grenier, Jr.
George Hessilbacher, Jr.
Carl Kanoff
George Kosel
Lee Lowell
Edward McFarland
Daniel and Karen McHugh
Gerry McLoughlin
Steven Misiur
Claude Poli
John Sanfacon
Louise Sebastian
Arthur Smith, Jr.
Elaine Sole
Richard Stagl

40TH ANNIVERSARY ISSUE

In the Spring 1998 *Picking Table* we suggested a special 40th Anniversary issue for next year, one which will focus on the collecting experience shared by generations of Franklin-Sterling aficionados. If the Color Fund is kept up, this also will be a color issue. We hope that our readers are thinking (with an eye to publishing) about their favorite Franklin mineral, or dump, or collecting experience, or personality: something truly special which can be shared about this most remarkable of all mineral localities. You are welcome to call the editors at (212) 749-5817 to discuss any ideas you may have.

THE STORY BEHIND THE PARKER SHAFT STORY....

This issue of *The Picking Table* marks another signal achievement besides publishing our first color issue: it inaugurates in print what might as well be called the "Parker Shaft Minerals" Project. This began several years ago with a hefty manuscript submitted by George Elling and Gary Grenier, Jr. It was ambitious, and attempted to tell the whole tale from a collectors' perspective: what "Parker Shaft Minerals" were, what they weren't, where they came from and when, why they appeal to collectors, and so on. The manuscript was circulated among members of our Editoral Board, marked up, and after a long delay bounced back to its authors. It was revised extensively, and returned to the editors having grown even larger (the story's very complicated). After another trip through the editorial meat-grinder the manuscript was sent back to the authors with more comments; both sides were discouraged and matters were at a standstill. Then Peter Chin had a simple but ingenious idea: why not break the "Parker Shaft Minerals" story into bite-sized pieces which would fit neatly into *The Picking Table* and be easily digested by its readers? George and Gary liked the idea so much that they were happy to have Peter take on the project, editorial meat-grinder and all. Here you have their first installment, proof that the process can work. And yes, the color photos were their idea too. If you like what you see, please let them know!

Message from the President

George Elling
758 Charnwood Drive
Wyckoff NJ 07481

With this issue we inaugurate the first "color *Picking Table*." Following nearly 40 years of publications this marks an historic event for *The Picking Table*, the FOMS as well as the Franklin Community in general. We wish to thank all of the individuals who helped support this issue through donations and hope this is the beginning of a new era of *Picking Tables*. Although not all future issues will be in color, we do plan to have a major "Fortieth Anniversary" issue which we hope will be perceived as the best *Picking Table* of all time. 1998 has proven to be a productive year for the society and meetings have been extremely well attended. It should be the goal of all members to help sustain and build the society further. Franklin mineralogy remains healthy from a collecting as well as a scientific standpoint and the publishing of Pete Dunn's monograph should encourage further membership. Both the Franklin Mineral Museum and the Sterling Hill Mining Museum continue to do well and draw large crowds. As members of FOMS, we should be proud of our continued sponsorship and tie-ins with each of these major museums. We look forward to a successful fall mineral show and to a healthy future for our society.

Local Notes

NEWS FROM THE FRANKLIN MINERAL MUSEUM

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

The Franklin Mineral Museum has some new staff and a fresh new look. We are proud to introduce our staff: Manager, Doreen Longo; Weekend Manager, John Bogath; Docents, Laura Blank, Betty Egan, Pat Hunsinger, Erin O'Brian, and Andrew Richter; Maintenance, Garry Englishman; Administrative Assistant, Farrah L. Fawcett. John L. Baum is Curator and John Cianciulli is Assistant Curator.

Museum manager Doreen Longo is giving the museum gift shop a face-lift. Re-organization of the sales area is already showing signs of success, and greatly improves the look of our new lobby. In addition to a great selection of general merchandise, there are nearly 2,000 local and world-wide mineral specimens available in sales cases in the museum shop.

Miner's Day was well attended although the number of old miners is shrinking year by year. Those who are able to attend still share the kindred spirit of days gone by. On May 28th the Franklin Mineral Museum front lawn was the setting for history-making international diplomacy. Louis Cherepy, Jr. donated 70 specimens of 41 local minerals from his collection to Hungary, in memory of the many Hungarian immigrants who worked in the mines here. The minerals were accepted on behalf of the Geological Institute of Hungary by Károly Brezsnyánszky, director of the Hungarian Geological Survey. The ceremony was well attended and included 30 civic group representatives who welcomed a delegation of four Hungarian officials. Louis Cherepy, Jr. is the son of Louis Cherepy, a noted local historian, and is the grandson of Stephen Cherepy, a Hungarian immigrant who worked in the mines. Hats off to Lou for arranging this memorial to the Hungarian immigrant miners, a group of hard-working people who played a major role in the history of mining at Franklin.

The museum hosted a night dig on the Buckwheat Dump this spring. Thirty-two people participated and found some interesting material. Most noteworthy were finds of spectacular fluorescent sphalerite with hydrozincite, good fluorescent fluorite in quantity, scheelite, and fluorapatite.

More mineral discount days and night digs will be planned for the future! The museum provided two displays for the Westfield show in April, *Franklin Favorites* (a fluorescent display) and *Gem Willemite*.

The reorganization of our local collections is going well. We are now in the final phase of storing our extensive reference collection of Franklin-Sterling minerals. Specimens are being systematically stored by species. The new wall cases in Kraissl Hall have been completed and look great!

Finally, the museum is preparing for the 42nd Annual Gem and Mineral Show to be held September 25th, 26th, and 27th at the Franklin School, Washington Ave., Franklin New Jersey. See you there!

NEWS FROM STERLING HILL

Joe Kaiser
40 Castlewood Trail
Sparta NJ 07871

There have been some additions to our displays of mining equipment outdoors and underground. The largest new piece in the yard, the one that looks like a space capsule, is a 9½-foot-diameter riveted ball mill of early vintage from about 1915. Very few of this early type remain; most were scrapped years ago. In the lamp room underground, a new battery-charging rack has been set up. In addition, the museum is in the process of obtaining a man-cage and ore skips similar to those which had been in use at Sterling Hill when the mine closed in 1987.

Work has been progressing on the Geo-Tech Center being placed in the old Sterling Hill Mine ruins. Much effort has been required to clean out the trenches on top of the mill foundation so that it will be possible to waterproof the "roof" over the old

basement rooms. Interior concrete abutments that are in the way of planned exhibits in these rooms are being removed. Portions of the exterior walls have also been removed to make way for windows and doors.

The GEMS curriculum has been lauded by many professional educators. The CRYSTALS (Collaborative Resources Yield Support for Teaching Activities and Learning Standards) project is well on its way to becoming a full-fledged educational program here at Sterling Hill, and has received continuing support from the Geraldine R. Dodge Foundation. Dr. Earl R. Verbeek has accepted a position as geology expert and scientific advisor with the project.

This fall's collecting at the Passaic and Noble Pits will be on September 12, and is reserved for members of the Sterling Hill Mining Museum Foundation. This last spring collectors were very successful there, due to the nice weather and the large amount of prior excavating done on the saddle between the pits.

FIELD TRIP REPORT

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

STERLING HILL MINE RUN DUMP
FOMS Field Trip
April 14, 1998

Numerous specimens of altered galena from the Passaic Pit had been transported to the Mine Run Dump, from which they were removed by enthusiastic collectors. These pieces contained many minerals, including cerussite, hydrozincite, goethite, hemimorphite, fluorapatite, phlogopite, quartz, albite, and (of course) galena. One unusual microcline that fluoresced bright red under shortwave UV was retrieved.

Massive granular yellow vesuvianite with fluorapatite and an unidentified humite-group mineral was found in pieces as large as 12 cm across. A few willemite crystals of the usual tan color were found, but the prize for oddest appearance went to a veinlet of secondary willemite which was pinkish-white in color. The most unusual find of the day was blue fibrous serpierite, in coatings on 3-cm pieces of sphalerite.

BUCKWHEAT DUMP
FOMS Field Trip
May 16, 1998

No report is available for this field trip.

LIME CREST QUARRY
FOMS-Hosted Field Trip
May 17, 1998

One of the delights of a working quarry is that things change dynamically as the work areas shift from one part of the quarry to another. That being said, I am regularly asked if some specific area at Lime Crest is still productive. Well...let's just say that "dynamic" is synonymous with movement. Most of what was in evidence at the quarry was new and unexplored.

Many people collected in the vicinity of the pegmatite bodies. Several 2 x 4 cm allanite crystals were collected successfully; larger crystals were found but proved resistant to extraction in one piece. Several collectors found sharp clove-brown titanite crystals, the largest being about 1 x 3 cm in size. One 2-cm mass of typical dark-brown thorite proved to be very active on the scintillometer.

The gneissic zone continues to produce rich reddish-purple masses of almandine garnet up to 8 cm across, with small, distorted, striated crystal faces evident here and there. The white microcline from this zone is found in large masses which fluoresce blue of moderate intensity in both shortwave and longwave UV. Shear zones in the gneiss were found with thin but bright pyrite coatings.

At the pegmatite-marble contact zone on the quarry floor two specimens of bright pink grossular, one 6 cm across, were retrieved. Also found on the quarry floor was an unusually bright green to distinctly blue-green serpentine in masses 3-4 cm across, forming pseudomorphs (with purple fluorite cores) after prismatic crystals of an unknown mineral.

Significant for the day were purple fluorite masses found in several dolomitized blocks of marble, with one collector taking home half a bucket full of transparent purple fluorite in cubic crystals up to 3 cm on an edge. Anyone for faceting?

Compact masses of graphite were in evidence, and several collectors saved examples of yet another of the plethora of forms this element presents at Lime Crest. Some fine, flat hexagonal crystal plates of graphite as much as 1 cm across were also found.

Several fine 1-2 cm pyrite crystals, with shapes from cubes to pyritohedrons, were saved from the crusher.

There were two different finds of spinel crystals: one as isolated crystals in compact, clean white marble, and the other mixed with phlogopite in several large boulders, making extraction of the spinels very difficult. On the edge of the mixed spinel and phlogopite find were large books of phlogopite, some 15 cm across, containing thin black rutile prisms. When sheets of this phlogopite were held up to the sun, sharp star-like patterns (asterism) could be observed in transmitted light.

It was nice to see some leftovers from a previous find: 3 x 6 cm pargasite crystals in calcite matrix.

Perhaps the most fascinating find was an area of crystal pockets worked by many collectors. These pockets produced calcite in small, clear to white prismatic crystals, quartz needles as much as 3 cm long, and (rarely) oil-green translucent sphalerite in 1.5-cm crystals and 2-3 cm masses. Gemmy little knots of this sphalerite fluoresce a pale orange-yellow in shortwave UV.

Norbergite was rather abundant in bands up to 20 cm thick of massed grains; these have an odd mottled yellow fluorescence under shortwave UV. Nearby were zones of green serpentine with distorted 2-3 cm books of bright green mica.

FRANKLIN QUARRY
FOMS Field Trip
June 20, 1998

Unlike the Lime Crest quarry, the Franklin quarry produced more or less the same material as on out last field trip. Why? If you checked your memory banks, you would have noticed little development work in the quarry other than a new water-filled pit on the lower level; what might be found there remains unknown.

A notable specimen of fluorescent aragonite turned up, with an 8 x 13 cm botryoidal coating on nonfluorescent calcite matrix; this aragonite fluoresces and phosphoresces fairly bright blue-white under shortwave and longwave UV.

Gypsum was found replacing tremolite crystals. In some cases the tremolite crystal remnants were found surrounded by

small colorless plates of gypsum. The largest mass found of gypsum was 1 x 3.5 cm in size; remnants of blue-fluorescing tremolite could still be seen in it under shortwave UV.

Many large, sharp prisms of tremolite were collected, some as much as 2 x 10 cm in size. Generally the exteriors of the crystals were colored dark, almost black, with graphite, while their cores were a lighter bluish-green; these crystals fluoresced the typical creamy blue color in shortwave UV. Several pale gray to nearly colorless crystal sprays, apparently of tremolite, delighted the collectors of fluorescent minerals; these turned out to be mixtures of diopside, tremolite, and norbergite, and were frequently rimmed with a thin band of purple fluorite. Under shortwave UV these crystal clusters often exhibit a sharply defined bullseye pattern in blue and yellow.

Typical bands of yellow norbergite grains, fluorescing moderately bright yellow under shortwave UV, were collected by almost everyone on this trip. Many collectors also went home with margarite specimens from a boulder that had fallen onto the floor of the quarry from high on the west wall; the largest piece collected measured 17 x 22 cm. Compared to this massive pale-blue material, the second margarite find was almost overlooked. This consisted of isolated phlogopite plates in compact white marble paralleling a band of dense, finer-grained phlogopite; the larger phlogopite plates were surrounded and partly replaced by plates of greenish-blue, transparent to translucent margarite, which occasionally formed sharp hexagonal crystals. While most of these margarite crystals were no larger than a few mm, some were 2 cm across. The margarite plates had rutile inclusions of three different colors: black, red, and gold. A few sparse grains of pinkish-red corundum surrounded by greenish margarite were reminiscent of North Carolina material, and yes, the corundum does fluoresce red in longwave UV.

Several sharp-eyed collectors spotted the stout 1-cm crystals of bright emerald-green diopside that, although often confused with uvite, can be easily distinguished by its blue fluorescence in shortwave UV. A genuine and noteworthy specimen of uvite was, however, found lying on the surface of the quarry floor. The pale olive-green crystal was 2 x 3 cm in size, and may have been the best find of the day!

MESSAGES

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

I have deposited an atlas of maps in the Sussex County Library in Frankford, New Jersey. This atlas consists of 22 maps including a cover sheet, and it covers much of the eastern part of the county, including the Franklin and Sterling Hill areas. The maps are each 36 x 48 inches, and were made by C. C. Conkling in the 1907 period.

The title of this work is *Atlas showing lands and mineral rights owned by the Franklin Iron Company, at or in the vicinity of Franklin Furnace, Sussex County, New Jersey, also lands of the Franklin Iron Company at Warren, New Jersey*. The scope of the atlas is greater than indicated by this inadequate title. The maps serve interests much broader than those of the mineral community, and that is why I chose a county-level deposition. The library in Frankford has a "New Jersey Room" which may interest readers of *The Picking Table*.

****

Seven-part complete copies of my monograph have been deposited in the following local institutions: Sussex County Libraries in Franklin, McAfee, and Frankford; Sparta Library; Wallkill Valley Regional High School in Hamburg; Hardyston Elementary School in Franklin; Franklin Elementary School in Franklin; and Ogdensburg Elementary School in Ogdensburg.

****

I have provided complete sets of Victor Goldschmidt's *Atlas der Krystallformen* and *Index der Krystallformen der Mineralien* to the Franklin Mineral Museum, where they may be of use to the micromount group, among others.

****

There is a new geologic map of northern New Jersey. Many F.O.M.S. members may find it of interest. The title is *Bedrock Geologic Map of Northern New Jersey*. It is authored by Avery Ala Drake, Jr., Richard A. Volkert, Donald H. Monteverde, Gregory C. Herman, Hugh F. Houghton, Ronald A. Parker, and Richard F. Dalton. It was published in 1996 by the U. S. Geological Survey as one of its Miscellaneous Investigation Series maps, MAP-I-2540-A, at a scale of 1:100,000.

This can be ordered from the U. S. Geological Survey's map service office at: USGS - Information Services, P.O. Box 25286, Mail Stop 306, Denver Federal Center, Denver, CO 80225. The telephone number is 1-800-HELPMAP. The cost is $4.00 per full copy plus $3.50 shipping and handling per order. Faxed credit-card orders are accepted at 303-202-4693. This is a beautiful and useful bargain.

I have donated copies of this new map to the Sterling Hill Mining Museum and the Franklin Mineral Museum. F.O.M.S. members may want to see this map before purchasing a copy.

****

You are all aware that the F.O.M.S. and I had intensive interactions with Wendell Wilson of *The Mineralogical Record* concerning the publication of my monograph in color. This lasted from September of 1994 to April of 1995, at which time I terminated these publication discussions. I saw no chance of success.

Few of you have been aware that I recently attempted, one more time, to achieve color publication in order to promote Franklin and Sterling Hill to a wider audience. On August 30, 1997, I sent a brand-new and different proposal to Wendell Wilson at *The Mineralogical Record*, and it was accepted. I hoped to give an abbreviated version of our great Franklin-Sterling Hill story to many thousands of mineral enthusiasts. That effort, too, has now failed, and I have abandoned wholly my efforts to publish color photographs of Franklin-Sterling Hill mineral specimens.

The considerations for me, dear F.O.M.S. members, are as follows. Because I knew you wanted color photography, I expended great treasure and effort in creating a color archive of Franklin-Sterling Hill minerals. Because I knew you wanted it published, I made many efforts between 1994 and 1998 to get it published. These efforts have not been successful, in spite of substantial energies expended and great amounts of time wasted. That energy and time were taken from science, very begrudgingly. I do not know how many years I have left for scientific investigations of the Franklin-Sterling Hill ores and calcium silicates, but I have decided not to waste any of that time doing things of less importance.

The Franklin Mineral Museum has purchased my color archive. It contains 246 images; 27 of these are 35mm positive images of fluorescent minerals, 202 of these are 35mm images of minerals and ores, and 17 are 4" x 5" transparencies of mineral specimens.

****

The comprehensive list of minerals from the formal "Franklin- Sterling Hill Area" has been published by John L. Baum and Pete J. Dunn for a long time, appearing initially in the brochure of the Franklin-Sterling Gem and Mineral Show each year, and intermittently in *The Picking Table*.

Due to a reorientation of still strong Franklin-Sterling Hill interests, Baum and Dunn will no longer be responsible for producing, updating, or publishing this list.

If F.O.M.S. wishes to designate a person as the keeper of the list, Dunn will advise that one person of published occurrences of additional Franklin-Sterling Hill minerals he observes in the scientific literature. Evaluation of these published reports, however, will be the responsibility of the keeper of the list.

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**

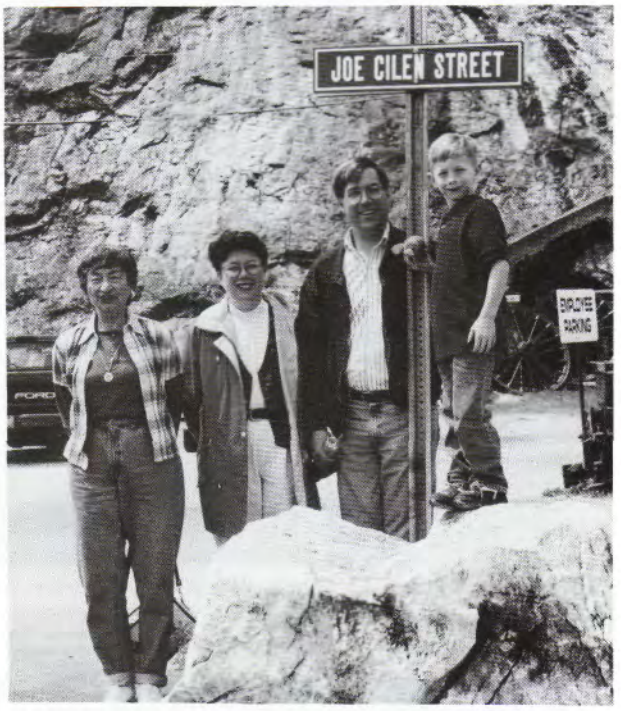
Call for group rates

FOMS SPRING SWAP & SELL
STERLING HILL DEDICATIONS
The morning and early afternoon of May 2

Overcast skies on Saturday greeted a medium-sized horde of swappers at the FOMS Spring Swap & Sell at Sterling Hill. Your editors were too involved in commerce for most of the morning to do much browsing, but we were told that the usual bargains and surprises were very much in evidence, along with the customary sharpshooters picking up rare species "for cheap." Those already planning for next year's event should move the date back a notch to the last weekend of April. Remember that the 1999 FOMS Swap & Sell *and* the Sterling Hill Mining Museum Dinner and Auction are combining forces with the New Jersey Earth Science Association for an all-round indoor/outdoor combined show to be held at Franklin's Robert E. Littell Community Center. (For those of you who are wondering, this is the old Franklin armory, the site of the Franklin show until a few years ago.)

Meanwhile, back at Sterling Hill, Dick Hauck emceed two important dedications for the museum. Joe Cilen Street came first. This is the previously unnamed thoroughfare from the outside gate to the parking lot. Joe's sister Alda was there with her son Alan, his wife Donna, and Joe's grandson Carter, and the dedication ceremony was, in Dick's words, "Very informal. Simple. The way Joe would like it." This marks the end of a Sterling Hill year which has seen (among other things) the inscribing of the Joe Cilen boulder, the auctioning of many key pieces from Joe's Franklin-Sterling Hill holdings, and the sale of his car to noted mineralogist Paul B. Moore. After admiring the new street sign the crowd moved over to a new landmark at the southwestern corner of the parking lot, a sturdy all-weather structure with the sign, "Brian Glynn Bulletin Board." This is a memorial to museum guide Brian Glynn, built by his son and marked with his name and the inscription, "In memory of a special man who will not be forgotten." Dick described Brian as "a completely pure human being" who had been one of Sterling Hill's best tour guides. With Brian's wife and family standing near, Dick eulogized Brian for his unselfishness, knowledge, and enthusiasm; "His contributions here," Dick added, "are permanent and durable."

Dick Hauck, second from left, with the family of Brian Glynn: wife Kathy, son Brian Jr., mother madge, and son Steve. Tema Hecht photo.

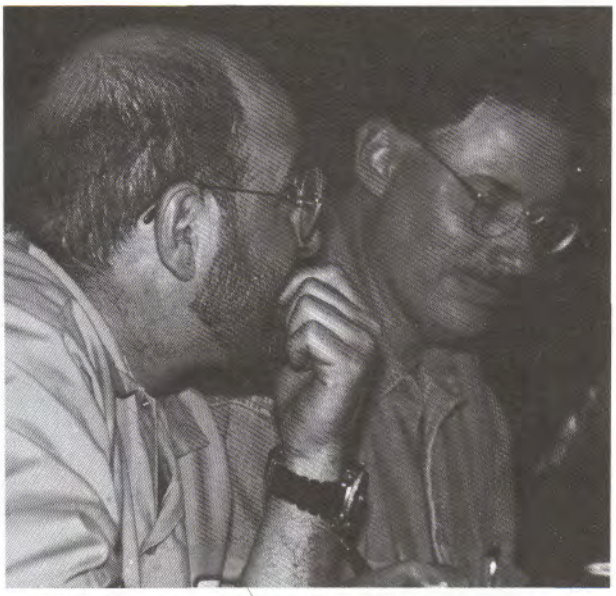


Kaufmans at the Joe Cilen Street dedication: from L, Alda, Donna, Alan, and Carter. Tema Hecht photo.

1998 FOMS Spring Swap and Sell, looking south. Tema Hecht photo.

STERLING HILL MINING MUSEUM
BANQUET AND AUCTION
The evening of May 2

The weather had become borderline drizzly by late afternoon, encouraging swappers to pack up in time for the 6 o'clock pre-auction banquet at the Ogdensburg firehouse. The 3rd Annual Mineral Auction of the Sterling Hill Mining Museum was set for 7:00, reflecting Bob Hauck's belief that one shouldn't waste a lot of time eating with important business afoot. Well, there *were* many lots in the auction to get through, 63 in all, from the collections of Elsa Barney, John Kolic, and "a Gentleman." On went the top hat, and auctioneer Dick Hauck proceeded to galvanize the crowd with his unique brand of grandiloquence ("Galvanize" in this context means " to electrify," not "to plate with zinc"). There were crystals macro and micro of franklinite, willemite, rhodonite, hemimorphite, friedelite, and other local classics; several unusual items like blue spinel crystals, cubic-parting hematite, and radiating graphite; some extreme rarities, notably eveite, bannisterite, and yeatmanite; and in short, a full range of samples from our own Ground Zero of enigmatic mineralogy. Some decent and unusual fluorescent pieces changed hands in the $300 - $400 range: Franklin barite, esperite, wollastonite, and margarosanite. None of the lots quite broke into four figures this year, but top honors went to Ms. Barney's ganophyllite and the "Gentleman's" roeblingite, each at $850, and John Kolic's Buckwheat Dump radiating willemite at $950. This year the auctioneer's patter was peppered with ironic observations, to wit: "There's an andradite that has something going for it, I'm sure;" "Not only do you get the specimen, but the cotton, the label, and the box;" and "There's probable sleepers in this bunch."



Mark Leger follows the bidding while Gary Grenier, Jr. bides his time. Tema Hecht photo.

FOMS 1st Vice President Dr. Steve Kuitems and President George Elling scrutinizing specimens before the auction. Tema Hecht photo.

FOMS President George Elling and 2nd Vice President Bill Kroth take a break from bidding. Tema Hecht photo.

Auctioneer Dick Hauck prepares to lob another zinger into the audience, flanked by (from left) Steve Misiur, Elna Hauck, Denise Kroth, and Bob Hauck. Tema Hecht photo.

MINERS DAY, FRANKLIN MINERAL MUSEUM
Midday, May 3

On Sunday it was blustery but fair, and at the Franklin Mineral Museum, Miners' Day went off without a hitch. 44 years after the closing of the Franklin Mine it is not surprising that the number of miners shrinks each year, but between them and their families the turnout is always good. The museum supplied ample "refreshments," and as part of the tradition, the cake was cut by Mary Welsh. Outside the Famous Franklin Band warmed up. Once the chairs and benches were arranged on the museum lawn, the band played the national anthem, and the audience recited, "I pledge allegiance..." The program followed, and concluded with the band's presentation of military music, English sea chanties, and popular favorites, including a polka medley.

Franklin Mineral Museum President Bill Welsh began the program by introducing Dr. James P. Kane, Principal of the Hamburg School and area school superintendent. Some years ago Dr. Kane began presenting a science education award to students in grades 6 -8 "for excellence in mineral research." This award, sponsored by the Franklin Mineral Museum, is given yearly to the Sussex County student with the best mineral-related Science Fair project. Jack Baum judges the projects, and between Dr. Kane's involvement and the museum's support, this award has been significant in boosting awareness among students of the area's rich mineral heritage. This is Dr. Kane's last year, so it was with considerable pride that he was able to present the award to one of his own students from Hamburg, Michelle Guzman. There was also an award for Dr. Kane, a Certificate of Appreciation from the Franklin Mineral Museum.

Jack Baum then addressed his audience of colleagues and friends; his remarks are reprinted here. They serve to remind us that Jack worked for the New Jersey Zinc Company at Franklin during his entire career as a geologist, from 1939 to 1971, and that consequently his knowledge of Franklin miners is deep, intimate, and appreciative. Those of us who collect minerals are generally aware only that Jack has been the museum's curator and one of its greatest benefactors since its opening in 1965, not to mention Franklin's resident mineral expert and mining historian. Thank you, Jack, for giving us a little more of yourself.

Award winner Michelle Guzman and Franklin School Superintendent Dr. Tom Turner. Tema Hecht photo.

Dr. James Kane, on left, with his award from the Franklin Mineral Museum. On right, museum Curator John Baum and President Bill Welsh. Tema Hecht photo.

Michelle Guzman and her family. Flanked on left by her teacher, Keir Yezuita, and on right by her principal, Dr. James Kane. Tema Hecht photo.

REMARKS ON MINERS DAY, 1998
John L. Baum

Today is dedicated to people, not rocks, but people who have had a lot to do with the success of the Zinc Company and Franklin and Ogdensburg. We are some of those people. Others prominent in Company history are the Wetherills and Lewis G. Rowand. The Wetherills were in mining in Pennsylvania producing lead white for paint and Samuel Wetherill experimented with zinc ore successfully to make zinc oxide. Being successful in this he joined the fledgling New Jersey Zinc Co. at Newark NJ in 1850 and two years later invented the Wetherill furnace which could make zinc oxide directly from Franklin area ore, principally from zincite, and developed the refinements which made possible a pure product. With others he built the Lehigh zinc works at Bethlehem, Pennsylvania, and produced zinc metal. He was responsible for the Zinc Company's paint business.

Wetherill's son John Price Wetherill was a partner of August Heckscher in the Lehigh company and discovered the magnetic nature of the mineral franklinite. It was the Lehigh interests that developed the Parker mine for which it built the Parker concentration plant which stood in the area of the present Franklin fire house. The key to the process was the Wetherill magnetic separator which pulled the franklinite from the crushed ore to be treated separately from the remainder of the ore. We are indebted for our jobs to the Wetherills, father and son.

The younger Wetherill's assistant at the Parker plant was Lewis G. Rowand who so improved the magnetic separator that they were used elsewhere to to separate minerals such as Western sphalerite until the development of flotation. He came to Franklin in 1905 and was a prominent inventor of electric fire alarm systems, electric furnaces, pulleys, screens and dryers. He was in demand as a consultant in such things. The separators as we knew them were his improvement. Two of his daughters married the sons of the senior Dr. Pellet of Hamburg, Reilly Pellett the dentist and Jack Pellett, Company mill expert. His former home on Maple Road will be on the house tour this coming Saturday.

We have been considering a few of the people who have contributed to the successful operations of the New Jersey Zinc Company in this area. But the Wetherills and the Rowands, the financiers Palmer and Taylor, the managers Heckscher and Hardenburgh, the mining engineers Haight and Catlin did not mine the ore, you fellows did. Today is your day and the day we remember.

In 1928, the Company put out as a supplement to the *Zinc* magazine, a list of all active employees at that time with five years or more of service and included those retired and still around. Earliest of these really old timers was Patrick Smith, hired in 1868, with 9 stars on his pin for 45 years of service and who therefore retired in 1913 or shortly thereafter. I figure he was born about 150 years ago. I am not going to ask whether Pat is in the audience because some joker in the distance will holler "here," but we honor him and the succession of Irish who made the 19th century wave of immigrants so important to mining and business in Sussex County as elsewhere.

Thomas Treloar, hired in 1874 and a 9-star man, must have been one of the earliest Cousin Jacks, a friendly term for the Cornishmen who mastered hard rock mining at home and brought their talent to the mining industry in this country, especially in the silver, copper and iron mines. Treloar well illustrated the mining town couplet:

By Tre-, Pol-, Pen-, and -O,
The Cornishmen you come to know.

Among old timers we might have known were Cap. Rowe, the mine captain when that job carried real clout, and E.D. Shuster, likewise as regards respect. These titles remained for their successors, but the privileges diminished with succeeding appointments. These men whom I treated with great respect bordering on awe were of the Company's class of 1906 and 1895.

I note some men whose names I was surprised to find so far back as regards date of hiring. Some names keep appearing. McEntee, Ora, Reynolds, Lang, Shauger, and why not? Many sons worked for the Company. Mine too.

Some men hired in 1906 were Jim Pellow and Jesse Ramage, in my time shift bosses who made my job easier as did the eight other shift bosses, and R.M. Catlin and Edgar Palmer. Palmer stopped at the geology department in the 50s during a Company directors' meeting when he was looking after the family affairs. His father was President during the 1897 consolidation of the Lehigh, Passaic, and New Jersey Zinc Companies. Catlin of course was the mining engineer who made Franklin into a model mining town. We have mentioned Cap. Rowe as 1906.

1907 brought names we remember, among them W.F. Evans and Warren Hastings, Mike Petro and Emmet Smith. Two more different mining men would be difficult to imagine than *Mr.* Evans and Hastings, and the mines reflected their personalities. Art Watt joined that year, to become mine captain succeeding Cap. Rowe. Zinc must have fallen on hard times in 1908 because there were few hires, but in 1909 things picked up. Palmerton came on line about this time, and names unknown to us began to show up. Sammy Van Gorder, James C. Hyde were in our group as well as Russell B. Paul, later to be a New York office wheel.

A member of the class of 1912 was Frank Straulina, Company gum-shoe, ever vigilant. Clarence Haight, Sidney Hall, and Duke Bauer joined in 1913. Sid always said "Better days are coming," and looked after our safety. He would have been shocked to see miners at a later date wearing such sissy accessories as gloves and ear protection.

Reading lists of fellow employees can't help but stir memories. Big Jim Stephens riding the fire engine on the 4th of July. David Jenkins our permanent mayor. Kenneth Stanaback who was known by name somewhat differently. Gaspar Czarke who slipped into the position and adopted the name of a new hire named Hedges who had changed his mind at the last moment without the Company knowing until he had proved himself. Charley Lovelace the enthusiastic Legionnaire whose *nom de mine* was another not to be seen or heard in polite society. Billy Moore who tended the electric trolley lines and could do wonderful sparks with a screwdriver, Pete Ora who grabbed the same overhead line and wanted to shake my hand at the same time because he knew something I didn't, and you fellows who taught me the meaning of "checkeye" and "dobra" and undoubtedly saved me from a scraper cable about to tighten, a timber being lowered, or an open raise. I thank you for that.

We of the Zinc Company can be proud of our contribution to our nation.

ROEBLINGITE AND THE "PARKER SHAFT MINERALS"

Peter Chin
900 N. Howard St.
Alexandria VA 22303

Gary Grenier, Jr.
8383 Sweet Cherry Lane
Laurel MD 20723

INTRODUCTION

This article is the first in a series on "Parker Shaft Minerals" that will appear in *The Picking Table*. The authors will attempt to give an overview of the concept of "Parker Shaft Minerals" and will show through the use of photography why this mineral suite has been a source of fascination to generations of Franklin-Sterling Hill mineral collectors. Subsequent articles will address in greater detail the unique circumstances of mining history and geological setting which led to the discovery of this unique suite of minerals. The authors will also examine the mystique of the "Parker Shaft Minerals" as a synergistic creation of the scientific and collector communities.

THE PARKER SHAFT AND ITS MINERALS

"Parker Shaft Minerals" is a term familiar to most, if not all, Franklin-Sterling Hill mineral collectors. To them the term represents a certain suite of unusual or exotic minerals that came from the Parker Shaft. Over the years, collectors have developed varying concepts of what constitutes a "Parker Shaft Mineral," such that many of the rare minerals from the Franklin Mine may have been improperly attributed to the Parker Shaft.

The Parker Shaft was one of many independently operated mine openings excavated in Mine Hill prior to the beginning of the 20th century to exploit the ore body at Franklin. It was begun on July 1, 1891, and the ore body was encountered on July 15, 1894. The Parker Shaft itself was merely a vertical opening in the barren marble, used to gain access to a deep portion of the ore body. The original specimens which contained the minerals that formed the nucleus of the "Parker Shaft Minerals" suite were not actually found during the sinking of the shaft, but were recovered during the initial development of the Parker Mine within the ore body. The site from which many, if not most, of the "Parker Shaft Minerals" had come was rediscovered during the mining of the Palmer Shaft support pillar in the decade prior to the closing of the Franklin Mine. Many specimens of "Parker Shaft Minerals" were fortunately recovered at that time and preserved in public and private collections. In deference to history and to avoid confusion, it is the minerals from this suite that are referred to here as the "Parker Shaft Minerals." The suite is a manifestation and a result of geological conditions unique to a limited area or areas in the ore body, and exemplified by the original occurrence in the Parker Mine.

The Parker Mine existed as a separate mining entity only until 1897. The *Great Consolidation* of 1897 united all independent zinc-mining properties at Franklin under The New Jersey Zinc Company. Starting in 1902, other underground workings at Franklin which extended throughout much of the ore body were connected to and accessed through the Parker Shaft (Dunn, 1995, p. 139). The operational life of the Parker Shaft ended in 1910 when it was closed and completely supplanted by the Palmer Shaft. Thus, mineral specimens taken out through the Parker Shaft during the period between 1902 and 1910 could have come from anywhere in the already extensive underground workings of the Franklin ore body.

While the operational life of the Parker Shaft ended in 1910 and the Franklin mine closed in 1954, scientific research continued on previously collected specimens attributed to the Parker Shaft and presumably to the same area in the ore body where the first specimens of the "Parker Shaft Minerals" had originated. In fact, a number of "Parker Shaft Minerals" new to science were described and published well after the Franklin Mine closed. This is evident from the lists below. It is probable that if scientific research continues into the minerals of Franklin and Sterling Hill, more mineral species will be added to the "Parker Shaft Minerals" suite.

The composition of the "Parker Shaft Minerals" suite has been discussed by many authors, most recently Dunn (1995, pp. 308-309). The lists which follow are the result of the authors' examination of hundreds of specimens in many collections from 1960 to the present.

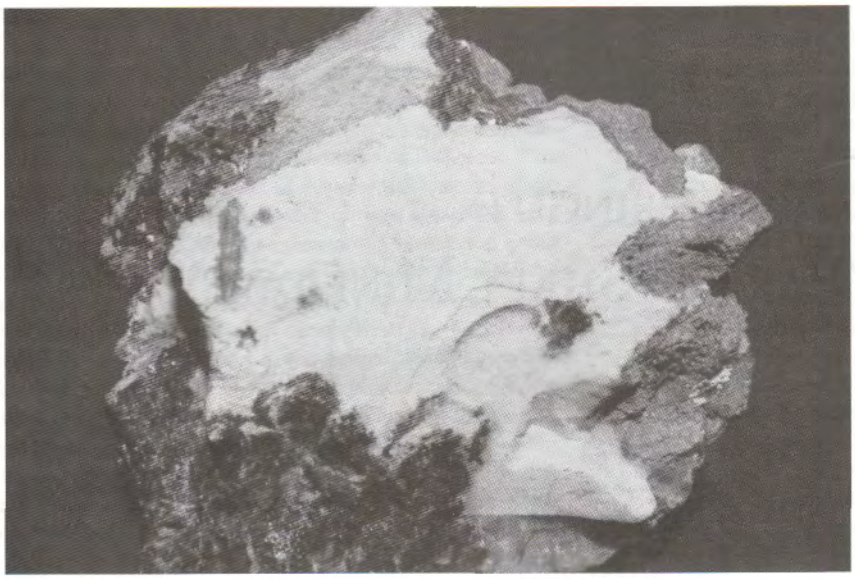


Figure 1. Roeblingite nodule, 2.5 x 2.5 x 2 in., from Franklin, N.J. The roeblingite is white and uniformly fine-grained without color zoning or color changes at its contact with the matrix, which is altered hancockite containing colorless clinohedrite and white charlesite. Philip Betancourt specimen; Gary Grenier, Jr. photo.

Figure 2. Roeblingite nodule, 3 x 2.5 x 2 in., from Franklin, N.J. The roeblingite in this elliptical nodule is opaque, snow-white, and fine-grained. This is the "porcelain-like" appearance often mentioned in physical descriptions of the mineral. The nodule has a thin rim of gray-colored roeblingite in contact with the associated minerals, altered tan-colored hancockite and dark brown hendricksite. John Kolic specimen; Gary Grenier, Jr. photo.

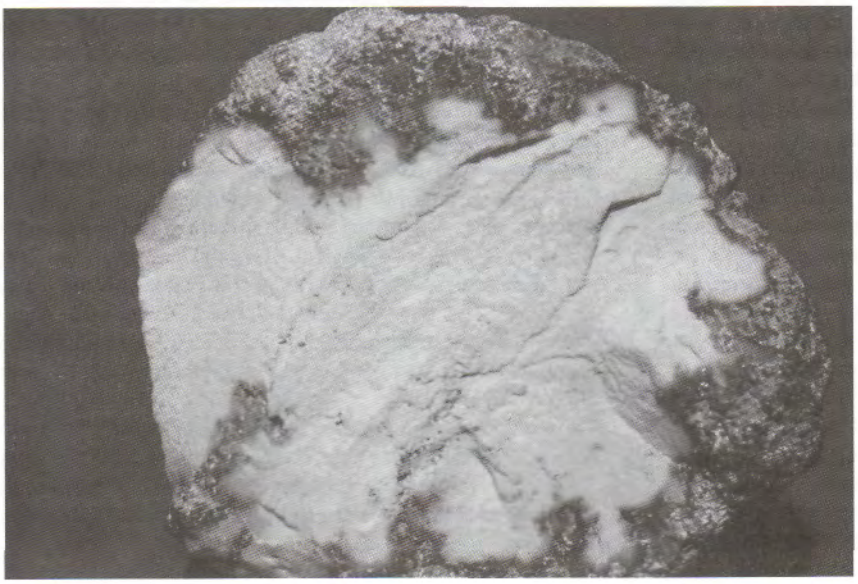


Figure 3. Roeblingite nodule, 4 x 3.5 x 2.5 in., from Franklin, N.J. A large, fine-grained white nodule. The outer rim or "rind" is a mixture of altered hancockite with ganophyllite. Peter Chin specimen, cat. no. C0007; Gary Grenier, Jr. photo.

THE "PARKER SHAFT MINERALS"

The "Parker Shaft Minerals" first found at Franklin are listed here in chronological order of their description in the scientific literature:

1. **Roeblingite** (1897)
2. **Clinohedrite** (1898)
3. **Nasonite** (1899)
4. **Hancockite** (1899)
5. **Margarosanite** (1916)
6. **Charlesite** (1983)
7. **Minehillite** (1984)

Minerals which were not first scientifically described from Franklin but are characteristic of and well-developed in the "Parker Shaft Minerals" assemblage are listed in order of appearance in the local scientific literature:

8. **Datolite** (1897)
9. **Cuspidine** (1910)
10. **Ganophyllite** (1910)
11. **Thomsonite** (1923)
12. **Barysilite** (1926)
13. **Prehnite** (1935)
14. **Pectolite** (1935)
15. **Xonotlite** (1935)
16. **Ganomalite** (1979)
17. **Pennantite-1a** (1983)

The above enumerated minerals constitute the suite of "Parker Shaft Minerals" as understood by the authors. Assemblages containing one or more (often many) of these minerals are usually associated with other minerals which are widespread at Franklin and include franklinite, willemite, hendricksite, feldspar, manganaxinite, garnet, native lead, and native copper. Some of the minerals numbered 1-17 are also found outside the original "Parker Shaft Minerals" suite but are common in that assemblage and tend to reach their best development there.

There are also quite a few minerals (18-26, below) which were discovered in specimens known or believed to be from the Parker Shaft, but are not considered by the authors to be integral to the "Parker Shaft Minerals" suite. Many of these minerals were relatively widespread elsewhere in the ore body; others may have been of limited occurrence. None appear to be regularly or exclusively associated with the "Parker Shaft Minerals" as a group.

18. **Glaucochroite** (1899)
19. **Hardystonite** (1899)
20. **Leucophoenicite** (1899)
21. **Gageite** (1910)
22. **Hodgkinsonite** (1913)
23. **Cahnite** (1927)
24. **Kentrolite** (1935)
25. **Marsturite** (1978)
26. **Franklinfurnaceite** (1987)

Because lead silicates such as roeblingite, nasonite, hancockite, and margarosanite play such a major role in the "Parker Shaft Minerals" suite, it is often assumed that any lead silicate from Franklin is not only a part of that suite but must also have been restricted to the part of the ore body which yielded "Parker Shaft Minerals" during the life of the Parker Mine and later in 1944-1954. Neither is the case. Esperite, a lead silicate known until 1965 as "calcium larsenite," was present in the Parker Shaft specimen found prior to 1897 and used for the description of hardystonite by Wolff (Palache, 1935, p. 81). However, esperite was initially described as part of the larsenite occurrence from the 400-foot level in the north end of the mine, far from the Parker Mine workings.

Palache also mentions many other species (e.g. hematite and hyalophane) as occurring in specimens from the Parker Shaft, but this should not be taken to mean that these minerals occur only in Parker Shaft material or can be considered characteristic members of the "Parker Shaft Minerals" suite.

ROEBLINGITE

$Pb_2Ca_6(SO_4)_2(OH)_2(H_2O)_4[Mn(Si_3O_9)_2]$ **Monoclinic**

Roeblingite came up once and that was the end of that, so you can not get that for love nor money. Three specimens are all I saw in Franklin, and none of these were for sale except one, and you had to buy the whole collection and then Roeblingite went with it. **John A. Manley (1899)**

100 years later, the situation has not appreciably changed. Roeblingite specimens have remained as elusive for present day Franklin-Sterling Hill mineral collectors as they were in Manley's day. In the years since its initial description in 1897 by Penfield and Foote, roeblingite has been the object of further scientific investigation by a number of scientists such as Blixt, Moore and Dunn. It has also been an object of desire, in some cases an obsession, for many generations of Franklin-Sterling Hill mineral collectors. For initiates, perhaps the greatest thrill is finding a specimen of roeblingite on the Parker Dump - an epiphany shared on different occasions by one of the authors (P.C.) and Dr. Paul Moore (Moore, 1992). There is no question that roeblingite exerts a powerful fascination on collectors, though it can be difficult to explain why to outsiders.

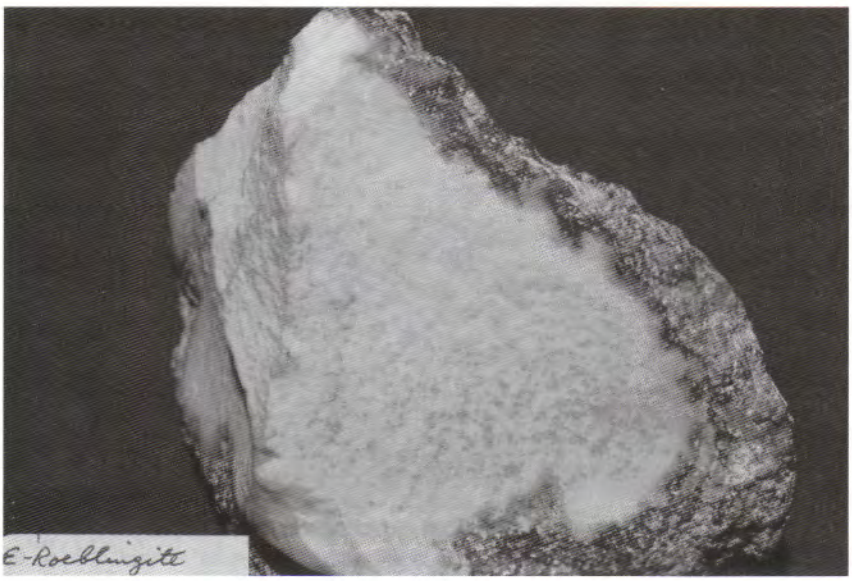


Figure 4. Roeblingite nodule, 3 x 2.5 x 2.5 in., from Franklin, N.J. This nodule has the typical white "fresh coconut" texture and color. A "rind" of altered hancockite and dark brown ganophyllite formed at the contact between the nodule and its matrix. George Elling specimen; Gary Grenier, Jr. photo.

Figure 5. Roeblingite nodule, 1 x 0.75 x 0.75 in., from Franklin, N.J. This small, three-dimensional nodule sits on a matrix of altered hancockite and garnet with minor amounts of white prehnite and charlesite; this matrix in turn is in contact with a layer of franklinite and hendricksite. The specimen overall measures 5.5 x 4.5 x 4 in. Fred Parker specimen; Gary Grenier, Jr. photo.

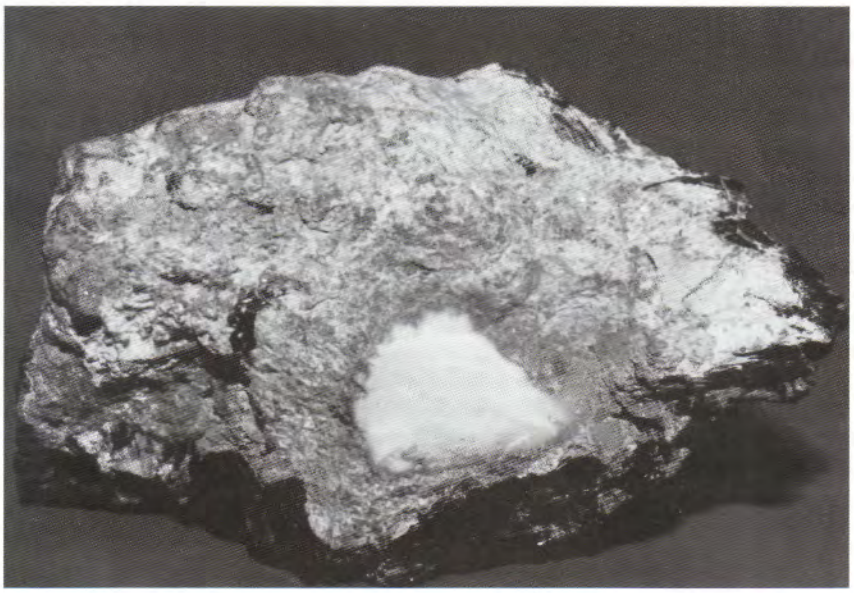


Figure 6. Roeblingite nodule in matrix, 4 x 3 x 2.5 in., from Franklin, N.J. The 0.75-in. roeblingite nodule, of typically rounded shape, is enclosed in a matrix of altered hancockite, white prehnite, and dark brown handricksite. William Kroth specimen; Gary Grenier, Jr. photo.

The daylight appearance of roeblingite itself, to be charitable, is quite drab and dull. It does not occur in macroscopic crystals. It is massive, usually white, and fine-grained, and likely to be compared in appearance with unglazed porcelain or coconut meat. In fact, most of the "Parker Shaft Minerals," with the exception of some specimens of clinohedrite, have an unassuming appearance in daylight, and will not win any beauty contests. To be sure, they are rare and very unusual minerals, some unique to Franklin and others duplicated at one or a few localities, notably Långban, Sweden. Their attraction is due in part to the extraordinary complexity of the "Parker Shaft Minerals" assemblages, which are unlike anything else in the world. Their complexity is evident even in hand-sized specimens and smaller; asteroid-sized specimens are not necessary to study or appreciate them. Even minerals which are common at other localities occur here in very unusual forms; for example, prehnite occurs as white platy masses and pectolite as colorless glassy grains. As an added bonus, many of the "Parker Shaft Minerals" are fluorescent under short and/or long wave ultraviolet light. The variety of fluorescent color and color patterns of the complex assemblages not only adds to their appeal, but can be an aid in identifying components of an apparantly indistinguishable *mélange* of white,off-white, gray,and buff colored minerals.

Roeblingite is chosen as the first "Parker Shaft Mineral" to be honored with color photography in *The Picking Table* because it is for many ***the*** quintessential "Parker Shaft Mineral." It is also a member of a sub-group of "Parker Shaft Minerals," the "Parker Shaft Lead Silicates." This sub-group includes barysilite, ganomalite, hancockite, kentrolite, margarosanite and nasonite; to the authors' knowledge roeblingite has been found assocated with all of these but ganomalite and kentrolite.

Not only was roeblingite the first "Parker Shaft Mineral" and the first "Parker Shaft Lead Silicate" to be discovered and described, but also for its fanciers it is a mineralogical *Fabergé Egg*. The complexities of the roeblingite assemblages are astounding, their fluorescent responses unique. Most of the "Parker Shaft Minerals" can in fact be found in association with roeblingite. The photographs accompanying this article show the complex nature of these assemblages, and suggest the nature of their appeal to Franklin-Sterling Hill mineral collectors.

The first set of pictures consists of black-and-white photographs showing the various physical forms of roeblingite. This is not an exercise in phrenology or nodule envy, and not all the photos are of coconut- or egg-shaped nodules. These can be considered a collection of mimetoliths or *lusus naturae*. In this regard, there is a certain roeblingite nodule that one of the authors (P.C.) tries to imagine resembles a certain glamorous Hollywood personality. However, no matter the nodule is oriented, it inexorably and inevitably reminds him of either Voltaire or Quasimodo, depending on the lighting. Perhaps you will be the lucky(?) one to locate this piece in the photographs.

The second set of photographs is in color. The full glory of the complex roeblingite assemblages is on display. There are the important assemblages containing the "Parker Shaft Lead Silicates" hancockite, margarosanite and nasonite, along with the "Parker Shaft Minerals" charlesite, ganophyllite, prehnite and xonotlite. In addition there is what appears to be a vein assemblage containing an unusual greenish crystalline cahnite, with charlesite, clinohedrite, barite, and roeblingite.

BIBLIOGRAPHY

Albanese, J.S. (1965) The Parker Shaft Silicate Minerals. *The Picking Table*, **6**, No. 2, 15-21.

Baum, J.L. (1983). The Parker Mine. *The Picking Table*, **25**, No. 1, 7-11.

Dunn, P.J. (1985) The lead silicates from Franklin, New Jersey: occurrence and composition. *Mineralogical Magazine*, **49**, 721-727.

Dunn, P.J. (1995) *Franklin and Sterling Hill, New Jersey: the world's most magnificent mineral deposits*. Privately published. 755 pp.

Dunn, P.J., Peacor, D.R., Leavens, P.B., and Baum, J.L. (1983) Charlesite, a new mineral of the ettringite group, from Franklin, New Jersey. *American Mineralogist*, **68**, 1033-1037.

Frondel, C., and Baum, J.L. (1974) Structure and mineralogy of of the Franklin zinc-iron manganese deposit, New Jersey. *Economic Geology*, **69**, No. 2, 157-180.

Hurlbut, C.S., Jr., and Baum, J.L. (1960) Ettringite from Franklin, New Jersey. *American Mineralogist*, **45**, 1137-1143.

Manley, J.A. (1899) A trip to Franklin Furnace. *The Mineral Collector*, **6**, 47-51.

Moore, P. B. (1992) The Welsh collection of minerals: a celebration. *The Picking Table*, ***33***, No. 1, 16-17.

Palache, C. (1935) The Minerals of Franklin and Sterling Hill, Sussex County, New Jersey. *U.S.G.S. Professional Paper No.* 180. 135 pp.

Penfield, S.L., and Foote, H. W. (1897) On roeblingite, a new silicate from Franklin Furnace, N.J., containing sulphur dioxide and lead. *American Journal of Science*, 4th Series, **3**, 413-415.

Van Mater, J.A. (1899) Summary Report on the growth and expansion of mining at Franklin 1892-1899. Untitled and unpublished report dated Dec. 18, 1899, New Jersey Zinc Co., Franklin, N.J.

Yeates, H. (1991) The lead silicate minerals of Franklin, New Jersey: an SEM survey. *Mineralogical Record*, **22**, 273-278.

****

NOTES ON THE FIGURES

In each figure caption, the list of associated minerals usually includes only those considered part of the "Parker Shaft Minerals" suite. Minerals such as franklinite, andradite, willemite, and hendricksite, which are often included in roeblingite specimens, are usually omitted from the caption.

All the photographs accompanying this article are the work of Gary Grenier, Jr., and are copyrighted by him. They are used in this issue of *The Picking Table* with his permission, and may not be reproduced without his written consent.

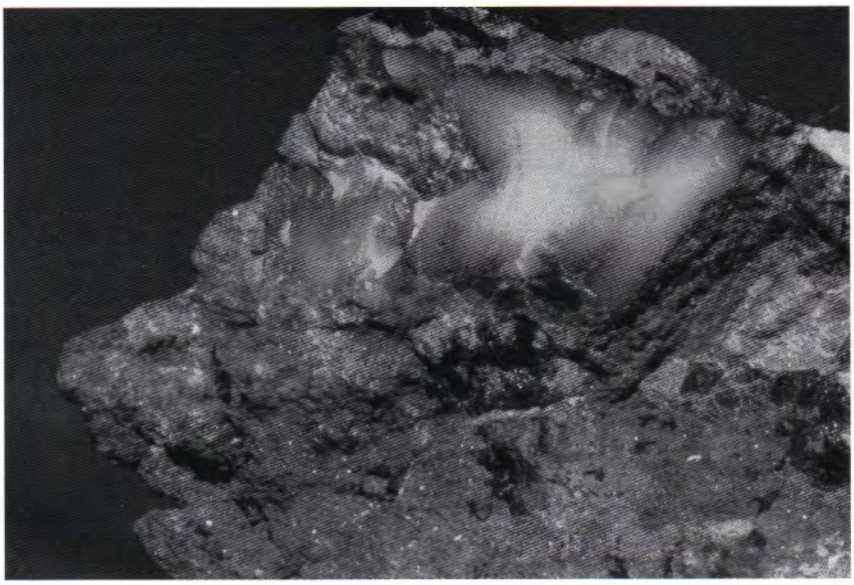
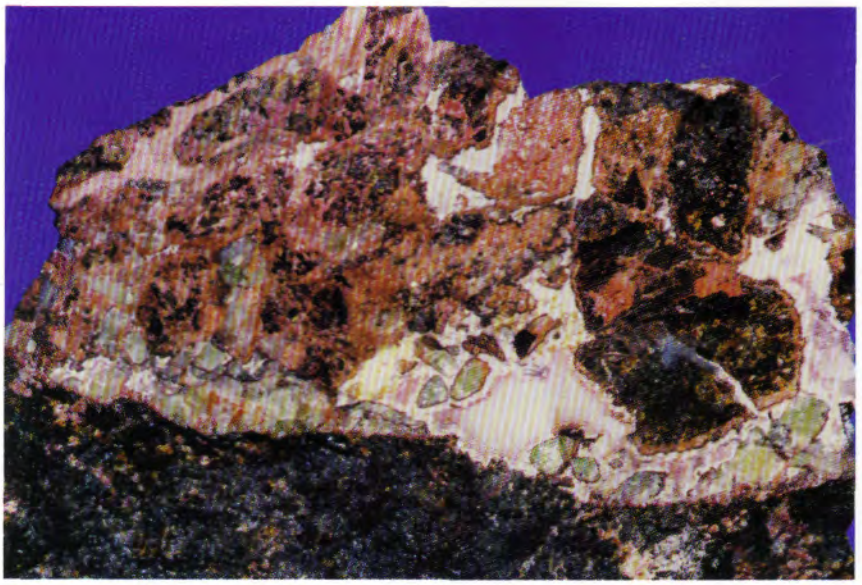


Figure 7. Roeblingite nodule in matrix, 3.5 x 3 x 2.5 in., from Franklin, N.J. An irregularly shaped roeblingite nodule in a matrix of fine-grained compact ganophyllite with dark brown hendricksite, glassy grains of orange-brown andradite, and minor amounts of white prehnite and barite. George Elling specimen; Gary Grenier, Jr. photo.

Figure 8. Roeblingite nodule in matrix, 3.5 x 2 x 1.5 in., from Franklin, N.J. A 0.75-in. opaque white fine-grained roeblingite nodule in a matrix of mixed red-brown hancockite, white prehnite, and minor amounts of franklinite and andradite. Elsewhere in the matrix are small gray-colored masses of roeblingite. David Wellbrock specimen; Gary Grenier, Jr. photo.

Figure 9. Roeblingite "vein" in matrix, 4 x 4 x 3.5 in., from Franklin, N.J. The roeblingite is vein-like in that it appears to be a vein-filling in massive granular franklinite. At the boundary between the roeblingite and the franklinite matrix is a thin layer of a brown mineral (hancockite or ganophyllite?) Within the "vein," which ranges in width from 0.5 to 1.25 in., are small masses of ganophyllite and altered hancockite. Richard Hauck specimen; Gary Grenier, Jr. photo.



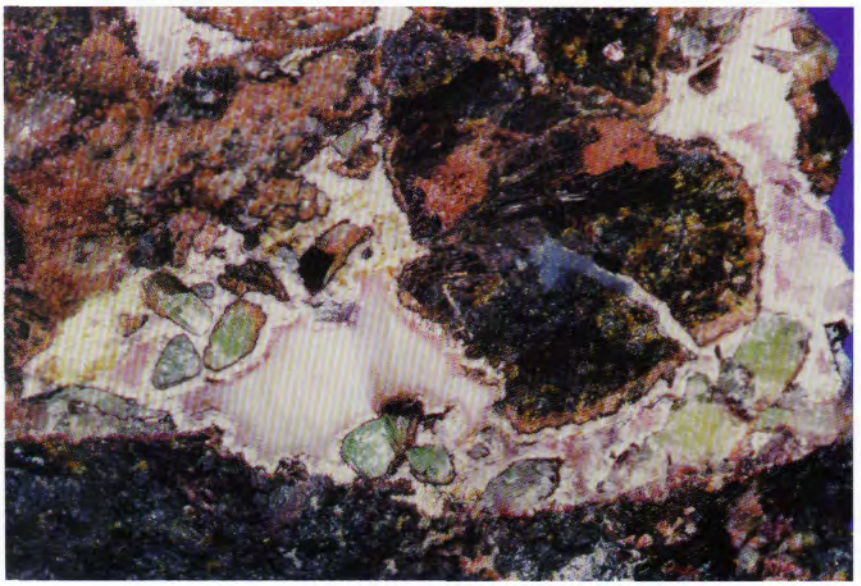


Figure 10. Roeblingite with charlesite, clinohedrite, ganophyllite, pennantite, and prehnite, 7 x 5 x 2 in., from Franklin, N.J. This specimen represents the vein assemblage described by Hurlbut and Baum (1960). The roeblingite in this specimen has a chalcedony-like appearance. The roeblingite mass is about 2 in. across, with a rim of white prehnite which has the appearance of radiating outward from the edge of the roeblingite. This assemblage contains orange-brown micaceous ganophyllite, some as masses, and some as rims on fragments and masses containing franklinite with dark brown hendricksite. Some of the ganophyllite masses have thin rims of dark brown pennantite which are in turn rimmed by platy white prehnite. Pennantite also forms rims around hexagonal, pale green willemite crystals, and here the pennantite is coated in turn with white platy prehnite. Pink masses of crystalline clinohedrite, white barite, and white charlesite are also present. James Chenard specimen; Gary Grenier, Jr. photo.

Figure 11. Close-up view of the specimen in Figure 10. The successive rims of dark brown pennantite and white platy prehnite can be seen in greater detail. Gary Grenier, Jr. photo.

Figure 12. A close-up of the back of the specimen in Figure 10. Pink crystalline masses of clinohedrite fill gaps in white barite. Rims of white prehnite and dark brown pennantite on willemite crystals and on ganophyllite masses can be clearly seen. Gary Grenier, Jr. photo.

Figure 13. Roeblingite with aqua-colored willemite crystals, 3 x 3 x 2.5 in., from Franklin, N.J. The roeblingite is an unusual tan color. This specimen is notable for the distinctive hue of its glassy, transparent to translucent willemite crystals. Gary Grenier, Jr. specimen and photo.

Figure 14. Roeblingite with cahnite, charlesite, ganophyllite, and clinohedrite, 3 x 3 x 1.5 in., from Franklin, N.J. This specimen appears to be part of a vein assemblage. To the left of the tan-colored roeblingite mass is a pencil mark left by John S. White to mark the area where a sample was removed for analysis. The pale green mineral is crystalline cahnite. The "vein" contains a white charlesite crystal and white to colorless clinohedrite crystals in a small cavity bounded by massive cahnite and white barite. Brown ganophyllite "caps" the specimen, and the matrix rock on the bottom is a mixture of franklinite and hendricksite. Peter Chin specimen; Gary Grenier, Jr. photo.

Figure 15. Roeblingite with hancockite and clinohedrite, 2.5 x 1 x 1 in., from Franklin, N.J. The roeblingite nodule is chalky white. Red hancockite is embedded in its surface. Translucent lavender-colored crystalline masses of clinohedrite encrust the nodule. A mineralogical *Faberge Egg*! George Elling specimen; Gary Grenier, Jr. photo.

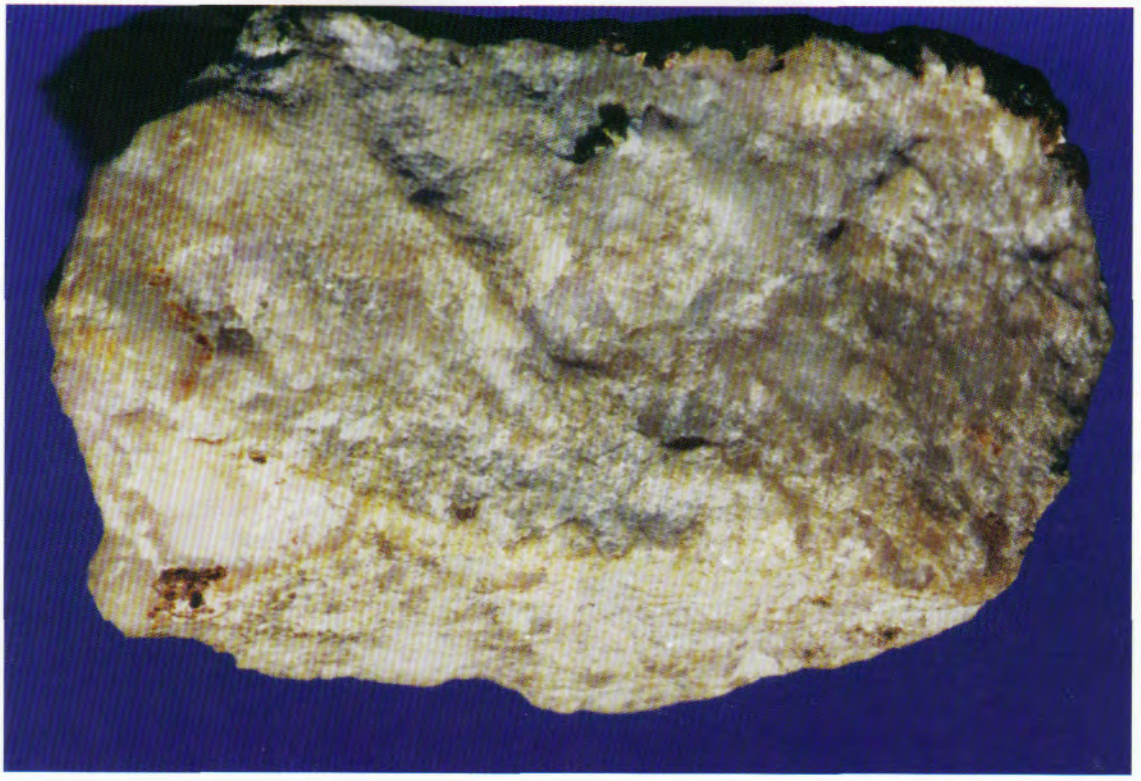


Figure 16. **Roeblingite with margarosanite, pectolite, and prehnite, 3.5 x 2.5 x 2 in., from Franklin, N.J. The roeblingite is embedded in and surrounded by platy margarosanite. Also present are fine-grained prehnite, glassy white pectolite masses, and massive manganaxinite. Gary Grenier, Jr. specimen and photo. (The photographer's original image has been inverted to match the orientation of the specimen in Figure 17.)**

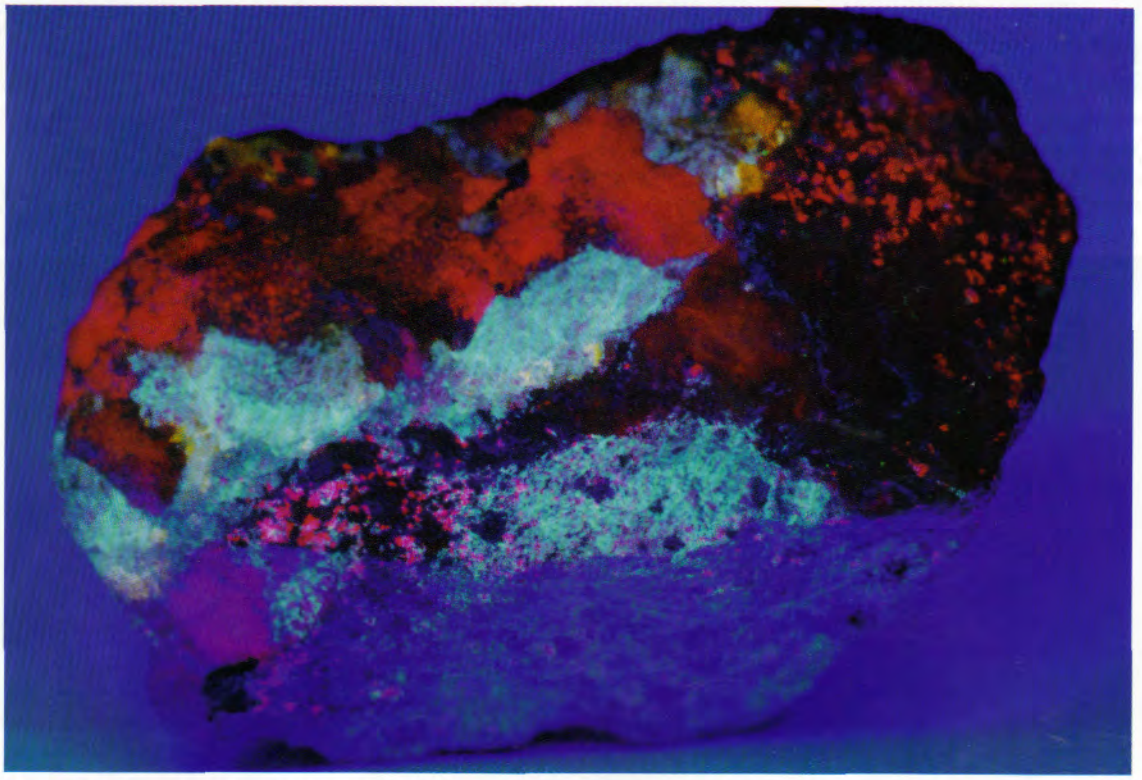


Figure 17. **The specimen in Figure 16 under short wave ultraviolet radiation. The fluorescent responses are: red = roeblingite, pale blue = margarosanite, bluish-gray = prehnite*, and orange = pectolite. *Note that to the eye prehnite fluoresces a bluish-pink color, often difficult to capture on film. Gary Grenier, Jr. photo.**

Figure 18. Roeblingite with hancockite, margarosanite, nasonite, pectolite, manganaxinite, willemite,andradite, etc., 2.5 x 2.5 x 2 in., from Franklin, N.J. The roeblingite is in small "eraser-head" sized masses. Gary Grenier, Jr. specimen and photo.

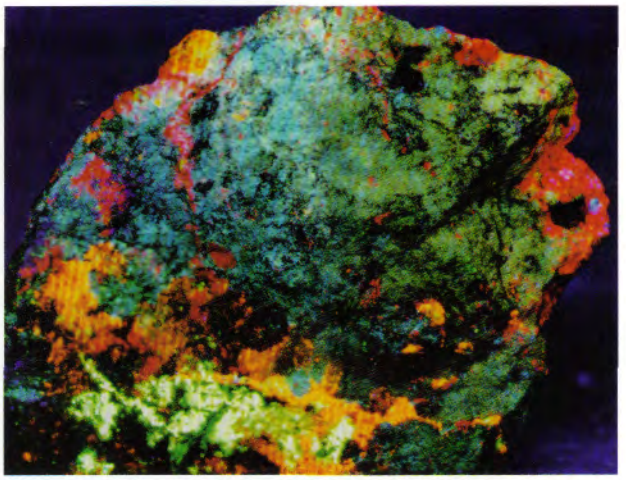


Figure 19. The specimen in Figure 18 under short wave ultraviolet radiation. Moderate red = roeblingite, pale blue = margarosanite, greenish-yellow = nasonite, orange = clinohedrite, intense red = manganaxinite, green = willemite. Gary Grenier, Jr. photo.

Figure 20. Roeblingite with xonotlite and prehnite, 5 x 4 in., from Franklin, N.J. Roeblingite is present in multiple nodules. Xonotlite and prehnite are both white and are difficult to distinguish in daylight, but not under UV; see Fig. 21. Gary Grenier, Jr., specimen and photo.

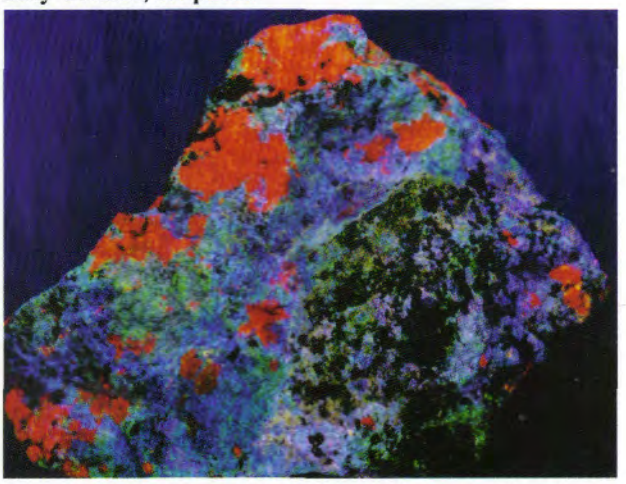


Figure 21. The specimen in Figure 20 seen under short wave ultraviolet radiation. Red = roeblingite, blue = xonotlite, and pink = prehnite. The value of fluorescence in mineral identification at Franklin is readily apparent. Gary Grenier, Jr. photo.

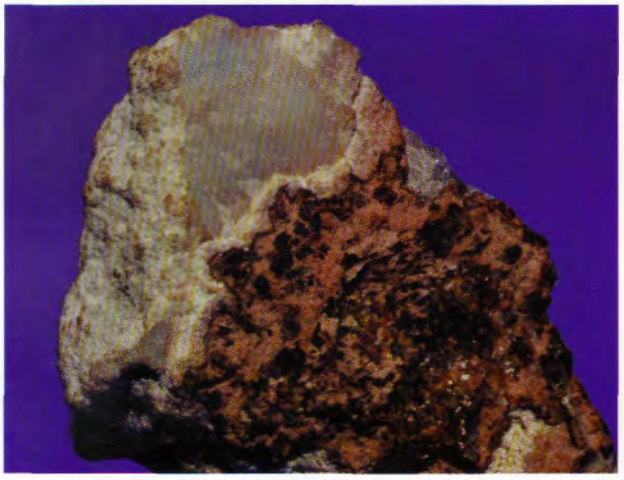


Figure 22. Roeblingite with charlesite, clinohedrite, prehnite, ganophyllite, hancockite, and pennantite, 2.5 x 2.5 x 2 in., from Franklin, N.J. From the same vein assemblage as the specimen in Figs. 10-12. Peter Chin specimen, Gary Grenier, Jr. photo.

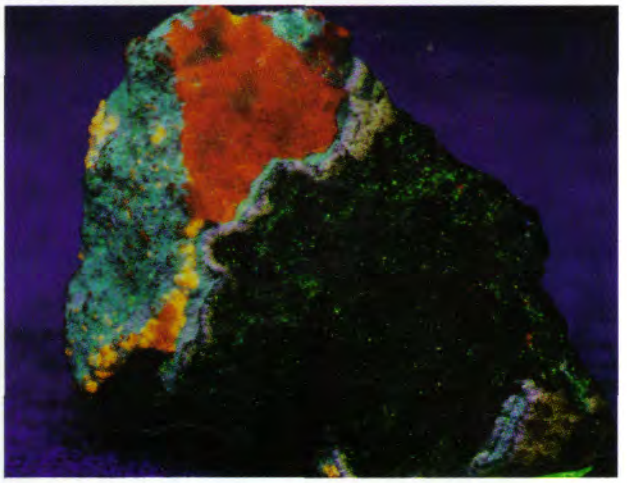


Figure 23. The specimen in Figure 22 under short wave ultraviolet energy. Red = roeblingite, blue = charlesite, orange = clinohedrite, and pink = prehnite. Gary Grenier, Jr. photo.

**Reprinted with permission from *The Economic Geology of Northern New Jersey*,
edited by Alan I. Benimoff and John H. Puffer,
the 1997 Field Guide and Proceedings of the Fourteenth Annual Meeting of the Geological Association of New Jersey**

THE GEOLOGY AND MINING OF THE STERLING HILL ZINC DEPOSIT, SUSSEX COUNTY, NEW JERSEY

Robert W. Metsger
Chief Geologist (Retired)
The New Jersey Zinc Company

The Sterling Hill ore body is one of an unique pair of metamorphosed Proterozoic zinc oxide and silicate deposits of a type unknown elsewhere in the world. With its companion deposit in Franklin, three miles to the north, it made up a mineral district which was a major producer of zinc for over one hundred and fifty years.

THE ORE BODY

The ore at Sterling Hill is a mixture of franklinite - $(Zn,Mn)O.Fe_2O_3$; willemite - Zn_2SiO_4; and zincite - ZnO. These and the gangue minerals, chiefly pyroxenes and olivines, occur in various proportions in a matrix of very coarsely crystalline white marble, the Franklin Marble, which has been correlated with the Grenville marble in Canada and the Adirondacks.

Generally speaking, franklinite comprises from forty to sixty percent of the zinc-bearing minerals. It typically occurs as black, metallic, rounded to octahedral grains a few millimeters to several centimeters in diameter in intimate association with the other ore and gangue minerals. The metallic ions, zinc, iron and manganese, are present in the mineral in various proportions in different parts of the ore body. As a result, the magnetic properties of the franklinite - and therefore of the ore - vary from strongly magnetic (approaching that of magnetite) to palpably non-magnetic. Microscopically fine particles of the magnetic franklinite are black and opaque (indistinguishable from magnetite) while the non-magnetic particles are ruby-red and transparent.

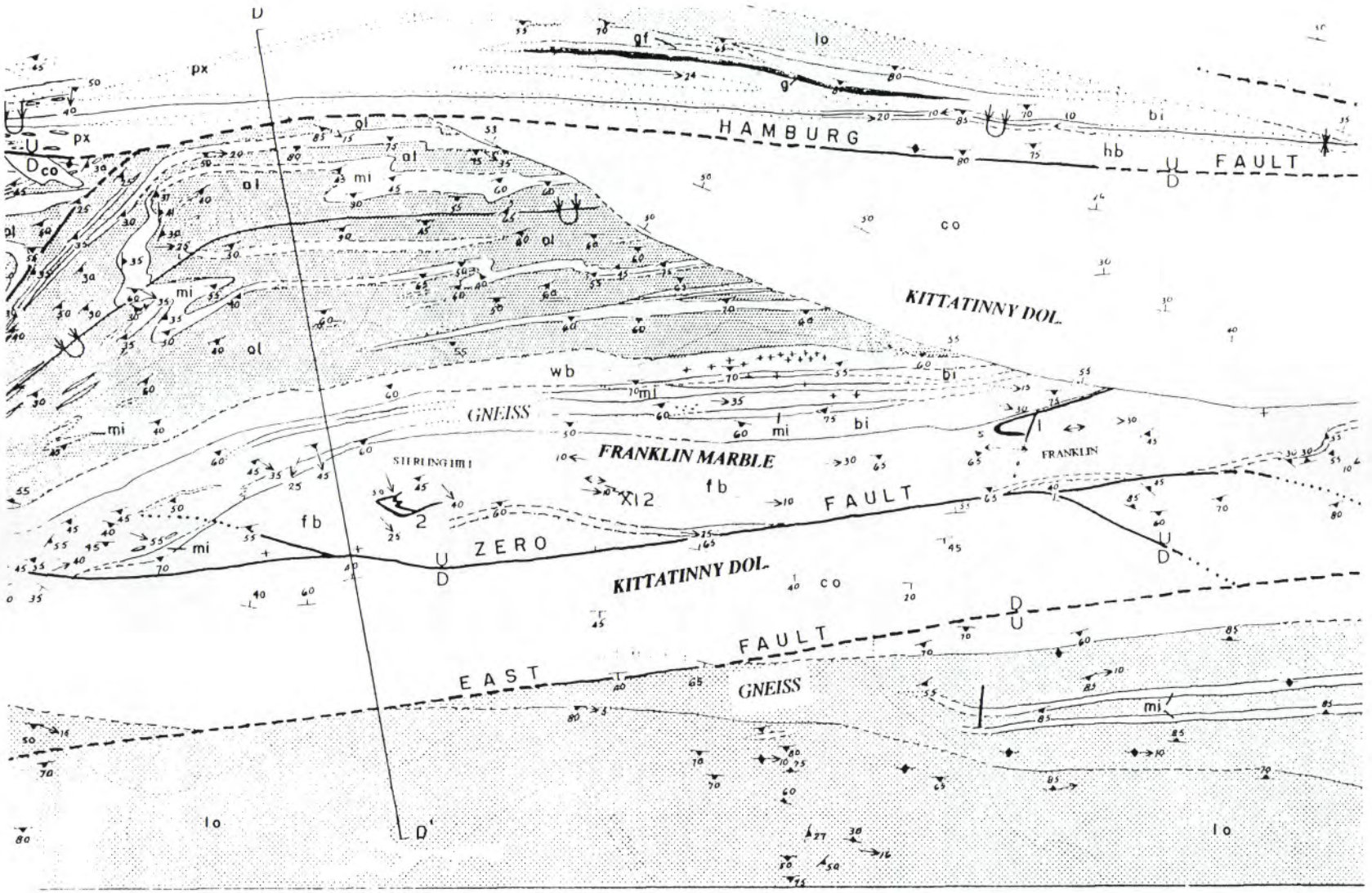
The other principle ore mineral is willemite, comparable in the variety of grain sizes and concentrations in the ore body with the franklinite. It varies in color from deep red to pale pink and from jet black to pale gray or colorless. The colors are due to the presence and relative abundance of micrometer-sized inclusions of franklinite which, in various concentrations, also cause differences in the apparent magnetic properties of the willemite from place to place in the ore body. These inclusions do not appear to be genetically related to the macroscopic franklinite occurrences. They are always found associated with similarly minute inclusions of serpentine distributed much like the magnetite inclusions commonly found in serpentinized olivine.

Zincite, an orange to red mineral, comprises about six to ten percent of the ore minerals and is found almost exclusively in the brown willemite parts of the ore body.

The ore and associated gangue mineral bands occur in complex isoclinal folds which are wrapped around a core of white marble containing xenolith-like blocks of amphibolite. The gross synformal structure plunges 45 degrees almost due east (geographically) while the limbs of the folds strike generally northeastward and dip fifty-five degrees to the southeast. The overall textures and fold structures suggest very strongly that the relatively dense ore body sank through the enclosing marble as an inverted diapir when the carbonate was extremely plastic or almost fluid. Age determinations on galena found in fractures in the marble indicate that the plastic stage of the carbonate, hence the imposition of the fold structures, occurred more than eleven hundred million years ago in pre-Grenville time.

THE ZERO FAULT

Flowing northeastward from Lake Mohawk about seven miles to the Boro of Franklin, the Wallkill River occupies a valley floored by the Cambro-Ordovician dolomitic limestones of the Kittatinny supergroup. These are a minimum of 1,150 feet thick where observed at the Sterling Hill mine and over 1,900 feet thick as determined by drilling in Franklin. The carbonates are bordered on the southeast and northwest by parallel, almost vertical faults (Figs. 1 & 2) which separate them from the Proterozoic rocks on either side. The northwestern border fault is best known because of its impact on the mining operations at Sterling Hill and its contribution to the problems of exploration in the area. It has been investigated extensively in the course of mining and by diamond drilling to as much as seven thousand feet

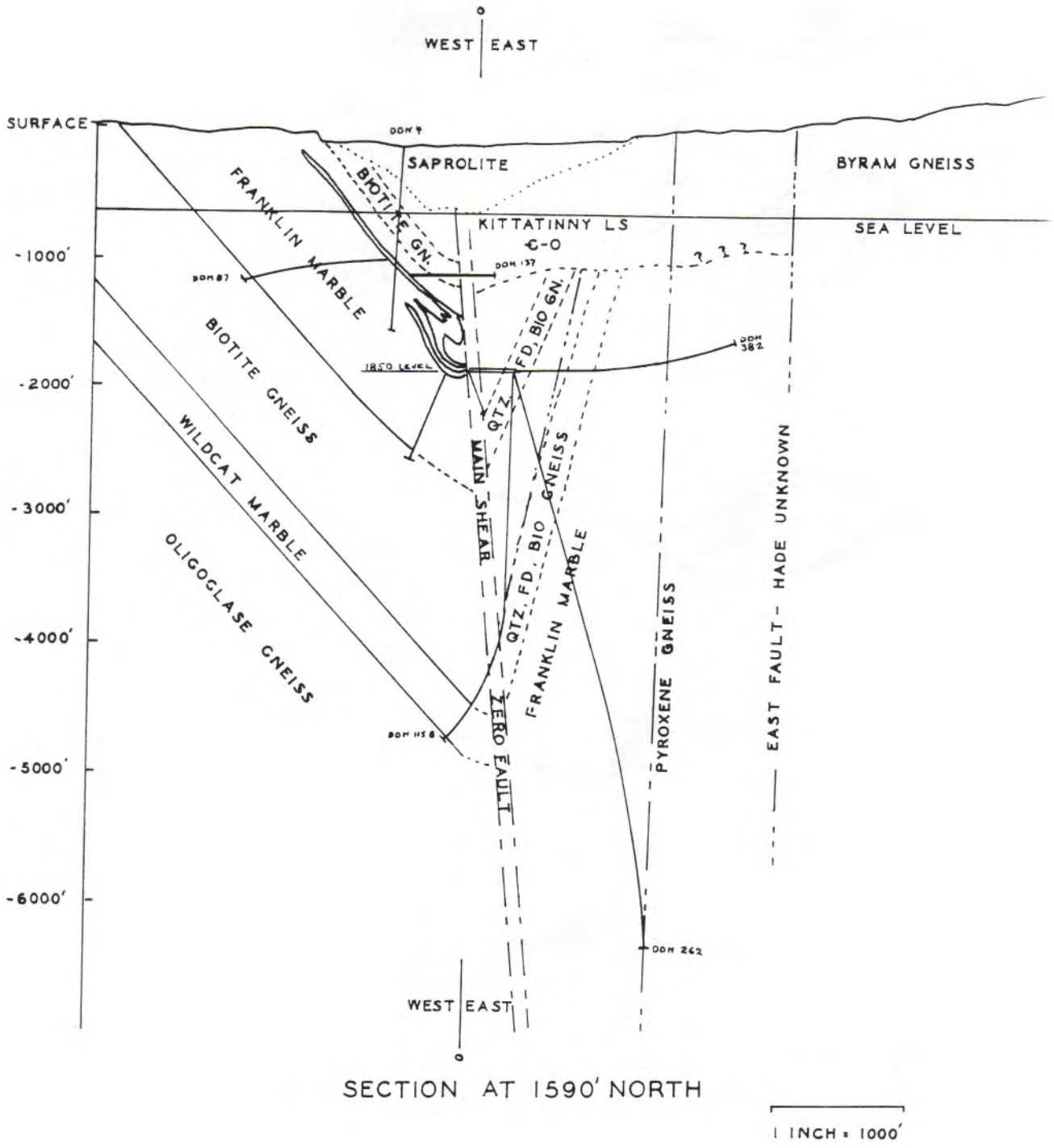


GEOLOGIC MAP OF THE FRANKLIN-STERLING HILL AREA

5,000 Feet

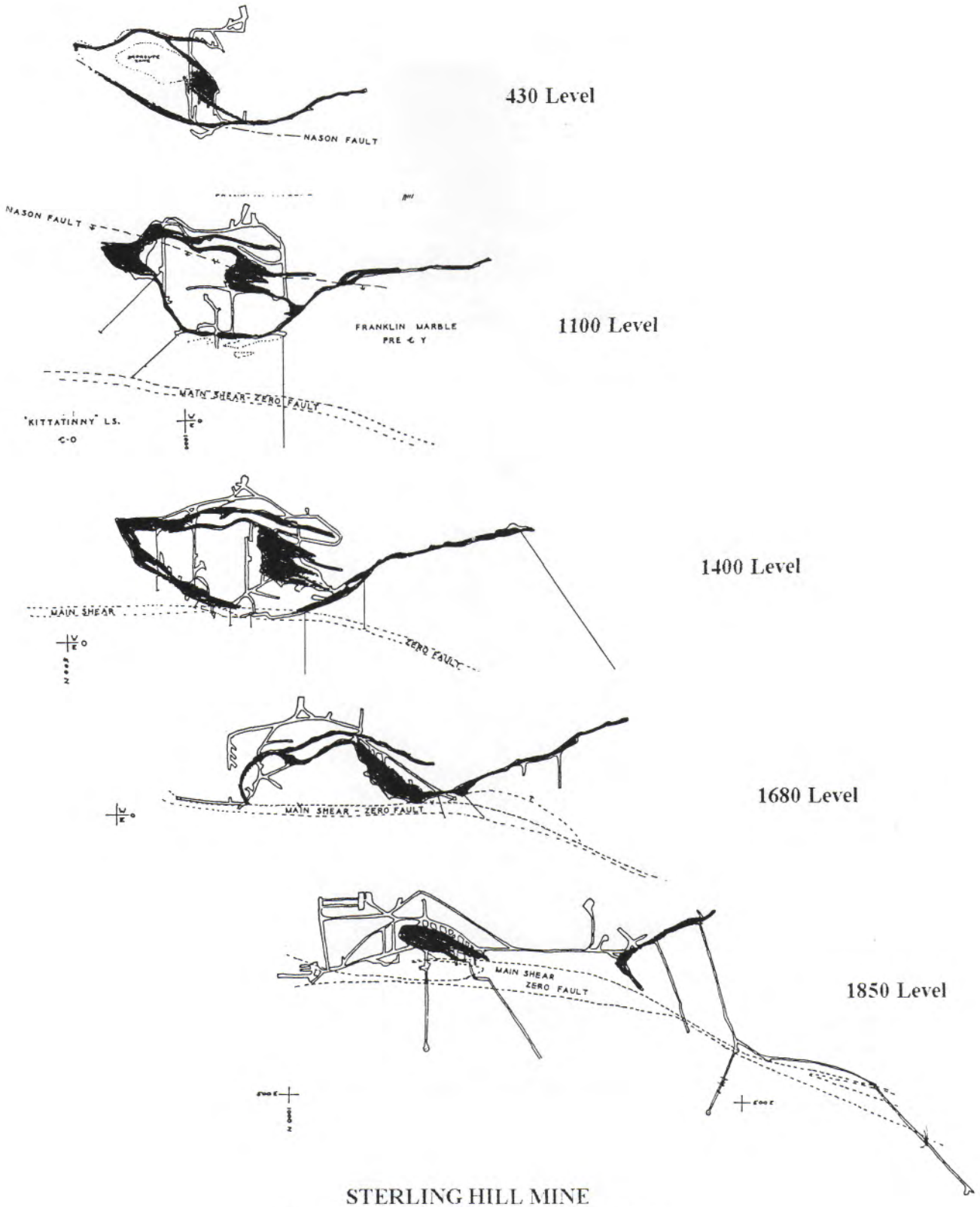
Figure 1

From: Hague et al. (1956)



STERLING HILL MINE
SUSSEX COUNTY, NEW JERSEY

Figure 2.



STERLING HILL MINE
Ogdensburg, Sussex County New Jersey
Scale: 1 inch=600 feet

Figure 3.

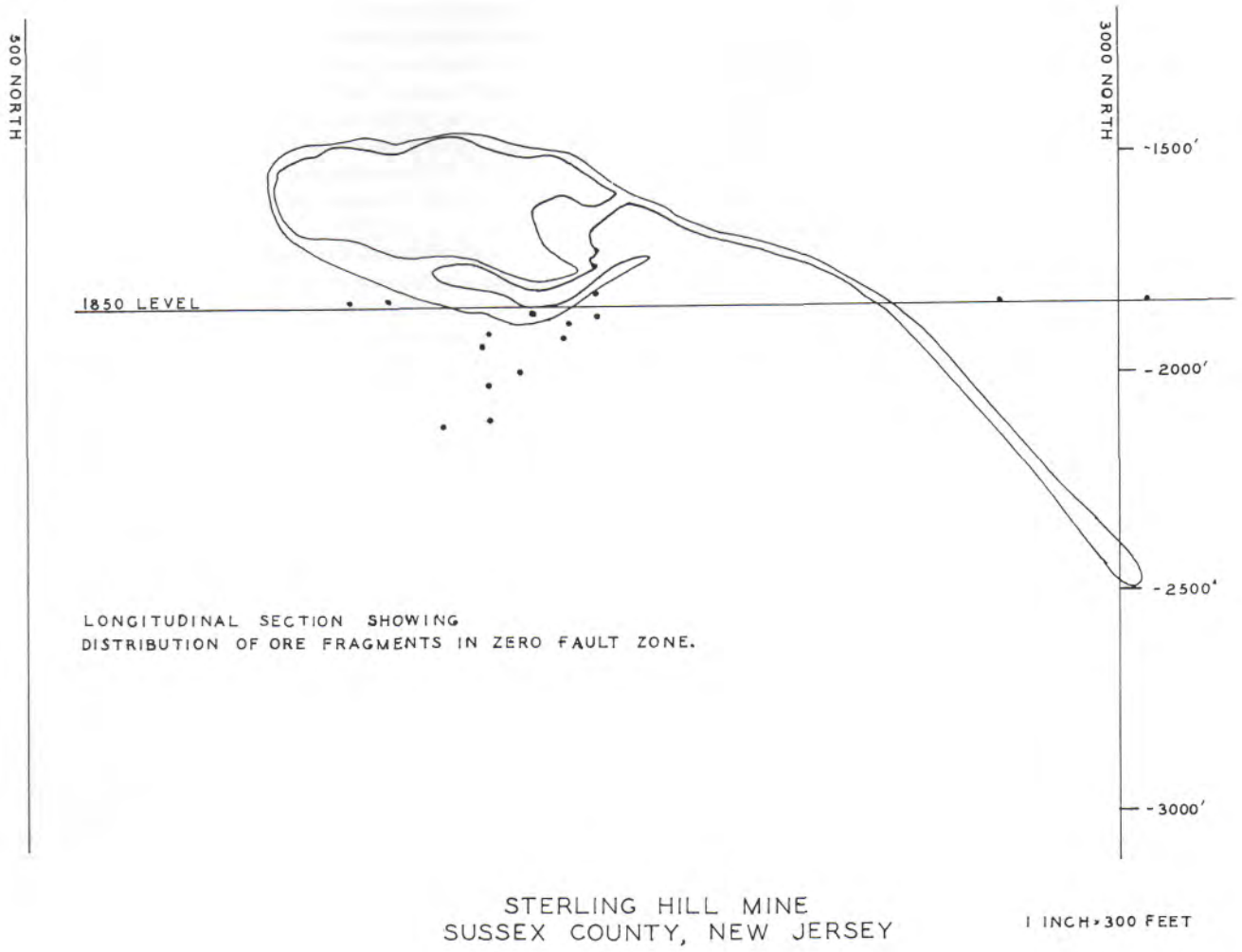


Figure 4.

below the surface. Because the exposure of the fault in the mine coincides with the zero meridian of the mine survey grid, the fault has been designated as the "Zero Fault" on all modern geologic maps of the area.

As a result of its fifty-five degree easterly dip, the ore body pinches out gradually against the nearly vertical Zero Fault below the 1,500 foot level. Below that elevation, perhaps related to stresses at the time of faulting, a cross-fold which plunges northward at about 25 degrees further complicates the problem of ore distribution on each level. The ore disappears against the fault at a depth of 2,500 feet from the surface. While we have no idea how large the severed segment is, it is interesting to note that the dimensions of the ore body increase from the surface downward to its intersection by the fault (Fig. 3) beyond which it is missing.

As exposed in the mine, the Zero Fault is marked by a vertical, or nearly vertical zone of intense shearing which ranges up to as much as twenty-five feet in thickness. Its schistose layering is lubricated by heavy black smears of graphite gouge which sharply delineate it against the light gray to white rocks on either side. The softness of the shear zone accounts for the lack of natural fault exposures at the surface. Mine openings and drill hole penetrations below the ore body have encountered numerous ore fragments within the fault zone (Fig. 4) indicating a substantial vertical downward component to the movement of the block east of the fault. The amount and sense of lateral movement is less clear due, in part, to a lack of data south of the mine. As there are no marker units common to both sides of the fault we can say only that the vertical displacement of the down-faulted block is a minimum of 1,150 feet (the known thickness of the Kittatinny dolomites in the graben).

A good exposure of the Zero Fault occurs about three miles northeast of the Sterling mine. Here the Cambro-Ordovician sediments are juxtaposed with the Franklin Marble across a steeply dipping, strongly mylonitized zone. Evidence of plastic flow in the marble on the northwest (left) side of the very sharply defined gouge-filled break can be seen here. At the same exposure further to the northwest is a graphic granite. How is this related to the enclosing marble?

SAPROLITE

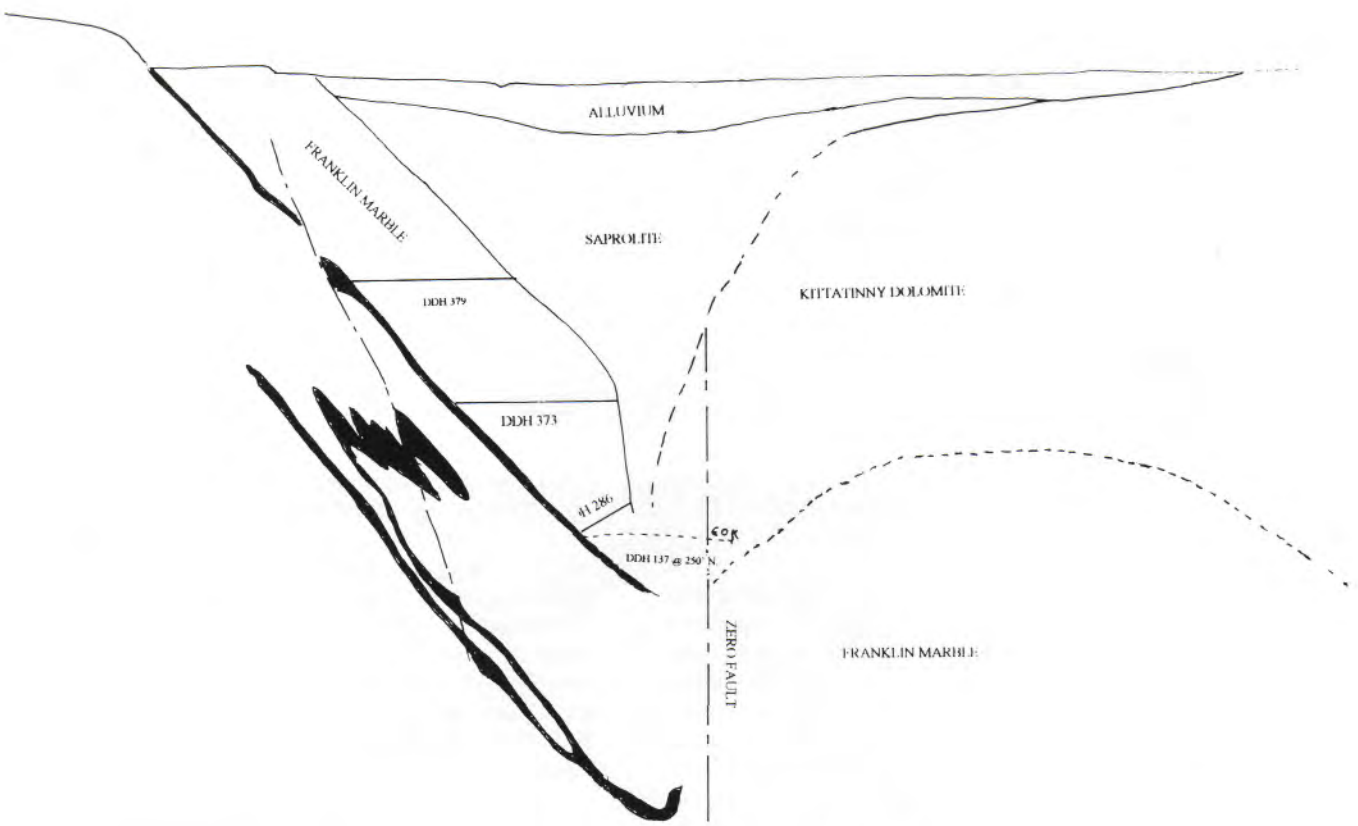
Directly over the mine, separated from it to the depth of the 600 foot level by only 300 feet of marble and by less than 100 feet of rock at the 1200 foot level, is a bedrock depression filled with water-saturated mud (Fig. 5) with a north-south surface dimension of 2000 feet and an east-west dimension of 1000 feet. The soft, clayey material retains most of the original textures of the rock from which it was altered and is thus classified as a saprolite. The flattened cone-like depression bottoms at about the 1200 foot level. The great depth of weathering appears to be related to brecciation associated with the Zero Fault.

A second, smaller occurrence of saprolite (Fig. 6) replaced the marble and amphibolite core of the ore body from the surface to a depth of 675 feet. This was well explored because it was hazardous to the mining of the adjacent ore. This saprolite, which also had the consistency of a clayey mud and retained many of the textural and structural features of the rock from which it was derived, had an average assay of about ten percent zinc. Some masses of it assayed as high as forty percent zinc. The latter areas were partially indurated with hemimorphite. The "mud" was mined in the late 1800s and early 1900s from two open pits until the water table was encountered.

DEVELOPMENT

Although there is some evidence of mining activity in the form of scattered pits as early as 1739, mining in earnest above the 500 foot level did not begin until the latter part of the nineteenth century. In 1913, making use of old workings to a depth of about 340 feet, an inclined (56 degree) shaft was sunk through large masses of ore for development down to the 1850 foot level. To protect the shaft, it was necessary to leave a 200-foot-wide pillar. This resulted in tying up a large tonnage of high-grade ore.

With the benefit of hindsight it might appear to have been poor planning to locate the main production shaft where so much ore had to be tied up in supporting pillars. However, before 1913 very little was known about the amount and geologic continuity of the ore body below the 500 foot level. The existence of ore at depth was known only from three widely spaced borings drilled from the surface in the years 1910-1912. The deepest ore penetrated was less than 1200 feet from the surface and there was no way of knowing how or even whether the occurrences were connected. The decision, therefore, was made to sink the shaft as close as possible to the projected trend of the known ore. From the shaft, levels were established at 100 foot vertical intervals by



STERLING HILL DEPRESSION

1 INCH = 300 FEET

Figure 5

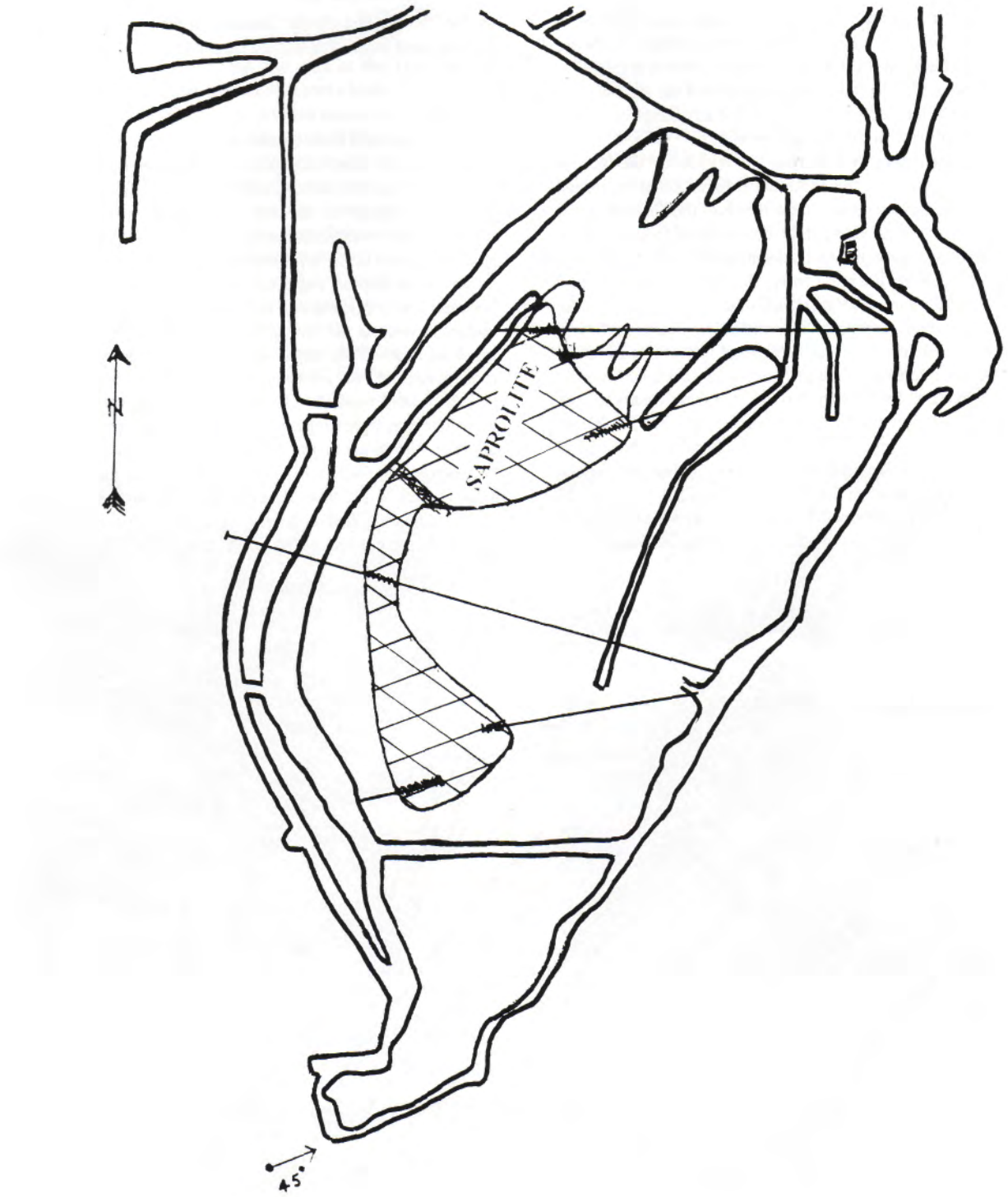


Figure 6.

driving within the ore to its extremities, working along the ore bands where they were relatively thin (drifts) and across the ore (cross-cuts) where it was thickest in the mid-sections of the folds. This made possible a very accurate estimate of the tonnage and configuration of the deposit with the added advantage of paying for its exploration with the ore thus produced.

As mining progressed during the 1930s in the deeper portions of the ore above the 1850 foot level it became apparent that, because of the divergence of the trends of the Zero Fault and the northern part of the East Limb, a substantial tonnage of ore must exist below that level. An exploration shaft was sunk in ore from the 1850 level to the point where the ore terminated against the fault. Exploration levels at vertical intervals of 100 feet to the depth of 2500 feet, driven in ore, indicated that a sufficient amount was present below the 1850 level to warrant development. As that extension of the ore body was separated from the main shaft by 1200 feet of barren rock , it was necessary to sink a separate production shaft in its footwall from the 1850 level and to establish a service level and sumps in rock at the depth of 2550 feet. The bottom of that shaft is at 2700 feet below the surface and is the deepest point in the Sterling Hill mine.

Although the ore below the 1850 level was simply a deeper extension of the East Limb, that part of the mine became known as the "North Ore Body" because it had its own shaft and underground hoist. Production from that part of the mine began in 1965.

MINING

The East and West Limbs and parts of the Cross Member were relatively thin, from place to place ranging in thickness from as little as two feet to more than twenty-five feet. In those parts of the deposit the ore was extracted by mining upward and for as much as several hundred feet horizontally along strike from a selected level to the level above (Fig. 7). The method, known as shrinkage stoping, required that until all the ore was broken between levels only enough be withdrawn to make room for the miners to work at the up-dip limit of the excavation. Not until breaking reached the target level was the stope emptied. This method required the retention of large tonnages of ore in inventory for many months. As the broken ore was withdrawn, unpeeled logs were emplaced as stulls to support the overlying marble. When all of the ore in the stope had been removed between levels, a void remained which was from 3 feet to as much as 20 feet thick, 130 feet in the dip direction, and as much as 300 to 400 feet along strike. At various times over the years divers materials were used to back-fill the voids. These included

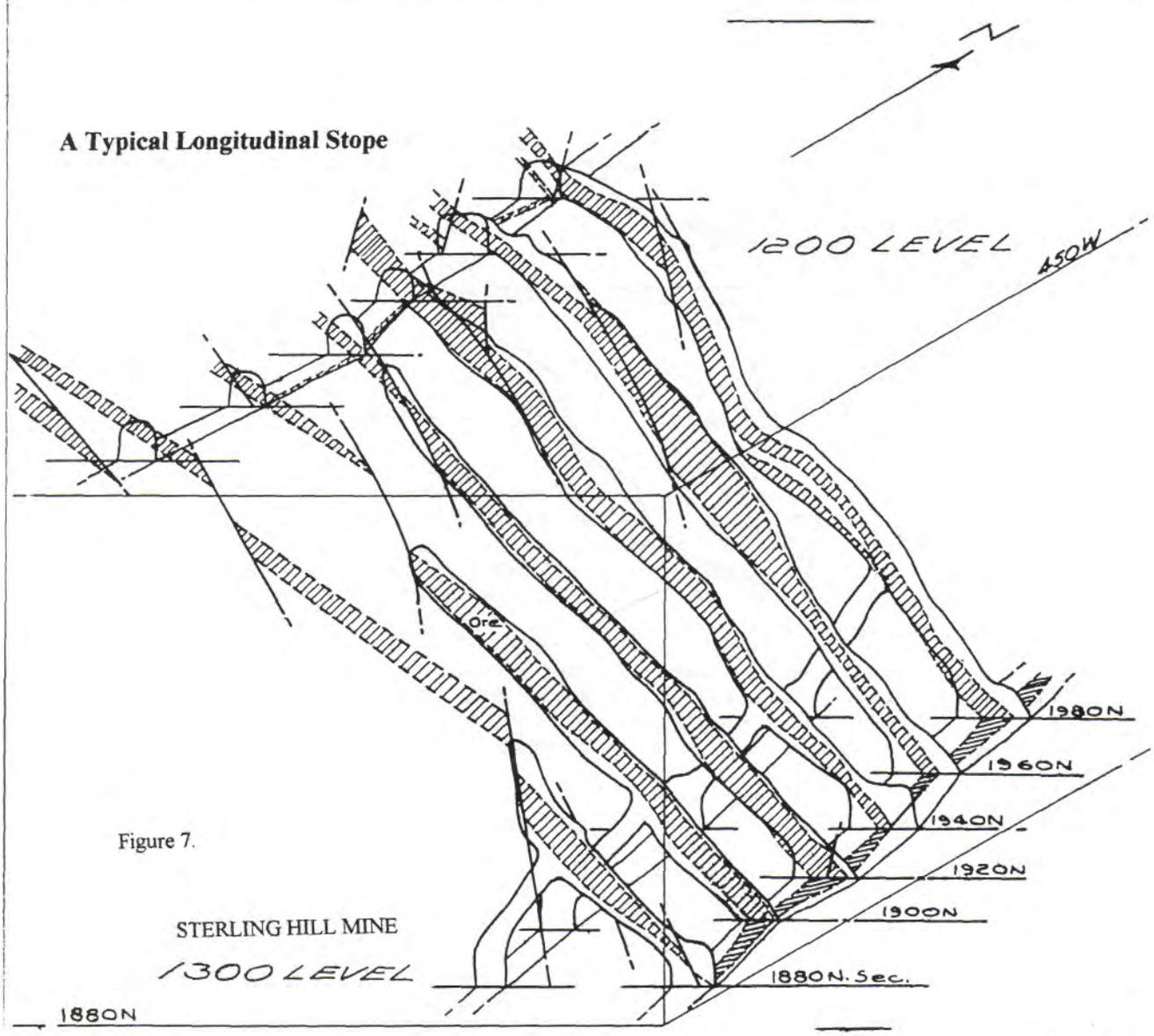


Figure 7.

development muck, Franklin Mine tailings, glacial sand and gravel, and for a few years while it was available, electric furnace slag from the smelter in Palmerton, Pennsylvania.

After 1961 cemented fill was used, first mixed by introducing bagged cement to the flow from each carload as it was dumped. As one would expect the resulting low-grade concrete was anything but uniform in its properties. During the last twenty or so years of mining all fill was introduced hydraulically from a mixing station just under the surface through pipes laid throughout the mine to hand-held hoses in the individual working places. This resulted in a much more uniform and controllable grade of concrete.

In the very thick middle part of the ore body a similar shrinkage method was used. However, here the stopes were transverse to the long dimension of the ore body and limited to 18 feet in width with 22-foot-wide pillars left between them. Excavation proceeded from foot to hanging wall. On completion, the voids were filled from bridges constructed at the upper level. When all the stopes in a given area had been mined and filled, the pillars were removed. In the early days this was done by excavating in slices from the bottom upward. In the last twenty years or so, mining of the pillars was accomplished using square sets (Fig. 8).

In 1961, after a three-year shut-down for revising the mining plans, a new shaft entirely within the marble footwall of the ore body was put on line. It had been under construction since 1949. This made it possible to abandon the old shaft and permit the extraction of the huge 200-foot-wide shaft pillar.

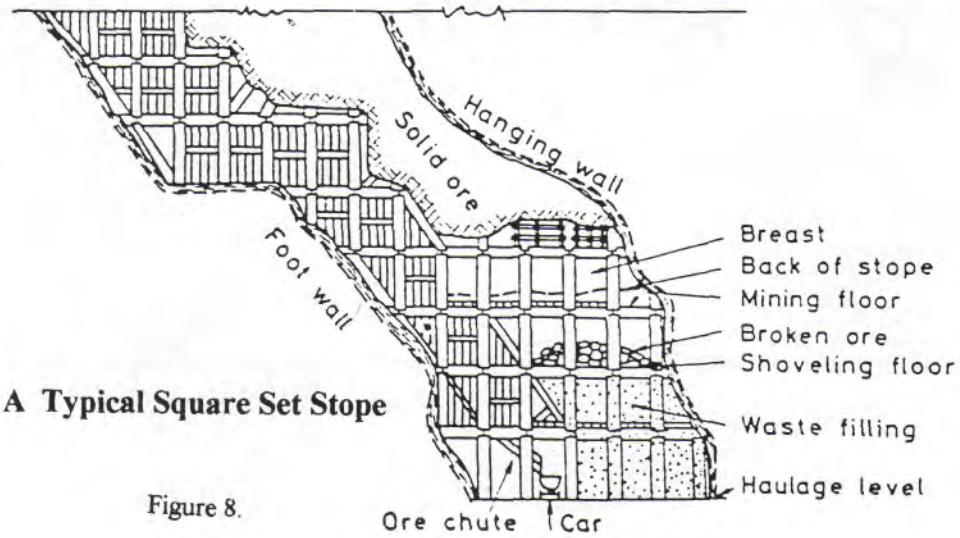
Removal of the old shaft pillar had to be approached cautiously as it was located at the center of the arch formed by the eastward-dipping hanging wall of the East Limb of the ore body, and was beneath the deepest part of the overlying water-saturated saprolite. Even a very slight shifting of the hanging wall rock would be sufficient to allow large volumes of water and mud to enter the mine through open cracks. That this was a real danger was demonstrated clearly when a drill hole only 1.5 inches in diameter broke through to the mud 150 feet above the 1100 foot level. A slurry of clay and sand gushed from the hole at a rate of about 420 gallons per minute. The water pressure was 410 psi, indicating a continuous column to the surface. The pumping capacity for the entire mine at that time was only 400 gallons per minute. It took almost a week to stop the flow and seal the hole. In the meantime the mine openings within about 100 feet of the gushing drill hole were filled waist deep in mud. Erosion by the slurry had increased the diameter of the hole appreciably.

Because of the potential danger to the mine from catastrophic flooding, concrete bulkheads with massive hemispherical doors were constructed on each level to protect the shaft and the pumping station at its bottom. Those doors at the 1850 foot level had to withstand water pressures of 800 psi. Pumping capacity was increased to 2800 gpm although the normal rate to keep the mine dry was only 68 gpm. The centrifugal pumps delivered the water from a sump below the 1850 foot level to the surface in one lift.

At the cessation of operations in 1986 the Sterling Hill Mine had produced about twelve million tons of ore, about half the amount produced from the Franklin mine over its history. In some of the early years the grade as mined had been as low as 12% Zn. This was a result of more primitive and, to some extent, careless methods of extraction. However, subsequent to the redesigning of the mining procedures in 1961 the grade produced was consistently between 18.4% and 21% Zn. This was not due to "high-grading" but rather was the result of more careful attention to the ore-rock contacts and the concomitant reduction of over-breaking.

Because of the unique mineral composition of the ore it was never possible to achieve a beneficiation product at the mine that compared in metal content with the flotation mill products of sphalerite mines. Whereas the overall grade of ore in sulfide mines such as those in middle Tennessee might be as low as 3% zinc metal, the use of froth flotation methods at the mine makes it possible to ship out a product consisting of almost pure sphalerite. Hence, such mines are able to ship concentrates containing over 60% zinc metal to the distant smelters. At the smelters the sulfides are roasted to obtain zinc oxide.

The ore minerals at Ogdensburg were not amenable to froth flotation. Also, whereas pure sphalerite contains about 67% zinc metal, the combined ore minerals at Sterling Hill, even if it were possible to obtain a perfect separation from the gangue by the gravity and magnetic methods available, would contain only about 40% zinc metal. Therefore it was necessary to ship the relatively low grade mill product to the smelter at Palmerton, Pennsylvania, seventy miles distant, for further concentration of the metal. There it was combined with large quantities of anthracite from the nearby coal region. The mixture was charged to a 300-foot-long cylindrical rotating kiln (a Waelz kiln) where



A Typical Square Set Stope

Figure 8.

the zinc was driven off as a metallic fume and immediately oxidized by a current of air flowing over the bed. The resulting low grade zinc oxide was collected in a bag house whence it was drawn for further processing in the manufacture of pure grades of zinc metal and zinc oxide.

Only after the completion of the roasting of the high grade sphalerite concentrates and the more expensive waelzing of the relatively low-grade Sterling Hill product could the value of the unique Sterling Hill ore be compared with that of the common sulfide ores. For this reason, although the concentration of metal in the ground at Sterling Hill was much higher than in most other zinc districts in the world, its economic value was not always competitive with that of the much lower grade zinc sulfide deposits. The additional energy required for processing and the necessity for transporting a relatively low grade mill product negated much of the economic advantage one might have expected in the mining of such a high grade mineral deposit.

REFERENCES

Regional Geology:

Baker, D.R., and Buddington, A.F. (1970) *Geology and Magnetite Deposits of the Franklin Quadrangle and Part of the Hamburg Quadrangle, New Jersey*, U.S.G.S. Professional Paper 638. U.S. Geological Survey, Washington, D.C.

Drake, A.A., Jr., Volkert, R.A., Monteverde, D.H., Herman, G.C., Houghton, H.F., Parker, R.A., and Dalton, R.F. (1996) *Bedrock Geologic Map of Northern New Jersey.* U.S.G.S. Miscellaneous Investigations Series, U.S.G.S. Geological Survey, Washington, D.C.

Hague, J.M., Baum, J.L., Hermann, L.A., and Pickering, R.J. (1956) Geology and structure of the Franklin-Sterling area, New Jersey. *Geological Society of America Bulletin*, **67**, 435-474.

Spencer, A.C., Kümmel, H.B., Wolff, J.E., Salisbury, R.D., and Palache, C. (1908) *Franklin Furnace Folio,* #161, Geological Atlas of the United States. U.S. Geological Survey, Washington D.C.

STERLING HILL MINE:

Metsger, R.W., Tennant, C.B., and Rodda, J.L. (1958) Geochemistry of the Sterling Hill zinc deposit, Sussex County, New Jersey. *Geological Society of America Bulletin*, **69**, 775-788.

Note:

A very complete bibliography may be found in Part One of: Dunn, P.J. (1995) *Franklin and Sterling Hill, New Jersey: the world's most magnificant mineral deposits.* Privately published in five parts and two supplements, and distributed by the Franklin-Ogdensburg Mineralogical Society, Inc., P.O. Box 146, Franklin NJ 07416.

COME TO A NEW AND SPECIAL EVENT!

27th ANNUAL

NJ EARTH SCIENCE ASSOCIATION GEM & MINERAL SHOW

& Outdoor Swap and Sell

A collaborative effort by the
FRANKLIN-OGDENSBURG MINERALOGICAL SOCIETY
NEW JERSEY EARTH SCIENCE ASSOCIATION
STERLING HILL MINING MUSEUM
all non-profit organizations

MILLION DOLLAR $HOW

$EE A MILLION DOLLARS IN DIAMOND$

NEW SHOW LOCATION!

ROBERT E. LITTELL COMMUNITY CENTER
(FORMERLY KNOWN AS THE FRANKLIN ARMORY)
IN FRANKLIN, NJ
near intersection of Routes 23 and 517 in Franklin, NJ

APRIL 24, 1999, Sat. 8:30AM-5:30PM
and
APRIL 25, 1999, Sun. 10AM-5PM

This is an indoor and outdoor event
Outdoor swap & sell hours: Sat., 8:30AM-5:30PM, Sun.,8AM-5PM

Donation: $4.00 per person
Children under 14 **FREE** with paying adult
Donation covers the indoor and outdoor event

•••••••••• DOOR PRIZES ••••••••••

*DEALERS*GEMS*JEWELRY*MINERALS*FOSSILS*WIRE WRAPPING*JEWELRY REPAIR*
PRIVATE AND INSTITUTIONAL EXHIBITORS* FLUORESCENT MINERAL EXHIBITS*
RESTURANT AND MOTEL ACCOMODATIONS CLOSE-BY, SEND FOR LISTING*

Banquet and mineral auction at the Ogdensburg Firehouse, Main St., Ogdensburg
on April 24, 1999 at 7PM,
$11.00 buffet, beverage included

For information: Fred Stohl
(732)341-3553

Sterling Hill Mining Museum
(973)209-7212

[This account of early mining and smelting activities at Franklin and Sterling Hill was included in an advertisement for "Patent Crystalized Iron, or Franklinite" in *The New York Times*, p. 8, Nov. 10 1862. The purpose of the ad is to attract investors to a metal alloy made from the residue of franklinite after the zinc is removed.]

HISTORY OF THE FRANKLINITE.

Report of A.C. Farrington, Geologist and Mining Engineer.

The mines are located in Sussex County, N.J., and yield an ore unique in its lithological characteristics, and is the only known locality where Franklinite and the red oxide of zinc has been found, but by whom and at what era these mines were discovered, is not authentically established. They were known, and extensive mining operations were carried on, before any permanent settlements were made by the whites, in their immeidate neighborhood, as several shafts and galleries still remaining on Sterling Hill clearly prove. These old works, from the fact that Lord Sterling was once the owner of these lands upon which they are situated, have been attributed to him. The time Lord Sterling became the owner has not been ascertained, but an original survey of the tract made in 1749 describes "the old mine holes." A section has been taken from the remains of a red cedar, that has grown in one of the pits since the working was abandoned, and it proves that period to have been more than one hundred and twenty years ago. In 1755, an old mining pick was found in one of the galleries by a hunter, who subsequently settled in the vicinity, and has a son, now a very aged man, living in the county.

Lord Stirling caused a large quantity of the Franklinite ore to be mined, and taken to the Charlottenburgh furnace, of which he was a proprietor; but the attempt to smelt it as an ore of iron proved unsuccessful, and most of the ore, removed at a great expense over mountain roads, ninety-five years ago, may now be seen at Charlottenburgh.

The late Dr. Bruce, of New-York, was the first who called public attention to these mines, by publishing a scientific account of them, embracing an analysis, and also furnishing a list of the associated minerals. He was followed in 1819 by Profs. Keating and Vannuxen, who furnished the Philosophical Society, of Philadelphia with an interesting paper, describing the Jeffersonite, associated with the Zinc and Franklinite.

The late Dr. Samuel Fowler, about 45 years since, became the owner of these mines, and, to scientific attainments uniting practical business talents of the highest order, appears to have really been the first one to appreciate their value, and made several efforts to have them worked. He made liberal offers to induce others to join him in the enterprise, but the untried natures of the ore, and the difficulties in obtaining competent operatives caused a failure of his plans--without lessening in his mind the value of the ore, and the ultimate success that would be likely to attend future attempts to work it. While he was a member of the House of Representatives of the United States Congress, a law was passed, directing the Secretary of the Treasury to cause a standard set of weights and measures to be prepared for the use of the Government in the different Custom-houses. F.R. Hasler, L.L.D., then Superintendent of the Coast Survey was intrusted by the Secretary with the execution of this important duty, and Mr. Fowler was successful in having New-Jersey Red Oxide of Zinc reduced to alloy with copper to form the brass used for these standards.

Not succeeding in enlisting capitalists to work on a large scale, he strove to encourage individual enterprize to develop the commercial value of these extensive repositories of minerals by frequent and liberal contributions from his own resources; but want of scientific knowledge of the character of the mineral, or a too rigid adherence to the plans used in working the sulphurets and carbonates of zinc, as practiced in Europe, prevented the achievement of success. It is also to be presumed, as is often the case, the Doctor was imposed upon by charlatans and pretenders, who laid claim to possessing the true Philosopher's Stone, whose magic touch was to transform the hills of Stirling and Franklin into metallic zinc and iron.

Dr. Fowler, a few years before his decease, conveyed a portion of these mines to the Franklin Company, an incorporation which was obtained by him for the purpose of working them; but the attempt proved unsuccessful. The company failed, the property passing into the hands of Messrs. Ames & Alger, of Boston. A quantity of zinc and Franklinite ore was taken by them to Mr. Alger's foundry at South Boston, where Mr. Alexander E. Osborne, the present metallurgist of the Bergen Point Copper Smelting Establishment, distilled metallic zinc, from the red one, after separating it by a magnet from its Franklinite. He also reduced Franklinite in a crucible, making iron and steel of a superior quality.

LETTERS FROM THE PAST

George Elling
758 Charnwood Drive
Wyckoff NJ 07581

Part of the Franklin/Sterling Hill mystique over the years has emanated from the people associated with its mining heritage and its minerals. In this issue and in future *Picking Tables* we hope to bring to life personalities that up until now have been relegated to footnotes or to bibliographies. We shall attempt to publish letters from my collection as well as other sources, and would encourage anyone with old historic documents to share them with *Picking Table* readers.

Of the letters we hope to share we shall include correspondence from notable Franklin personalities, including: Charles Palache, R.B. Gage, W.A. Roebling, Arthur C. Spencer, John Albanese, William J. Kemble, Joseph J. McGovern, Henry B. Kummel, E.P. Shuster, E.S. Dana, and W.T. Shaller, among others.

In this first selection I have chosen eight historically important letters written from 1904 to 1910 by Arthur C. Spencer to Charles Palache. They concern not only Palache's contribution to the U.S. Geological Survey's *Franklin Furnace Folio* of 1908, authored by A.C. Spencer, H.B. Kummel, J.E. Wolff, R.D. Salisbury, and Charles Palache, but also early plans for Palache's monograph which would not be published until 1935, as U.S.G.S. Professional Paper 180, *The Minerals of Franklin and Sterling Hill, Susex County, New Jersey*.

****

[typed on USGS stationery, with handwritten postscript]

Department of the Interior
United States Geological Survey
Washington, D.C., December 3rd, 1904

Dr. Charles Palache,
Cambridge, Mass.

My Dear Dr. Palache:

Since returning from my field work in New Jersey I have again taken up the subject of having a study of the minerals made, and Dr. Hayes has authorized me to confer with you upon the subject. I hope that you will not feel from your experience with the matter that you are not willing to go ahead with the investigation. Dr. Hayes has asked me to prepare an outline covering more work in the general field of the crystalline rocks, and to embody in that plan a scheme for having a monographic study of the Franklin Furnace and Sterling Hill minerals. If this plan is accepted would it be possible for you to get together during the winter a general statement which will show how much work has been done, and what it would be desirable to do. It is my idea that this statement should be accompanied by as complete a bibliography as possible, and probably there should be some running notes upon the contents of the different papers. If this could be done you would be in position to take up the study of the different collections during the summer vacation. From my unexpended allotment I would be able to meet the expenses of preliminary work, and you would receive a definite sum of money for carrying on the investigation next summer. Let me say again that I hope the disappointment incident upon the necessary change of plans last summer will not influence you against taking up the work in the future. I have been astonished at the wealth of material available in the existing collection and am sure that every facility would be afforded by the different mineral collectors in carrying on the investigation.

Yours very sincerely,
Arthur C. Spencer

I am going to secure the indorsement of Mr. Emmons, Mr. Lindgren, and Mr. Cross all of whom fully appreciate the necessity of having this mineralogical work done in a thorough manner, before presenting the matter to Mr. Walcott. I only regret that I did not take the matter up in a formal way last spring. The excuse is that Dr. Hayes was so fully in accord with the plan then proposed.

A.C.S.

****

[Handwritten note on USGS stationery, undated by year but believed to be 1904. Spencer's "short paper on the iron ores of Sussex Co.," to which he refers here as if it had just been printed, appeared in *Mining Magazine*, Vol. 10, pp. 377-381, 1904. The title of the paper is, "Genesis of the magnetite deposits in Sussex Co., New Jersey."]

Department of the Interior
United States Geological Survey
Wash'n, Dec 22nd

My dear Dr Palache

I am greatly pleased that a real start has been made on the mineralogical investigation, and am congratulating myself upon the prospect of cooperation upon the problems offered by the New Jersey zinc deposits. I have just now drafted a reply to your letter addressed to Dr. Hayes on Dec. 19th, which I hope will be entirely satisfactory to you. I believe that the nature of your proposed monograph would be suitable for publication by the Smithsonian Institution and when it is finished you might think favorably of taking steps to have it appear in the Contributions to Knowledge or even in the Annual Reports. Have you seen my short paper on the iron ores of Sussex Co. in Dec. Mining Magazine. I shall attend the Phila. meeting next week, and may possibly see you there.

Here's a merry Xmas to you and yours.
Sincerely yours
Arthur C. Spencer

****

[typed on USGS stationery]

Department of the Interior
United States Geological Survey
Washington, D.C.
December 18, 1905

Dr. Charles Palache,
University Museum
Cambridge, Mass.

My dear Dr. Palache,

I am making progress in the text for the Franklin Furnace folio, and wish to learn the status of your "albeit" on the mineralogy. Dr. Wolff's text was criticised by Mr. Emmons and Mr. Cross because it contained a list of minerals unadorned, so that I wish to add such a discussion of the minerals as may appease those in authority. However, I have not yet fully worked

out what should be incorporated upon this subject in the folio text, and would be very glad of any suggestion from you.

Yours very sincerely,
Arthur C. Spencer
Geologist

****

[Typed on USGS stationery, with handwritten annotations which are printed here in italics.]

Department of the Interior
United States Geological Survey
May 9, 1906

Dr. Charles Palache,.
University Museum,
Cambridge, Mass.

My dear Palache:

I was very glad to receive your note of recent date with mineral determinations. In regard to the specimen from the Hamburg quarries, the black mineral which had somewhat the appearance of franklinite you say is altered spinel containing titanite/*rutile*. From my memory of the specimen the matter is not quite clear to me. Will you please elucidate further?

Yours very sincerely,
Arthur C. Spencer

letter not at hand

****

[Handwritten note on USGS stationery. Tentatively assigned to the summer of 1906, as this is the approximate time when Palache's intensive study of Franklin-Sterling Hill minerals and collections is supposed to have begun.]

Department of the Interior
United States Geological Survey
Friday morning

Dr. Charles Palache
Ilseford Me.

My dear Palache:

Your letter of July 5th has just come to hand. I am still in the office and have work to keep me busy for some time. Nevertheless I want to join you when you start your work. Unfortunately the managers of the mine at Franklin think they have done their duty toward the Survey and I fear there will be no chance of visiting the underground workings again, though I do not regard this as a very serious drawback. At Franklin the geological relations are very obscure and the collecting very poor. The best show to get minerals is in the dump of the Parker shaft which is being used for road metal. Underground there are no features which cannot be also seen upon the surface.

I would suggest the advisability of going first to Sterling Hill where something is to be seen of the relations of the ore and the geological structure. It is there that all the helpful observations are to be made, in my opinion. If you see no serious objection I would suggest that we meet at Ogdensburg, which is the first station on the way to NY from Franklin Furnace on the N.Y. & Susq. Western - RR.

Also it would favor my work if you could arrange to visit some of the mineral collections before beginning field work, say to take up the time until the 15th so that I would not have to return to Washington. Please do as suits you best about this however. You could go to Columbia to look over what Kemp has and see the Nason modle [sic] of the ore body, and also take a preliminary look at the Bement collection of the Mus. of Nat. Hist. Then there is the collection at Rutgers College New Brunswick which is convenient to N.Y. Prof. J. V. Lewis who has recently gone to Rutgers is a close friend of mine and will show you every consideration. You might write him a note in advance of your visit, though even if he is not there you can get at the minerals through the college authorities.

Yours very sincerely
Arthur C. Spencer
Geologist

****

[handwritten on stationery of the Hotel Central, Dillsburg, Pa.]

Aug. 9th, 1907

My dear Dr. Palache

Yours of recent date finds me in the wilds of York County studying some magnetite deposits in the Trias. The ores are of contact origin connected with the diabase intrustions. It is a rather interesting bit of geology.

I have had the time of my life with the Franklin Furnace work but at last have submitted the folio text. Have not yet tackled the special description of the zinc mines but will get to that by Oct. 1st.

When I return to Washington which will be in about two weeks I can send you a copy of the pre-Cambrian text for the folio. Sorry I cannot have someone find it and mail it to you but I have no recollection as to its location.

The Cuba trip of which you learned from Canfield was a side job for private interests.

With best regards
Arthur C. Spencer

Dear P.

Delayed a week or so waiting for your letter to show up again. It is somewhere in my luggage so I send to the Univ. instead of direct to Maine. Wish I had done this earlier.

A.C.S.

****

[handwritten on USGS stationery]

Department of the Interior
United States Geological Survey
Washington Jan 21st., 1909

Dr. Charles Palache
Cambridge Mass.

My dear Palache:

Dr. Clark has been at me in regard to the Franklin Furnace minerals. He wishes to incorporate the analyses made for you in a forthcoming bulletin on the work of his lab, but does not wish to preceed your description of the minerals. Can you publish descriptions in A.J.S. within two or three months, so that he can use the data and give references?

I am just back from field work in Texas the last of December. Plan to take up the description of the Zinc Mines this spring and as I imagine you are all ready we can go to print when my part is done.

Yours
Arthur C. Spencer

****

[handwritten on plain paper]

Washn March 23, 1910
Prof. Charles Palache
Cambridge, Mass.

My dear Palache.

As usual I am guilty in that I have not written before concerning a Franklin Furnace work. As time has passed I have come to feel more and more strongly that I have nothing in the way of facts or conclusions which will justify a monographic discussion of the Sussex County ore bodies as originally planned. Mr. Hayes thinks that it will be as well for me not to attempt such a report, but he desires to publish your results, and is ready to go ahead. Will you please let me know how the work stands at present, probably you are all ready.

I am off to Georgia this PM for a 10 days trip.

Yours very sincerely
Arthur C. Spencer

THE PAPER TRAIL

Richard Hauck
43 Woodland Road
Franklin NJ 07416

The stories of the Franklin-Ogdensburg area are many. Too many details are lost due to the lack of records. Books, magazine articles, and club publications will preserve a portion. One important but often lost record of the past is the written letter.

During this past snowy winter I had the opportunity to organize a large collection of early 20th century letters. The first letter included here, dated 1903, was written by James J. McGovern to A.B. Wade. Mr. McGovern describes a large find of salmon-colored calcite at Franklin: "from between the two veins the buckwheat and the West Vein as they call it....They get hundreds of tons of it." At the foot of the letter Mr. McGovern roughly sketches the relationship between the two veins and the calcite. He also offers the intelligence that "Foote's man" (from the famous Foote Mineral Co. of Philadelphia) and Mr. Pfordte of Rutherford, N.J. had been by two weeks ago but didn't get much. Mentioned as an aside is "the fellow" who was to send Mr. Wade some willemite.

The second letter was written by A.B. Wade to George F. Kunz, enclosing the letter from McGovern to Wade and expressing his concerns about the willemite sample, which had come from H. Ricker of Ogdensburg. Wade is concerned that "the material he showed me was not altogether satisfactory, yet I now believe he had better stuff buried somewhere." Wade adds that McGovern had written him that Ricker had 20 lbs. of ruby zinc plus an equal quantity of pure willemite, but he warns, "one must see the goods before making a bid with this man."

In this collection of letters there is another chapter to the story. On May 16, 1932, Frank R. Quinn wrote Kunz, asking if he would be interested in buying the collection of J.J. McGovern, Quinn's brother-in-law. Apparently not: Ward's Natural Science eventually purchased McGovern's collection and sold it through a special price list, excerpted below. As a footnote, when the Quinn building on Main Street in Franklin was sold in 1986, a case of McGovern's minerals was still there.

J. J. McGovern to A. B. Wade, undated, 1903
Franklin Furnace
NJ

Mr. A. B. Wade

Dear sir yours recd the calcite comes from between the two Veins the buckwheat and the West Vein as they call it for I got it myself. They get hundreds of tons of it. Did the fellow send you the Willemite yet. When I see him I will ask him about it. I found 2 pieces of good masssive axinite last week. Foote's man was here 2 week ago and Mr. Pfordte of Rutherford N.J. Don't think they got much. The Rhodonite is coming out now any one want it.

Very truly
Jos. J. McGovern

West
Vein

Rock where
calcite comes

Buckwheat

A.B.Wade to George F. Kunz, Nov. 9, 1903

Dear Mr. Kunz,

Inclosed you will find a letter from Mr. Magovern that throws a little more light on the calcite location, he refers to the salmon variety.

The "fellow" he refers to is H. Ricker of Ogdensburg, I met him on both of my Franklin trips and the material he showed me was not altogether satisfactory, yet I now believe he had better stuff buried somewhere.

Magovern wrote that this same fellow has 20 lbs of ruby zinc in matrix, also about the same quanity of pure willemite, one must see the goods before making a bid with this man, however.

Several parties whom I furnished with desirable datolite tell me they have not a single duplicate, Mr. Jones of East Orange has a few but you could neither beg, borrow, or buy one of them.

I went to Paterson on Election Day but did not secure anything fine, also tried to get Datolite of the 1900 find but did not succeed - sorry to say.

I got from one of my friends a fairly good datolite 3 x 4 x 3 with yellow green crystals on it slightly bruised [here a crude sketch of a crystal, 5/13 x 13/16"] some as large as this one, one 2 x 2 with bright small crystals on calcite, could you see them, I. have an amethyst from same locality.

If you want those four specimens which you set apart you may have them for ten ($10) dollars, they represent the cream of many trips and the best obtainable, the analcite is particularly fine and very rare.

Fully 90% of the Paterson minerals were spoiled by etching perhaps by fluorine, leaving nice bright crystals at a premium.

If you can spare one willemite and one leucophoenicite I would like to have them.

Yours very sincerely,
Archie Wade

Frank R. Quinn to "Hon. Dr. Kuntz," May 16, 1932

My dear Mr. Kuntz,

I heard you are interested in buying up mineral collections and wondered if you would be interested in the collection of James J. McGovern, which is made up of minerals from the New Jersey Zinc mines of Franklin.

I have been in possession of this collection since Mr. McGovern's death and would appreciate hearing from you if you are at all interested.

Very truly yours,
Frank R. Quinn

Excerpts from Ward's Natural Science sales catalog of "The J. J. McGovern Collection of Franklin, New Jersey, minerals," circa 1940

Amphibole, var. Edenite. A large gray doubly terminated crystal 4½ x 5½", $10.00. A group of large crystals, 3¼ x 5", $9.00.

Arsenopyrite. A bright ¾ inch striated terminated crystal in limestone, 1½ x 1¾", $7.00.

Axinite, xled yellow with polyadelphite, fowlerite, etc. 4 x 4½", $10.00, xled yellow with polyadelphite, etc. 3 x 6", (fluorescent) $11.00, 4 x 4¼", $7.50, 3 x 3¼", $7.50, 2 x 2½", $2.50, 1 x 1", $1.50. Partly xled with xled fowlerite on franklinite, willemite, 3 x 5", $9.00.

Xline yellow with polyadelphite, fowlerite, etc. 4½ x 4½", $9.00, 3¾ x 4", $6.00, 3 x 3½", $5.00, 2½ x 3", $4.50, 3¼ x 3½", $4.00. Xline with biotite, etc. 3 x 5", $7.00, 3 x 3", $4.50.

Bementite. An unusually fine coarsely xline specimen, 3 x 3¾", $15.00. Xline, nearly pure, 2¼ x 3¼", 6.00.

Bustamite. Group of large crude pale pink crystals with calcite, 4 x 5½", $17.50. Group of crude crystals with calcite, garnet, biotite, 2½ x 2", $6.00. Group of medium size crystals 1½ x 1¾", $1.50. Single crystal in calcite, 2 x 2½", $3.00.

TIMES ARE TOUGH!

Richard Hauck
43 Woodland Road
Franklin NJ 07416

In the 1990s collecting or buying good minerals is not easy. We often wish we were back in the "good old days." The following account of what a collector would face in WWI-era Franklin is from a letter dated Nov. 13, 1917, from Frederick Canfield to Dr. George F. Kunz. Evidently Kunz had asked Canfield about the possibility of the New York Mineralogical Club making a collecting expedition to Franklin.

"Yours of yesterday received. Your use of the word 'We' is meant for members of the Club, as I understand it. Therefore I will say at once, that it is not possible for the Club to go to Franklin to collect specimens. The Zinc Co. has shut down on collecting. I heard yesterday, that boxes of minerals had been held up at the express office in Franklin, also that your baggage is examined in your room in the hotel, &c. &c. I was in Franklin about five weeks ago. I saw nothing like such detective work. I learned, however, that I could not go about old diggings and dumps, as in times past. I wished to see an old pit which was dug many years ago for minerals, but I had to get the next to the highest official of the management, to go with me to the pit. He stayed with me until we got back to the public highway. If you desire to go there personally, you should get a letter from some high official of the Zinc Company, to Mr. Catlin the Supreme Head at Franklin, then you will be all right."

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 observations 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:

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

As quantities are limited, orders are filled on a first come, first served basis.

Now Available

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.

This publication contains the following:

The Story of Franklin and Sterling Hill is affordably priced and easy to read.

You may purchase this book for $15.00 from the FOMS or either the Franklin Mineral Museum or the Sterling Hill Mining Museum. When ordering by mail please add $4.00 for shipping and handling.

Send checks payable to the FOMS to:

John Cianciulli
60 Alpine Road
Sussex NJ 07461

PUBLICATIONS AVAILABLE

FROM THE FRANKLIN-OGDENSBURG MINERALOGICAL SOCIETY, INC.

THE PICKING TABLE

Complete Set of *The Picking Table*
(Volume **1**, #1 through the current issue)
the set.....$85.00 (+$6.00 UPS fee)

Individual back-issues of *The Picking Table*

Volume **1**, #1 through volume **23**, #2: each issue	$2.50
Volume **24**, #1 through volume **29**, #2: each issue	$3.50
Volume **30**, #1 through volume **34**, #1: each issue	$5.00
Volume **34**, #2 through volume **37**, #2: each issue	$7.50
Volume **38**, (combined issue)	$15.00

Add $0.75 postage for each issue through vol. **23**, #2, and $1.00 postage for each issue beginning with vol. **24**, #1.

Note: All issues of *The Picking Table* prior to volume **23** are available only as *photocopies*.

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)*

Color Slides and Color Prints (Photomicrographs of Franklin-Sterling Hill Minerals by **Dr. Alfred L. Standfast**)
10 separate sets available, each set features four different minerals. ***$5.00*** (+ *$0.50* postage per set)

Most publications are made available at Society meetings. However, if ordering by mail, make check or money order payable to **FOMS**, and address your order to:

Steven C. Misiur, Asst. Treasurer FOMS
309 Fernwood Terrace,
Linden, NJ 07036

FRANKLIN-OGDENSBURG
MINERALOGICAL SOCIETY, INC.
BOX 146 - FRANKLIN, NEW JERSEY 07416

OGDENSBURG NJ 07439

Non-Profit Org.
U.S. POSTAGE
PAID
Permit No. 22

Address Correction Requested