THE PICKING TABLE

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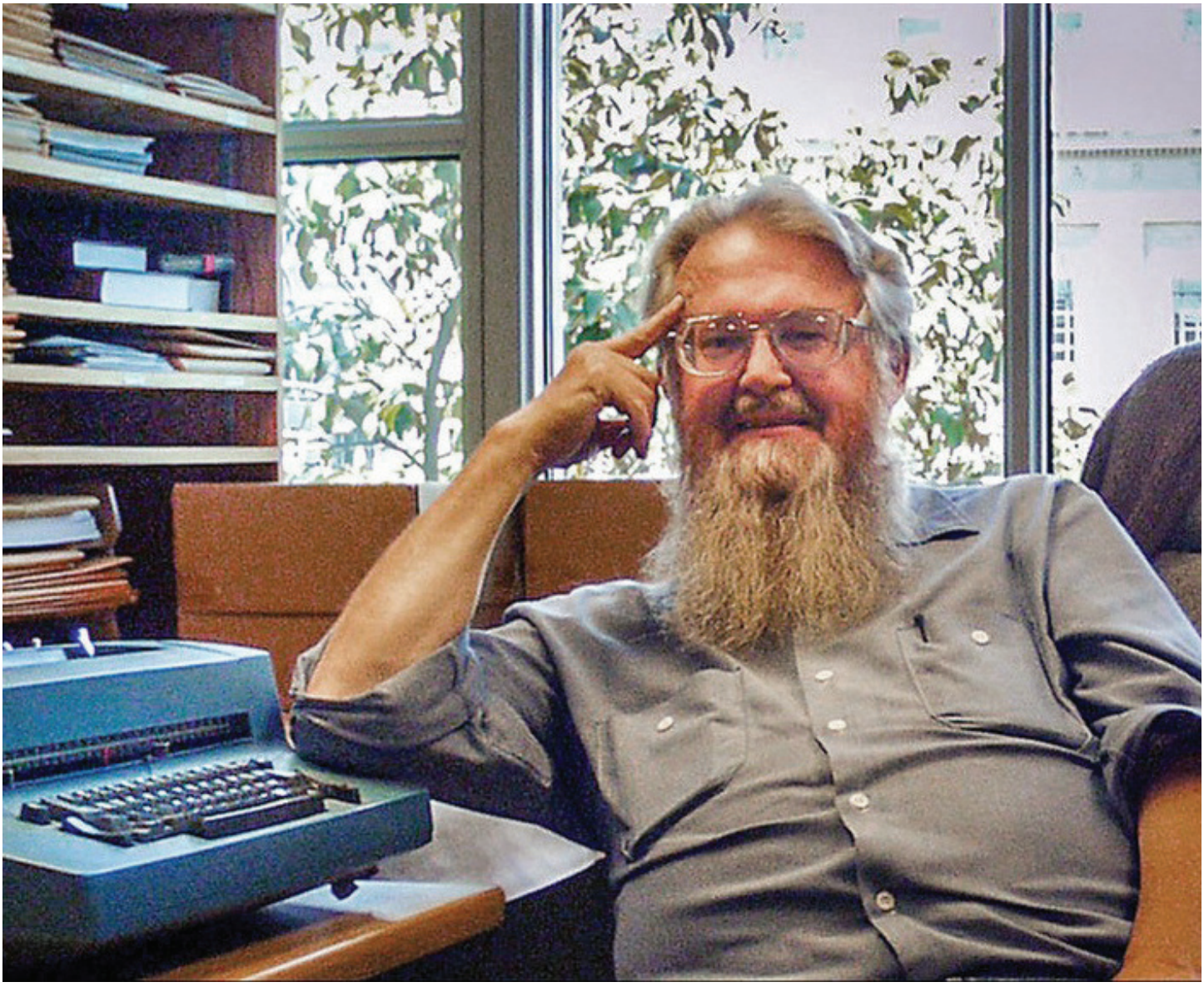

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Glowfather (Lueur Père) Ralph Thomas with his friend, Madame Violette Boné, at Ultraviolation 2017. *Tema Hecht photo.*

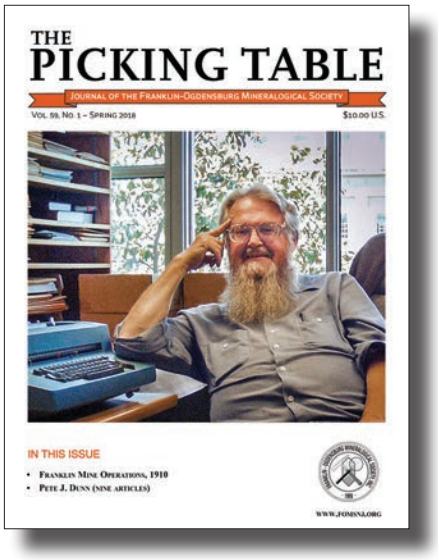
THE PICKING TABLE

VOL. 59, NO. 1 – SPRING 2018

About the Front Cover

This is where the magic happened.

In this May 2012 photo, taken in Pete Dunn's office in the Smithsonian Institution, Pete's elbow is shown resting on the same blue IBM Selectric typewriter that he used decades earlier to compose more than 70 papers on the minerals of Franklin and Sterling Hill. These papers were the prelude to his 755-page monograph, which was published in 1995 and remains the most comprehensive and definitive treatment of the local minerals. *Herb Yeates photo.*



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

Members are encouraged to submit articles for publication. Articles should be submitted as Microsoft Word documents to Richard J. Keller, Jr. at: PTMemberFeedback@gmail.com.

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

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

The Picking Table is printed on acid-free, chlorine-free paper.

Spring and Summer 2018 Activity Schedule

SATURDAY, MARCH 17, 2018

9:00 AM – NOON
FOMS Field Trip
Collecting at the Taylor Road site.
Field trip cancelled due to snow cover.

NOON – 1:15 PM
Future Rockhounds of America
Franklin Mineral Museum.
Parents are welcome to attend.
For questions please contact Mark Dahlman at:
fra@fomsnj.org or 301-428-0455.

1:30 PM – 3:30 PM
FOMS Meeting
Franklin Mineral Museum.
Lecture: *The Great Chain and Sterling Forest Iron Mines*,
by Doc Bayne.

WEDNESDAY THROUGH SUNDAY APRIL 4–8, 2018

****NJ Mineral, Fossil, Gem & Jewelry Show**
New Jersey Convention & Expo Center, Raritan Center
97 Sunfield Ave., Edison, N.J.
Wednesday–Friday: NOON – 9:00 PM
Saturday and Sunday: 10:00 AM – 6:00 PM
For more information, please go to: **www.ny-nj-gemshow.com**.

SATURDAY AND SUNDAY, APRIL 14 AND 15, 2018

****29th Annual North Jersey Gem, Mineral & Fossil Show**
Midland Park High School,
250 Prospect St., Midland Park, N.J.
Saturday: 10:00 AM – 6:00 PM
Sunday: 10:00 AM – 4:00 PM
Admission: $5.00 per person; $4.00 per senior adult;
free admission for children under 12 and uniformed scouts.

SATURDAY, APRIL 21, 2018

9:00 AM – NOON
FOMS Field Trip
Collecting at the Hamburg Mine/Lang Shaft (private property)
Meet at the Franklin Mineral Museum at 8:30 AM *sharp*,
where participants will be escorted to the location.
$5.00 admission plus $2.00/lb for material taken.

NOON – 1:15 PM
Future Rockhounds of America
Franklin Mineral Museum.
Parents are welcome to attend.
For questions please contact Mark Dahlman at:
fra@fomsnj.org or 301-428-0455.

1:30 PM – 3:30 PM
FOMS Meeting
Franklin Mineral Museum.
Lecture: *Fluorescent Minerals Under the Microscope*,
by Thomas Pogash.

6:00 PM
****Annual Museum and FOMS Members-Only**
Mineral Sale and Auction
Franklin Mineral Museum.

SATURDAY AND SUNDAY, APRIL 28 AND 29, 2018

46th Annual NJESA Gem & Mineral Show
Held in conjunction with the
23rd Annual FOMS Spring Swap-and-Sell.
Sponsored by the New Jersey Earth Science Association,
the Sterling Hill Mining Museum,
and the Franklin-Ogdensburg Mineralogical Society, Inc.
!!! NEW LOCATION !!!
Littell Community Center (formerly the Franklin Armory),
12 Munsonhurst Road, Franklin, New Jersey.
Saturday, 9:00 AM – 5:30 PM; Sunday, 10:00 AM – 5:00 PM
Swap-and-Sell hours:
Saturday, 8:00 AM – 5:30 PM; Sunday, 9:00 AM – 5:00 PM
Donation: $6.00 per person,
children under 14 free with paying adult.

Banquet and Auction
Saturday evening at the GeoTech Center,
Sterling Hill Mining Museum.
Admission limited to 60 people.
Social hour: 5:30 PM – 6:30 PM
All-you-can-eat buffet: 6:30 PM – 9:30 PM
Banquet tickets are $20.00 each and include all food,
coffee, tea, and soft drinks. BYOB!!
Silent auction: 5:30 PM – 7:30 PM
Live auction: 7:45 PM
Both auctions are for the benefit of all three show sponsors:
NJESA, FOMS, and SHMM.

****Annual Super Diggg!**
Saturday, April 28, 2018
Franklin Mineral Museum, Franklin, N.J.
Sponsored by the Delaware Valley Earth Science Society
(DVESS).Visit **www.superdiggg.com** for more information,
schedule, fees, and updates!

****Sterling Hill Garage Sale**
Saturday and Sunday, April 28 & 29, 2018
10:00 AM – 3:00 PM
Christiansen Pavilion, Sterling Hill Mining Museum.

****Collecting on the Mine Run Dump and in the Fill Quarry, Passaic Pit, and "Saddle" area.**
Sterling Hill Mining Museum, **Sunday only, April 29**.
9:00 AM – 3:00 PM **(Open to the public!)**
Fees for mineral collecting:
$5.00 admission plus $1.50/lb for all material taken.

SUNDAY, MAY 6, 2018

NOON
****Annual Volunteer Appreciation and Miners Day Tribute**
Franklin Mineral Museum.
Including special program and a concert by the famous Franklin Band.
!!! Attendance by invitation only !!!

SATURDAY MAY 12, 2018
(Rain date: SATURDAY, MAY 26)

****North Jersey Mineralogical Society Swap & Sell**
9:00 AM – 5:00 PM
Sterling Hill Mining Museum.

SATURDAY, MAY 19, 2018

8:45 AM – NOON
FOMS Field Trip
Collecting at the Braen Franklin Quarry,
Cork Hill Road, Franklin, N.J.
If gate is open, drive through and park to the left of the gate.
Please don't block the roadway.
Meet at the scale house to sign releases. Hard hats, leather shoes (preferably steel-toed), gloves, and safety glasses **required**.
Participants MUST arrive by 8:45 AM to register!
Members will then be escorted to the collecting site.
Latecomers prohibited!

Today's Future Rockhounds of America meeting and FOMS meeting have been cancelled in favor of the Pete J. Dunn Memorial Service, which will be held at 12:30 PM in the Christiansen Pavilion of the Sterling Hill Mining Museum. FOMS members are welcome to attend this service but must contact Maureen Verbeek in advance by e-mail, at moellen57@gmail.com. Lunch will follow the service.

SATURDAY, JUNE 16, 2018

9:00 AM – NOON
FOMS Field Trip
Collecting at the Hamburg Quarry of
Eastern Concrete Materials, Inc.
Route 23 just north of Hamburg.
Meet at the scale house to sign releases.
Hard hats, leather shoes (preferably steel-tipped), gloves, and safety glasses required.
Weight of individual specimens is limited to 25 lbs.
Bulk collecting/loading of specimens is strictly prohibited.

NOON – 1:15 PM
Future Rockhounds of America
Franklin Mineral Museum.
Parents are welcome to attend.
For questions please contact Mark Dahlman at:
fra@fomsnj.org or 301-428-0455.

1:30 PM – 3:30 PM
FOMS Meeting
Franklin Mineral Museum.
Lecture: *Interesting Tidbits About The New Jersey Zinc Company*, by Peter Kern.

MINERAL OF THE MONTH—MARGAROSANITE

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

6:00 PM – 10:00 PM
****Night Collecting on the Mine Run Dump and in the Passaic Pit and "Saddle" area.**
Sterling Hill Mining Museum.
Fees for mineral collecting:
$5.00 admission plus $1.50/lb for all material taken.
Eye protection, flashlight, hammer (carpenter's claw hammers not allowed), and UV lamp advised.
!!! Open to Sterling Hill Mining Museum members only !!!

SATURDAY, JULY 21, 2018

9:00 AM – 4:00 PM
FOMS Day at the Franklin Mineral Museum
Field trip to the Taylor Road site from 9:00 AM to NOON; meet at the Franklin Mineral Museum and walk from there.
Field trip on the Buckwheat Dump from 10:00 AM to 3:00 PM.
Collecting fee waived for FOMS members; pay poundage fee.
Swap-and-Sell Activity Encouraged.
FOMS volunteers will provide lunch and refreshments: BYOB.
RSVP to Gary Moldovany, gsmoldovany@gmail.com.
This event is only for FOMS members and their families.

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

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

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

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

Compiled by Tema Hecht: thecht@att.net

President's Message

GARY MOLDOVANY
116 LAFAYETTE ST.
HACKETTSTOWN, NJ 07840

By the time you read this, we will be in a new year, 2018. As many know, Harold "Pat" Hintz had to step down from his position due to health issues and a move to Virginia, allowing me to become your new president. I would like to thank Pat for all his years of service and dedication to FOMS, and we look forward to his visits.

Most of you know who I am, but for those who don't, here's a brief introduction. My wife, Heather, and I live in Hackettstown, N.J., about a 40-minute drive from Franklin. I began collecting Franklin/Sterling Hill minerals in 2004, have been a member of FOMS ever since, and have served as second vice-president and vice-president. Heather and I are also members of several local mineral societies, and I am active on the mineralogy database Mindat.org. I field-collect whenever I have the time and enjoy exploring other mineral localities in our general area such as Amity, N.Y., and the C.K. Williams Quarry in Easton, Pa. I like and collect both fluorescent minerals and "daylight species" from Franklin and Sterling Hill.

The Fall 2017 Franklin Mineral Show was a success in our new location, the former Franklin National Guard Armory, now the Littell Community Center. Our shows had been held there for many years prior to our move to the Franklin School about 20 years ago. We are pleased to inform you that our future shows will now be held at the Littell Center. There are a few minor "growing pains" to deal with, but thanks to the dedication of our volunteers, we are confident that future shows will be even better.

Heather and I had the great pleasure last spring to attend the Gilsum Rock Swap in Gilsum, N.H. It was quite an experience and we were very impressed at the level of interest and participation by the local community. This wonderfully run show and its community support have given us some ideas about how to increase interest in, and attendance at, our upcoming shows. The Gilsum Recreation Committee sponsored the show and provided breakfast for everyone, both Saturday and Sunday, even taking orders for food and delivering it to the vendors during set-up. The Gilsum Historical Society had a booth and a handmade quilt raffle. The American Legion cooked hamburgers and hot dogs all weekend, and the local fire department had a chicken barbecue on Sunday. The Recreation Committee also rented tables to all the vendors and provided pickup and delivery.

Attendance at the show is in the 2500 range with 75 vendors and collectors coming from all over the U.S. We think that employing some of their ideas could improve interest and attendance at our shows. We have been in preliminary discussions with members of the Franklin Historical Society, the Sussex County Historical Society, the Franklin Fire Department, and Nick Giordano, Franklin's mayor. Surprisingly, many of these folks are mineral collectors and are willing to participate in the show. They also expressed interest in preserving the rich mining history of the Franklin District.

Our current plans include having outside booths for the historical societies, and having the Franklin Fire Department bring a truck to the show where the firemen will provide tours of their equipment and accept donations. We will also reach out to the local First Aid Squad, and will continue to have Hardyston Boy Scout Troop #187 prepare food. I believe that by working with the community, we can improve our relationship with the citizens of Franklin, keep interest alive for the mineral collecting community, preserve local mining history, and make the town of Franklin more aware of who we are and how important it is to keep its history alive.

This past year we had our first collecting trip to the Hamburg Mine/Lang Shaft property on High Street in Franklin, for which we would like to express our most sincere thanks to co-owners Phil Crabb and John Sowden. This site has the distinction of preserving an actual outcrop of the original Franklin orebody, and Phil and John have promised future collecting trips to the site. Their kindness and generosity are much appreciated. Phil is also a member of the Franklin Fire Department and is acting as liaison to further improve our relationship with the Borough of Franklin.

I would like to thank the staff of *The Picking Table* for a wonderful publication, the volunteers who helped and will help with the planning, setup, teardown and success of our shows, and those who volunteer at our society's table at both Franklin shows and the Edison show. Your selfless dedication and the gift of your time have made our successes possible.

We're planning for the 2018 collecting season and I'm looking forward to what Rich Keller has in store for us. I know we will be visiting the Lime Crest Quarry again, thanks to our renewed relationship with Braen Aggregates and the staff at the Franklin Quarry. Our first meeting of the season, and we hope our first collecting trip, will be on March 17. Keep an eye on our Facebook page for updates! The NJESA spring show is April 28-29, and Heather and I look forward to seeing all of you there.

From the Editor's Desk

RICHARD J. KELLER, JR.
13 GREEN STREET
FRANKLIN, NJ 07416
FranklinNJ@hotmail.com

Welcome to 2018 and another year of FOMS meetings, field trips, mineral shows, swap-and-sells, other mineral-related activities and of course, *The Picking Table*. But first, addressing the 800-pound gorilla in the room: Clearly this issue of the *PT* is dedicated to the life (and times) of Pete J. Dunn, world-famous mineralogist and author of the most extensive compendium on the minerals of Franklin and Sterling Hill. The timing of Pete's passing (November 2017) was such that it gave the editorial staff of the *PT* sufficient time to solicit manuscripts for this, our spring issue, so that we may remember him in a medium that will last for generations. Even if you did not know Pete personally, every member of the FOMS owes him a debt of gratitude for the huge amount of knowledge he generated and shared with us over more than three decades.

We approached several people to write about Pete—not just to laud him for his scientific work, but also to give us a peek into the man outside the science. We also include some photos of Dr. Dunn to show that he was much more than a brilliant man with a one-track mind. He was just a fun guy to be around. (How many of *you* would wear a bright pink squid hat?)

The longest article in this issue, however, takes a different tack entirely by giving us a glimpse into the operations of the Franklin mine in 1910. This article, compiled by Mark Boyer, is taken from the annual report of Benjamin Tillson to Robert M. Catlin, superintendent of the Franklin mine. The report is both comprehensive and fascinating, and provides a glimpse into the wealth of information contained within the archives of the Franklin Mineral Museum.

So sit back, kick up your feet, have an adult beverage or two (raising your glass to Pete J. Dunn), and enjoy this latest issue of *The Picking Table*.

Errata

On p. 29 of the previous issue of *The Picking Table*, in the Acknowledgements section, the name Lawrence Lochram should have been given as Larry L. Lockrem, and the company name should have appeared as L & L Geochemical Services LLC, not LL Geochem.

Pete Dunn Bibliography

The FOMS has arranged to have Pete Dunn's complete bibliography (all 37 pages of it!) posted to the Society's website. We hope to make that web page "live" by the time you receive this edition of the *PT*, so please take a few moments to check it out. You may be surprised by the breadth of Pete Dunn's publications, only a fraction of which relate to Franklin and Sterling Hill. Pete's interests included not only the documentation of newly discovered mineral species, but also encompassed topics in gemology (early in his career) and mineral systematics. In addition, *The Mineralogical Record*, to which quite a few FOMS members subscribe, was his favorite outlet for a series of helpful articles and guest editorials aimed at the mineral-collector community.

License plates of hardcore collectors, spotted at last year's Super Diggg. *Mark Boyer photos.*

Happenings at Sterling Hill

BILL KROTH AND JEFF OSOWSKI
STERLING HILL MINING MUSEUM
30 PLANT STREET, OGDENSBURG, NJ 07439

The Sterling Hill Mining Museum continues to thrive on many fronts. First, and perhaps most importantly, we strive every day to fulfill our educational mission: *To tell the story of the Sterling Hill Mine and to inspire lifelong learning about earth sciences, engineering, and the responsible use of the Earth's nonrenewable resources.* Our attendance, especially by school children, continues to be robust.

This past November, the Sterling Hill Mining Museum partnered with the American Museum of Natural History to quarry a world-class display specimen, the largest of its type, from the orebody's east limb exposure in the Fill Quarry. Freeing this 22-ton slab of our most brilliant red-fluorescing calcite and brightest green-fluorescing willemite required three kinds of expertise: a team of Italian professionals who brought their cable saw with them from Italy; former Sterling Hill miner Doug Francisco, who repaired our rock drills and precisely drilled the pilot holes for the cable saw; and our friend and tenant Fred Rowett of Rowett Excavating, who moved enough sand and gravel from the Fill Quarry to create the spiral ramp leading down to the face of the exposure. This team worked flawlessly and succeeded in what we honestly thought was impossible: the removal of a slab of banded ore 19 feet wide, 9 feet high, and 2½ feet thick. This fluorescent and phosphorescent monolith will be the centerpiece of the American Museum of Natural History's new Allison and Roberto Mignone Halls of Gems and Minerals, due to open in Manhattan in 2019. The slab will be oriented as it was in the exposure, and illuminated by a battery of powerful shortwave ultraviolet lamps. We expect this will amaze and delight over five million visitors per year, and almost worry how we at Sterling Hill will respond to the anticipated increase in *our* admissions…but we will gladly meet that challenge!

Ex-miner Doug Francisco assisted in pumping water under high pressure into a steel bag placed within the saw cut. The force of the water expanded the bag, causing the large slab of rock to topple gently onto a pile of soil that cushioned the fall.

A diamond-impregnated cable, driven at 275 miles per hour by a computer-controlled motor, quickly made the lower horizontal cut.

A second partnership is with the Borough of Ogdensburg. While past animosities and distrust still lingered with some in the town as a result of their dealings with the New Jersey Zinc Company, and our museum's decision to become a 501(c)(3) tax-exempt foundation, an excellent opportunity arose to bridge this divide: the Sterling Hill Haunted Mine Tour! This was conceived as part of a fundraising effort for the Ogdensburg Public School's eighth-graders, whose dream was to have a class trip to Boston for an important lesson in American History. As planning progressed, the Mine Tour involved the Ogdensburg Police and Fire Departments, the Department of Public Works, local EMTs, the Ogdensburg Historical Society, and of course the school's students, their parents and teachers, and the employees and staff of our Mining Museum. This cooperative effort culminated in a very successful (and scary) two-night Halloween event. Over 750 visitors came, took part in our Haunted Mine Tour adventure, and were impressed and thrilled by our efforts. Even better, enough money was generated to make the class trip possible. Best of all was the close and friendly relationships we at the Museum have developed, and will continue to develop, with the residents of Ogdensburg.

Other ongoing partnerships continue as we work with the Fluorescent Mineral Society and the Delaware Museum of Natural History to highlight the amazing world of fluorescence.

The Sterling Hill Mining Museum continues to grow and is stronger than ever in so many ways, thanks to the incredible work of our outstanding staff and volunteers.

Franklin Mineral Museum Report

MARK BOYER
PRESIDENT, FRANKLIN MINERAL MUSEUM
32 EVANS STREET
FRANKLIN, NJ 07416

Greetings, museum friends. As many of you know, the past year was filled with much drama at the Franklin Mineral Museum. The year 2017 started auspiciously enough with the return of the Delaware Valley Earth Science Society's annual mineral field-collecting trip to Franklin. Known lately as the "Super Diggg," this event was held in recent years at the Sterling Hill Mining Museum. Last year, DVESS decided to bring it back to Franklin for the long-anticipated unveiling of the museum's notorious "Mill Site Pile." For many years, this enormous mound of rock taunted local collectors with the prospect of classic Parker Shaft mineral finds—if only the museum would open the chain-linked gates to paradise! Finally, this year it happened. The pile was cleaned and domed with a backhoe, and the adjacent Buckwheat Dump got its most thorough turning-over ever. More than 220 collectors came from all across the country to stake their claims and try their luck. It was like the gold rushes of old, only without the violence. Everyone reported having a great time, and many unusual and significant finds were made. One Super Diggg find, reported months later by a father and son who came to the museum to have their canary-yellow fluorescing specimen identified, was perhaps the richest esperite to have ever been field-collected in Franklin!

Unfortunately, the museum's high spirits were dealt a blow on a grand scale later that spring. Early in the morning of June 19, an agile burglar scaled our barbwire-topped chain-link fence, climbed onto the roof of the fossil room, broke out two clerestory windows overlooking Welsh Hall, lowered himself down with a towstrap, and smashed display cases to steal gold, gems, and precious stones. He exited by the same route, leaving behind a copious amount of blood from an injury sustained by breaking the windows. By the next day, half a dozen TV news crews had interviewed curator Earl Verbeek and me, and news of the crime quickly spread, accelerated by lurid headlines about the "trail of blood." Despite our loss, the outpouring of support from far and wide was amazing, and we thank the mineral community for their many expressions of concern. Nearly a year later, this crime is still an ongoing police investigation. One fortunate thing we can say about this incident is that none of the museum's critical or high-value specimens were taken, and everything that was stolen was replaced, thanks to generous donations. And it has prompted us to upgrade our security systems.

If the burglary wasn't bad enough publicity, in early October the local newspapers reported that our former manager was arrested and charged with embezzlement. The news media got some facts and figures wrong, but the essence of the story is this: As our museum began to implement new protocols for better financial accountability and transparency, our former manager of 20 years unexpectedly decided to retire. Upon her departure, mounting evidence of embezzlement led to an investigation by the Franklin police. The case has now reached an indictment and will no doubt generate more publicity as it proceeds through the court system. Although this sad development has given us a black eye, it should be understood that the case was the result of the museum's own fiscal initiatives and internal investigations. It's been a long, arduous process to bring ourselves into the modern era of accountability, but as evidenced by this event, we are serious about our integrity and reputation. In recent years, for example, the museum has established policies regarding the accession and deaccession of minerals as well as conflict-of-interest for officers and trustees. If anything, we have demonstrated that we have taken a leadership role that other area organizations may be encouraged to follow.

On a lighter note, the museum's annual fall mineral show in September was moved from the Franklin Borough School back to its original location, the Littell Community Center, formerly the Franklin Armory. This move saved the museum thousands of dollars in show expenses, and it also increased our capabilities. One big improvement was the ability to provide hot food services, with the able assistance of the Hardyston Township Boy Scouts. While there were many challenges with prepping this location for the show, the spirit of excitement and volunteer enthusiasm was clearly evident. We are especially grateful to the Franklin-Ogdensburg Mineralogical Society, which sponsors and organizes the outdoor swap-and-sell event, for its over-the-top support and efforts in making this change in venue a success.

The Franklin Mineral Museum's mission of preserving and safeguarding our mineral heritage is recognized by those who see our museum as the best repository of their donations to the public trust. Late last year, the museum acquired through generous donation many documents, artifacts, and mineral specimens from the estate of Robert Metsger, former geologist with the New Jersey Zinc Company. Among the documents were complete mine maps from Franklin, and among the mineral specimens was the fluorescent mineral collection owned by the N.J. Zinc Company. The original Zinc Company cabinet will be put on exhibit at the museum with its original specimens, many of which are spectacular and world-class.

As we begin 2018, we anticipate renewed excitement with the appointment of our new manager, Carol LaBrie, who has been on the museum staff since 2005. The 2018 DVESS Super Diggg will again hope to make great discoveries as we burrow deeper into the Mill Site Pile. Also in 2018, the exhibit hall informally known as "The Local Room" will be officially renamed John L. Baum Hall at our annual Miners Day celebration in May. Over the past year, curator Earl Verbeek has spearheaded a complete reorganization of the specimens in "Baum Hall" to explain Franklin minerals in a paragenetic manner (that is, showing how these minerals formed in context and sequence). Collections manager Lee Lowell has recataloged the entire exhibit and created an alphabetical species list so that visitors can find what they're looking for. Additionally, during Miners Day, the museum's Hall of Fame will honor the late Pete J. Dunn for his contributions to Franklin mineral science.

So, friends, there's no end to the awesome and unexpected in the Franklin mineral world. The Franklin Mineral Museum is at the hub of the action, so don't miss the chance to be part of it. As always, mineral science continues to make new discoveries at the museum, the official "keepers of the species list." In 2018, visitors will notice improvements such as renovated restrooms, new security and safety measures, reconditioned exhibits, and aesthetic improvements. We offer great kid-friendly activities such as gem-panning and fossil digging, and opportunities to learn about natural science, mineralogy, and mining history. Please visit us whenever you can and help support our mission to preserve Franklin's world-famous heritage.

Collectors on the "Mill Site pile" for the first time, April 29, 2017, at the Franklin Mineral Museum. *Mark Boyer all photos.*

The 61st Annual Franklin-Sterling Gem & Mineral Show

September 23 and 24, 2017

STEVEN M. KUITEMS, DMD
14 FOX HOLLOW TRAIL
BERNARDSVILLE, NJ 07924

This was the 61st year of this annual show, which after 24 years at the Franklin School has returned to the Littell Community Center, previously known as the Franklin Armory. For long-term members of the Franklin collector community this was a trip down Nostalgia Lane. As in the good old days, the outdoor swap was on the grass behind the parking lot, and it seemed to be well-attended even though the weather was extremely warm. Jim Van Fleet had organized a crew that refreshed the white stripes in the parking lot and cleaned up the perimeter of the Swap-and-Sell area so swappers and visitors could move about unimpeded by the undergrowth. Many thanks to all who helped.

This year there were five daylight exhibits and six fluorescent exhibits. The first daylight case was titled "Minerals of the Franklin Marble," presented by the Franklin Mineral Museum. The Franklin Marble is the host rock for the Franklin and Sterling Hill Zn-Fe-Mn orebodies, and many well-crystallized species from outside the orebodies were represented. Fine crystals of phlogopite, pyrite, spinel, and dravite were represented, along with much rarer fluoro-tremolite and well-formed scapolite crystals, but my favorite was the large plate of silvery margarite from the Braen Franklin Quarry.

Mark Mayfield's display, "Found in the Field Since 2015," was a superb assortment of well-crystallized miniature to thumbnail-sized specimens Mark personally collected. Included were four outstanding examples of dark brown andradite crystals from the Franklin Mill Site material moved to the Buckwheat Dump; these were beautifully worked out and displayed alongside an assortment of willemites from the Sterling Mine. The next case, Steven Kuitems's "Franklin Classics," featured a striking example of ash-gray tephroite and rich "ruby zincite" collected in 2016 on the Buckwheat Dump, and green sphalerite crystals and a golden calcite crystal collected in May 2017 during a FOMS field trip to the Braen Franklin Quarry.

Ken Reynolds's case, "Classic Hemimorphite From Sterling Hill," displayed a wide variety of Passaic Pit specimens: large specimens of so-called "maggot ore" mined in abundance in the 1870s; smooth white botryoidal hemimorphite recovered in the 1990s; and a fine, rare example of pale blue botryoidal hemimorphite. Dick and Elna Hauck's case, "Rhodonite, Franklin, N.J." presented five superb crystallized rhodonite specmens. Of note were a plate of undamaged bladed rhodonite crystals, and a superb example of rhodonite crystals on bladed yellow axinite-(Mn) with fine pale-green prisms of willemite, a classic assemblage from an open fissure in ore. These specimens were surrounded by an assortment of Dick and Elna's mining sculptures.

Zack Bonard (a.k.a. Z-Rex) was the youngest mineral dealer at the swap. *Tema Hecht photo.*

The fluorescent exhibit had six cases. The first, placed by the Franklin Mineral Museum, was titled "Red With Desire, Green With Envy" and featured the fluorescent pairing of calcite and willemite under shortwave UV that is the signature mineral fluorescence of the district. There were many brilliant two-color specimens representing a wide variety of patterns from both the Franklin and the Sterling Mines. I especially liked the veins (or ribbons, as the miners called them), especially one standout "Dead Zone" specimen with a solid band of willemite down the center and a nonfluorescent zone on either side of the willemite band, in a matrix of calcite strewn with willemite grains. Steven and Daniel Kuitems's case was titled "Franklin Delights" and consisted of an assortment of specimens under longwave UV, mostly sphalerite from both local mines. Some sphalerite specimens exhibited three to five different-colored fluorescences instead of the more common orange fluorescence.

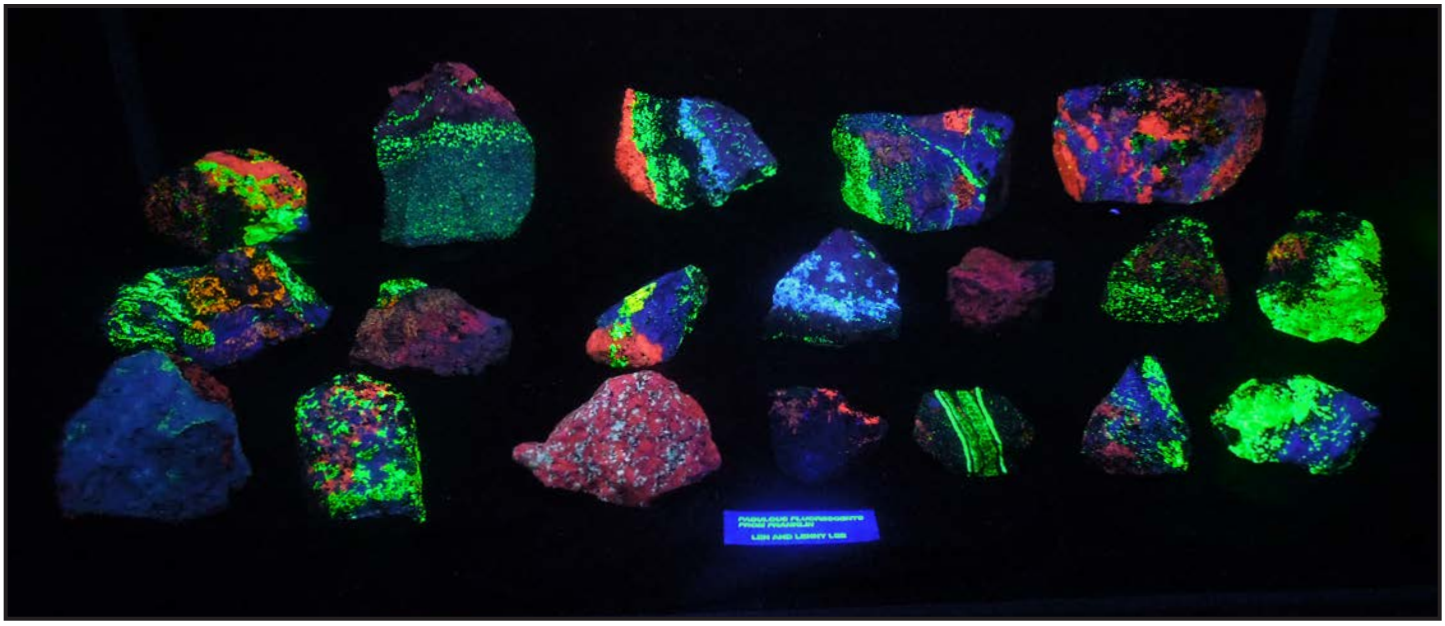
Sterling Hill rarities included yellow-green-fluorescing zincite veins from the west limb of the orebody, and a large green-fluorescing genthelvite from a trench on the east side of the Passaic Pit.

Denis DeAngelis's case, "Shortwave Sunshine," was a fine assemblage of the rarer Franklin species under shortwave UV, including orange-fluorescing Second Find and Third Find wollastonites. Yellow-fluorescing cuspidine and pale-blue-fluorescing margarosanites caught the viewer's eye, while a great rarity, orange-fluorescing johnbaumite in red-fluorescing calcite, brought a smile to the face of every knowledgeable Franklin collector. Alex Kerstanski's display, "Vein Rocks," consisted of green-fluorescing willemite and red-fluorescing calcite under shortwave UV, in patterns and textures which illustrated the metamorphic processes that took place in the orebodies. Of note was a specimen that started out with a single willemite vein that divided into three willemite veins.

The fifth case was a combination effort by Mark Dahlman and Chris Luzier titled "Picture This," with a variety of mimetoliths ("picture rocks") from the Franklin and Sterling Mines. Imagine splitting open a rock from Franklin and finding a yellow esperite penguin staring back, or a green

Seth Maranuk (right) and Chris Brink, bringing minerals, music, and art to our Sussex scene. *Tema Hecht photo.*

Ralph Kovach, purveyor of home-made cabochons at the outdoor swap. *Tema Hecht photo.*



Len and Lenny Lee's display of *Fabulous Fluorescents From Franklin*, heavy on the hardystonite. *Tema Hecht photo.*

Dick and Elna Hauck's display of unusual rhodonite and typical zinc miners; Dick is believed to be the miner at lower left. *Tema Hecht photo.*

willemite elephant from the Sterling Mine, or a two-color snail from Franklin with a green head and neck, and a yellow shell composed of willemite and esperite. Even more unusual was a rock that spelled out "Hi" in green willemite, while another looked like an igloo made of white-fluorescing barite and orange johnbaumite, with a view from its doorway of a lone white barite cloud set in a red calcite sky. If you were brand-conscious, there was a specimen that showed a red Nike-like "swoosh" in a sea of green willemite, but the most notorious mimetolith was "The Astronaut," sketched in radiating willemite and clearly wearing a space suit with helmet (see photo on p. 6 of last issue).

The final case was Len and Lenny Lee's "Fabulous Fluorescents From Franklin." Two superb margarosanite specimens dominated this shortwave UV case, one with a sharp band of blue-white margarosanite and a green willemite and red calcite band surrounding it, and the other a band with what looked like blue-white puffy clouds floating above a thick band of margarosanite.

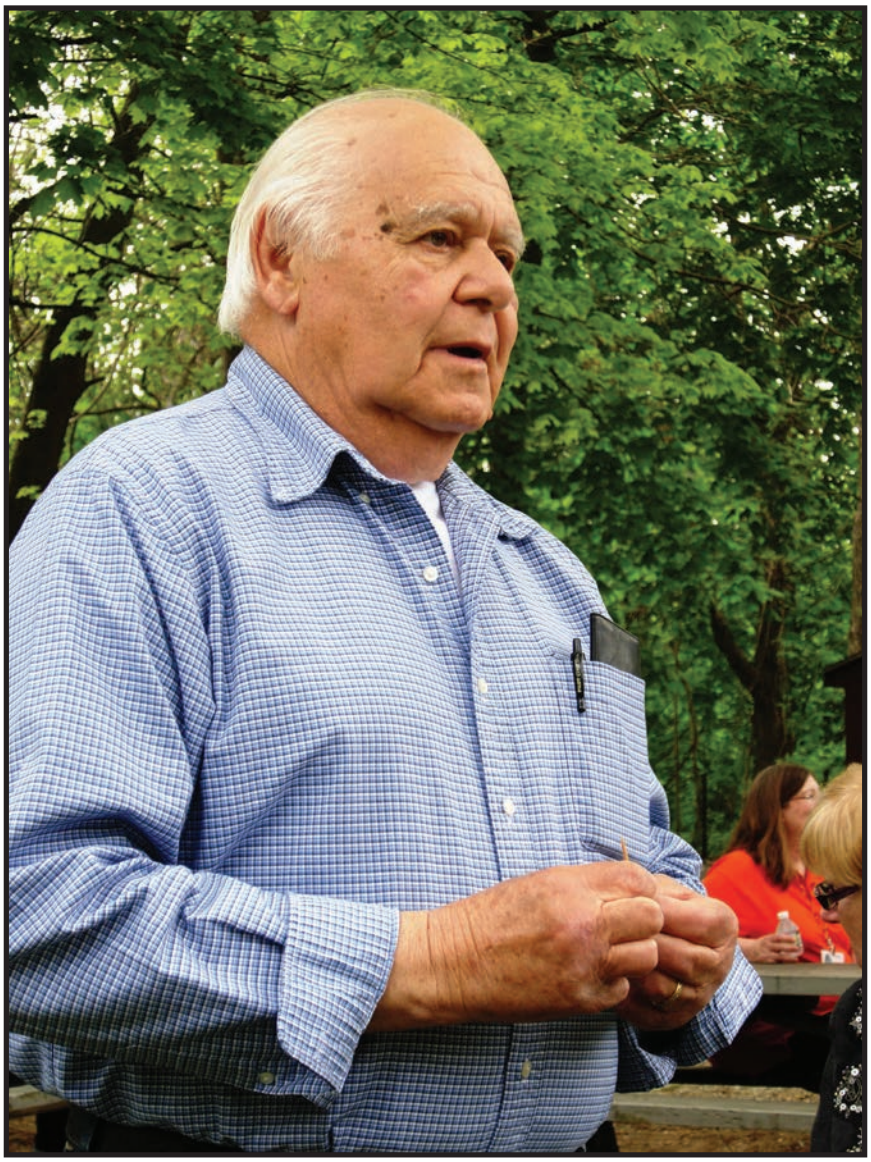
It was a pleasure to view all these fine exhibits! Kudos to all who brought, arranged, and exhibited their specimens at this two-day show. Special thanks to the coordinators Steven Misiur (Daylight Exhibits) and Richard Bostwick (Fluorescent Exhibits), and all those who made this show possible.

With a smile like that, do you really think it's Coca-Cola in that can? Mark Dahlman isn't saying… *Tema Hecht photo.*

In Memoriam: Ronald H. Mishkin

EARL R. VERBEEK
CURATOR, FRANKLIN MINERAL MUSEUM
32 EVANS STREET
FRANKLIN, NJ 07416

One of the few remaining Franklin miners unexpectedly slipped away from us on February 3, at age 87. Ron Mishkin, well known to many as a tour guide and educator at Sterling Hill Mining Museum, and as an authority on the history of iron mining in New Jersey, was a professional geologist with a storied past. A native of Paterson, N.J., Ron first got interested in geology when he took a night course at a local college. Later, while enrolled as a geology student at the University of Texas at El Paso (UTEP), he spent a summer working underground as a mucker in the Franklin Mine. He enjoyed that job so much that he signed on for another year of work in the Franklin Mine after receiving his bachelor's degree. In 1953 he moved to Arizona to work in the Magma Mine, a job he disliked because, as he often remarked, the mine was as hot as its name implies. Thereafter he spent the better part of two years as an exploration geologist in the Western U.S., a job well suited to his scientific curiosity and general love of nature. Ron also worked in two of New Jersey's iron mines: the Richard Mine in Wharton and the Scrub Oak Mine in Mine Hill. The stories of his experiences in these mines could fill a book—as indeed it might still, for Ron was well along in documenting his life's story at the time of his death.



Ron Mishkin at Miners Day, Franklin Mineral Museum, May 6, 2012. *Tema Hecht photo.*

Ron was a genial man, always ready with a story and a few jokes to try on those around him. He particularly enjoyed telling others of typical pranks that miners played on one another in the mine: of the peanut butter and grease sandwiches, or of convincing a new hire to rub a stick of dynamite on his forehead. Even before his career started, however, he was involved in perhaps the most legendary prank ever undertaken at UTEP. In brief, Ron, along with six other students, wrangled a six-foot alligator from a local pond in the dead of night and deposited the angry reptile in the office of a strait-laced geology professor. Stories differ on the reaction of the professor when he entered his office in the morning, but no one was hurt, and the prank quickly became one of the most celebrated events on campus. It remains so to this day: Search the Internet for Oscar the alligator (the Texas one, not the one in Georgia) to learn more.

Farewell, Ron. Your wealth of knowledge and gentle nature will be missed by all who knew you. ⚒

A Report on the Operations of the Franklin Mine During 1910

BENJAMIN F. TILLSON
(1884 – 1951)
ASSISTANT SUPERINTENDENT OF FRANKLIN MINES
NEW JERSEY ZINC COMPANY

Editor's Note: The following report of mine operations for the year 1910 by Benjamin Tillson, Assistant Superintendent of the Franklin Furnace Mines for the New Jersey Zinc Company, was made during a critical period of transition and development for the Franklin mines. While Tillson's comprehensive overview of operations is from a business perspective, at times reading very much like an annual report to stockholders, it also offers us a fascinating historical record of a boom period for Franklin's mining industry. In 1910, the Palmer Shaft had been put into operation, and the fabled Parker Shaft had been phased out. The Palmer Shaft was not yet the sole means of bringing ore to the surface, as other shafts and mines at Franklin were still in operation at this time, including the Buckwheat Open Cut, but not for long. New mining and milling procedures were being implemented, new equipment was being tested, and new labor practices were inaugurated that would increase the mine's profitability while reducing the workforce. Improvements in ore conveyance via new ore passes, larger capacity mine cars, and electric locomotives on haulage levels would soon render mule-powered tramming obsolete.

This report was written for Mine Superintendent Robert M. Catlin, who was brought to Franklin in 1906 by the N.J. Zinc Company to fix the general disorder of the Franklin mines and establish modern mining methods. Additionally, Catlin was responsible for bringing to Franklin a hospital, a bank, a community house, electricity, a water system, paved roads, and law and order.

Herewith are presented pertinent excerpts of Tillson's report that give us a portrait of a healthy, booming mining enterprise. Omitted here, as noted, is dreary and mundane discussion, such as inventories and technical details regarding pumps, air compressors, drills, and other equipment, as well as mining cost-efficiency data and several blueprints of tables of mining, labor, and production data. The full report is on file in the archives of the Franklin Mineral Museum.

— Mark Boyer

January 14, 1911

Mr. R.H. Catlin, Superintendent,
Dear Sir:

Herewith is my report on the operation during the year 1910 of the Franklin Furnace mines of The New Jersey Zinc Company.

Respectfully Submitted,
Benj. F. Tillson

1. ORGANIZATION

During the past year there have been quite a few changes in the personnel of the Mining Department. At the start of the year the Mining Staff was as follows:

F.T. Rubidge, Asst. Supt.
Geo. Rowe, Mine Capt.

W.L. Sheeler (Open Cut)
Wm. VanTassel
Jno. Macsoj

B.F. Tillson, Asst. at Parker Mine

Shift Bosses	Timber Bosses
Robert Gall	Thos. Bolitho
R.J. Moyse	Wm. Steer
Jas. Bolitho	
Richard Cundy	
Wm. Maddren	
Jno. Bolitho	

W. Hastings, Asst. Taylor Mine

Shift Bosses	Timber Bosses
Jas. Robinson	Jas. Pellow
Sam'l Rowe	Linn Hubbard
Rex Trower	
Jno. Gluyas	

On June 1st F.T. Rubidge left the employment of The New Jersey Zinc Company and B.F. Tillson was promoted to fill the vacancy. W.F. Evans was taken from the Surveying Department to fill the position of Asst. Mine Capt. at Parker Mine, but the continual exertion underground proved to be deleterious to his health, so in the latter part of the month he returned to the Survey Dept. and W.L. Sheeler was transferred from the Open Cut to the position of Asst. Captain in Parker Mine. About Sept. 1st Sheeler, because of lung trouble, was forced to leave and seek a drier climate out West; and until Oct. 20th his place was not filled, but at that date H.H. Hodgkinson was promoted from his position as sampler to that of Asst. Mine Captain at Parker Mine.

At present my staff is as follows:

Geo. Rowe, Mine Capt.

H.H. Hodgkinson, Asst. at Parker Mine

Shift Bosses	Timber Bosses
Robert Gall	Wm. Steer
Jas. Bolitho	
R.J. Moyse	
Thos. Bolitho (Temporarily from timber boss)	

W. Hastings, Asst. at Taylor & O.C.

Shift Bosses	Timber Bosses
Sam'l Rowe	Jas. Pellow
Jas. Robinson	L. Hubbard
Wm. Maddren	

Open Cut

Wm. VanTassel

Jno. Macsoj

During April Jno. Bolitho returned to Michigan and Thos. Bolitho was promoted to fill the vacancy. Early in the Spring a number of the shift bosses were obsessed with the idea that they should receive vacations, but have their positions held for them awaiting their return, three of them desiring to visit the "Old Country" for several months. As the result Gluyas and Cundy went abroad with the understanding that when they returned they would have to take chances as to the position which they could get. On June 1st Trower left the mine staff to enter the Survey Department and Cundy was transferred to Taylor Mine from Parker Mine to take his place, while the work was arranged in Parker so that only the upper, prospecting levels were worked on two shifts and the force in the lower territories was reduced to an adequate size for operating only on day shifts.

On June 15th Gluyas left for Cornwall, England, and Maddren was shifted from the Parker Mine territory to fill Gluyas' place, while Moyse left the lower Parker section to fill the position left vacant by Maddren.

On July 1st Cundy went abroad and Jas. Bolitho filled his place in Taylor Mine and Robt. Gall was then in charge of all the Parker Mine territory below the 700 ft. level, the same being worked only on day shifts as inaugurated June 1st.

On Nov. 1st, with the Mine's assumption of the operating control of Palmer Shaft, the mining operations were restricted to a one shift working day (ten hours long on each week day, except Saturdays, when a short shift of seven hours is considered the equivalent.). This made it necessary to dispense with one shift boss, so Thos. Bolitho was returned to his former position of timber boss and Jas. Bolitho was returned from Taylor Mine to his old territory in Parker Mine.

In order to hasten some of the development work in the upper part of Parker Mine, it has been necessary to reinstall two working shifts a day, so Thos. Bolitho has temporarily been reinstated as the shift boss opposite Moyse in this territory until this rush work is finished.

Although it is evident that the men are doing better work because they labor only on day shifts, yet, because of the mill's failure to treat the amount of ore they would supposedly require, the standard unit of work performed per man in the mine is not as high as it should be, so quantitative comparisons are of slight value. However, there were on average 680 men working per day at the beginning of the year, and now there are but 386 names on the underground payroll and during the past month the average number of men working underground per day was 347.6; a reduction of about 49%.

2. BUILDINGS

As yet the new time office and change house at Palmer Shaft have not been completed, so there are several frame buildings in service which can in the near future be disposed of, namely, the old Palmer office and the "dry."

It seems as though it will be advisable to erect convenient to the new blacksmith shop and the railroad tracks a shed for

blacksmiths' coal, of sufficient capacity to accommodate a half car of coal, since we must be prepared for the break-down of our oil furnace or shortage in oil supply.

There are a number of frame buildings in the vicinity of Parker Shaft and since we will soon have no occasion to operate this shaft, it would appear advisable to dispose of some of these sheds for nominal sums rather than suffer fire risk from them. The Parker blacksmith shop, the old change house, the old ore bins to the north of headframe, and the two old supply houses may well be torn down as they will only prove attractive haunts for "hoboes." Since it seems as though the boiler plant would no longer be needed at Parker Mine, inasmuch as the hoisting engine and fire pump can be operated by compressed air from the mine, it is planned that all but the best two boilers be dismantled and the boiler house altered to protect but the two boilers furthest north. The carpenter shop is a good building and will probably be needed as a storage place for several of the large steam pumps from the Elevator and Trotter Shafts.

One of the powder sheds at Parker Shaft has been fitted with the old Foster superheater formerly used for thawing the frozen cars of ore at Mill #2 and a hot water system of heating installed for thawing the powder in the neighboring powder house, thus doing away with the heavy expense of two or more tons of coal consumed in the boilers per day for steam heating.

The old mine captain's office and shift boss change house is a building in good condition and is temporarily used as a workroom for the diamond drill man and change house for some of the men.

Although the ore bins and tipple connected with Parker headframe are not in good condition and so far as safety of the shaft is concerned might better be torn down, yet it is possible that we may be required to keep the shaft in readiness for hoisting ore in order to fulfill the terms of the contract with R.W. Parker.

A drift is being spiled into the southern face of the Mill #2 tailings heap and after it has penetrated to a distance of about fifty feet it is planned to excavate a 10′ x 15′ x 7′ high chamber to be used as a storage place for our supply of mine explosives.

The wooden ore bins at the Open Cut are cleaned out and of no further use there, so may well be dismantled. The Open Cut blacksmith shop is no longer needed and is a dilapidated shed which should be wrecked. The Carpenter Shop and Supply House are both two story buildings in good condition and of some value. The Oil House and 2nd Hand Supply House at the Open Cut can also be disposed of. Plans are in hand for maintaining the Powder House at the Open Cut and installing a home-made hot-water heating plant for thawing the powder and heating Mr. Gibbs' quarters in the Open Cut Office Building, as well as the Stables.

3. EQUIPMENT

(a) Hoists: As supplementary hoists for handling timber and other supplies on the intermediate levels of the mine we have in service six 5″ & 5″ x 6″ cylinders Lidgerwood geared hoisting engines operated by air. One is used for loading the timber skip at the collar of Trotter Shaft, one is placed on the 400 level of Taylor Mine for lowering timber to the 650 level, one is placed on the 750 level for lowering to or hoisting from the 800 level, one is placed on the 800 level to operate with the timber slide to the 950 level, one is stationed on the 950 level in connection with the timber slide from there to 1100 level, and one is being used in the erection of the large, high cribbings of the 716 S & 763 S stope slices on the hangingwall of 950 level. An Allis-Chalmers 9″ & 9″ x 12″ geared hoist is installed at the collar of Trotter Shaft for the purpose of lowering timber to the 300 or 400 levels, but when the timber chute raise series has been extended to the 300 level, all timber can be sent down Palmer Shaft for delivery in Taylor Mine; however, it would seem best to maintain this engine even then since some timber must be delivered to the 200 level Taylor and must be hoisted there from the 300 level if not lowered from the surface.

At the collar of Parker Shaft there is a 6⅜″ & 6⅜″ x 12″ "Mundy" geared hoist which has been used for loading timber on the cages and since our supply of timber there is exhausted, we can remove this hoist. It seems advisable to place it on the 300 level to be used with the Taylor Mine slide in place of the less powerful engine now on the 400 level.

It is planned to operate the large Parker Hoisting Engines by compressed air brought up Parker Shaft from underground and so permit of the shutting down of the boiler plant at Parker Shaft. A receiver, 3′ Diam x 9″ long, has been placed at the bottom of the shaft in order to reduce to a minimum the amount of moisture in the air to be used on the surface.

A Lidgerwood 10″ & 10″ x 12″ geared hoist is situated on 950 level at the top of the slope in Parker Mine and will now be seldom used but it seems wisest to maintain it there until the air pumps on 1150 level are removed and until we feel certain that the extension of the 1150 haulage drive or some development work will not make it necessary to hoist rock from below the 950 level.

A double drum hoist is situated at the collar of Palmer Shaft for the operation of the derrick.

[Section 3.(b) on Compressors omitted.]

3.(c) Drills: During the past year the use of hammer drills in stoping has greatly increased so that a piston drill is now seldom used in a stope. A glance at the accompanying blue-print [omitted] of a yearly summary of the active stopes will show that in January 1910 there were a few more piston than hammer drills used in stoping, during Sept. and Oct. seven

or eight hammer to one piston drill stoped the ore and, were proper allowances made for the four 17 ft. crosscuts which are being driven by piston drills to start stopes and are charged as stoping, Nov. and Dec. would show every bit as large a relative proportion. The reduction in stoping costs can be partly credited to the increased use of these one man drills and their increased footage of holes drilled. [Discussion omitted.]

The following list is an inventory of the machine drills upon our property Jan. 1st, 1911:

F24 (3½″) Ingersoll-Rand Reciprocating Drills			8
D24 (3″)	Ditto		55
A86 (2¼″)	Ditto		11
HC10 (2″) Ing.-Rand Hammer Drills			1
Gordon Hammer Drills (2nd Hand Supply)			3
HB10 (1⅝″) Ing.-Rand Hammer Drills			26
BC10 (2″)	Ditto	(Butterfly Valve)	1
McKiernan (2″) Type "D" Hammer Drills			20
″	(2″) New Type "D" Hammer Drills (On test)		1
HA13 (1⅜″) Ingersoll-Rand Valve Block-holers			8
MV1 Valveless Ingersoll-Rand Block-holers			18
BA13 Ingersoll-Rand "Butterfly" Valve Block hol. (On test)			1

3.(d) Drill Steel & Sharpening: Early in December the new blacksmith shop at Palmer Shaft was put into regular operation with a hydraulic plunger feed on the dead-block of the Word drill sharpener replacing the screw feed operated by a separate engine. Two #2 Leyner drill sharpeners, one being new and the other the one which has been in service since August, 1908, at Parker Shop, have been installed for sharpening all the hammer drill steel and any other drill whose length is over ten feet whether for test-hole or Open Cut use. A Leyner #2 oil furnace is used to heat all drill steel and works very satisfactorily, requiring about 3 gallons of oil per hour of actual running time or approximately 700 gallons, or 14 barrels per month. Two soft coal forges are also used, one for general repair work of the mines and the other for pick sharpening, etc., and as an emergency fire for heating drill steel in case that the oil furnace should be out of commission. An A.C. electric motor has been ordered as a power unit for driving an emery wheel and any other tools which may be deemed necessary. In this regard I should recommend the purchase of a power drill-press, hack-saw, punch, and shears. [Discussion omitted.]

3.(e) Pumps: The centrifugal pumps of the 1050 pump station started to operate on April the 29th, 1910, and barring some difficulties, due to the seizing of the impeller bushings, which were rectified shortly after installation, they have given but little trouble. However, the only idea we have of their duty and efficiency is from a pumping test made on May 24, 1910, measuring the discharge at the surface by a rectangular weir 12″ wide with a contracted flow and indicating the power at the engine house switchboard. [Discussion omitted.]

The centrifugal pumps in the 340 level pump station of Taylor Mine were put into operation on Aug. 11, 1910, but have given much trouble because of their excessive thrust and consequent wear of the thrust bearings. Another undesirable feature of their construction or installation is the fact that they will not pick up their own suction water when the column pipe is empty nor is it safe to run them then because water is partly relied upon as a lubricant and any water not drained from the column to prevent freezing in winter time will drain out through the foot valves. So it has been necessary to operate an air pump to charge the centrifugal pumps at this station and the same thus requires the operation of the compressors. We can arrange a supplementary sump above the 300 level on the east skip track in order to form a water supply for charging the pumps, but this supplementary supply would, however, always be in danger of freezing.

The foundations of the 1150 pump station are finished and the pumps are in place ready for lining up and pipe fitting, and will probably be operating by Jan. 23, 1911. The sump for this station has a capacity of about 35,000 gals. and receives its water from the sump at the shaft bottom where all dirt and mud should settle. When these pumps are regularly operating, we can dispose of the #4 and #10 Cameron pumps at the foot of the Parker Slope just above the 1150 level, and the air compressors can then be shut down except during the actual working shifts in the mine and there will then probably be a saving of at least 150 H.P. to account for not only the air used in these pumps but also for the leakage of the air lines during the period of time that pressure is maintained solely for pumping purposes.

[Discussion omitted.]

3.(f) Air Lines and Hoses: A 6″ air line has been laid from Palmer Shaft along the 300 ft. level to Taylor Mine and down the ladderway there to the 750 level where it will ultimately connect with a 7″ line which will soon be laid through the footwall haulage drive on that level to Palmer Shaft. The 6″ air line on the 300 level is connected to the old 6″ water column in Trotter Shaft and it in turn will be connected to the surface pipe line, thus furnishing another feeder of compressed air underground to be used in case of any accident to the air pipe in Palmer Shaft above the 300′ level. All the surface air line to the southeast of the valve house near the tennis courts will be taken up and part of it, starting with 10″ pipe, will be laid east to the Mine Hill railroad tracks and 7″ pipe will then follow that railroad embankment to Trotter Shaft, while the balance of the 7″ pipe will be laid on the 750 level of Parker Mine.

[Pipe inventory omitted.]

3.(g) Tracks: On Jan 1st, 1911, the footage of rails on the property was:

	Parker Mine	Taylor Mine	Open Cut	Total
20 Lb. Rails	25,870	28,760	2,290	56,920
30 ″ ″	4,380	1,900	790	7,070
40 ″ ″	11,740	5,600	—	17,340

3.(h) Mine Cars: The following list is of the tram cars in the Mines Jan 1st, 1911:

30 Cu.ft. cars, 36″ gauge, for Mule Haulage (scrapped)	12
24 Cu.ft. Ernest Weiner, 24″ gauge cars	31
24 Cu.ft. Wonham-Magor, 24″ gauge cars	14
24 Cu.ft. N.J. Zinc Co., 24″ gauge cars	27
16 Cu.ft. Koppel, 22″ gauge cars	4
60 Cu.ft. N.J.Z. Co., 24″ gauge electric haulage cars (300 level, 8; 750 level, 10; 950 level, 6; 1150 level, 6)	30

3.(i) Accidents and Safety Appliances: Four men were killed during the past year and two of them, John Fingora and Valent Kozolak, drill nippers, met death probably because of their carelessness, for after the wreck of a cage load of drills in the shaft no evidence could be found of the straps which should have been used for lashing the drills in the cage and the appearance of several drills driven upwards through the shaft timbers where the wreck occurred seemed ample proof that this unfortunate occurrence was due to several drills falling out into the shaft while the cage load of drills bearing the two "nippers" was being hoisted. The third fatality occurred to a stoper, Frank South, whose duty it was to take care of the very treacherous ground in the 1550 S stope up from the 550 level. While working his way forward in the stope trimming the back and placing props as he advanced, a heavy piece of ground ripped off the back, catching him unawares and crushing him. His death was instantaneous, while his "buddy" had a narrow escape but was unhurt. The fourth man, Sam Durko, fell down the 191 S ore raise series on the 300 level and his body was found in the raise below the 450 level. He was that day for the first time a trammer on the 300 level electric haulage train and it seems possible that he might have received a shock from the trolley wire and so slipped into the chute, but this accident has never been satisfactorily explained.

No time or expense has been spared to insure as far as possible the safety of the men working underground, for a skilled powder monkey is left in charge of each place where the ground is treacherous and he is paid a special rate of $2.50 per 10 hr. shift for trimming and timbering the back and watching after the safety of the men working in that particular place.

Outside of several fractures the number of injuries has decreased from that during 1909 and they have been of very minor importance. Although we have been comparatively fortunate in regard to accidents during the past year, I still believe it would be a valuable move if a "first aid" corps were organized from amongst the shift bosses and men were trained by Dr. F. P. Wilbur.

We have three of Siebe, German & Co.'s self contained breathing apparatus; designed for permitting a person to remain in a nonrespirable surrounding atmosphere for a time limit of two hours, and ten oxygen cylinders made by the Linde Air Products Co. and each charged with 10 cu.ft. of compressed oxygen at a pressure of about 1800 lbs. per sq. in. Last Spring I made a test of one of these outfits by entering the mines at Parker Shaft and climbing the ladders to the 300 level, then south through Taylor Mine to the skip tracks, and up the basin to the top of the Open Cut. I relied wholly upon the breathing apparatus and made the trip in 35 minutes but had at that time exhausted all of the oxygen, because the automatic inlet valve did not work properly after a short time and the admission of oxygen was controlled entirely by the emergency valve. The construction of the breathing-bag seemed to be responsible for the failure of the outfit. A partition hanging from the top of the bag nearly to the bottom forces the air exhaled by the operator to pass through the sticks of caustic potash which rest in the bottom of the bag and the chemical process by which the potash absorbs the exhaled carbonic acid gas produces water at the same time so after a short time a fluid seal is formed on the partition at the bottom of the breathing bag and the air can not pass through to be purified. It is our intention to test this apparatus more thoroughly, remedy any difficulties, and drill the shift bosses so that they will become thoroughly familiar with their use, but it would first seem advisable to definitely organize a "first aid" corps who would receive the proper instructions and practice and would realize their responsibilities.

4. UNDERGROUND MINING

(a) Hoisting: Ore was hoisted from the 800 ft. Loading Pocket and the Surface Loading Pocket on April 27th, 1910, and no ore has been hoisted up Parker Shaft since Oct. 15th, 1910, thus a considerable saving in royalties has been made. For a time more or less trouble was experienced because of the warping of some of the members of the loading pockets but an investigation showed the trouble to be due to the capacity of the hopper being too large so that the skip loaders would cut off the stream of ore with the lower gate and thus strain the loading mechanism. However, since lessening the capacity of

the hoppers the apparatus works well and yet the skips will average a load of more than 5 tons with the comparatively coarse muck from the 800 Pocket and 5.5 tons with the fine muck of the 1150 pocket. Now that the supply of timber at Parker Shaft is exhausted, barring the lowering of powder, there is no necessity for operating the Parker hoisting engine so the boiler plant will be shut down immediately and the engine will be connected to the air line for use in case of emergency.

4.(b) Mine Development: Considerable work has been done the past year in extending the known northerly limit of the ore body in the upper part of the property and developing ore where there was supposed to be a barren zone between Parker and Taylor Mines. The Lang raise has tapped the water of the Lang Shaft and the adjacent old workings and a 200′ level has been driven to the north of this raise to the extent of 380 ft. of excellent ore and 42 ft. of rock drifts, while 26 ft. in ore have been drifted south of it (the southern advance being stopped for fear of breaking into old flooded workings). The northerly advance of this heading was checked by a faulting of the vein of ore, and following the principle that we have in general tried to observe it was deemed wisest to cease work on that level until a raise from the level below developed ore to the north.

The 300 level was pushed to the north and after passing through about 80 ft. of decomposed vein matter and a solid neat clay vug a good vein of ore was followed to the north for 300 ft. where it was lost through faulting and an associated iron bearing jasper-like rock. The 290 N. raise, which proved to be on a footwall spur of the ore body, was continued above the 300 level but in a distance of about 30 ft. the nice vein of ore was lost through its displacement on a fault whose strike is N.E. and dip is 32° S.E.; the material against which the vein of ore abuts being a blue magnesian limestone. Another raise on the same stope slice from the 300 level was started further to the east on a different vein of good ore but struck the same fault plane.

The 400 level was extended south on a good vein of ore for 149 ft. through ground previously supposed to be barren and the ore vein played out when the drift was not far from holing into one of the old Ding Dong stopes. The north heading of the 400 level had never been further advanced since it showed only a jasper looking iron-bearing rock but in June it was carefully examined and a small vein of ore was noticed disappearing into the west side of the drift about 15 ft. back from the face. This vein has been followed to the north for 481 ft. and is of rich ore nearly all the way with prospects for continuing so. The original vein seems to end a short distance north of the 564 N. stope but on cross cutting to the east on that section another rich vein was struck within six feet and has been followed to the north. Cross cutting to the east on 500 N. slice before and subsequent to Jan. 1st has shown 33 ft. of ore (including main drift) then 8 ft. of calcite, then 19 ft. ore, 25 ft. calcite, and again 19 ft. of ore to the present date, with the heading in lean ore.

In February 1910, a cross-cut was driven to the west on 500 N. slice on 450 level in order to connect with the footwall raise which had followed a vein of ore up from 550 level and a rich 1 ft. vein was followed north for 35 ft. when it narrowed to a faint stringer and was abandoned. In the meantime a hangingwall raise in 500 N. slice was being driven from the 550 level and it bore off to the east on ore and reached the altitude of the 450 level but some distance to the east of the main drift, so the 500 cross-cut was started in April towards the west and extended 110 ft. to hole the raise through a territory of many very narrow and some medium sized (2 to 4 ft.) stringers of ore in calcite. This cross-cut was sampled for its whole length from H-W to F-W raises and the average zinc content was 11.4% while the experimental sizing and separating test showed it to have a gross worth of $6.92 per gross ton or approximate mining and milling profit of $4.28 per gross ton. A likely stringer not far from the easterly end of the cross-cut was selected for drifting north upon in July and up to Jan. 1st 263 ft. had been driven. It may be of interest to note that throughout several hundred feet of this drift native copper has been found sprinkled through the willemite and franklinite but seldom in masses weighing ¼ lb. or more. The shape of some of the pieces indicate that they are pseudomorphs after mica so the copper must be a secondary mineral. On Dec 1st a cross-cut to the east and west was started on the 800 N. stope slice and to date has passed through (including the main drift) 62 ft. of ore, 14 ft. of calcite, then 8 ft. lean ore and face is in pegmatite going to the east; and to the west has pierced respectively 14 ft. of calcite, 12 ft. of ore, 7 ft. garnet and feldspar, 7 ft. ore, 8 ft. calcite, 8 ft. pegmatite, then 15 ft. calcite, and is now in about 9 ft. of a hornblendic pegmatite.

Two hundred and seventy feet have been drifted to the south on the 450 level from Parker Mine during the past year through territory which has been previously considered a barren zone. This vein of ore was discovered by cross cutting about eight feet into the footwall and will undoubtedly persist to Taylor Mine although the face of the north heading there is very lean. In all probability there is another vein of ore lying to the east of this drift and in due time a cross-cut should be driven in search of it.

The 500 level was driven to the north from 360 N. raise 289 ft. and to the south 140 ft. to connect with the old Parker Mine workings which supposedly ended in barren territory. About 60 ft. north of the 360 N. raise the vein seemed to fork and since the easterly branch was the wider it was followed until it died out at about 500 N. slice, then a cross-cut was here driven west to the raise which had come up on a rich vein of ore. This vein was then followed north until just beyond the 622 N. slice it was cut off by several faults. Here, starting in September, because of the showing made by the 550 level north drift, 51 feet of a garnet bearing pegmatite rock was traversed to reach a

vein of rich ore which proved to be 82 feet wide; and for 10 ft. still further east calcite has been shown by drift and a test hole has shown the same material for 20 ft. more.

The 550 level was again started north in June on the hanging wall drift on a showing of franklinite some 25 ft. back from the face of the heading and on the west side. This quickly developed into a good vein of ore of which we had neither the hanging or foot wall so upon reaching the 564 N. slice a cross-cut was driven to the east and west to define the width of the ore. To the west the ore extended 8 ft. and then a magnetite bearing pegmatite was encountered and was cross-cut for 28 ft. and a test hole was advanced 20 ft. further without a change of ground; while to the east (including the width of main drift) there proved to be 15 ft. of ore before garnet was struck. On the footwall vein about 15 ft. was cross-cut to the east on 564 N. slice and a test hole crossing the other one proved the absence of ore between the hanging and foot wall drifts. During the year 1909 this level has been advanced to the north 197 ft. on the H-W heading and no hanging wall or foot wall is defined although garnet is being kept on the east side.

Starting in April the 800 level was drifted north on some lean ore in which franklinite and some willemite were sprinkled through the calcite without showing any vein banding. After advancing about 100 ft. a definite 1 ft. vein of rich ore was met running across our drift and it was followed to the southwest and led to the gneiss footwall rock on which it abutted without signs of faulting. Following this stringer to the north we drifted to coordinate 800 N. before the vein swerved to the east and died out. A chamber has here been cut for setting up the diamond drill to investigate the territory to the east.

On the 1100 ft. level a prospect drift has been extended 323 north of the former northern limits of the level through calcite and pegmatite, while once a magnetite vein rolled in from the west side and soon swung out again. Pyrite, leucopyrite, and galenite have been seen in the limestone of this drift but sparingly distributed. It extended north until it reached coordinate 800 N. on the 1000 N. stope slice and here a chamber was cut suitable to accommodate a diamond drill which will prospect the country to the east and west.

From present indications the pursuance of this development work will block out quite a considerable additional ore reserve but it seems inexpedient to hazard any statement as to the probability of this ore being a new lense of any magnitude or whether it is the forked termination of the old ore body for enough evidence has not as yet been gathered to support any theory as to its occurrence. However, there can be no doubt as to the frequent faulting of the ore body in its upper northern limits and that state of affairs might also account for some of the puzzling features of this recent development.

An important feature to note in regard to so extensive an amount of development drifting in ore is the effect it will have upon the mining costs. Although the development work in rock is properly chargeable to a capital account, that in ore pays for itself directly and must be charged against the ton of ore, but drifting costs far more per ton of ore produced than stoping so if the unusual amount of development work had not been done in November and December the already low cost figures for those months could have been appreciably lower.

4.(c) Timbering: Great care has been exercised in timbering up the backs of all finished stopes which do not appear to be perfectly safe, in order that the ground trimmers and muckers, who work in the stope while it is being drawn, may be protected. The understanding and ability of the timbering force have also developed so that now it is customary to frame trusses of timber close to and conformable with the stope backs so that but little lagging or blocking is required. Several advantages are thus obtained:- (1) less timber is used, (2) the result is stronger for the same sized timber, since it generally receives a compressional force rather than a bending one, (3) and the timber can be wedged closer to the back and will, therefore, support a greater weight, (where cribbing or much blocking is used, the shrinkage becomes considerable and loose ground has an opportunity to gain some velocity and gather force before meeting the timber).

The shift bosses and miners realize far better than they used to the necessity for an ample and proper placement of props where ground sounds loose, even though it cannot be wedged down.

We have on hand in our new timber yard a good stock of timber and estimate that it will be sufficient to last us over the spring and summer months until next fall, when the sap is out of the trees, providing we continue to receive enough for our daily needs during the winter. On Jan. 1, 1911, we estimated our stock on hand as about 59,000 lineal feet of lagging and 23,390 ft. B.M. of 2″ white oak plank.

The timber and plank used during the year 1910 is, as follows:

Lagging	484,000 ft. approx.
8″ timber	247,600 ft. ″
10″ ″	52,800 ft. ″
Large Set Timber (12″ & over)	21,900 ft. ″
Plank	111,500 ft. B.M.

The installation of a gang of saws for framing mine sets has been under consideration and I should recommend the purchase of the complete outfit quoted to us by Denver

Engineering Works Co. for $1370., and believe that the saving as compared with the present cost will pay for it in three years.

4.(d) Tramming: The cost of tramming for October, November and December was less than half what it was at the beginning of the year and, assuming that for the past year the average tram distance has not been shortened by the electric haulage, this indicates an increased labor efficiency. Reference to the accompanying blue-print [omitted here] of tabulated mining data for the monthly totals and units during the year 1910 will show under the column of "Tons Trammed per Man" in the division of Active Stopes a gradual increase from 14.4 to 22.7 tons (with a yearly average of 18.9), which demonstrates that better supervision and a reduced working force has resulted in more efficient work. The actual tramming costs for the last three months were really less for they are bearing the expense of maintaining the mules which are no longer needed.

4.(e) Electric Haulage: The regular operation of the 300 level electric haulage commenced in the latter part of March and that on the 750 level began early in April. On the 1150 level the electric locomotive assumed its duties in October while that on the 950 level started to haul ore on the first of November. At present the electric haulage system has not greatly shortened the average tramming distance from the stopes to the dumps, because of the peculiar situation of the stopes which are producing the ore hoisted. Of course, it has brought about a considerable saving by doing away with the mule haulage on the 950 level, the operation of the air hoist on Parker Slope, the hoist up Taylor Slope, and the transfer of ore from the Open Cut bins to the mill.

As originally designed the 3/4″ helical truck springs have been unsatisfactory for they allowed the body of the car when loaded to rest on the wheels, and the springs also readily broke. Cast Iron washers were placed on the boxes to raise the body further from the wheels and on 2/3rds of the cars the 3/4″ springs have been replaced by 7/8″ ones and the remaining 1/3rd will be changed directly. The bearing surface of the box lugs for the 3/4″ x 4″ retaining straps was not sufficient to sustain the continual thrust upon them as the cars went around curves, and since the gauge of the fast and loose wheels is dependent on the spread of the boxes, this wear caused much derailment trouble and improper wear on some of the wheels. Thirty new boxes with a larger bearing surface for the straps were ordered and have been received; also pieces of 3″ pipe slipped over the axles are being used as spreaders to keep the boxes a certain distance apart and maintain the gauge of the wheels.

On the 750 level as an experiment the cars have been wired up with insulating connectors between each to take the electric current from the locomotive for lighting a portable searchlight on the rear of the train. The scheme works well except that the connectors are hardly sturdy enough for the duty, but we can probably make some ourselves that will answer.

4.(f) Drifting: Excluding the 291 S., 348 S., 451 S., and 535 S. crosscuts which have been carried 17 ft. wide with a high back preparatory to stoping and have been included in the stoping rather than the drifting estimates, the total drifting for the year amounted to 4909 ft. advance, of which 989 ft. was in rock. The development work done on each of the levels during the year 1910 was as follows:

Level	Location	Advance in Ore	Advance in Rock
200	No. of Lang Raise	380	42
	S. of ″ ″	26	—
	S. in Taylor Mine	—	98
300	North	380	17
	360 N. Crosscut East	—	19
	290 N. ″ ″	8	8
400	North	481	—
	S. from Parker Mine	149	—
	622 N. Crosscut West	7	—
	500 N. ″ East	31	5
450	N. on West Vein	35	32
	N. on Easterly Vein	263	—
	800 N. Crosscut to E.&W.	72	20
	500 N. Ditto	85	48
	360 N. Ditto, East	—	21
	S. from Parker Mine	270	10
500	N. from 360 N. Raise	264	25
	S. from 360 N. Raise	140	—
	500 N. Crosscut to West	—	26
	622 N. ″ East	92	52
550	N. on Easterly Vein	197	—
	N. on Footwall Vein	43	4
	564 N. Crosscut W.&E.	32	34
	500 N. ″ to East	—	11
750	North	35	—
800	North	350	11
850	North	13	—
1100	N. to Coordinate 1000N	—	323
Misc. Stope Crosscuts		367	183
Total		3920	989

[Drifting and mucking cost data omitted.]

4.(g) Raising: The total footage raised for the year was 4257 with an average section of 6′ x 6′, and of this 708 ft. was through rock. The raising which was done for development purposes amounted to 1188 ft. (800 ft. in ore and 388 ft. in rock) and of this the Lang raise was 180 ft. (147 ft. in ore and 33 ft. in rock). Of the remaining 3,069 ft. of raising found necessary for the progress of mining operations 320 feet was through rock. The cost of raising has been lessened throughout the year and in general the low raising costs may be ascribed to the use of hammer drills and particularly the McKiernan type "D" for until quite recently it has been the only machine capable of drilling a six foot round of about 20 holes in time to permit the round being fired on the same shift. A new style BC-10 Ingersoll-Rand Drill we are now testing will accomplish the same results, but the old ones will not.

[Raising cost data omitted.]

4.(h) Filling: During the year 1910, 100,950 cu.yds. of Lake Grinell gravel, mill tailings, picking table rejections, Palmer Shaft rock, and Open Cut rock have been placed in the mine as fill; and of this amount about 65,000 cu.yds. have been produced in the Open Cut. Since we have found that we can break rock in the Open Cut of 20¢ a long ton and believe we can continue to meet this figure or do better, and the electric haulage of it to Ding Dong will not cost over 2¢ per ton, while Lake Grinell gravel will cost us about 28¢ per long ton delivered at Ding Dong (3.5¢ steam shovel maintenance and labor, 0.7¢ for coal, 22.4¢ transportation charge, 1.4¢ for unloading at Ding Dong) it seems advisable for us to develop the Open Cut as a quarry for producing fill. However, until we have mined all of the Open Cut ore there may be times when the breaking of rock will be interfered with and will not keep up to the demands of the mine, so for the present it seems wise to maintain our steam shovel at Lake Grinell to furnish fill in case of an emergency. The underground cost of placing fill will average about 17¢ per cubic yard. [Reference to table omitted.]

4.(i) Stoping: [Stoping labor and cost discussion omitted.] The increased use of hammer drill stoping has raised the tonnage broken per drill shift from 21.4 in January to 55.4 in Dec. and this gain in drilling efficiency combined with the practice of using a retreating system where possible in breaking down the backs of the stopes has resulted in the amount of ore broken per man in stope rising from about 7 gross tons (estimated from drill shifts) in January to 15.4 gross tons in December. The average for the year in active stopes is 34.0 tons broken per drill shift or 11.8 tons per man in stope. [Discussion omitted.]

In September and October about 5,000 gross tons of ore were trammed out of the #1 chute (R.W. Parker Stope) and this amount would be credited to the breaking costs when as a matter of fact this ore had been broken some time previously, lay idle in the #1 Chute and has never been measured as an ore reserve.

Reference to another accompanying blue-print [omitted] of Mining, Labor and Production for 1910 shows an increase throughout the year of tonnage broken per shift for all men directly connected with mining operations. During the first three months the tonnage per man was up well since there was an opportunity for breaking a large quantity of ore even though it increased the ore reserves; during September and October the breaking rates are too high because of the ore from #1 Chute; and it is possible, judging from the undue drop in April and June, that they (in connection with November) are the months when the conveyor scales failed to record about 6,000 tons that passed over them (which error cannot be rectified on the records). The average tonnage broken underground per man-shift for the year was 2.29 and the maximum for any month was 2.92 for November when credit should have been given for 3,000 tons which were broken and hoisted but unaccounted for by the scales, raising this figure to 3.26.

Providing the mill can receive 1200 gross tons per day, it will be safe to estimate that the mines can produce as an average 3.0 tons for each man-shift directly connected with the mining operations whether breaking ore, timbering, tramming, hoisting, or placing fill.

[Table of work done Jan. 1, 1910, to Jan. 1, 1911, and tons produced in each stope omitted. Table summary: Ore produced was approximately 297,815 tons, of which 4140 tons came from the Open Cut. Fill placed was approximately 100,950 cubic yards.]

5. OPEN CUT MINING

Only 12,567 gross tons of ore have been mined in the Open Cut this past year for it has been necessary to strip a great deal of overhanging rock on the east side and mine much rock which formed an overburden on the ore of the basin, so that the total tonnage of rock was 86,550 gross tons. As shown by the August production, with the use of 30 ft. holes and heavier burdens over 10 gross tons can be broken per man-shift in the Open Cut, including the trammers on the #1 Elevator Level, but the average for the year was 5.62 gross tons per shift. During the month of October, the costs are upset by the fact that the Dike hoisting engine was being removed through the Open Cut and although much labor was expended and many rounds of holes drilled, they could not be fired nor are they yet blasted. The rock in the Open Cut has not been quarried with the sole object of furnishing fill, but in order to make it possible and safe to remove the Open Cut ore, so the faces have had to be sloped back and the benches are not in the best shape for purely quarry work.

At present there are sixteen mill-holes in the Open Cut bottom, which is about 10 ft. above the roof of the #1 Elevator level, eight of them delivering to the 300 level electric haulage (of these latter eight there are two sets where the two mill-holes join the one raise from 300 level, there is one raise from the 300 level which branches out to four mill-holes, and the other two mill-holes are each separate raises from 300 level.)

In September the Open Cut account ceased for since the ore passed through the mine to be hoisted up the Palmer Shaft and no accurate estimate of its tonnage was feasible, there seemed no use in trying to preserve a separate account. So the labor and supplies spent on breaking ore have been included in the stoping costs, and the costs of breaking rock in the Open Cut have been charged against the Filling account.

[End of report]

Miner using a compressed-air–powered drill in the Buckwheat Open Cut, circa 1905. *Courtesy of the Franklin Mineral Museum.*

The Buckwheat Open Cut in its final stages of operation, circa 1910. Note the cavernous opening of the South Chamber into the East Limb of the orebody. *Courtesy of the Franklin Mineral Museum.*

Pete J. Dunn

1942–2017

TONY NIKISCHER
EXCALIBUR MINERAL CORPORATION
1885 SEMINOLE TRAIL, #202
CHARLOTTESVILLE, VA 22901

With great sadness, I learned of Pete Dunn's untimely passing on November 8, 2017, after a short hospital stay. I had spoken with him just five days earlier, our ritual of frequent telephone calls and constant e-mails extending from long before his retirement from the Smithsonian in 2008. During his relatively short but exceptionally productive career as a mineralogist, he was the absolute world leader in authoring descriptions of new minerals, having published over 130 species new to science. Although later surpassed by Dr. Igor Pekov of Lomonosov Moscow State University, it was an unprecedented accomplishment that brought him great satisfaction throughout his life.

My relationship with Pete was a complex one, perhaps as complex as the man himself. Because of his intent focus on "those little freaks of nature," as he collectively called his new species, some in the academic community suggested he was a researcher without imagination. Others who worked on his mineralogical projects with him often complained of his impatience and the demanding protocols for the work they were expected to complete. Pete was, indeed, impatient and demanding, as the world sometimes moved too slowly for his taste, particularly when it came to science. He could best be described as "prickly," a curmudgeon, impatient, or "one who doesn't suffer fools easily." I wrote that line about him in 2008 when petedunnite was featured in the *Rocks and Minerals* column on Who's Who in Mineral Names. He chortled with delight at the description.

That same article noted that during his time as Associate Editor to *The Mineralogical Record* (1977–1993), Pete published over a dozen guest editorials that focused on the mineral collector and dealer communities and their interaction (or their lack of it) with science. Some of the Dunn editorials could best be described as "scathing," and in keeping with his democratic but often politically incorrect "treat everyone alike" approach, no one was spared his pointed barbs. Having been the occasional recipient of Pete's rancor, I can attest to the painful wincing it evoked. He was never afraid to suggest that his latest target was clearly "depriving a village of its idiot." In his typical style, Pete suggested to me that: "Overall, I viewed, then and now, my editorials, which consumed time better devoted to mineralogy, as a gift to mineral collectors."

A meeting of mineral people at the Smithsonian Institution in 2006. From left to right: Dr. Pete Dunn, the author, and Dr. Igor Pekov, who would later surpass Pete as the most prolific describer of new species in history. *Photo courtesy of Excalibur Mineral Corporation.*

However, Pete demonstrated that he wanted the same level of quality and accuracy for his own work, and he would not publish just for the sake of it. His own rigid personal standards were more important than just another notch on his belt. The English scientist Thomas Huxley once said, "The great tragedy of science [is] the slaying of a beautiful hypothesis by an ugly fact." Pete had once described and successfully submitted another new Sterling Hill mineral to the International Mineralogical Association's Commission on New Minerals and Mineral Names, had it approved and named, but subsequently withdrew it *after* approval when he decided that the mineral still needed more work. To this day, the approved and subsequently withdrawn mineral is unpublished.

The mineral petedunnite was named for him in 1987. "It is a very boring mineral," wrote Dr. Dunn when describing his namesake mineral in his magnum opus, *Franklin and Sterling Hill, New Jersey: The World's Most Magnificent Mineral Deposits*. Indeed, most pyroxenes are rarely aesthetic or exciting, and petedunnite is no exception! Nonetheless, its naming was a fitting tribute to a scientist who studied these and many other deposits in great detail and with remarkable

Pete Dunn (on right) at the reception desk near the entry to the Smthsonian Institution's National Museum of Natural History.

productivity. When I wrote of a second occurrence that I discovered in Labrador, Pete was both astounded and derisive, as my co-author had extended the microprobe data out to three places to confirm that the material was Zn-dominant. Pete was unimpressed, but I believe secretly delighted in our discovery.

Pete's legacy includes a remarkable tenure of 24 years as the United States' sole voting representative to the IMA's Commission on New Minerals and Mineral Names. During that long tenure, he established the "*Formal Definitions for Type Mineral Specimens*" along with then-chairman Dr. Joe Mandarino, and he succeeded in having those landmark standards approved by two IMA Commissions and published in ten worldwide scientific journals. Likewise, he established and subsequently had approved other major IMA policies such as "*Protocols for Scientists on the Deposition of Investigated Mineral Samples*," and procedures for "*The Discreditation of Mineral Species*." The latter, sometimes ignored by the IMA, had given rise to a firestorm of protest from many fronts, including scientists, curators, dealers, and collectors alike when those rules were not followed by the IMA hierarchy. "Prickly" would be a mild description of Dunn's response to some of those "mass discreditation" decisions!

Dr. Dunn also served as Associate Editor to *American Mineralogist* (1982–1985), was Editor of the esteemed *Neues Jahrbuch für Mineralogie* (1989–1991), and was Associate Editor to the aforementioned *Mineralogical Record* (1977–1993). Constantly working behind the scenes or unraveling some mineralogical problem, Pete rarely lectured or attended meetings or poster sessions during his professional career. The only exceptions were his occasional talks to the Franklin-Ogdensburg Mineralogical Society, where he would announce some of his new discoveries as well as solicit a gathering of specimens of particular species so he could observe different assemblages that were held in Franklin-rich collections. I remember those sessions well, and I marveled at how quickly he could reorganize scores of specimens of a given mineral into a series of assemblages he grouped and wished to study. In another exception just last year, Pete attended my three lectures at the Micromineralogists of the National Capital Area (MNCA) Symposium pertaining to new mineral descriptions and related topics close to Pete's earlier professional interests. I was both honored and pleasantly surprised to see him there, knowing how little he travelled these days. His support of friends remained strong.

Pete's early scientific efforts in the 1970s were devoted more to gemology than mineralogy. He published articles in the *Journal of Gemology*, *Zeitschrift der Deutschen Gemmologischen Gesellschaft e.V.*, and *Gems & Gemology* before graduating to more mainstream mineralogical pursuits. Hence, his Franklin-Sterling work was the second major thread in his research efforts. He began full-bore in April of 1973, and went public in his beloved "Holey Land" of Franklin-Ogdensburg in the autumn of 1977, but only after consulting with his mentor and predecessor, Clifford Frondel, and obtaining his blessing. The result of those efforts yielded 70 papers on Franklin-Ogdensburg, nearly a quarter of his published output prior to the publication of both his monograph and his historical treatise. These two efforts alone took 22 and 26 years of research, respectively, overlapping in good part.

Although I noted Pete's historical, multi-volume work on the convoluted history of business dealings and land transfers in the Franklin-Ogdensburg mining community was sometimes "blindingly dull" reading, he accepted my commentary with good humor, even when I suggested that I experienced many headaches reading it, as my forehead frequently crashed to the desktop when I fell asleep while perusing its many volumes.

Nonetheless, Pete's five-volume treatise on Franklin and Sterling Hill mineralogy, privately published and then revised in 2004 into a two-volume hardcover edition of more than 750 pages, still stands as the ultimate descriptive locality reference. This remarkable work was followed by the aforementioned seven-volume, 1100-page treatise on the mining history of Franklin and Sterling Hill (1765–1900) that has been cited as the "unmatched, seminal historical work on the locality."

Dr. Dunn joined the U.S. National Museum (Smithsonian Institution) as a mineralogist in 1972. He remained at the Smithsonian, "to the delight of some and consternation of others," until his retirement in January 2008. After his retirement, he largely abandoned his mineralogical studies for other pursuits, yet he kept his friends close. His interest in trees spurred new "knowledge collecting" opportunities for him,

and I recall his delight when I sent him the nuts and a fallen leaf from a horse chestnut tree (*Aesculus hippocastanum* in the Sapindaceae family) from behind the Washington Avenue elementary school in Franklin where the annual mineral show was once held.

After retirement, Pete lived simply in his Fairfax County, Virginia, house. Yet, he embarked on new pursuits, buying and distributing bottled water for free to local residents, always at great time and financial expense to himself, but without remuneration beyond his own satisfaction of doing a good deed for others. He still volunteered at the Smithsonian's front reception desk every Friday, often wearing a pink squid hat with dangling tentacles to attract the curious to his station. For holiday seasons, he would purchase hundreds (literally!) of boxes of chocolate (Pete was seriously addicted to good chocolate!) also to dispense at no charge to the locals. He was a volunteer park ranger and even sat in on a local women's coffee group at a nearby fast food restaurant most days, just to keep his humor and interests alive. One of his most daunting tasks at retirement was undertaking a three-day effort to re-teach my long-forgotten optical mineralogy skills. His patience was, admittedly, remarkable, as were his advice and detailed protocols he offered.

Pete was born on November 10, 1942, to William K. and Ethel L. Dunn in Somerville, Massachusetts. He grew up there and in Reading, Massachusetts, joined the Air Force, and eventually graduated from Salem State College in 1969 with a B.A. in Geography and Earth Sciences. He followed this with an M.A. in Geology and Mineralogy (1973) from Boston University, where he was employed as the Curator, Geology Department. His Ph.D. in mineralogy was earned at the University of Delaware. After his retirement, he offered me much of his book collection, his Berman balance, and the huge number of chemical reagents he used for optical tests. I have them all still, and they will serve as constant reminders of both his mineralogical prowess and his friendship. I will personally miss his astute observations, his often bawdy and politically incorrect e-mails, and the many phone calls and old-fashioned, handwritten letters we shared over the years. R.I.P., my friend.

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Yes, we were all young once. Pete Dunn with his sister, Louise.

One of the last known photographs of Pete Dunn, October 2017, with a chat group that he joined every week.

Pete J. Dunn, Humanitarian

EARL R. VERBEEK
CURATOR, FRANKLIN MINERAL MUSEUM
32 EVANS STREET
FRANKLIN, NJ 07416

With the passing of Pete J. Dunn on November 8, 2017, all who collect and/or study the minerals of Franklin and Sterling Hill lost one of their greatest friends. Some of you knew Pete personally; many did not. But even those who have met and conversed with Pete, or exchanged e-mails with him for years, may not know much about his altruistic side. As with his scientific accomplishments, Pete did not trumpet his humanitarian deeds to the world, but quietly tended to those in need. Here are three small examples of, perhaps, the Pete you never knew.

CANDY FOR THE HOMELESS

For years, right up to the month of his death, Pete kept track of periodic sales on Russell Stover chocolates and would buy all the boxes he could find whenever the price dove from $14 or so to $9. He stashed these boxes in a cabinet above his refrigerator, after checking that their expiration dates extended beyond the end of the year. In 2010 he had about 36 such boxes; in 2011, more than 50; and by 2016, more than 350. On Christmas Day he drove around to all the homeless people he knew (he kept track of who was out there and where they were) and gave each person a box. For some of them, this was probably the only Christmas present they received, and was certainly a rare treat in any case. He also distributed boxes of chocolates to workers at the local McDonald's, Rite-Aid pharmacy, Safeway, the local cleaners, and to various friends and acquaintances.

VISITS TO THE NEGLECTED

In earlier years Pete had done other things on Christmas. He used to go to hospitals and start on the top floor, asking the head nurse on each floor which patients had not had a visitor on Christmas Day. Then he'd spend ten minutes or so with each of them. Pete related the story of a nurse who told him of a particularly difficult man, a very angry one who was chained to his bed with handcuffs. The nurse advised against Pete's visit. Pete went anyway and found a black man who was, as stated, angry at the world, particularly at any person who is white. Pete listened while the man hurled one diatribe after another at him, and regarded his polite listening as probably the only gift he could give the man – a chance to vent, to express his anger, and not have anyone tell him he was wrong, or try to judge him for his views.

FOOD FOR THE HUNGRY

Pete also served as chief turkey-cooker for the homeless on Thanksgiving. At midnight he would start work and spend all night cooking turkeys to get ready for the next day. About 7 AM on Thanksgiving morning, groups of attractive young ladies would arrive to be the servers of Thanksgiving meals throughout the day. Pete himself would dearly have loved some attention from these ladies, but he stated that none of them wished to have anything to do with this guy sitting in the corner, dead tired, clothes covered with turkey grease.

There is more, of course, but these three examples should give you an impression of the person behind the scientist. As you will see from reading other articles in this issue, Pete could be testy, impatient, uncooperative, or even dismissive, but he was also a caring and attentive friend to many. His numerous and enduring kindnesses, quietly dispensed over a period of decades, may not have been as widely known or appreciated as his scientific contributions, but they were no less significant. And now, perhaps, in reference to the photograph, you may perceive a deeper meaning behind the license plate on Pete's truck.

Pete Dunn at Sterling Hill Mining Museum, October 1990. *Bernard Kozykowski photo.*

Pete Dunn – "Information for Memorial"

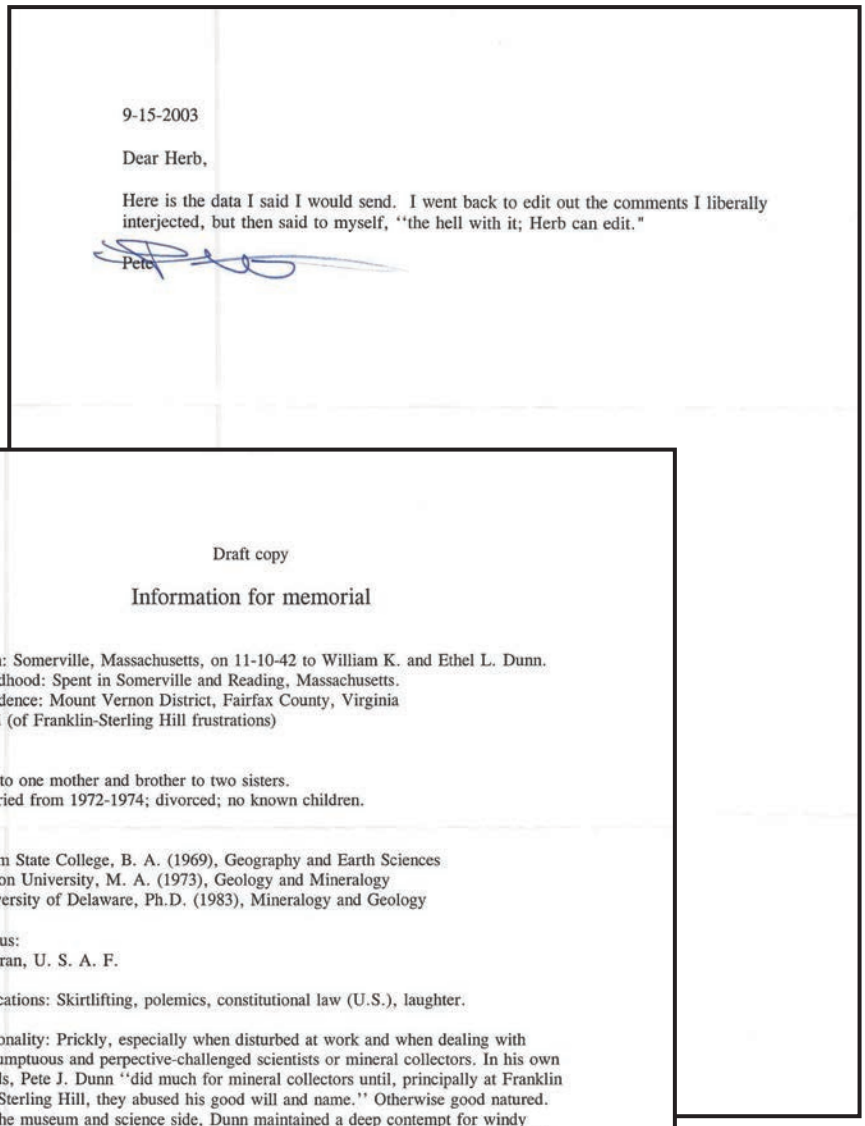
HERB YEATES
1707 VESTAL DRIVE
CORAL SPRINGS, FL 33071

Over the years I had a number of conversations with Pete regarding what he felt would be his legacy. In short, it centered on just one thing: his publications.

Whatever else he may have left behind—unfinished notes, correspondence, souvenirs, photographs, or specimens; any recordings or memories others may have of him—what mattered most to Pete was his publication legacy. And it is a rich one. Easily over 320 distinct written contributions to mineral science, including his magnum opus, *Franklin and Sterling Hill, New Jersey: The World's Most Magnificent Mineral Deposits* (Dunn, 1995).

He recognized, however, that some in the mineralculture might choose to remember his passing, and, in classic Pete fashion, he compiled a list of all that he felt was important ahead of time, so that any later Pete Dunn remembrances might have "a factual basis."

The following letter, from 2003, is interesting for that perspective and is shared here in its entirety. His remark, "the comments I liberally interjected" is sarcasm—he knew full well I'd see this as an absurdly skeletal list of facts, missing all the "color" of his character and his influence on the mineral community, F-SH in particular. It's Pete's view. And as such it makes for an interesting prism. Enjoy.

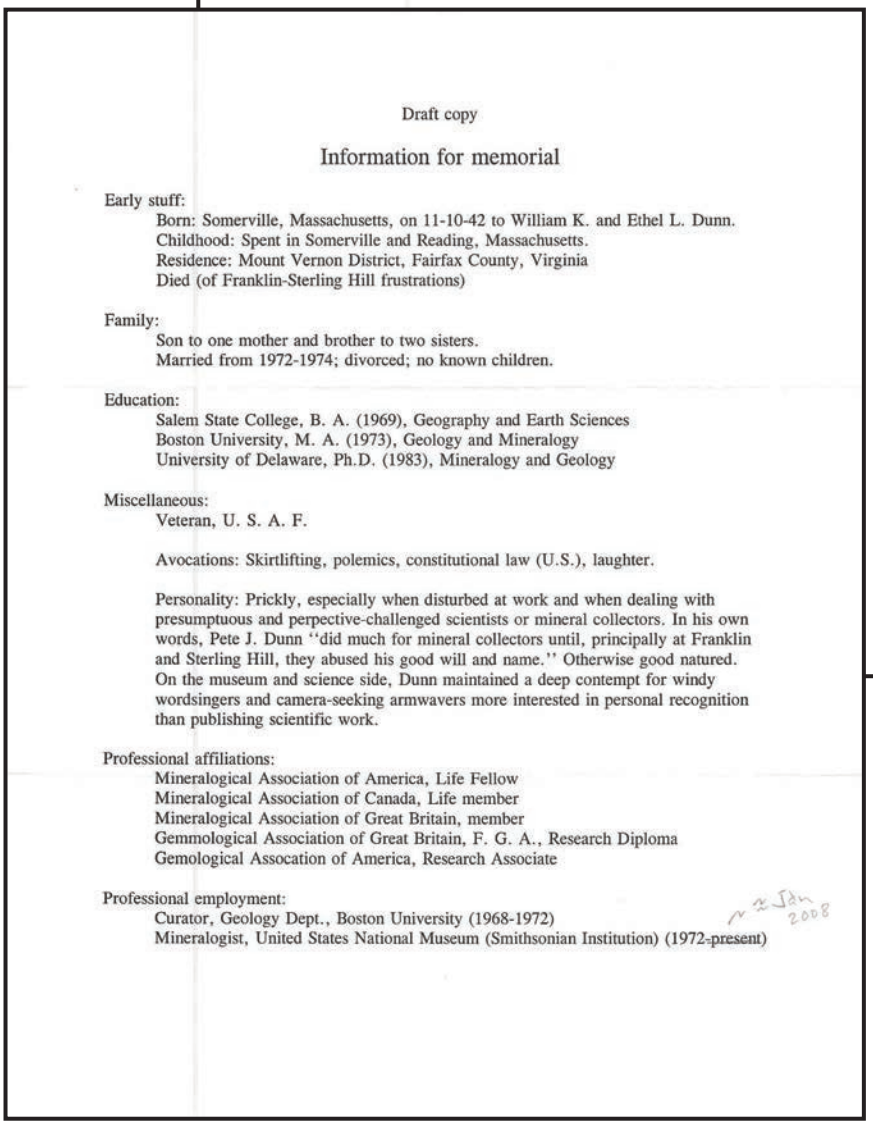


9-15-2003

Dear Herb,

Here is the data I said I would send. I went back to edit out the comments I liberally interjected, but then said to myself, "the hell with it; Herb can edit."

Pete



Draft copy

Information for memorial

Early stuff:
Born: Somerville, Massachusetts, on 11-10-42 to William K. and Ethel L. Dunn.
Childhood: Spent in Somerville and Reading, Massachusetts.
Residence: Mount Vernon District, Fairfax County, Virginia
Died (of Franklin-Sterling Hill frustrations)

Family:
Son to one mother and brother to two sisters.
Married from 1972-1974; divorced; no known children.

Education:
Salem State College, B. A. (1969), Geography and Earth Sciences
Boston University, M. A. (1973), Geology and Mineralogy
University of Delaware, Ph.D. (1983), Mineralogy and Geology

Miscellaneous:
Veteran, U. S. A. F.

Avocations: Skirtlifting, polemics, constitutional law (U.S.), laughter.

Personality: Prickly, especially when disturbed at work and when dealing with presumptuous and perpective-challenged scientists or mineral collectors. In his own words, Pete J. Dunn "did much for mineral collectors until, principally at Franklin and Sterling Hill, they abused his good will and name." Otherwise good natured. On the museum and science side, Dunn maintained a deep contempt for windy wordsingers and camera-seeking armwavers more interested in personal recognition than publishing scientific work.

Professional affiliations:
Mineralogical Association of America, Life Fellow
Mineralogical Association of Canada, Life member
Mineralogical Association of Great Britain, member
Gemmological Association of Great Britain, F. G. A., Research Diploma
Gemological Assocation of America, Research Associate

Professional employment:
Curator, Geology Dept., Boston University (1968-1972)
Mineralogist, United States National Museum (Smithsonian Institution) (1972-present)

Service to science

United States Voting Member, Commission on New Minerals and Mineral Names, International Mineralogical Association (1984-present), nearly two decades.

Associate Editor, *American Mineralogist*, (1982-1985)

Editor, *Neues Jahrbuch für Mineralogie*, Stuttgart, Germany (1989-1991)

Associate Editor, *The Mineralogical Record*, (1977-1993)

Published over a dozen guest editorials in the *Mineralogical Record*, focusing on the contributions of the mineral-collector community and its interaction with science.

Established "Formal definitions of type mineral specimens" with the assistance of Dr. J. A. Mandarino, obtained their approval from two IMA commissions, and published these standards in ten scientific journals.

Established "Protocols for scientists on the deposition of investigated mineral specimens" and published the protocols in seven scientific journals.

Established formal, IMA-approved standards for "The discreditation of mineral species" and published them.

Research interests:

New-mineral species: Described 133 new species, a record number.

Mineral systematics: Active in the discreditations of incorrectly-described species, redefinitions and revalidations of poorly-described species, the definition of undefined solid solutions within mineral groups, and nomenclatural matters.

The minerals, mineralogy, and mining history of Franklin and Sterling Hill, Sussex County, New Jersey (an incomplete work), consisting of 70 scientific papers and _____ books, all on Franklin and Sterling Hill Seven of these comprise a mineralogical monograph and _____ comprise a mining history from 1765-1900. The other two volumes were for the general public, one for children and one for adults.

Publication was Dunn's life work; he did not participate in lecture and poster sessions nor attend meetings.

Pete Dunn – A Personal Journey of Discovery

HERB YEATES
1707 VESTAL DRIVE
CORAL SPRINGS, FL 33071

It was my good fortune to meet Dr. Pete J. Dunn at a time when he was actively describing new minerals and I was studying mineralogy. Over time I became a student, friend, and confidant of Pete's, spending time at his lab as he was characterizing some of his last Franklin-Sterling Hill ("F-SH") species, and willing to share best practices. The journey for me was both lucky and transformational.

BACKGROUND

I've been an avid collector of minerals, and Franklin-Sterling Hill minerals in particular, since the 1960s. As a youngster growing up in the New York metropolitan area, I often explored the mine dumps and ex-New Jersey Zinc Company properties in Franklin, usually alone; devoured Palache (1935); and kept up with "post-Palache" scientific papers via *The Picking Table* ("*PT*"). Life would soon take me in another direction career-wise, but that early passion for minerals remained.

In the late 1970s Pete's first publications concerning F-SH species began to appear. Modern techniques and a fresh set of eyes were finally being applied to the then erratically studied mineralogy of F-SH. The local species list (then a mess) was cleaned up. Myths were dispelled, and new species discovered. Something special was happening: Pete Dunn had descended on the minerals of F-SH. It was an exciting time. I began to spend my lunch breaks in the journals room of the New York Public Library, looking for Pete's latest papers, and exploring their references.

WRITING PETE

In March 1986 I first wrote to Pete with questions on bementite and the lead silicates from the "Parker Shaft suite." Bementite is a topic for another day, but as for many aficionados of F-SH minerals, the "Parker Shaft suite" held special fascination. I was surprised when his response arrived only a few days later. That was fast.

Pete answered my questions frankly and clearly; outlined what was then known, unknown, and otherwise; and included a reprint of a recent paper he'd written on Franklin's lead silicates that I'd not yet seen (Dunn, 1985). He encouraged me to go find out more.

Specimen stubs containing some exquisite examples of lead silicates from Franklin, NJ, prepared for SEM study. *Herb Yeates photo.*

SEM

From his research papers, it was clear Pete often worked with very small samples and made good use of electron probe microanalyzer (microprobe; EPMA) techniques. I began to wonder what "secrets" my meager specimens might reveal if examined at such a scale. I had no local access to a microprobe, but quickly found a course in scanning-electron microscopy (SEM) at a nearby State University of New York campus, and took it.

The experience was mind-blowing. In short, turning the SEM on specimens I'd stared at for years with a binocular microscope was like voyaging into another galaxy. However, what became most interesting under SEM wasn't always what had been interesting under the binocular. For example, beautifully crystallized axinite-(Mn) appeared as a boring desert of featureless planes under SEM. On the other hand, certain "fuzzy" spots, on apparently massive specimens of certain other F-SH species, under SEM might reveal fantastically beautiful intergrowths of well-formed crystals. It's another world.

Soon I was certified to run the SEM lab solo and entrusted with the keys, so could work there pretty much any time of day or night. And outside of my day job (the "career"), that meant pretty much *all* the time. Over the next several years I was able

to examine hundreds of specimens with SEM, including many of the new F-SH species Pete had recently described, and capture thousands of images. Pete shared the original samples he'd prepared from the type specimens to allow a deeper dive at the SUNY lab. The SEM experience completely changed my appreciation of size and scale and opened up, literally, new and alien vistas. In the process a few new "tidbits" of F-SH knowledge were gained. None of it would have happened if not for that encouraging letter from Pete.

In the meantime, it became clear I needed to go back to school and learn mineralogy in a structured, academic setting. I enrolled at City College of the City University of New York (CUNY) for mineralogy and optical mineralogy classes, in the fall of 1988. Jeff Steiner, a graduate of Stanford University with a strong background in geochemistry and petrology, and a greater affinity for plagioclase than franklinite, was professor. He was fantastic. Jeff was able to help bridge a yawning void between my mineral collector perspectives and some key foundations of the science. I began to wonder if mineralogy might make for a more rewarding career choice.

MEETING PETE

When the *PT* arrived that winter, I spotted Pete J. Dunn as featured speaker for the March 1989 FOMS meeting. Finally, a chance to hear a "Pete Dunn lecture"! I'd heard whispers he'd occasionally held "mini-seminars" and informal gatherings up in Franklin, but thanks to lousy advance notice in the *PT* and my relative isolation in New York, I never managed to catch one. This time, though, I'd be there. My wife and I both decided to go. We had no idea what to expect.

We sat in the front row. A tall man with a beard dressed in blue denim took the stage of the Hardyston School. My first thought: That can't be him. Not at all what I'd pictured for a distinguished Smithsonian scientist. The crowd settled into their seats and the room began to quiet. Just as it did, the bearded man briskly stepped down from the stage, came directly over to me, thrust out his hand and loudly introduced himself. "Hi, I'm Pete Dunn, and I am very pleased to meet you!" I was flabbergasted. Frightened, really. Apparently, he wanted me to know I was "on his radar"; someone must have pointed me out to him ahead of time. I would later learn this was "classic Dunn." Pete was very specific and deliberate in his actions. And he *loved* surprises.

My surprise was complete. His lecture was phenomenal. Passionate, interesting, theatrically presented, yet precise. The technical aspects could be anticipated from his writing, but the passion and dramatic oratorical talent were wholly unexpected. Wow. Those who never experienced a Pete Dunn lecture have missed something remarkable. Pete was a captivating lecturer.

Afterwards, I spoke with him briefly outside the school. I explained my interests and current coursework. He was keen to continue the dialogue and had suggestions. I asked his phone number and he gave me his card, but then paused to explain his "communication preferences." This was the first time I'd heard of such a thing.

Pete strongly encouraged letter-writing. In fact, he considered it the best way to communicate about mineralogic topics. He suggested written correspondence was less subject to memory fade or misinterpretation, and demanded more careful and structured thought—the best way to communicate on technical matters. It also, he went on to say, helped filter out the lazy and "less serious who just liked to talk." Most importantly, mail could be responded to at a time of the *recipient's* choosing rather than the sudden demand of a ringing telephone. Yes, telephone calls were welcome, but a response would be unpredictable. Later, as I came to understand Pete's work at the Smithsonian better, the periods of intense single-minded focus, and daily travels within the National Museum of Natural History (NMNH) building, it was obvious why this was so.

F-SH CORRESPONDENCE

Immediately following that March 1989 meeting, we began regular correspondence on F-SH topics. It continued for decades. Initially, dialogue centered on descriptions and SEM images of the more peculiar things I'd spotted in F-SH vugs, and progress of my course work.

Pete would make suggestions on how to confirm or discount a guess in a particular identification problem, and I'd set about trying to do so—making use of the X-ray powder diffraction (XRD) machine at City College if sample size permitted, or, with more difficulty, on the microprobe across the river at Lamont-Doherty. I'd share results and he'd quiz me on the data and how well—and why—I knew the numbers were correct, and with what precision. In some cases I'd mail him a few clean grains in a gel-cap, and he'd run them on the museum's XRD equipment. I can't claim any new minerals were *described* in the process, but some tiny bits of new F-SH mineral knowledge were gained. Along the way he became a heck of a guide to some best practices in descriptive mineralogy.

Franklinfurnaceite

One of the first subjects for SEM exploration involved vuggy specimens of hodgkinsonite from Franklin. While using the binocular microscope, I noticed that some of the vugs contained a very dark brown platy mineral. The association suggested franklinfurnaceite, then only recently described (Dunn et al., 1987). But crystals depicted in the original paper were ragged in appearance and displayed only a basal

pinacoid, whereas these were euhedral, sharply formed, and in some instances strikingly twinned. Additionally there was a puzzling dark red druse, which under SEM resolved into fields of distinctly spear-shaped crystals. Both are franklinfurnaceite. Pete suggested the finds warranted a short write-up and encouraged me to provide one for the *PT* (Yeates, 1989). I sent him an early draft. He returned it with more red than I'd ever seen on anything ever written. Pete was very frank in his criticisms, on paper or in person. All of it was helpful.

Barysilite

Another SEM focus was on specimens from the "Parker Shaft suite," and the lead silicates in particular. From a sample of coarse platy barysilite, I prepared an SEM mount of a few grains that looked oddly "fuzzy" under the binocular microscope. These turned out to be exquisitely intricate aggregates of flattened rhombohedral crystals. Pete suggested they could be molybdophyllite, a species he'd been looking for at Franklin, but chemistry from EDS suggested a lead silicate with manganese, and no magnesium. Additional runs were made using the microprobe at Lamont, and I discussed the data with Pete. The crystals were barysilite. Beautiful euhedra in parallel growth. A new habit for Franklin.

Ganomalite

Associated with the arrays of barysilite euhedra noted above were sparse, water-clear, stout hexagonal prisms, barely discernable under the binocular microscope. Pete suggested nasonite, but Mn appeared consistently in energy-dispersive X-ray spectroscopy (EDS) data. These were ganomalite, and interesting for showing a pyramid crystal form.

Kentrolite

Under close binocular examination of additional barysilite specimens, some transparent, carmine-red spicules were found. Pyrobelonite? Chemistry from EDS showed only Pb, Mn, and Si. Pete was intrigued as well. The color was vivid. I mailed him a few milligrams in a gel-cap, and he ran them on the museum's Gandolfi X-ray camera. They were kentrolite. The first find of kentrolite where it "belonged"— in a "Parker Shaft" assemblage mingling with other lead silicates. This find also did its species name proud: from the Greek, for "spike."

Again, Pete strongly encouraged me to write up findings. First, though, I wanted to examine more specimens of *all* the lead silicates. Pete agreed. So, in the fall of 1989, we visited Carl Francis and the research collection at Harvard together, and I made visits to the Smithsonian in 1990 to examine their specimens. Pete loaned his SEM stubs prepared in connection with Dunn (1985), and we shared lots of correspondence on the project. A few interesting tidbits of F-SH knowledge were gained. I submitted these observations to *The Mineralogical Record* the following year (Yeates, 1991).

VISITING PETE

Visits to the Smithsonian got scheduled around Pete's periods of peak research activity—what he referred to as "hard core" or "full burn" time—during which he'd come in extra early and stay 100% focused on the project(s) at hand. No time for visitors then. Fall or spring, and sometimes a slack period in the middle of summer, were the best times to visit. The in-lab study topics, any mineral species to be explored, were agreed beforehand. Nothing went unplanned or left loose regarding a visit or collection access. We'd agree an agenda with "asks" and anticipated timings beforehand. As Pete might say, doing so "prevented any disappointments."

Local motels in the Alexandria, Virginia, area, near Pete's home, were suggested. The Red Roof Inn and the Days Inn appeared at the top of his list: classic "frugal Pete" calculation on value-for-money. Hard to argue with not wasting money, and they were adequate; not much time was spent inside. On a few occasions I had a parking spot at the museum, but more often I'd leave the car at the motel and drive in with Pete. Parking spots were in tight supply. Pickup would be arranged, for example, at 5:26 AM the morning after I'd arrived. At that time of day there would be little traffic. We could be at the museum by 6:00 AM.

Sure enough, Pete would be right where he said he'd be at that precise time. Five twenty-six in the morning with Pete meant 5:26 AM. (Sometimes he was early.) He'd already have the morning's paper with him, and we were underway within seconds.

Driving with Pete through predawn blackness with the lights of DC shining along the Potomac was unforgettable. We'd make a right over the 14th St. Bridge, a hard right onto Constitution Avenue, and a quick right into the NMNH's driveway. We'd approach the guard station. A quick check and we're waved into the staff parking lot behind. We open a back door and enter a labyrinth of tunnels to find an elevator handling the East research wing. Pete uses a special access pass to get the elevator to move, and up to the 4th floor we go. No one else is here. In fact, it almost seemed no one else was in the entire building. It's pitch black. We switch on some utility lights at the edge of the floor. We pass giant meteorites stored outside the department of mineral sciences. We open a door and walk east along the chemistry labs facing Constitution Avenue, and pass a shiny microprobe lab on the right. Approaching the corner of the floor and the director's office, we make a sharp right.

Panoramic view of Pete's later office at the Smithsonian. Lots of well organized (paper) correspondence, journal reprints, and research reports surround him. The blue IBM Selectric still had its use when the photo was taken in May 2002, though mostly for typing labels and his ever-present 3″ x 5″ note cards. *Herb Yeates photo.*

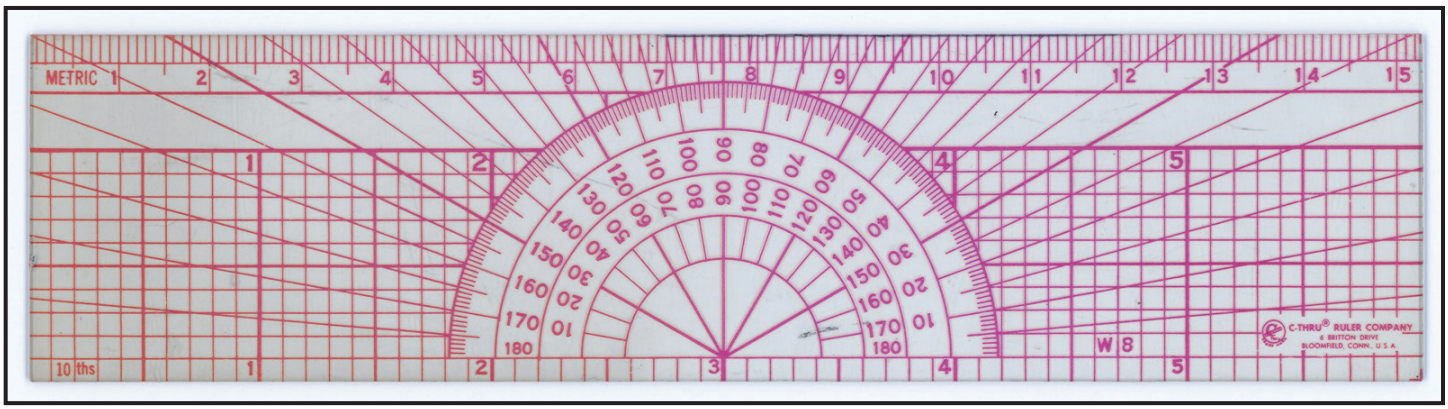
Down this hall, just ahead on the left, is a big windowed room with a large wooden conference table surrounded by shelves of books—the Mineral Sciences department's library. We stop here. Through the windows is a superb view of the Capitol, now just nearing sunrise. Pete spends a few minutes in silence at the table reading his *Washington Post*; there were specific writers and topics, often involving constitutional law, that he devoured. The newspaper is folded and left on the table for others. He stands and announces, "Time for Science!" Our session begins.

Pete's office was then directly across the hall, a small and remarkably compact, windowless room perhaps 8 × 16 feet packed with more books and storage cubbies than I'd seen in any other volume of space—and still leave room to work.

There was a work surface along the right and left walls. Square carpet tiles were placed on counters as mats to keep things from moving, while providing a soft surface. On the right were his microscopes. His main tool was a Nikon Optiphot-Pol. This was one of several polarizing microscopes he'd personally purchased, and had regularly serviced, over the years. His first was a Leitz student model SM-Lux pol with an optional reflecting light attachment. The Franklin Mineral Museum now has this, but he had it on loan to me for several years until I could finally afford my own. He also owned a fine Zeiss polarizing scope that was eventually sold to Paul B. Moore. But the Nikon was his favorite—he loved its big bright field of view. Next to it was a sturdy binocular scope mostly used for grain selection prior to inspection under the polarizing microscope.

On the work surface along the left side of the room was his primary writing tool in those years: a bright blue IBM Selectric typewriter. Odds were good that on any given day between 6:00 AM and 3:00 PM the staccato sounds of its Courier-font type ball could be heard from this room. Index cards—which fit nicely in the shirt pocket of blue workman shirts—could quickly be slipped into the typewriter's carriage, and a few quick thoughts punched out and dropped in the post. Pete must have been the major user of the US Postal Service on that floor (it annoyed him no end when inbound physical packages—the kind we'd use to send samples back and forth—were suspended following the "Anthrax scares," and materials rerouted to a screening facility).

Above and on both sides, from work surface to ceiling, were wooden shelves for placing specific streams of communications for particular projects. Correspondence on IMA matters was in one bin, those with the editors of a particular journal in another, etc. Having run short of shelf space he even installed a long spanning shelf, just above head level, from the left to right wall. This contained an old black Dana's System 6th, a set of Dana's 7th, and a full set of Deer, Howie & Zussman, along with recent *Mineralogical Abstracts*. There were remarkably few



Pete's pocket ruler. Along with a pencil or pen (typically blue felt-tip), Pete kept a special plastic ruler in the pocket of his custom-made signature blue work shirts. "It helps me add numerical data to my observations, wherever I am." At work in his lab he constantly made use of it.

specimens left out. Any visible were associated with specific projects and placed in corresponding boxes with associated paperwork. Nothing here was out of place or "arranged by accident." A dissecting needle resting on a carpet square was meant to be there. I tested this a few times and always found the object soon returned to its original orientation. Interestingly, the back wall of his office once had a door, through which one could directly access the National Collection. By the time of my first visit, in June 1989, this had been bricked up and sealed.

It was not easy to have two humans inside this room. Pete was not used to the company. After the first couple of visits I knew to wait in the conference room until he'd arranged the space as he liked and was ready to tell me where to sit. Study sessions would proceed as we'd agreed beforehand.

One session involved tips and best practices using reflected light on a polarizing microscope; another involved the preparation and care of polished sections, etc. A third involved exploiting the Gandolfi X-ray camera effectively with small samples. Yet another involved proper use of the National Collection. It was a struggle to contain my excitement on that session's "field trip" to the collection room. Pete explained its organization, numbering system, catalog, and the general layout of the room—an enormous space filled with towering gray stacks of wooden drawers. The collection room comprises most of the center of the floor. Off to one side is an annex of sorts, known as the "Blue Room," but the gems held far less interest than the contents of the research collection. A cardinal rule: Before pulling out a chosen specimen drawer, pull out the drawer *below* it halfway. I can only imagine how this rule came to be and am grateful for not having caused it. There were no accidents on my watch.

One day, during a later visit to the collection room, Pete stopped in to see how I was getting on. He watched me examining a few samples, and asked, "Do you know which are the most *valuable* specimens in the collection?" I didn't, and stared back blankly at the seemingly daft question. He grinned and said, "The ones with more cards in them," and walked out. I looked more closely. In addition to a white accession card located in each specimen's cardboard box, some also held *colored* cards—pink, blue, or green. One color indicated X-ray data, with reference; another color noted chemistry; another publication data. Most specimens in a drawer had only the white accession card. A few had an additional colored card, and one or two might contain several. At a glance one could spot which specimens in a drawer had what work performed. For the F-SH aficionado, the National Collection is the *bee's knees*.

Pete by now had kindly shared many of his day-to-day research practices, but thought B. Darko Sturman, up at the Royal Ontario Museum in Toronto, might be willing to share another: a combined optical and X-ray technique. So

The author in the mineral collection room at the Smithsonian. Note "Rule Number One" being observed—the drawer below the one of interest has been pulled out halfway. *Herb Yeates photo*.

with Pete's arrangement I headed up to Canada. Darko was a most gracious host and mentor. Pete later distilled the notion of sharing such techniques in descriptive mineralogy more widely via a "Mentor Mineralogists" program, and published a short notice in *The American Mineralogist* to that effect.

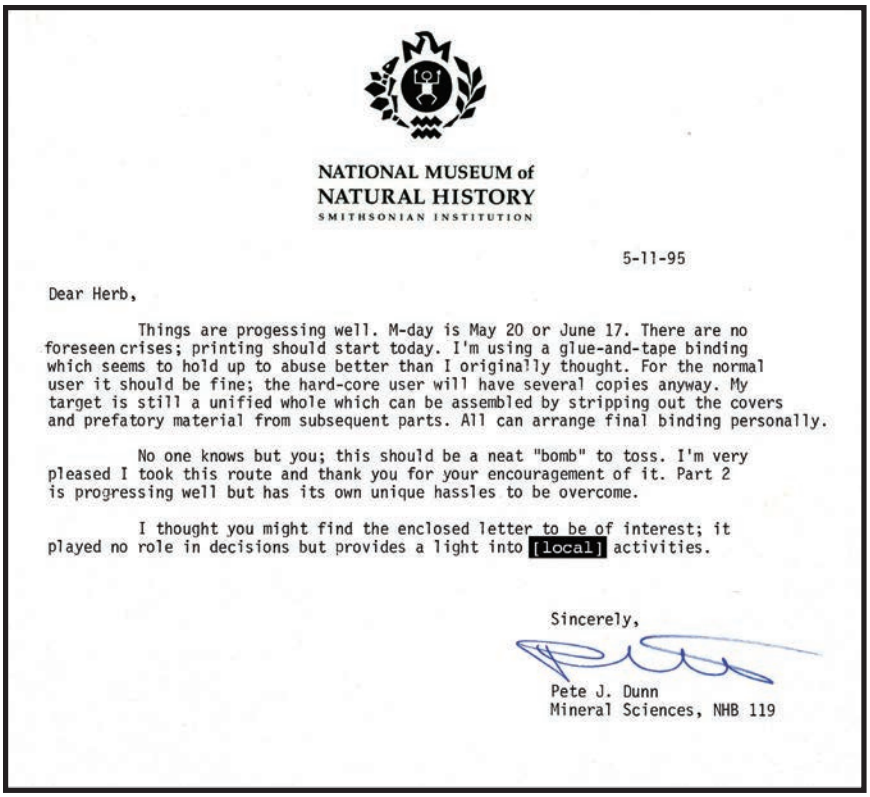
TO BE OR NOT TO BE

Studies at City College continued into petrology and geochemistry, which were wonderful, and soon a decision point for me was reached. Should I continue with formal studies and attempt a career change, or keep with the one that was already paying our rent?

On a subsequent visit to see Pete we reviewed the realities. The field of mineralogy, descriptive mineralogy in particular, was not exactly on the upswing, unlike the fleld in which I was already employed. We compared job realities. They looked stark. It was highly unlikely I could find a position locally at even half my current salary. Worse, if I did find one, there was little assurance it would exist in another year or two. Spots were often funded only for brief periods. It was not a path I had the courage to take. The result for me since has been a form of mineralogic purgatory: continued academic interest in mineral science, until I can make good my retirement and enjoy free time for mineral studies. That day should arrive soon. I'm sad Pete won't be there, though, when it does.

THE MONOGRAPH

With the characterization of samfowlerite, Pete drew a line in the sand on new F-SH species work and increasingly focused on his "formal notebook." Our correspondence continued apace, more now as a confidant than student, and the prospect of a new book on the minerals of F-SH looked increasingly real. Various publishing options were discussed.



NATIONAL MUSEUM of
NATURAL HISTORY
SMITHSONIAN INSTITUTION

5-11-95

Dear Herb,

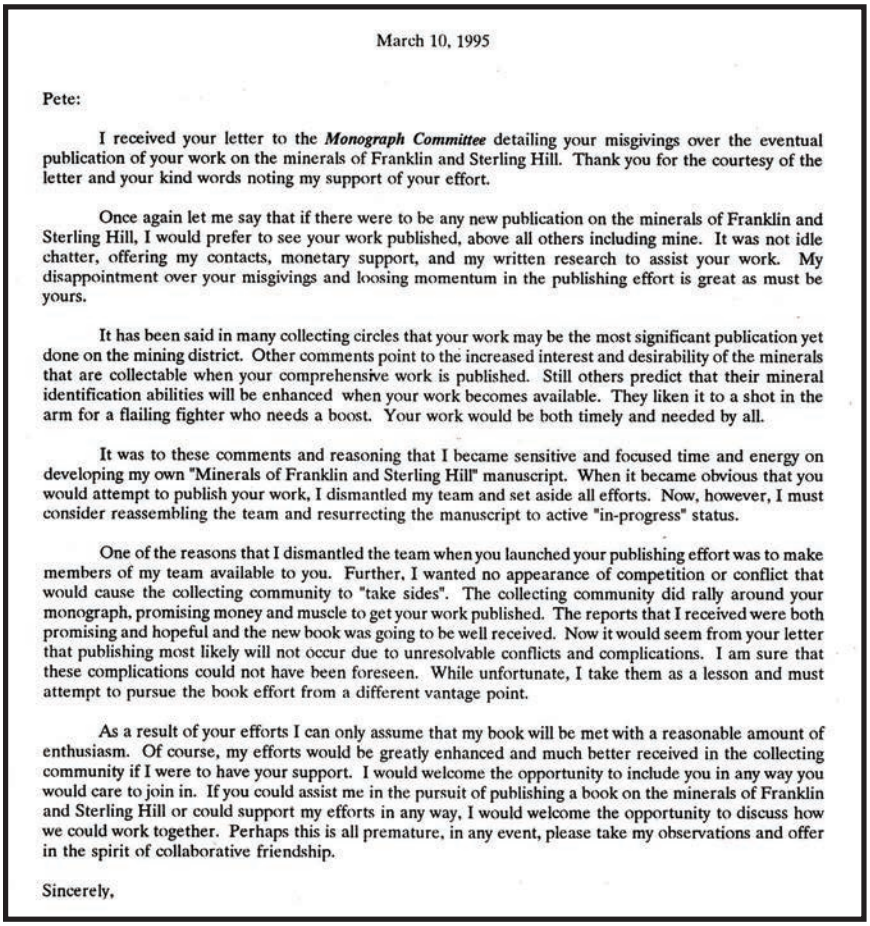
Things are progessing well. M-day is May 20 or June 17. There are no foreseen crises; printing should start today. I'm using a glue-and-tape binding which seems to hold up to abuse better than I originally thought. For the normal user it should be fine; the hard-core user will have several copies anyway. My target is still a unified whole which can be assembled by stripping out the covers and prefatory material from subsequent parts. All can arrange final binding personally.

No one knows but you; this should be a neat "bomb" to toss. I'm very pleased I took this route and thank you for your encouragement of it. Part 2 is progressing well but has its own unique hassles to be overcome.

I thought you might find the enclosed letter to be of interest; it played no role in decisions but provides a light into [local] activities.

Sincerely,

Pete J. Dunn
Mineral Sciences, NHB 119



March 10, 1995

Pete:

I received your letter to the ***Monograph Committee*** detailing your misgivings over the eventual publication of your work on the minerals of Franklin and Sterling Hill. Thank you for the courtesy of the letter and your kind words noting my support of your effort.

Once again let me say that if there were to be any new publication on the minerals of Franklin and Sterling Hill, I would prefer to see your work published, above all others including mine. It was not idle chatter, offering my contacts, monetary support, and my written research to assist your work. My disappointment over your misgivings and loosing momentum in the publishing effort is great as must be yours.

It has been said in many collecting circles that your work may be the most significant publication yet done on the mining district. Other comments point to the increased interest and desirability of the minerals that are collectable when your comprehensive work is published. Still others predict that their mineral identification abilities will be enhanced when your work becomes available. They liken it to a shot in the arm for a flailing fighter who needs a boost. Your work would be both timely and needed by all.

It was to these comments and reasoning that I became sensitive and focused time and energy on developing my own "Minerals of Franklin and Sterling Hill" manuscript. When it became obvious that you would attempt to publish your work, I dismantled my team and set aside all efforts. Now, however, I must consider reassembling the team and resurrecting the manuscript to active "in-progress" status.

One of the reasons that I dismantled the team when you launched your publishing effort was to make members of my team available to you. Further, I wanted no appearance of competition or conflict that would cause the collecting community to "take sides". The collecting community did rally around your monograph, promising money and muscle to get your work published. The reports that I received were both promising and hopeful and the new book was going to be well received. Now it would seem from your letter that publishing most likely will not occur due to unresolvable conflicts and complications. I am sure that these complications could not have been foreseen. While unfortunate, I take them as a lesson and must attempt to pursue the book effort from a different vantage point.

As a result of your efforts I can only assume that my book will be met with a reasonable amount of enthusiasm. Of course, my efforts would be greatly enhanced and much better received in the collecting community if I were to have your support. I would welcome the opportunity to include you in any way you would care to join in. If you could assist me in the pursuit of publishing a book on the minerals of Franklin and Sterling Hill or could support my efforts in any way, I would welcome the opportunity to discuss how we could work together. Perhaps this is all premature, in any event, please take my observations and offer in the spirit of collaborative friendship.

Sincerely,

Publicly, Pete was often circumspect regarding a "new book," but behind the scenes he was working hard at bringing it all together. Synthesizing his prior publications with subsequent work, and augmenting it with wholly new content, was a tremendous task. Much correspondence flowed between Pete and folks in the F-SH community. I had the experience of being blind-copied on more of it than I'd like to admit. It was a rocky path.

One amusing moment came when Pete suggested that he might just not create a book after all—that on reflection, perhaps it was all just too much effort and trouble. A member of a committee ostensibly created to assist with publication of Pete's book seized the moment to suggest (erroneously) that he and his buddies were ready and able to create one instead. What none in the F-SH community knew at the time was that much of it had already been written—and printed—and an actual "M-Day," or monograph day, for its release, scheduled. Pete loved surprises!

REFLECTION: SOME LESSONS LEARNED

First, new findings require hard work. There is an obvious but oft overlooked requirement to first master all that's *already* published before suggesting something is actually new to science, and not merely a "reinvention of the wheel." In an age before the Internet, this meant good relations with research librarians for access to all relevant journals, no matter how obscure. Part of Pete's routine at the Smithsonian was to come down the East wing elevator of the NMNH to the ground floor, walk across the lively public lobby facing Constitution Avenue, and reenter the west wing to visit the research librarians, to make fresh requests and see what may have come in for him overnight. Pete paid little mind to "talk." At the risk of overstating to make the point: If it wasn't published, it didn't exist. He recognized his role in science as one of adding new "knowledge bricks"—be they large or small—via peer-reviewed publication. Proper care in their construction mattered greatly to him.

Second, the devil was in the details of the data. Good numbers meant good science, and "bricks" that would stand the test of time (pre-Dunn F-SH mineral science is rife with mistakes, bad data, and erroneous conclusions). Pete was fastidious with numbers. When reviewing a paper he'd carefully inspect the data presented and methods described. He was expert at spotting sloppiness. Pete would ask me to read specific papers and then ask what I thought of the data used, and why. Claims made in the front of a paper unsupported by appropriate data within were typical "red flags." Inexperienced authors, who may not have understood the limitations of a particular tool or experimental setup, and who perhaps provided numerical data to an unsupportable number of decimal places, would quickly catch his attention. Pete would routinely check the calculations in, for instance, formulae derived from weight percent data, by hand with a calculator, and place a small check mark in pencil next to each number as he went.

Interestingly, Pete was also able to spot careful analysts by similar methods, including some he never met. He held Lawson Bauer in high regard. Some others, not so much. More than a few discreditations, redefinitions, and new mineral species investigations for Pete began with a simple but rigorous review of published data.

Third, complex efforts often require multiple parties, and it is vital to know who can deliver what, and when. Regarding new species characterizations, Pete was very open in sharing which researchers were a joy to work with, and why (usually a variant of good data swiftly provided) and which he found disappointing, and why (generally poor data and/or extended delays). Inspection of his bibliography will reveal his favored set of collaborators. Pete also had a network of folks in the NMNH building—research librarians, chemists, collection specialists, analytic technicians, and photographers—that played important parts in his work. He was grateful to them all, and his publications bear witness.

Finally, for the "independent" investigator especially—someone perhaps with training but no access to modern lab facilities—there could be no single better diagnostic tool than the polarizing microscope. Pete encouraged its frequent use at every turn. Most of his letters to me include a sentence commanding me to use the scope. He telephoned my professor at City College, Jeff Steiner, to find out what techniques and which accessories were being used in class, and how often. He loaned me his first polarizing scope, an old black Leitz SM Pol now at the Franklin Mineral Museum, so I could use it at home when not at work or in class. In his work, Pete typically made immersion mounts of single grains, and exploited reflected light with polished sections. The polarizing microscope was an essential tool in Pete's research. And thanks to his constant encouragement, I'm a better practitioner.

Pete, during an unguarded reflective moment at the Franklin-Sterling Hill Gem & Mineral show, 1998. *Herb Yeates photo.*

PARTING THOUGHTS

In the course of exploring "Parker Shaft" specimens, I came across an odd phase. After study under polarizing microscope, and SEM with EDS, it remained a puzzle. So we made it a study topic for a next session at the Smithsonian. I posted pure grains in a gel-cap to Pete ahead of time. The night before I arrived, he ran the sample in a Gandolfi X-ray camera overnight. Because the sample size was meager, "it needed time to cook." When we arrived that next morning, the exposure was complete.

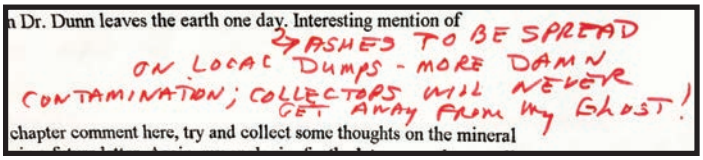
We took out the film and developed it. Later that morning, we walked down the hall to the X-ray film library (since removed) and slapped the new film up on the light box. Pete took out a clear Cu K-alpha ruler and measured the lines we'd gotten. Carefully. Twice. They looked strong and clear. He pulled a few other films out from the library drawers, and placed each, one at a time, over the new film for comparison. There were notable differences. Several perfectly silent minutes passed. He measured one more time. Silence.

Pete suddenly pulled the film off the light box, slipped it into a paper sleeve, wrote my name and date on it, and handed it back to me. "That is a new mineral." So far as I know, it remains a potentially "new" mineral, but it has a few problems, and there's a long path between knowing something is a new mineral and fully characterizing it. With luck, perhaps in retirement I'll make use of a bit of what Pete taught and try to describe it.

Pete described his work on F-SH minerals as taking place in three distinct phases. The first two: "From 1973 until 1977 I studied Franklin minerals in solitude; from 1977 until 1989 I worked in the public eye but with few satisfactions because

there was no one else thinking along the same lines" (PJD, personal communication). As for Pete's third phase, I'm grateful to have had a ringside seat for much of that period.

Once, in a letter to Pete, I remarked on his ultimate disposition; literally, what might become of his remains. He made a photocopy of my letter, wrote his reply in bold red pen directly on it, and mailed it back.


n Dr. Dunn leaves the earth one day. Interesting mention of
ASHES TO BE SPREAD
ON LOCAL DUMPS - MORE DAMN
CONTAMINATION; COLLECTORS WIL NEVER
GET AWAY FROM MY GHOST!
chapter comment here, try and collect some thoughts on the mineral

May it be so! R.I.P. Pete Dunn, you've given us all a fantastic legacy to read, learn from, and enjoy.

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Yeates, Herb, 1989, Observation of habits for franklinfurnaceite crystals. *The Picking Table*, vol. 30, no. 2, p. 7-9.

Yeates, Herb, 1991, The lead silicate minerals of Franklin, New Jersey: an SEM survey. *The Mineralogical Record*, vol. 22, p. 273-278.

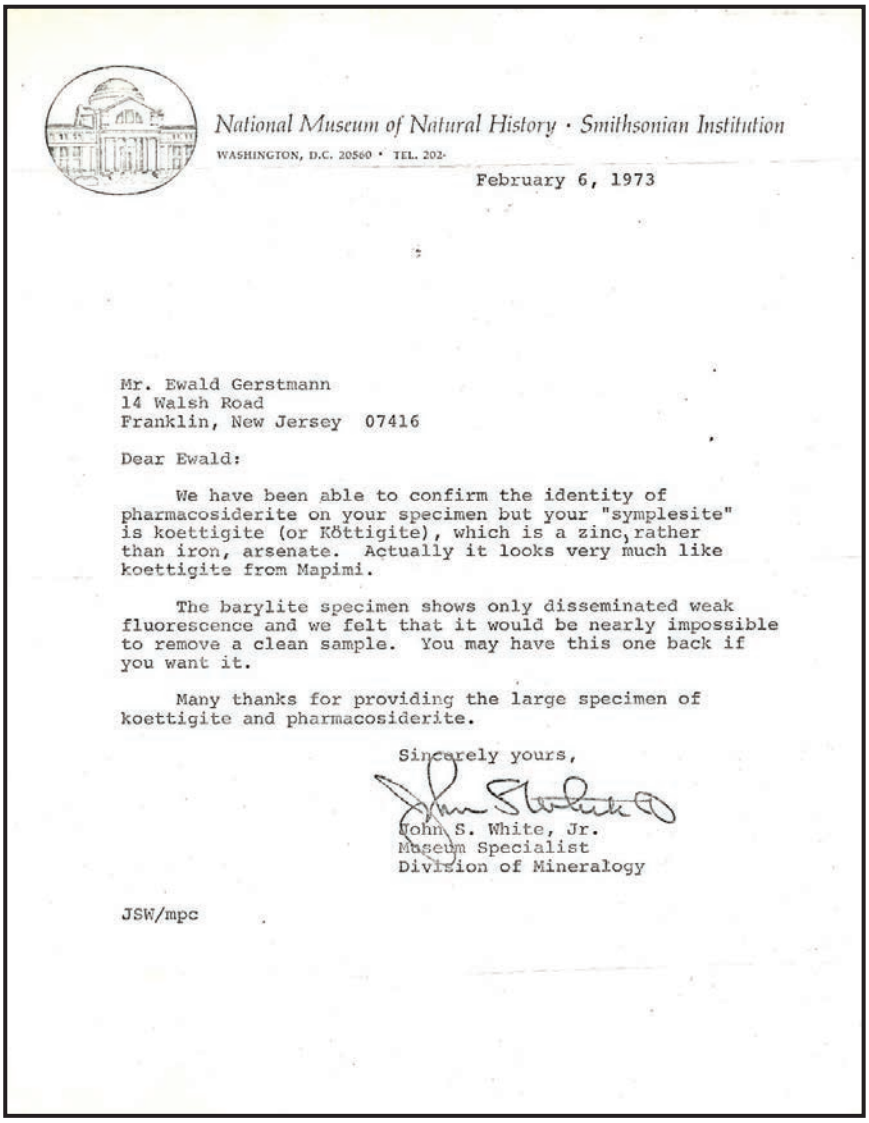
Pete Dunn in his office at the Smithsonian, May 2002. This was the second office Pete occupied on the Mineral Sciences floor; his initial one was much smaller and windowless. Note "Franklin Ethical Bear" overhead, Pete's prized Nikon Optiphot-Pol microscope behind on right, the always-near-to-hand dictionary, and the blizzard of Post-its above his work surface. The monograph and subsequent historical studies were all created on the PC in foreground. *Herb Yeates photo.*

1972: A Propitious Year for Franklin

PETER CHIN
1031 KUEKUE ST.
HONOLULU, HI 96825

What you are about to read is a glimpse of the man we knew as Pete Dunn. As others have noted, he was a complex and prickly individual whose personal and professional relationships were not always friction-free.

1972 was a seminal year in American history and a propitious year for Franklin mineralogy. Pete J. Dunn began his career at the Smithsonian. The war in Vietnam was winding down and America was transitioning away from a wartime to a peacetime economy... and then there was Watergate. A malaise had settled over the Franklin mineral-collecting community. At Harvard, Dave Cook's work on Franklin minerals had finished or was winding down, and elsewhere such research had slowed to a painful crawl. Franklin and Sterling Hill minerals from previous years were still waiting to be identified and described, and there was no one on the horizon to take up the slack. There had been a dry spell for quite some time: No new minerals or exciting finds were made, or major collections sold. It seemed to some in the Franklin mineral-collecting community that an ominous void was forming, and there was no one, with the possible exception of Paul Moore, who was likely to take up the mantle of Franklin mineralogy in the dedicated way that Charles Palache, and Clifford Frondel after him, had done. Even Ewald Gerstmann complained about the lack of progress in mineral analyses and identification, and (above all), the high prices of minerals. This frustration had dulled Ewald's enthusiasm and contributed to his earlier unsuccessful attempt to sell his collection, but that is another story.



National Museum of Natural History · Smithsonian Institution
WASHINGTON, D.C. 20560 · TEL. 202-

February 6, 1973

Mr. Ewald Gerstmann
14 Walsh Road
Franklin, New Jersey 07416

Dear Ewald:

We have been able to confirm the identity of pharmacosiderite on your specimen but your "symplesite" is koettigite (or Köttigite), which is a zinc, rather than iron, arsenate. Actually it looks very much like koettigite from Mapimi.

The barylite specimen shows only disseminated weak fluorescence and we felt that it would be nearly impossible to remove a clean sample. You may have this one back if you want it.

Many thanks for providing the large specimen of koettigite and pharmacosiderite.

Sincerely yours,

John S. White, Jr.
Museum Specialist
Division of Mineralogy

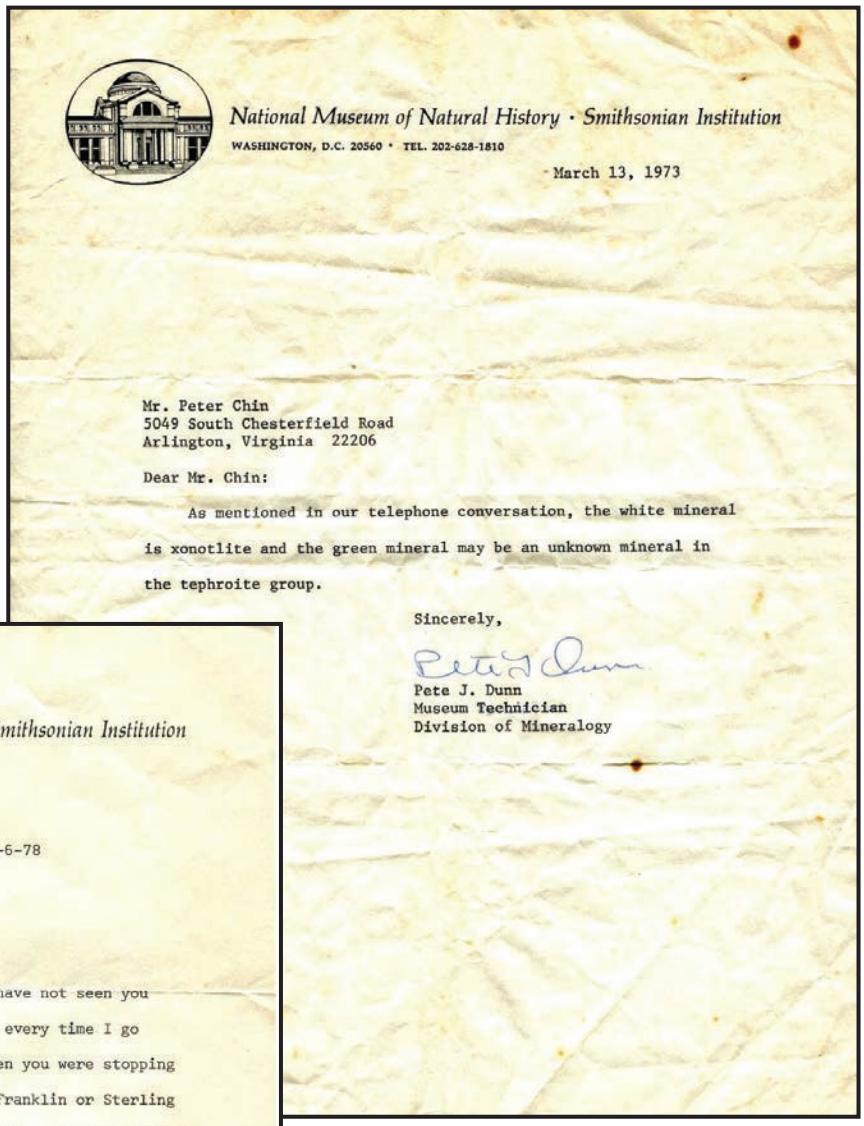
JSW/mpc

Fig. 1

1972 was the year that began the transition from Harvard's domination of research in Franklin mineralogy to a new golden age led by Pete Dunn. It was also the same year Eugene (Gene) Clyne, a shift boss at the Sterling Mine, brought out the first of many remarkable mineral finds, a welcome trend continued by the great miner and mineral collector John Kolic, who was hired by Gene in 1973. Their and others' discoveries would fuel and dominate Franklin and Sterling Hill mineralogical research for the next twenty-plus years. The February 6, 1973, letter (Fig. 1) from John White to Ewald Gerstmann, while not mentioning Pete, marks the beginning of the long cooperation between the Franklin mineral-collecting community, the Smithsonian, and Pete Dunn.

In August or September of 1972, I personally delivered to John White, at the Smithsonian, several of Ewald's arsenate specimens from Gene Clyne's find in 960 Stope, 340 Level at the Sterling Mine. Pete was the newly hired technician who performed the analyses, the results of which are mentioned

in White's letter of February 6, 1973. Soon afterward I communicated directly with Pete about a number of analyses he'd made of Franklin and Sterling Hill minerals. In addition to submitting specimens of new Sterling Hill finds to Pete, I also brought him a number of "Parker Shaft" specimens from the Franklin Mine, including minerals that I and many other collectors had long assumed were barylite, calciothomsonite, and larsenite. We were wrong. All the supposed calciothomsonite and larsenite specimens that Pete tested, white acicular crystals in axinite-(Mn) or altered hancockite, were xonotlite, aragonite, or calcite. The weakly blue-fluorescing mineral in feldspar was not barylite as rumor had it, but actually two minerals: One was poorly fluorescing margarosanite and the other was a then-unknown mineral described in 1984 as minehillite.



National Museum of Natural History · Smithsonian Institution
WASHINGTON, D.C. 20560 · TEL. 202-628-1810

March 13, 1973

Mr. Peter Chin
5049 South Chesterfield Road
Arlington, Virginia 22206

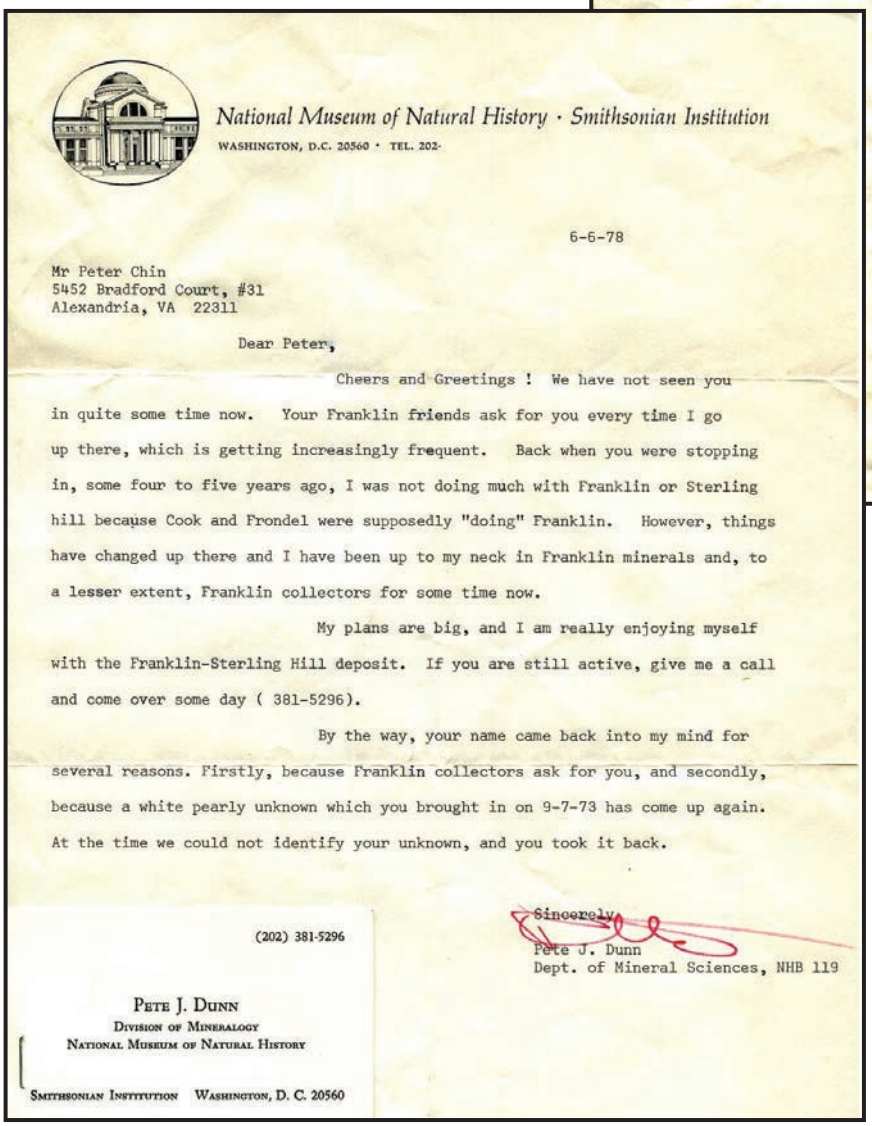
Dear Mr. Chin:

As mentioned in our telephone conversation, the white mineral is xonotlite and the green mineral may be an unknown mineral in the tephroite group.

Sincerely,

Pete J. Dunn
Museum Technician
Division of Mineralogy

Fig. 2



National Museum of Natural History · Smithsonian Institution
WASHINGTON, D.C. 20560 · TEL. 202-

6-6-78

Mr Peter Chin
5452 Bradford Court, #31
Alexandria, VA 22311

Dear Peter,

Cheers and Greetings ! We have not seen you in quite some time now. Your Franklin friends ask for you every time I go up there, which is getting increasingly frequent. Back when you were stopping in, some four to five years ago, I was not doing much with Franklin or Sterling hill because Cook and Frondel were supposedly "doing" Franklin. However, things have changed up there and I have been up to my neck in Franklin minerals and, to a lesser extent, Franklin collectors for some time now.

My plans are big, and I am really enjoying myself with the Franklin-Sterling Hill deposit. If you are still active, give me a call and come over some day (381-5296).

By the way, your name came back into my mind for several reasons. Firstly, because Franklin collectors ask for you, and secondly, because a white pearly unknown which you brought in on 9-7-73 has come up again. At the time we could not identify your unknown, and you took it back.

Sincerely,

Pete J. Dunn
Dept. of Mineral Sciences, NHB 119

(202) 381-5296

PETE J. DUNN
DIVISION OF MINERALOGY
NATIONAL MUSEUM OF NATURAL HISTORY

SMITHSONIAN INSTITUTION WASHINGTON, D. C. 20560

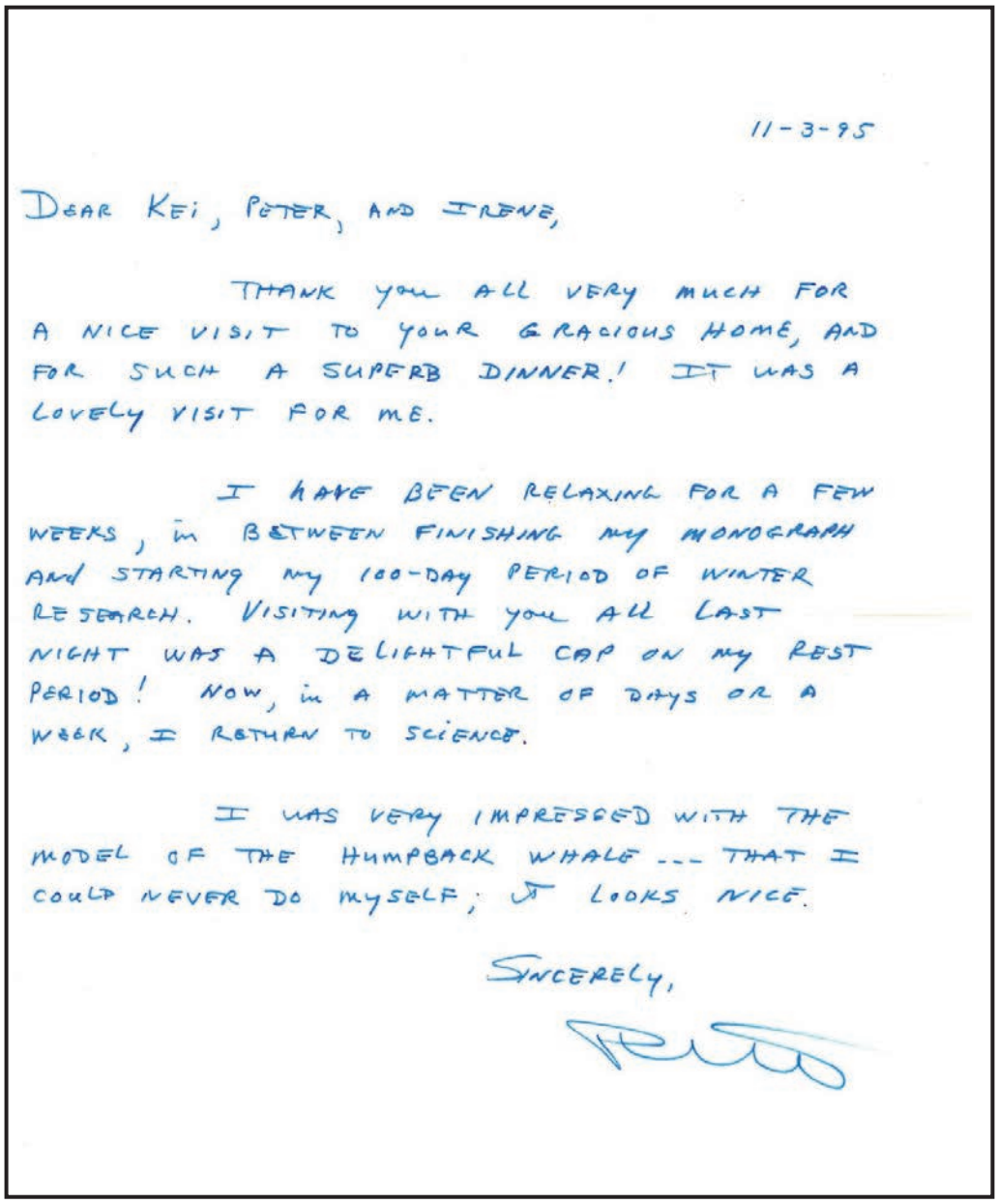
Fig. 3

The first direct written communication I received from Pete is the letter dated March 13, 1973 (Fig. 2). The white mineral mentioned in the letter, bundles of white acicular crystals in hydrothermally altered hancockite, was sold to me as calciothomsonite. At Pete's suggestion, the green "unknown mineral in the tephroite group" was submitted to David Cook at Harvard for analysis. David concluded that the green mineral was iron-rich sonolite. I think his analysis and conclusion should be revisited.

Among the other mineral identifications Pete made from the "Parker Shaft" minerals I submitted to him were green massive cahnite partially surrounding a roeblingite nodule, and groutite crystals with cahnite crystals. Alas, no larsenite or calciothomsonite!

Among the new arsenates from the 1972 Sterling Mine find that I brought to Pete's attention was one best described as brown crud, a pitticite-like substance he later characterized and described as ogdensburgite, a mineral new to science. Other arsenates from this find were reported in *The Picking Table*. It was a heady time and Pete seemed to relish his investigations of Franklin and Sterling Hill minerals.

It wasn't until 1978 that Pete announced his intent to devote his energy and scientific interest to the pursuit of Franklin and Sterling Hill mineralogy, as mentioned in his June 6, 1978, letter (Fig. 3). The "white pearly unknown" I brought to him in 1973, which could not then be identified, was later found to be a new mineral, gerstmannite, described and named by Paul Moore and Takaharu Araki in 1977. How Paul came to describe and name it is one of many stories yet to be told in the byzantine history of the Franklin collector community.



11-3-95

DEAR KEI, PETER, AND IRENE,

THANK YOU ALL VERY MUCH FOR A NICE VISIT TO YOUR GRACIOUS HOME, AND FOR SUCH A SUPERB DINNER! IT WAS A LOVELY VISIT FOR ME.

I HAVE BEEN RELAXING FOR A FEW WEEKS, IN BETWEEN FINISHING MY MONOGRAPH AND STARTING MY 100-DAY PERIOD OF WINTER RESEARCH. VISITING WITH YOU ALL LAST NIGHT WAS A DELIGHTFUL CAP ON MY REST PERIOD! NOW, IN A MATTER OF DAYS OR A WEEK, I RETURN TO SCIENCE.

I WAS VERY IMPRESSED WITH THE MODEL OF THE HUMPBACK WHALE --- THAT I COULD NEVER DO MYSELF; IT LOOKS NICE.

SINCERELY,

Fig. 4

On a more personal note, as I lived about three miles from Pete, we did sometimes meet for dinner and discuss nonmineral matters. Our mutual friend George Loud would often join in the fun. Note the reference to the humpback whale in Pete's 1993 thank-you note (Fig. 4).

In the years after he published his monograph and wound down his research activities, I would sometimes see Pete when I bicycled through Belle Haven Park in Alexandria on my trips between Alexandria and Mount Vernon, or between Alexandria and the Jefferson Memorial. He studied trees and gave impromptu nature tours to visitors there. As a volunteer docent at the National Museum of Natural History, I would sometimes see Pete in the information booth on the first floor of the rotunda, on his days off from working as a mineralogist, happily answering questions from visitors. In his later years, away from research and questions from mineral collectors, he seemed quite happy in his new-found duties despite his health issues.

It was a friendship I will always cherish.

Who Was Dr. Pete J. Dunn?

DICK AND ELNA HAUCK
43 WOODLAND ROAD
FRANKLIN, NJ 07416

Fine-grained green gahnite with brown andradite and coarse-grained, pale gray calcite, from Franklin. The specimen measures 4.7 × 3.7 × 2.8 inches (12 × 9.5 × 7 cm) and was no. G-263 in the collection of Pete Dunn. *Earl R. Verbeek photo.*

Pete Dunn (left) and John Kolic on 900 level of the Sterling Mine, October 1990. *Bernard Kozykowski photo.*

There is no question that Dr. Pete J. Dunn was one of the world's most outstanding mineralogists. His name will stand among the Franklin greats who preceded him, including Drs. Charles Palache and Clifford Frondel. Pete produced a steady stream of publications on the local minerals, including a monograph of great length. He discovered not only many mineral species new to the local area, but also species new to science. Even those of us who are not scientists greatly benefited from his choice of the Franklin area as his main research focus.

The Franklin area has always been a world-class mining and mineral locality, but Pete's efforts gave it a level of appreciation and understanding that will be added to but probably never surpassed.

Pete was a friend to many, but not at all times. If Pete felt that a person was not dedicated to science in full, that person would receive suggestions that weren't always kind or appreciated. The wives of his "Franklin Friends" were considered to be negative distractions, and it was not wise for a woman to offer suggestions or criticism.

Those of us who shared the time that Pete was with us were most fortunate. We knew a most gifted, most interesting, and most unusual person. There was only one Pete.

A 5-cm-thick vein of pyrite with thin veinlets of white calcite and a black, unidentified mineral in altered, hematite-stained, granular ore from Sterling Hill. The pinkish-tan to tan-colored mineral in the ore resembles serpentinized willemite and does not fluoresce; many of these grains have a thin border of red hematite. This was specimen Z-965 in the collection of Pete Dunn and measures 3.1 × 2.8 × 2.2 inches (8 × 7 × 5.5 cm). *Earl R. Verbeek photo.*

Pete Dunn, a Unique Friend

LEE LOWELL
28 TROON DRIVE
NEWTON, NJ 07860

Sometime in the mid-1980s, I met Pete Dunn in Ewald Gertstmann's museum in Franklin. Other than giving a brief handshake, I had no time to talk to Pete since his attention was focused on Ewald and several other collectors gathered around him. A short time later I learned that most of these collectors were what I facetiously called "Pete's disciples," who were on Pete's list for receiving his "confidential" research memorandums.

I thought maybe someday I would gain the same privilege. However, an unfortunate incident occurred a few years later involving Pete, Ewald, and myself, which I was sure would probably hurt my chances of ever becoming a member of Pete's "inner circle." Gerstmann had sold several Sterling Hill mineral specimens to a part-time dealer who was telling his customers these specimens were analyzed by Dunn. When Pete heard about this, he called Ewald, blaming him for what the dealer was telling his buyers. Ewald denied this and was so upset with Pete's accusation that he came to my apartment, pounding on the window to get my attention. When he came in, he was highly agitated and told me what had happened. Before he left, he asked me to write a letter to Pete insisting that he did not say anything of the sort to the dealer. I had Ewald review the letter and I sent it to Pete. The contents of this letter contained a few uncomplimentary words about Pete's accusation. Several days later, Pete called Gerstmann and asked, "Who is this Lee Lowell?"

When I became treasurer of the Franklin Mineral Museum, I inherited the management of the museum's financial accounts. One of these was Pete Dunn's research and education fund. The money in this account came from donations Pete received over the years, which were set aside to pay for his education and research trips to Franklin as well as other facilities such as museums, libraries, and historical societies. Now, with some trepidation, I had to work with Pete, since I wrote the checks to pay the invoices he sent to me for his travel reimbursements. Surprisingly, he never mentioned the Gerstmann letter to me, and our relationship flourished.

When I became president of the FOMS in the mid-1990s, Pete told me he was ready to publish his Franklin and Sterling Hill monograph. He wanted to have it printed in color by the publisher of *The Mineralogical Record*, Wendell Wilson. However, the negotiations were very difficult and frustrating, and Pete started to lose patience. Finally, he asked to me to select a small group of FOMS members to continue deliberations with Wendell Wilson to attempt to achieve a publication agreement. When this failed, Pete told me to end

A large specimen of platy barysilite coating a fracture surface in altered willemite-franklinite granular ore with minor calcite, orange-brown andradite, and pale tan "caswellite," from Franklin. This specimen, 5.5 × 4.0 × 3.0 inches (14.5 × 10 × 7.5 cm) in size, was no. G-215 in the personal collection of Pete Dunn. *Earl R. Verbeek photo.*

Prismatic crystals of dark brown fayalite in a matrix of silvery löllingite and bone-white calcite from Sterling Hill. This was specimen Z-720 in Pete Dunn's personal collection and measures 4.0 × 3.1 × 2.0 inches (10 × 8 × 5 cm). *Earl R. Verbeek photo.*

John Cianciulli (left) and Pete Dunn in Shuster Park, Franklin, June 1980.

the group's efforts, and he decided instead to self-publish the monograph in black-and-white since his cost for printing it in color would have been prohibitive.

Over many years, we had many personal discussions about family affairs, collectors, and others in the mineral community. He was very explicit with his opinions of many, and I was thankful that he enjoyed our conversations. He called me regularly to ask what was going on in "the Holey Land," as he called Franklin, and he always thanked me for my volunteer efforts at the FMM. I enjoyed his hospitality during my visits to his house and the times he took me to the Smithsonian, allowing me to roam in the large mineral room.

He had a humanitarian spirit that he expressed by purchasing food and giving it to local homeless people, one of whom was living in the woods; Pete delivered food to him there. Pete donated minerals and many of his personal research files to the Franklin Mineral Museum. He expressed much hope for the success of the museum and the FOMS. He enjoyed the receipt of *The Picking Table* issues.

We all were fortunate to have had another "giant" in our midst who devoted many years of his life studying the local heritage, recording the history of the local mines and quarries, and publishing an enormous quantity of mineral analyses. (Pete liked to use the word *enormous* when he was talking about his research efforts.) Pete's contributions to "the world's most magnificent mineral deposits" will remain a significant treasure for all of us now and those in the future who have an interest in the local mining district.

Pete Dunn in his original office at the National Museum of Natural History.

Dr. Pete J. Dunn: My Friend

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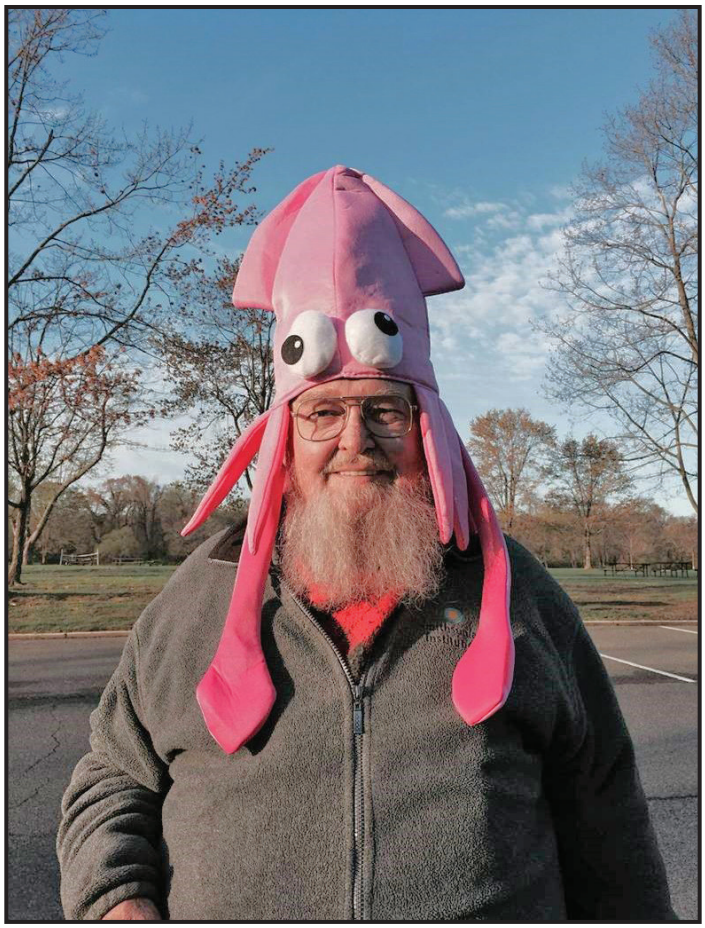
Like most people in the mineral community, I knew of Dr. Pete J. Dunn long before I met this eminent man of science. My first recollections were of seeing legal-sized white envelopes and 8 × 10 manila envelopes, all bearing the return address of DUNN, NHB 119, Smithsonian, *National Museum of Natural History*, Washington, D.C. Back in the late '70s I worked at the mineral mecca known as Jim's Gems in Wayne, N.J. In the days before eBay, prominent collectors, miners, and the general collecting community made their way to the store to sell or buy minerals. Scientists such as Earl Verbeek and Marilyn Grout (U.S. Geological Survey) and Peter Leavens (University of Delaware) buried their heads in the drawers of minerals in hopes of striking gold, or even better, finding a mislabeled specimen of kolicite or johnbaumite. To be honest I can't say that Dr. Dunn stopped by Jim's Gems more than once or twice. From what I later learned of Pete, his time was dedicated to science, and his trips north were focused and planned out to the minute, leaving little extra time for experiences that might not be productive to his work. Science consumed almost all of Pete's waking hours, and for many years he could be found seven days a week in his office at the Smithsonian. His visits to "the Holey Land," as he referred to Franklin and Sterling Hill, typically involved leaving his home town of Alexandria at 4:00 AM, giving a talk or holding an informal seminar until 4:00 PM, and then driving back to Virginia, all in the span of one day. Pete was a man who did not require the power of caffeine for energy; to me, his energy seemed fed by his passion for minerals and the intellectual need to unlock the puzzles of mineralogy and chemistry hidden in the grains of a specimen.

So fast forward 15-plus years, and for me, the transformation of Pete from FOMS lecturer and letter-writer to an actual physical person took place. In those days, a visit to the Sterling Hill Mining Museum and a chat with Dick Hauck were part of Pete's normal itinerary while in the area to conduct research, lecture, or attend the Franklin mineral shows. And yes, the SHMM mailbox was also treated to a plethora of white and manila envelopes addressed from the Smithsonian. April of 1994 found me working in the gift shop during one of Pete's visits. Being the talkative person Pete is, we found ourselves conversing over the gift shop counter. You see, as dedicated to science as Pete was, finding time to exercise his charm and elicit a smile from people, women in particular, was an aptitude he honed and used with great skill throughout his life. How grateful I am for that experience, as on that day a true and treasured friendship began to crystallize between us. So, from

Pete Dunn in lecture mode, date and place unknown.

April of 1994 until November of 2017, a total of 23 years, Pete and I were close friends. He watched my two children, Charlie and Ellen, grow into adulthood, an experience he cherished as he had no children of his own. Pete was the mentoring "Dutch Uncle" to the kids, who were 8 and 6 years old when they first met him. In typical Pete style, his visits to the house involved teaching Charlie and Ellen practical lessons in life, such as how to use and sharpen a knife, how to properly wash one's hands to avoid exposure to germs, and how to cover one's mouth when coughing or sneezing so as not to spread germs. As the kids matured, lessons on the importance of using a thesaurus or consulting Strunk & White while writing were emphasized. An extensive lecture series on how to invest one's allowance and earnings in mutual funds and a Roth IRA ran for several years. We were fortunate to have Pete as a house guest many times over those 23 years, especially when he was gathering information for his historical treatise. Pete's typical dinner request was for a home-cooked meatloaf dinner, mashed potatoes, and a fresh glass of apple cider, followed by chocolate chip cookies for dessert. I was only too pleased to provide these meals for him.



Pete Dunn, outdoors in his ever-popular squid hat.

I feel remiss in cutting short on relaying all the charming and endearing stories of Pete's kindnesses to me and my family, though please keep in mind I am available to meet over a glass of red wine and can elaborate further at any time. I would like to continue now to share, in a broader sense, how I feel Pete impacted the people around him.

So let's go back in time to the mineral community of the '70s, '80s, '90s, and early 2000s. Why were all these men and women of science, along with mineral collectors, coming to Jim's Gems or the Sterling Hill Mining Museum? In large part it was because the story of mineralogy at Franklin and Sterling Hill was evolving in real time through the works of Pete J. Dunn. It was an exciting time, full of new discoveries, all duly recorded in a cascade of new publications in the scientific literature. Miners and collectors with sharp eyes brought unique specimens to the attention of Dr. Dunn, who zoomed in and gave the specimens meaning and a place in science. Dr. Dunn, too, searched out specimens that he thought might be important pieces to the enduring puzzle of Franklin/Sterling Hill.

I probably didn't need to state some of the above, as most of you who are reading this experienced those times. However, I think it has been left to me, as a person who was part of Pete's life *after* his tenure as a research scientist at the Smithsonian, to fill in the final pages of Pete's story. Pete did bring home his finely engineered petrographic microscope, the same instrument that he used to investigate the many dozens of new mineral species that he described. And he did conduct research on minerals for a number of years in the comfort of his home. Nevertheless, I did not expect to find any hidden treasure of unpublished papers or scientific ponderings in his home office. Pete was extremely protective of his writing and never believed in publishing a paper that wasn't backed by careful scientific data. I also feel he would not leave any incomplete science sitting around for people to stumble upon.

Retirement allowed Pete to transfer his passion for learning about minerals to learning about trees for a number of years. At the onset I thought he would produce a book on the subject. Boxes which once housed mineral specimens in his house were now filled with nuts, twigs, and leaves. Detailed observations were recorded and journals kept. But as time marched on, Pete started to embrace taking life slower and made great efforts to seek out the company of his fellow man. With the need to publish behind him, people were no longer an annoying distraction to his science. Pete could be found most evenings sitting by the river and reading *The Washington Post*. He used that time to chat with passersby, sharing information about events in the park that he patrolled as a volunteer. He periodically held show-and-tell sessions with his meteorites or fluorescent minerals. The minerals may have received the oohs and ahs, but I think it was the chuckles elicited by Pete's yellow rubber chicken or pink squid hat that provided him the most pleasure. The park was a place of contentment for Pete as he watched children play, families interact as they gathered for an afternoon barbecue, or folks dance as they listened to music. Pete had ten glorious years of retirement, and he felt content at the end of each day. He may no longer have been contributing to science in a giant way, but he continued to have a huge impact on the people in his neighborhood. Pete made it a point to smile and say hi to folks he encountered during the course of each day. What a wonderful way to make the world a better place! When I needed to share the news of Pete's passing, it was endearing to see a tear come to people's eyes and smile as they related how Pete had enriched their lives.

I think Pete would look at his life as a victory, a term he used to describe many of his days. For me, I will miss speaking with him on the phone, something we did daily. When it was necessary to leave a message, Pete typically uttered, "I will speak to you when we're a little older."

You Will Be You: The Wisdom of Pete Dunn

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Pete Dunn was a man of many facets and apparent contradictions. He was a serious mineralogist, yet he loved to share off-color jokes and stories via e-mail. He could be temperamental, but he loved children. When he retired from the Smithsonian, he declined to retire as an emeritus scientist, which would have allowed him to keep his office and have access to the laboratory; yet he volunteered to staff the visitor's desk at the very same museum. He was a challenge to my vocabulary, as it was necessary to use words like "enigmatic" and "mercurial" to describe him.

I do not remember exactly when I met Pete, but it had to be in 1998 or 1999, around the time I was negotiating with Steven Phillips to reopen the Trotter property for collecting. Soon after meeting Pete I had some mineralogy questions to ask, so I wrote to him care of the Smithsonian. He answered; patiently, I must point out, because at that time in my life, I knew just enough about mineralogy to be dangerous. Yet, he gave me a chance. I learned from my mistakes and pressed on.

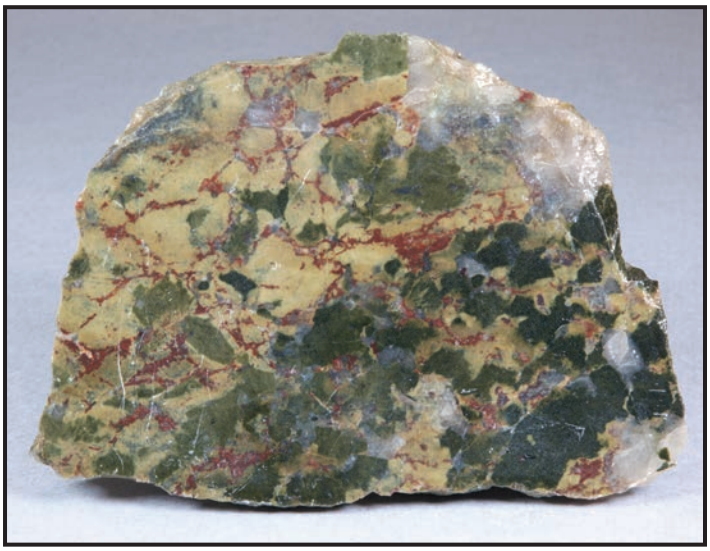
Eventually, he invited me to visit him at the Smithsonian. I considered that an honor and a privilege. As time progressed we would correspond, and while I was frustrated with his utter reluctance to discuss the details of Franklin and Sterling Hill minerals, I began to appreciate the wisdom he shared. He did not teach me about the details of mineralogy so much as he taught me about the philosophy of being a scientist. For example, he liked to say, "Take credit for what you do, and don't take credit for what you didn't do." That simple statement would serve me well in the future as I collaborated with others. He had a vigorous distaste for what he called "chatter" and "arm-waving"; that is, he had no time for idle discussion or going around in circles with verbal pontificating or Internet news group debates. Rather, as he often said, "Publish it and discuss it in the literature." I must admit that I have not always adhered to this advice, but I have never forgotten it either. He shared a number of other basic, but very practical tidbits of wisdom, such as how much mineral sample is needed for each kind of analysis; not to release your research in fragments, but rather explore a topic in every aspect and publish a single and comprehensive document on the subject; he explained the inner workings of the International Mineralogical Association, which surprisingly is a mystery to many geologists and mineralogists.

However, he gave me the best advice of all when I decided that I wanted to leave my career in information systems and go back to school to become a mineralogist. During that period, I spoke with him about what I might hope to accomplish, whether it would be worth the financial sacrifice and the difficulty of returning to school in one's forties. I also expressed some self-doubt, wondering if I could live up to the standards and accomplishments of my role models and mentors. His response was brief and perfect, and I remember it verbatim to this day:

"Don't try to imitate someone; you're not going to be Charles Palache or Joe Mandarino or anybody else. You have your own talents and your own interests and you will find your niche. You're going to be you; that's unique and it's going to be great." Armed with that insight, I sold my house, moved across the country to study with my new graduate advisor, and graduated with a Master of Science in Geology in 2008.

Fast forward to recent days. I had a busy year in 2017, in terms of teaching classes and presenting papers, and I was overdue for keeping in touch with Pete. I put off contacting him until finally, one day in November, I decided I would call him the following weekend. However, that was not to be—I received an e-mail on the Wednesday before I was going to call him that he had passed away unexpectedly after a brief illness. I was stunned as well as saddened at the loss of a friend, but more than that, I felt a bit guilty. I hadn't spoken with him in nearly a year and had been putting it off, thinking that there is always plenty of time. Sometimes I forget that time is the fire in which we burn, and any one of us can leave this realm at any moment.

I wanted to talk to him about a number of things and seek more of his wisdom, something that will never happen now. At least I can remember the knowledge Pete gave me and try to keep following his advice ... and I will always keep 3×5 note cards with reminders on them, a habit I learned from him. I also take comfort in the fact that he achieved the only kind of immortality we can really hope for: He left behind a rich body of literature that will remain significant for as long as there is a science of mineralogy.



Two specimens of petedunnite, a pyroxene of ideal composition $CaZnSi_2O_6$. The top photo shows the only verified specimen of petedunnite crystals. The crystals, 1.5-2 cm long, are dark green where unaltered; the green color is due to iron substituting as an impurity element for zinc. This specimen was no. M-115 in the collection of Pete Dunn and is now in the Franklin Mineral Museum. It measures 3.0 × 2.4 × 2.2 inches (7.5 × 6 × 5.5 cm). The bottom photo, a visually attractive, polished slab of petedunnite, belies Dr. Dunn's description of the species as "a very boring mineral." The dark green material is unaltered petedunnite; paler green to yellowish-tan colors indicate progressive alteration. The glassy mineral at upper right is quartz. The irregular, red veinlets are probably pigmented by hematite that formed from iron released into solution during hydrothermal alteration. This slab, in the Mark Boyer collection, measures 4 inches (10 cm) across. It was sawn from one of the scores of petedunnite stones discovered on Boyer's property from roadfill that had been taken from the Buckwheat Dump in the 1950s. Petedunnite has been found at the Taylor Road Dump, the Trotter Dump, and the Mill Site as well. *Earl R. Verbeek photos*.