



to promote, support, protect and expand the collection of mineral specimens and to further the recognition of the scientific, economic and aesthetic value of minerals and collecting mineral specimens.

BULLETIN OF FRIENDS OF MINERALOGY

Volume 46, No. 4

ISSN 2471-7932

September 2016

Inside This Issue

President's Message	1-2
Officers	3
Bylaws Approved	4
Notes from General Meeting	4-5
Mineral Show Dates	6
SE Micro Mineral Symposium	7
Books	8-9
News from Over the Pond	10-11
Awards in Denver	12
Barriers to Field Collecting	13-17
Chapter Updates	18
In Memoriam	19
Our Affiliates	20



President's Message By Clyde Spencer

Dear Friends,
New Vice-President: After a week open to discussion of the election of Mark Jacobson to the vacant position of vice-president, I asked the Board of Directors to vote to endorse his election. The voting period was open-ended because there have been some past issues in getting enough Directors to respond by email. However, after more than a quorum had voted, and there was

no chance of the results being changed by any additional votes, I closed the voting and declared Mark elected. I provided the Board with the results of who voted and how they voted, which would have been the case were they voting in an open business meeting. Immediately after the results were announced by email on July 26th, I received a request from Alex Schauss to indicate that he wanted the results to reflect that he abstained from voting. I told him that I would do so in the next (this) newsletter. While, initially, I only provided the results to the Board, because Alex is adamant that he wants his vote known, I'm providing the amended results below for the general membership:

DIRECTOR

Term expires 2017:

Allan Young;
Gloria Staebler;
Nelson Shaffer;
Alex Schauss;

VOTE

YES
YES
DID NOT VOTE
DID NOT VOTE
ABSTAIN

Term expires 2018:

Clyde Spencer;
Jim Etzwiler;
James Houran;
Sue Liebetrau;

ABSTAIN
YES
NO
YES

Term expires 2019:

Bob Meyer,
Virgil Lueth;
Mark Jacobson;
Linda Smith,

DID NOT VOTE
YES
ABSTAIN
YES

CHAPTER REPRESENTATIVES:

COLORADO CHAPTER: Jeff Self;
MIDWEST CHAPTER: Randy Marsh;
PACIFIC NORTHWEST CHAPTER: Bruce Kelley;
PENNSYLVANIA CHAPTER: Joe Marchesani;
SOUTHERN CALIFORNIA CHAPTER: Dr. Don Buchanan;
MISSISSIPPI VALLEY CHAPTER: Larry Nuelle;
NEW JERSEY CHAPTER: KC Dalby;

DID NOT VOTE
YES
YES
YES
YES
DID NOT VOTE
YES

To summarize the above, there were 11 “Yes” votes, 1 “No” vote, and 3 abstentions (me, Mark, and Alex); there were 4 directors who did not vote.

The highlight of the recent Denver show was the general membership meeting. Fifteen people showed up, basically to discuss the future of FM. I handled it like a Committee of the Whole, rather than a business meeting. No actions were taken. The minutes were recorded by Allan Young as secretary *pro tempore*, and are printed below. Unfortunately, some directors and members, who I know were at the show, didn't show up for this important meeting.

Our newsletter editor, Beth Heesacker, wasn't able to make it to Denver. However, prior to the meeting, there was an exchange of email amongst her and the officers. I particularly liked what she wrote about how she views FM. “My initial thought on what the goal of the FM is that it is something like strands of glue. We provide connections. By putting chapter reports into the newsletter we share ideas that would not be shared otherwise. Information on what one chapter is doing might spark interest in other chapters doing the same or similar projects... That is how I think of FM vs the local chapters. No one is in isolation but we are connected in order to be better than we are as individuals.”

New VP Mark Jacobson took the lead on coordinating judging the displays at Denver. He presented the results at the Saturday night banquet. His report can be found below.

The American Geological Institute, of which FM is a member, is having a meeting in Denver the week **after** the mineral show. I can't afford the time and money to fly back. However, Mark Jacobson and Gloria Staebler have graciously agreed to partake of the free breakfast and attend the meeting. Maybe we can get a report from one of them in the next newsletter.

Kenton Dalby (KC), president of the New Jersey Chapter, has been trying to setup a website hosted by Mindat. It has been moving slowly. The Executive Committee has been discussing options to using AGI to host the National website. I spoke with Jolyon Ralph at the Denver show and he promised me he would get in touch with KC.

There will be a number of positions on the Board of Directors that need to be filled during the February 2017 business meeting. The former bylaws state that a Nominating Committee should have been elected at the 2016 business meeting; however, it didn't happen. The recently approved, amended bylaws grant me the authority now to appoint that committee of three. I'd appreciate it if some of you would volunteer to serve on the committee. It is important that we get capable people serving in leadership roles. Please contact me if you are willing to serve.

Virgil Lueth (with help from Allan Young) has offered to replace Julian Gray (who has asked to step down) as TGMS seminar chairman in 2018. I shall shortly ask the Board to endorse Virgil's appointment. As I recollect, Julian told me he has served as chairman for 12 years. It looks like he will be replaced by a committee of at least four, as Virgil has told me that he expects support from MSA and TGMS.

Lastly, I feel a bit like a second-class citizen. FM members who have been members for a long time have some very classy, professional looking badges to wear. Apparently, in the past, part of the dues paid by members went to having personal badges made. At some point in the past, the practice stopped. So, our treasury continues to grow, but somewhat at the expense of new members who don't get the old time perk. Maybe they “Don't need no Stinkin' Baadge.” What do you think? Should we start making and distributing badges again?

NATIONAL OFFICERS

PRESIDENT: Clyde Spencer, 1858 Robin Hood Drive, Fairborn, OH 45324; c_spencer123@att.net

VICE PRESIDENT: Mark Jacobson, 1714 S. Clarkson Street, Denver, CO 80210,
markivanjacobson@gmail.com

SECRETARY: Sue Liebetrau, 11822 SW Lodi Court, Powell Butte, OR 97753; liebetrauam@msn.com

TREASURER: Gloria Staebler, PO Box 234, Arvada, CO 80001; gastaebler@aol.com

WEBMASTER: Jim Etzwiler, 19011 312th Ave NE, Duvall, WA 98019; kd7bat@arrl.net

EDITOR: Beth Heesacker, 4145 NW Heesacker Rd., Forest Grove, OR 97116, heesacker@coho.net

NATIONAL BOARD OF DIRECTORS

Term expires 2017:

Allan Young; allanyoung@msn.com

Gloria Staebler; gastaebler@aol.com

Nelson Shaffer; shaffern@indiana.edu

Alex Schauss; alex@aibmr.com

Term expires 2018:

Clyde Spencer; c_spencer123@att.net

Jim Etzwiler; kd7bat@arrl.net

James Houran; jim_houran@yahoo.com

Sue Liebetrau; liebetrauam@msn.com

Term expires 2019:

Bob Meyer, pyrite111@hotmail.com

Virgil Lueth; vwluth@nmt.edu

Mark Jacobson; markivanjacobson@gmail.com

Linda Smith, vanegas3@charter.net

CHAPTER REPRESENTATIVES (ALSO BOARD MEMBERS)

COLORADO CHAPTER: Jeff Self; selfawareminerals@gmail.com

MIDWEST CHAPTER: Randy Marsh; marsh.rg@pg.com

PACIFIC NORTHWEST CHAPTER: Bruce Kelley; bruce.kelley@gmail.com

PENNSYLVANIA CHAPTER: Joe Marchesani; Jmarch06@comcast.net

SOUTHERN CALIFORNIA CHAPTER: Dr. Don Buchanan; dbuch7326@aol.com

MISSISSIPPI VALLEY CHAPTER: Larry Nuelle; LNuelle@gmail.com

NEW JERSEY CHAPTER: KC Dalby; fluoriteguy@gmail.com

EX-OFFICIO BOARD MEMBERS

ROCKS & MINERALS: Marie Huizing; rocksandminerals@fuse.net

THE MINERALOGICAL RECORD: Wendell Wilson; minrecord@comcast.net

MINERALOGICAL SOCIETY OF AMERICA: Alex Speer; j_a_speer@minsocam.org

Mindat: Jolyon Ralph; jolyon@mindat.org

MINERALOGICAL ASSOCIATION OF CANADA: office@mineralogicalassociation.ca

**Deadline for the next FM Newsletter is
December 20, 2016**



8/11/2016

Dear Friends;

The voting for the amended FM bylaws is now closed. Virgil Lueth informed me that it has been past practice to accept the total number of general-membership email votes cast as a de facto quorum. I am observing that past practice.

There were 43 valid votes cast and the amended bylaws have been passed unanimously.

Respectfully,
Clyde Spencer, President
Friends of Mineralogy

~~~~~

### **Notes from General Membership Meeting of Friends of Mineralogy September 17, 2016**

The meeting was called to order by Clyde Spencer at 11:00 am with 15 persons in attendance.

Clyde mentioned that hosting the annual FM general membership and board meeting at the Inn Suites (Hotel Tucson City Center) may be problematic as parking may not be available due to the sale of the lot that was previously used for parking. Shuttle service is being planned for this venue. Allan Young suggested looking into finding a room at the Convention Center for the Board meeting on Saturday morning. Clyde asked for contact information for Tucson Show Committee members so that he could investigate this possibility.

Clyde prefaced the remainder of the meeting by asking those present for their ideas regarding the direction that FM should go in the future. He then read a portion of an email from Beth Heesacker where she likened the role of the National organization to "strands of glue."

Mark Jacobson stated that he believed that the original goals of FM have largely been met, and that the organization has narrowed the gap between amateurs and professionals. He believes that we should focus on collecting localities (and challenges to field collecting), "orphan" museums (those with no curator), the need for volunteers and the encouragement and training of speakers and writers.

Mark also discussed the need to preserve books and publications on minerals. Some paper copies do not need to be preserved as they are available digitally, but those that are not need to find a home so that they are not thrown away. Mark stated that Bruce Keller with the CSM Museum has created a network whereby homes can be found for old publications.

Virgil Lueth suggested that we could serve as a clearing house to provide information on who to contact if one has mineral-related books to donate. However, one must keep in mind that, as an organization, we are manpower constrained.

Clyde mentioned that Julian Gray has decided to resign as speaker chair for the TGMS Symposium, and that a replacement will be needed. He also mentioned that the TGMS show committee has asked for speaker line-up and abstracts sooner than in the past. It was stated that FM has not had much help from the other organizations involved in the symposium (MSA and TGMS) in landing speakers. One solution would be to abdicate our responsibility in this area, and let the other two organizations fill this role. Virgil suggested that we should ask the other two organizations to team up with FM to fill the speaker slots.

The theme for the 2018 TGMS is "Crystals and Crystal Forms."

Virgil also mentioned the need to support other symposiums (that may not be affiliated with FM).

The next subject that was discussed was involvement of MSHA in small mineral collecting operations. Clyde discussed one such example in South Dakota, and stated that MSHA has been going after even one-man operations, which may not be authorized under their present regulations. Allan cautioned the group that we need to be careful with this issue as it concerns people's lives. Virgil suggested that we assemble documents (*i.e.* regulations) that govern collecting so that we can distribute to our members and other interested parties. Clyde described his local chapter's safety training program in Ohio and suggested that similar training be undertaken in the West. Allan gave a brief description of the BLM regulations concerning mineral collecting. Basically, BLM is less restrictive than the USFS.

Nelson mentioned that AGI has a lobbyist in Washington, D.C. and suggested that we try to get a legislator to help us in this regard. He stated that we need to promote mineral collecting before the collecting areas all disappear. He said that a "save the minerals" effort was needed and that we should start a letter writing campaign to legislators.

It was brought up that private landowners who previously allowed collecting on their land are now refusing to allow access because of liability concerns. It was suggested that we provide a list of "friendly" landowners.

The meeting was adjourned at approximately noon.

Respectfully,

Allan Young, *Secretary pro tempore*

~~~~~



Dogtooth Calcite from the Marblehead quarry in Northern Ohio (near Sandusky on Lake Erie). It was collected in 2015.
Dimensions - 5x2x3 inches
Tom Bolka specimen

Mineral Show Dates

The Munich Show (Mineralientage München), World of Minerals, Gems & Fossils, Munich, Germany October 28-30

With over 1,250 exhibitors, the Munich Show is Europe's biggest show for minerals, fossils and precious stones. Between dealer booths and tables and special exhibits on 500,000 square feet of exhibition space, one of the highlights for over 40,000 people that attend the show in the Mineral Pavilion. Many finds from around the world collected during the spring, summer, and early fall first make their first appearance at this show.

This 2016 show's theme is "Hidden Treasures." The show will have a special exhibit of various museum treasures rarely seen by collectors or the public, since museums only display about 5% of their inventory on average.

Considered one of the premier mineral shows in the world, the city is located within a few hours travel time from almost all European countries.

For more information visit the show's website: www.mineralworldmunich.com

37th Annual New Mexico Mineral Symposium November 12 - 13, 2016

*Macey Center
New Mexico Institute of Mining & Technology
Socorro, New Mexico*

Featured Speaker:

John Cornish - *Upside Down And In The Future, Mining Tasmania's Adelaide Mine*

The New Mexico Mineral Symposium provides a forum for both professionals and amateurs interested in mineralogy. The meeting will allow all to share their cumulative knowledge of mineral occurrences and provide stimulus for mineralogical studies and new mineral discoveries. In addition, the informal atmosphere allows for intimate discussions among all interested in mineralogy and associated fields.



The symposium will consist of a day and a half of formal papers presented in 30-minute time blocks. Papers will tend to focus on mineral occurrences from New Mexico and adjacent states, including Mexico. A few selected papers may be presented from other parts of the world. An informal pre-symposium social and tailgating session is held at local motels beginning on Friday, November 11, 2016 and last through the weekend. A field trip to the Copper Flat deposit, near Truth or Consequences is also planned for Friday.

A silent auction, sponsored by the Albuquerque Gem and Mineral Club for the benefit of the New Mexico Bureau of Geology Mineral Museum will be held on Sunday afternoon, November 13. The auction is open to the public and all interested may buy or sell. More information is available at the symposium.

See: <https://geoinfo.nmt.edu/museum/minsymp/home.cfm>



Report on the 3rd Annual Southeastern Micro Mineral Symposium

Our group has started meeting at Troy University between the Summer and Fall sessions for a very informal micro mineral "gathering". I supply the meeting room (my classroom) and the attendees bring snacks, scopes and give-away minerals. Talks, demonstrations and discussions are provided by the members.

This year we assembled on Thursday afternoon, July 28. Most of the group arrived by mid-afternoon and were busy looking at minerals. Henry Barwood gave a short presentation on the minerals that have been found in an eggletonite-rich pegmatite vein recovered at the 3M Big Rock Quarry, Arkansas last spring. This is the type locality for eggletonite. In addition to eggletonite, a completely new mineral species, a manganese niobium silicate has been found in this material. Several members of the Southeastern Micro Mineral group collected specimens on this trip and additional material was on the give-away table at this meeting. We all had dinner at Hooks Barbeque and then returned to look at more material.

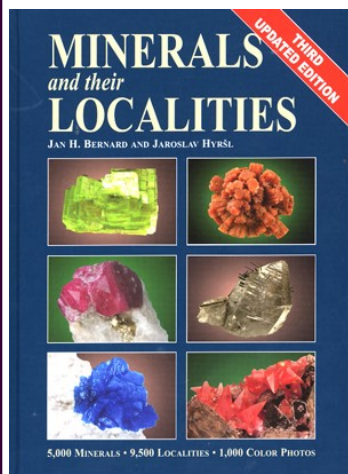
Friday, July 29, we got underway around 9 AM. One of the main activities at this meeting is having specimens identified by the other attendees who have experience with the various localities we collect from. Lots of spirited discussions ensue! At 10 Mike Howard gave a talk on the researcher/collectors who have been active at Magnet Cove over the years. It was truly a walk down memory lane and enjoyed by everyone. Mike also distributed digital copies of his book: Magnet Cove, Hot Spring County, Arkansas: *Collector and Professional Observations, Stories and Photographs of Minerals from this Classic Mineral Collecting Locality*. By Art Smith and Mike Howard. This is a monumental work that finished the extended paper begun by the late Art Smith. Mike will make it available, free of charge on his site: <http://www.rockhoundingar.com/>

Friday afternoon Jim Stoops set up and demonstrated his stacking method for imaging minerals. Many of our group are experimenting with various methods of imaging and stacking mineral photographs. Jim's approach is very interesting. He uses a tripod to mount a camera with a telephoto lens and microscope objective in a "tube" configuration. His camera is linked to his computer using a software package from the camera manufacturer. He steadies the specimen holder using stacking tins filled with sand, and uses an old zoom lens as a micrometer to elevate and lower the specimen as he is shooting his stack. It is quite a portable rig and produces excellent images. We were all intrigued by his use of the old lens as a micrometer. Most of the group had dinner at a local seafood restaurant.

Saturday, July 30, we continued examining specimens and a number of unusual minerals were spotted in the syenite give-away material. By late afternoon a few people pulled out to head home, but most of us stayed and had dinner at Julia's restaurant, which is one of the best places to eat in Troy. The conference broke up around 8 PM. In attendance were: Henry Barwood, Tim Barnes, Ed O'Dell, Steve Bonney, Bob Stevens, Bob Brady, Mike Howard, Steve Stuart, John Whatley and Jim Stoops. Three "regulars" could not make the meeting this year and were missed.



Fluorite from Mundy's Landing, an old abandoned fluorite mine in Woodford County Kentucky. Collected in 2012 .
Dimensions - 7x5x3 inches.
Tom Bolka specimen



Book review - Minerals and their Localities, 3rd edition, 2015

Minerals and their Localities, 3rd edition, 2015.

Authors: Jan H. Bernard and Jaroslav Hyršl.

Granit Publishing House, Prague, Czech Republic, pp. 912, 1025 color photos, 170 x 240 mm, hardcover, ISBN 9788072960989, \$150.

The first edition of this standard reference book appeared in 2004. Back then it was an instant hit, because it filled a gap in the mineralogical literature: a single, up to date book on all known minerals and their localities. This is THE book you will go back to time and time again, because it offers a condensed overview of almost all minerals known. For every mineral, many important properties are mentioned briefly, with special emphasis on the data that are of importance to mineral collectors. The most important classic AND more recent localities, the dimensions of the crystals found there, and the geological environment it occurs in are mentioned for most species; data you do not always find in other reference works.

Compared to the first edition, the looks of the book have not changed much. The descriptions are still quite compact, but that did not prevent the number of pages to increase from 808 to 912. It actually makes sense: about 830 new minerals have been described since 2004. The color code on the edges of the pages are still there and make it easy and fast to find a specific mineral. Also, important is that a lot of information has been added or updated for most of the "older" minerals, especially regarding new localities or other important data (Hyršl, 2016, pers. comm.)

In this latest edition no less than 5,030 minerals, all valid species according to the latest IMA standards (situation of August 2015), have been included. Even though the paper used for this edition is slightly thinner than previous editions, the huge increase in minerals translates to a heavier book: 2.5kg for this edition, being about 200g heavier than the first version. The number of color photos on the other hand has slightly decreased: 1,025 in 2015 compared to 1,035 in 2004. The good thing is almost all pictures are new; only 5 photos of the first edition have not been replaced.

The dimensions of the photos (7.0 by 4.5 cm) and the book are still the same (17.0 by 24.0 cm). On the other hand, the number of localities mentioned in this third edition has increased considerably: from 8,500 to 9,500. This also means mineral collectors have been very active the last 11 years! :-)

The final good news: the price for this edition (\$150) is almost equal to what it was when the first edition became available (\$145 in 2004). Considering the number of pages has increased by 13%, and general costs have gone up as well since 2004, you're getting a better deal for such a high quality publication than ever before!

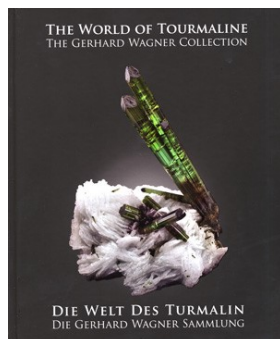
Herwig Pelckmans, San Mateo, July 2016.

References:

1st edition: http://rruff.info/doclib/cm/vol43/CM43_1435.pdf

Available from Min Rec: <http://www.minrec.org/bookdetail.asp?id=132>

More New Books and Others of Note



The World of Tourmaline

by Mark Mauthner (photographer), Federico Pezzotta, Daniel Trinchillo, Gerhard Wagner, Jim Walker, Mary Fong-Walker. Hardcover, 264 pages
2015, Published by Ivy Press, Dallas, Dimensions 9.5 x 11.2 (inches), Price \$50.00

The World of Tourmaline is a visual feast for lovers of tourmaline, and a gorgeous documentation of what is perhaps the finest collection of tourmaline specimens ever assembled by a private collector. In the first few pages, Gerhard Wagner, a collector from Germany, tells the story of how he was introduced to minerals and decided to specialize in one of the most popular gem species. What follows thereafter is a photographic tour de

force by Mark Mauthner of over 360 superb specimens, some of them shown from two different angles, many full-page size, in stunningly high-quality reproduction. "Image specialist" Stephanie Hubbs was employed to compare photos and proofs to the actual specimens in order to assure absolutely accurate color fidelity.

This is a coffee-table book of the highest quality, and a valuable documentation of a great collection, destined to be sold at auction soon. (Parallel text in English and German)

Available from Min Rec: <http://www.minrec.org/bookdetail.asp?id=126>

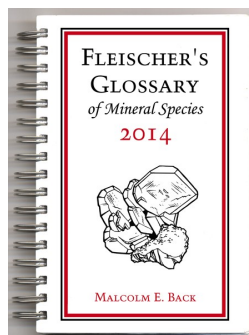


The Mineral Art of Hildegard Könighofer

Master Mineral Artist Hildegard Könighofer's beautiful new, 224-page book on her incredible mineral paintings has just come off the press. Filled with prints of over 150 of her original-sized paintings this book is a soon-to-be classic.

Price: \$170.00

Available from BlueCap Productions: <http://shop.bluecapproductions.com/product.sc?productId=57&categoryId=21>



Glossary of Mineral Species 2014 by Malcolm Back

Usually we publish a new edition of Fleischer's venerable *Glossary of Mineral Species* every four years. We are excited to announce that, after more than five years, the new 2014 eleventh edition is finally printed and ready to mail! A huge amount of work goes into bringing the file of all known and IMA-approved minerals up to date, as well as updating the changes to all the preexisting species and to all of the mineral groups listed. This new edition, at 434 pages, is 26% larger than the 2008 edition, and lists 4,684 mineral species with formulas, type localities, crystal systems, relationships, references and other data.

It's kind of amazing that this book still sells so well, in this modern age of the Internet. But the Mineralogical Record staff uses it all the time. When we need to check a mineral it takes mere seconds to grab the *Glossary* off the shelf and flip to the page, before our computer has even booted up. And there are check-boxes to use for annotating your own collection in the book. This is a reference that every mineral person should have at hand. The new edition, like the previous one, still comes with a wire-O binding that lays flat on the table, and a tough leatherette softcover.

Price \$34.00

Available from Min Rec: <http://www.mineralogicalrecord.com/bookdetail.asp?id=113>

News from Over the Pond by Pete Ward



Fluorite mining in Weardale produced vast amounts of specimens when mining was happening, but last mines shut down in the early 1990's - and no specimens have come out since. The only source has been Rogerley - and really only one colour green. Historically the best specimens came from 'flats' in the limestone - huge cavities, mostly clay filled, containing abundant specimens. Three mines were known for these flats - Rotherhope Fell, Greenlaws and Boltsburn. Rotherhope and Boltsburn are inaccessible - both mines are under deep water. Parts of Boltsburn ARE accessible, but not the main fluorite producing flats, from which the gemmy purple specimens came. Greenlaws is the only mine not under water, in which the flats can be accessed. I started opening Greenlaws in 2009, with a team of volunteers. I funded the entire dig, (spending over £100,000) and when we finally broke into the first flats, after 4 years of digging, and 250 feet of shaft, two members of the team tried to take over the dig and stole the money we had made from selling a few specimens.. Everything ground to a halt, and after much discussion these people were finally removed from the scene after they trashed the underground workings, electrics, winch and other equipment. We started work again, with a brand new lease from the landowner. The two retirees then managed to get involved with a dig at Boltsburn, and promptly started selling specimens from there, claiming they owned and ran Boltsburn - which they patently didn't. One even claims to be a retired West Cumbrian miner - he would not know what a rock drill was, let alone how to bore and fire a face.

These people gathered a group of rather dubious supporters around them, and tried to create more problems for Greenlaws. This basically was a stream of complaints to both the planners, and to the mines department. These authorities have grown sick and tired of the complaints, and after discussions with us, decided to look more closely at the commercial aspects of mineral collecting. Our Project has always had a Constitution that clearly states it is a non commercial dig, and will never make a profit - all monies earned from sale of specimens will go back into the dig - researching social history, mineralogy, geochemistry, and so on. The planners are now trying to work out what actually constitutes commercial mining - removal of 1kg of rock, 100kg of rock, or 100,000 tonnes of rock. Or is selling £100 worth of crystals commercial? The problem in the UK at the moment is that there is no definition of this 'commercial' aspect. Even Rogerley, who openly admit to being commercial, do not have planning permission. Add to this mix of uncertainty the fact that the new Mines Regulations Act 2014 has just taken effect, and you have a recipe for closure of every specimen producing operation. The sheer cost of compliance is mind boggling.

So... the current situation in Weardale is that exploration by collectors for new sources of specimens has stopped. All digs have stopped. Greenlaws is putting together a mining plan, and will hopefully be up and running again when this is approved. I understand Rogerley is in the same position. Boltsburn is also in a similar state, with considerable improvements needed. The next 12 months will be lean months for collecting in the north of England, and it may be that spiralling compliance costs will prevent any of these digs from re-starting: The end of fluorite specimen production from Weardale; It is early days, but my gut feeling is that only very well financed and professionally run digs will survive - so they will need to sell specimens at a high price to even break even. Most of this uncertainty brought about because of the jealousy and greed of one grubby little individual from West Cumbria, who with a bunch of his cronies has managed to capture the attention of Regional planning authorities, and Her Majesty's Inspectorate of Mines. We now know that this attention is spreading throughout the country, and Cornish mines are currently being looked at - together with digs in Wales, Yorkshire, and Derbyshire.

This is the explanation on the Collectors page:

As all of you will know, there has been a strong element of jealousy and greed involving mineral collecting and mine digs, which peaked with the Greenlaws Project. As a result, some jealous individuals chose to make 'reports' to both the Durham planning department, and to the HSE, complaining about Greenlaws. I should explain that the 2014 Mines Regulations Act joined the old Mines Department with HSE to form a new body, with a new set of rules - the 2014 Act. The effect of these childish 'complaints' was to create strong awareness of both the commercial aspects of minerals (highlighted by the American involvement in Rogerley), and for HSE it made them aware that a lot of people were messing around underground. The new Act covers ALL mines, whether working, abandoned, tourist or otherwise.

HSE work closely with the planners, and the stream of childish complaints about Greenlaws prompted both Departments to start investigating the entire mineral collecting scene. They monitored social media sites for over a year, collecting information about minerals, dealers, shows, and those involved at the sharp end, like us. HSE began to realise that thousands of people enjoyed this hobby of mine exploring. The trouble is – HSE are bound by the 2014 Act to enforce the rules – which cover abandoned mines.

We were the first to be looked at. We have always had a high social media profile. We have never attempted to hide, or to dig secretly. We have been open with the planners from the start. When we were inspected, we immediately found the HSE to be thoroughly professional. As a mining geologist with 20 years experience working in deep underground gold mines, I was seriously impressed with their attitude to both what we were doing, and to our mine. They stressed from the outset - “We are not here to close you down, we are here to make sure you enjoy what you are doing – safely”. We have had nothing but help and advice from them – and it is clear that our Inspector knows more about mines than I've had hot dinners. These guys are mining professionals before being Civil Servants – and I have a huge amount of respect for them. They are actively helping the Greenlaws Team, and the farm, to keep the Project on the rails.

Their investigations highlighted that Weardale was a hotbed of exploration – and social media was full of pathetic and boastful postings about mining specimens from Boltsburn in particular. We were told in general conversation that a number of other mines in Weardale has been identified and would be inspected in the days and weeks after us – these included Boltsburn, Rogerley, other digs around Rookhope and Allendale – and that Nenthead would then be looked at. A recent meeting in Nenthead highlighted that indeed the net has thrown considerably wider, and inspections are taking place all over the country now. I'm told that groups in Wales are being looked at.

It has been claimed by some rather unintelligent individuals that we reported other digs. To do so would have only made the situation worse, and would have brought us down to the level of the idiots who started this process by reporting Greenlaws. The fact is that this was bound to happen anyway – the 2014 Mines Regulations Act is new legislation, and those responsible for it are still, by their own admission, only starting to get their heads around it. This situation is going to get worse before it gets better – but it should result in those digs which are properly organised and above board, being safely run and administered. They will have a level of oversight by professional mining engineers which was previously never even contemplated. That makes them safe – and with that, everyone becomes a winner.

Mineral collecting in the UK can continue, but those who seek to profit from it by raping old mines and selling their ill gotten booty will be hunted down by the authorities. Landowners are being warned about their responsibilities to properly gate and monitor sites. There will be strong emphasis on properly run, safe digs – there will still be specimens available. Armchair collectors need to realise the sheer cost of recovering these within the rules – and prices will need to reflect that, unfortunately.

I hope this sets the record straight – I'm sure there will be abusive and negative remarks made by those who are not willing to toe the line, or who have been part of the campaign against Greenlaws. I just hope that everyone can now see sense, and work together for what should be a really enjoyable hobby, untainted by the jealousy and greed that have been so apparent recently.

Educational Awards at the Denver Gem and Mineral Show, Denver, Colorado September 16-18, 2016

Two educational awards, for individual and institutional cases were awarded at the Denver Gem and Mineral Show. Three judges, using principles based on rules first written in 1970 and elaborated on in an as yet unpublished article prepared by Si and Ann Frazer and Albert and Sue Liebetrau, chose for the individual award the case describing meteorite types by Anne Black and John Kashuba. The case described several different types of meteorites, how they are defined, recognized or where they are believed to originate. This was supplemented with slabbed examples and color prints of thin sections of these meteorite types. The color photomicrographs lined the back of the case as well as the front of the case along the bottom.

The institutional educational award was made to the Montana Tech Mineral Museum, Butte, Montana where the curator and state geologist is John Metesh and the assistant curator is John Foley. The case documented the sapphire deposits of Montana with a graphic map showing sapphire deposits, a graph showed the economic significance – meaning production – of these deposits, historic pictures from two deposits, two published references describing some of the deposits, examples of the sapphires and best of all a riker mount with examples of sapphire bearings that were used in turn of the century hand watches.



The cases considered in the competition were fossil, mineral, meteorite and lapidary. Ten institutional and eight individual cases were considered. The certificates will be created, framed and mailed to the winners. Further documentation of selection and decision criteria will be following in a later FM national newsletter.

Barriers to Field Collecting – Part III



By Clyde Spencer

The US Department of Agriculture has proposed new rules for collecting fossils on public land – specifically US Forest Service land. The public comment period ended July 22nd, 2013. However, should you be interested, the proposed rules can be found here: <https://www.federalregister.gov/articles/2013/05/23/2013-12173/paleontological-resources-preservation#h-8>.

I don't really have a dog in this fight because I'm not a fossil collector. However, some of the proposed restrictions on collecting-methods and quantities will probably have future implications for mineral collectors. Although I take issue with the stated purpose of "preservation," I'm sympathetic with conservation of resources and minimizing the impact of extraction activities. However, the old adage about the road to Hell being paved with good intentions seems to apply here. I personally feel that the bureaucrats are being overzealous in their restrictions and probably have little first-hand experience with fossil or mineral collecting activities.

One of the proposed discriminators between casual fossil collecting and fossil collecting that requires a permit is whether or not the fossils are considered rare. In the case of most mineral collecting, common rocks and minerals typically have little interest to collectors. I am concerned that, once established, these rules for fossil collecting might be used as a model for restricting the collection of minerals on Forest Service land. So, we must be vigilant that a similar rule requiring a permit to collect 'rare' minerals isn't implemented in the future.

Interestingly, if you want to collect a fossil and put it on a shelf for display, or pack it in a box in the basement, then you don't need a permit for "casual" collecting of said fossil. However, if you intend to do any research on the fossil, then you need a permit to collect it. Woe onto anyone who collects something with no intention of doing more than displaying it, and then later decides to study it, because that would be illegal!

The section of concern that prompted my sarcasm above about research reads as follows:

"The term *non-commercial personal use* as used in the definition of *casual collecting* would clarify the types of use allowed under casual collection, and would mean uses other than for purchase, sale, financial gain, or research. Common invertebrate and plant paleontological resources collected for research purposes is not personal use and would need to be authorized under a permit in accordance with Sections 291.13 through 291.20...."

The collection of a *T. rex* would always require a permit because it is a vertebrate fossil. Strictly speaking, those common fossils that would otherwise be acceptable for casual collecting become *verboden* if money or research are motives (see above). It would be difficult to enforce. However, it is conceivable that if someone collected a fossil under 'casual' circumstances and later noticed that there was something about it that warranted examination, and the person then published his findings, he could be prosecuted because he had not collected the specimen under the permit system and placed it into a repository. I understand that the attempt is to document items of scientific value. However, basically, the rule is ill conceived and poorly written. It will discourage research and publication.

In the case of common fossils, it is unlikely that the fossil bearing locations will ever be truly "depleted." The amount collectable by 'casual collecting' may be decreased, at least temporarily. However, erosion will generally release new material over the years.

The restrictions that should be of greatest concern to mineral collectors are the methods of collecting allowed and the quantity of material allowed to be collected.

The definitions section states:

"The term *negligible disturbance* as used in the definition of *casual collecting* would clarify that casual collection of common invertebrate and plant fossils may only result in little or no change to the land surface and have minimal or no effect on other resources such as cultural resources and protected or endangered species. Disturbance caused by powered and/or large non-powered hand tools would exceed the "negligible" threshold and would no longer be casual collection."

Strictly speaking, it would be impossible to collect anything and comply with the "no change" requirement. "Little" change is ambiguous and probably unrealistic except for picking up loose items lying around on the surface. The proposed rule states that "The authorized officer has discretion to determine what constitutes negligible disturbance." I personally dislike such arbitrary exercise of power without obvious recourse to review. I think that some quantitative measure would be far preferable to a subjective opinion that will vary with the individual.

The definitions section further address disturbance with the specification of tools:

"The term *non-powered hand tools* as used in the definition of *casual collecting* would clarify the types of tools that can be used for the casual collecting of common invertebrate and plant paleontological resources, and would mean small tools that can be readily carried by hand, such as geologic hammers, trowels, or sieves, but not large tools such as **full sized-shovels** or **pick axes**. Larger tools are more likely to create disturbance that is greater than 'negligible.' The tools must not be powered by a motor, engine, or other power source."

It does not directly address sledge-hammers, but considering that "full sized-shovels" are disallowed, I'm certain that anything larger than a regular geologic hammer would be frowned upon in collecting in Forest Service land regardless of what was being collected. Therefore, crow-bars and larger pry-bars are problematic. Clearly, diamond-blade saws and battery-powered drills are prohibited under these rules. What is not addressed is whether or not chisels would be prohibited. Using a geology hammer by itself is not the most effective way to remove fossils or minerals. While these particular regulations are specifically addressing collecting of fossils, I don't see how they are going to handle surface disturbances for mineral collecting differently from fossil collecting. Therefore, the mineral collecting community needs to be concerned about these rule changes.

Again, while these proposed regulations are specific to fossil collecting, there are already similar quantity restrictions on mineral collecting in effect on public lands.

"The term *reasonable amount* as used in the definition of *casual collecting* would quantify the maximum amount of common invertebrate and plant paleontological resources that could be removed from Federal lands. A person may remove up to one gallon of material in volume or 25 pounds in weight, and up to five specimens of each type of fossil per calendar year. If the fossil specimens are contained within rock slabs, the reasonable amount would be limited to a slab that can be hand-carried by one person without the aid of mechanical devices. The authorized officer may modify [i.e. reduce] the amount that is reasonable in order to preserve fossil-bearing locations that may be at risk of being depleted, thereby preserving paleontological resources in accordance with the Act."

Two half-gallon milk cartons worth is not a lot of material to collect considering that the person may have driven hundreds of miles to collect. Since the size slab that can be carried by a 25-year old weight-lifting male is different from what a child or 70-year old woman can carry, does this restriction constitute *de facto* age or gender discrimination? Does the rule allow someone to use a mechanical conveyance, just to make the job easier, as long as the person is capable of lifting the slab? In any event, to collect very large individual fossils will obviously require a permit, and the person doing the labor to extract it won't be able to keep it. So, there is little incentive to go to the effort. It will probably be left to the elements to degrade it and eventually destroy it.

I think that the NFS has a responsibility to properly post any and all lands closed to particular activities. Despite the old rubric about "Ignorance of the law is no excuse," the courts have routinely held that with *mal prohibita* class laws (No Parking, Don't Walk on the Grass), it is necessary to clearly notify the public that activities that would normally be allowed are disallowed. It isn't acceptable to put the onus on the public and make them check with some authority before taking a hike into an area with unknown potential restrictions.



I'm troubled that the world we live in seems to be getting more restricted. We are being told by know-nothing bureaucrats what we can and cannot do. Our National Forests are increasingly being managed for biological and environmental preservation instead of multiple uses. Mining is usually discouraged. Even lumbering is discouraged! Former mining districts have been withdrawn as Wilderness Areas and the roads have been gated or bulldozed. Unless you are comfortable with the idea of public lands being administered like a National Park or open-air zoo where you are told where you can drive and walk, it is necessary to start pushing back on the bureaucrats who justify their salaries by making more rules.

Barriers to Field Collecting – Part IV



By Clyde Spencer

As you may recollect, in three previous newsletters I talked about some of the problems that the mineral-collecting community encounters in trying to gain access to collecting localities. I didn't receive any responses, so I'll have to go this alone.

I don't have easy solutions for all the problems except to note that the solutions are primarily political. To that end, mineral collectors need to be organized and proactive. It would help to educate our legislators and increase the number of collectors (*i.e.* voters) who are concerned about the trends over the last few decades. It would also help if the public were educated about the role that mining plays in providing a comfortable, technologically advanced lifestyle. Perhaps that would help to put things in perspective and return a level of sanity that seems to be lacking in laws and regulations being passed.

Political power comes from numbers. So, FM might consider allying itself with other groups with similar concerns, such as off-highway vehicle enthusiasts and hunters (even AARP!), or at least contribute to law suits brought by organizations when a favorable decision would provide mineral collectors greater access to actual and potential collecting sites on public lands. However, because Friends of Mineralogy is a 503 (C) non-profit organization, we have to be careful not to cross the line separating educational activities from blatant lobbying. However, that doesn't prevent members from making financial contributions as individuals.

Those pesky 'No Trespassing' signs have often come about for good reason. Although, it is not unheard of for people leasing grazing rights on public land to post the land with unauthorized, unsigned 'No Trespassing' signs. I also have a friend in Colorado who has a legitimate claim whose postings were torn down and replaced with signs even while there was no attempt to register the claim with the BLM. While it is not always an easy or quick task to determine land ownership, it is more important than it was decades ago. A polite request made to the landowner for permission to collect, and a willingness to sign a 'Hold Harmless' agreement, might be rewarded with the desired permission. Once a relationship is established, it might be easier in the future to gain access to the site. It shouldn't be necessary to say this, but past behavior of some collectors indicates otherwise: Your future access, and that of others, depends on your behavior. Clean up and remove any trash you find, and don't damage any structures or equipment, no matter how old. An admonition I would suggest for everything you do is to consider what the world would be like if everyone were to act as you are about to act.

I have mixed feelings about backfilling any holes dug. If the hole is a potential danger to livestock or people, then it should be filled in. However, if you or others are going to be doing additional collecting at the site, having to remove the backfill, and again put it back, becomes a real pain and reduces the time available for collecting. Probably the best thing to do, if you anticipate having to dig a hole(s), is to ask the landowner what his desires are with respect to filling holes. The landowner's wishes should always take precedence. It can't hurt the relationship to offer a specimen to the landowner. They may well decline, but at least your generosity will be remembered.

Which leads me to another topic: There has been talk of paying quarry operators for their time and troubles, which is usually on a Saturday. Even though many collectors would be willing to pay \$20 or more to gain access to some of the more desirable quarries, with up to 30 collectors, we are starting to be talking about a substantial amount of money. That may well have bearings on the legal liability of the host if he is being paid. It may also be a conflict with his responsibilities and duties when he is an employee of the actual quarry owner. Probably a small gift, such as a box of chocolate or a bottle of Jack Daniels may be appreciated, depending on the individual, and would go a long ways towards cementing the relationship and providing future access. Typically, federal and corporate rules regarding reporting gifts have a threshold of about \$25. Therefore, I would suggest sweetening the deal with something that is not trivial, but is under the threshold of where it may cause problems for the recipient. That means a donation of about \$1 per collector.

We have to remember that the working quarries and mines that are potential collecting sites are in the business to make money. All the employees have a job, which unless their job description includes community outreach, they are going above and beyond their job to arrange and supervise our trips. Therefore, they don't appreciate lots of phone calls asking to be able to collect. That, apparently, has been a point of friction for one classic site in Indiana. Therefore, it is probably best if there is a single point of contact representing a group, such as Friends of Mineralogy (FM). To that end, it is probably in our best interest to encourage those collectors, who are not members, to join so that the quarry operators are not dealing with numerous phone calls. FM should make it a point to encourage the free lancers to join our chapter. Unfortunately, if outreach does happen to be in the quarry employee's job description, it is usually interpreted as supporting schools. So, something else that might be useful to us is to stress the point that education is part of our charter – we aren't just rock hounds looking for pretty rocks.

A related concern is appropriately setting expectations with the host about who the collectors are, collectively, and perhaps make the host aware that it is common practice to trade minerals, which may then find their way to eBay. Also, the quarry operator, who is typically selling aggregate, probably doesn't understand how important provenance is to collectors. These concerns are things that probably are primarily the concern of the field trip coordinators. However, attention to setting expectations may avoid problems such as purportedly have occurred in the recent past.

A frustration in collecting on public land is that different agencies sometimes have different policies with regard to what can be done on 'their' land. A project that FM might undertake is to try to work through their congressmen to get, for example, the Forest Service and Bureau of Land Management to have uniform policies and procedures with regard to field collecting unless there are unique conditions that justify a more restrictive policy. From personal experience, I know that at least one National Recreation Area (Whiskeytown) in California, administered by the National Park Service, has such a restrictive policy about recreational gold panning that it would be almost impossible to actually find any gold, despite being in an area known for its past riches. When I enquired if the policies were the result of any scientific studies, I was stonewalled and never received a reply. So, one thing that would seem reasonable to me would be legislation requiring federal agencies to develop policies based on objective scientific research, and not just listen to demands from environmental advocacy groups expressing subjective concerns about the ecosystem. The Forest Service has started to go down the same road!

The US Geological Survey (USGS) identified an area in Trinity County (CA) as having significant potential for Platinum Group Minerals, second perhaps only to the Stillwater Complex (MT). Shortly afterwards, it was turned into the Chanchellula Wilderness Area. The road over the mountain was bulldozed closed. Thus, putting the valuable minerals off limits, and essentially wasting the money that was spent by the USGS studying the area. When I last visited the area, there had been only five people sign in at the trailhead in the previous two years. I

would recommend that FM members throughout the country write to their federal legislators to ask for laws requiring federal agencies controlling access to and use of federal land be required to base their regulations not just on environmental impact studies, but scientific studies related to resource and recreation potential.

Since the rise of the environmental movement in the 1970s, the concept of 'multiple use' of public lands seems to have fallen out of favor with emphasis on biological priorities. The public has little appreciation for the source of the raw materials that provide them with their televisions, smart phones, computers, and automobiles. FM should do more to educate the public about the importance of mineral resources and mining to technology and the economy. Perhaps we can restore the balance of emphasis from biological preservation to the former 'multiple use.'

It doesn't help our situation that, with the exception of the aggregate and cement industries, the importance of mining has declined in this country. The aggregate industry is doing well and has even turned to low-silica sources such as the copper-bearing basalts in the waste dumps of the abandoned copper mines on the Keweenaw Peninsula. The roads in northern Michigan are being paved with copper! It is a loss not only to collectors, but to the world when useful and versatile copper ends up being pavement instead of being extracted and smelted. What few metal mines that exist in the country are now promptly 'reclaimed,' meaning that the waste piles and unmined ore become inaccessible after the mining is concluded. This is short-sighted because advances in technology often allow processing of dumps both because lower grade ore can be processed profitably, and uses are found for elements that formerly had no industrial applications. It doesn't help that the mining industry is not perceived by the general public as the supplier of the raw materials that go into their airplanes, cars, household appliances, and communication devices. Rather, it seems that the public associates mining with spoiling the environment. Thus, there is generally antagonism towards any proposed new mining activity. You might want to consider personally joining the National Mining Association (<http://www.nma.org/index.php/position-on-minerals>) as a way to keep abreast of what is happening politically.

Unfortunately, the role of mineralogy has declined in real-world geology with the concerns today focused on environmental issues such as water and energy. As a result, the number of mineralogy course offerings in most universities has declined and, therefore, the number of geology majors exposed to the wonders of mineralogy have declined. I take the position that the decisions to reduce course offerings were a mistake. If a geologist can't at least readily identify the common rock-forming minerals in a hand specimen, then he or she can't identify the rock. If the rock can't be identified and differentiated from similar rocks, then field mapping will be more difficult and less accurate. This ripples through the process to where even hydrologists and energy-exploration geologists may not be as competent as in previous generations. So, another suggestion I have is for those of us who care, to petition and agitate for universities to strengthen the mineralogy component of their geology curriculum. However, before they even get to college, the younger generation might be enticed to become mineral collectors. Most people have little idea about the diversity of color and forms that minerals come in. One thing to consider is that after cleaning and trimming your field collection, you might have specimens that aren't the top-grade that you personally want to keep, either because of minor damage or duplication; instead of disposing of the leftovers, consider donating them to a local science teacher, or rock hound club. What is mundane to you just might excite some child who may then go on to try to find a better specimen.

Friends of Mineralogy might want to consider allying with additional mineralogical societies and hiring a lawyer to examine these issues and possibly even bringing a suit against the agencies impeding collecting. This is a power struggle between the tax payers who support the public lands, and the stewards who are paid with tax dollars. The stewards undoubtedly have their hearts in the right place, but the placement of their heads is highly questionable. Thus, they have had difficulty thoroughly thinking through the consequences of their policies.

These articles were previously published in the FM Midwest Chapter newsletters



New Jersey Chapter Update

We have started our fourth year of operations with our annual business meeting held on 09/13/16. The highlights are the development of a new website which is in the process of hosting by Mindat. We are the trial run at the offer made by Jolyon Ralph and hope to have all the bugs worked out in the near future. We have also adopted a logo for the chapter which will appear in our new website.

Reviewing our financials for the previous year proved that it is almost impossible to operate a non-profit society with membership dues being the only source of income. With that in mind, we have decided to establish a mineral show slated to run August 5th and 6th of 2017. Due to costs and limited cash flow, we are starting small with ten (10) indoor dealers and enough outdoor tailgating room to house a small army! Hopefully the weather will cooperate. We have also picked a busy month for shows on the East Coast, with Marty Zinn's East Coast Show falling on the following weekend and the old Lost Dutchman Show the weekend after that in Lebanon, Pa. Hopefully we can ride the front side of the coat tails and help make the East Coast the place to be in summer!! Look for announcements on The Fellowship of the Rock, an old fashioned show where all material for sale must be related to geology, mineralogy or paleontology. Jewelry, beads and tumbled stones are taking the back seat!! In addition, we will be holding a raffle on some select mineral and fossil specimens donated by the membership instead of asking dealers for door prizes. Dealer and tailgaters should contact the show chairman at fluoriteguy@gmail.com for further information. Our admission price will be \$4 for ages 15 and up.

In addition, we continue to offer our membership the chance of reducing their membership dues by receiving a two dollar discount for every dues paying member they recruit. Our dues are being kept where they have been since charter inception.

Respectfully; KC Dalby, President



Pennsylvania Chapter Update

Friends of Mineralogy - PA Chapter Symposium November 5 - 6

Friends of Mineralogy - Pennsylvania Chapter will hold their annual symposium at Franklin & Marshall College in Lancaster, Pa., on Saturday November 5, 2016, with a field trip for symposium registrants on Nov. 6. Advance registration is strongly encouraged.

In addition to several speakers, there will also be invited mineral dealers; a give-away table; silent auction of specimens, books, tools, and more; and plenty of opportunities for fellowship with other avid collectors. Professional geologists can receive professional development hours for lecture attendance.

At this time we are planning for talks including the following topics:

Hawaiian minerals and geology: A student experience,
Dunite in the Serpentinites of the Pennsylvania-Maryland Chrome Mining District,
Cenozoic mineralization ages for sulfides and calcite in Pennsylvania,
and one or two others.

The web site will have any updates and a registration form:
<http://www.rasloto.com/FM/>



In Memoriam Henry Barwood

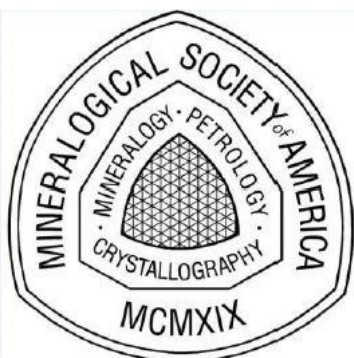
Natrolite speared on aegirine from the eggletonite pegmatite found at 3M Big Rock Quarry, Pulaski County, Arkansas. FOV is about 2 X 3 mm. Imaged with a 48mm B&L objective on a bellows mount. Canon 40D with a fluorescent ring light. Stacked using Combine Z.

FM AFFILIATES



The Friends of Mineralogy is a long-time affiliate of The Mineralogical Record magazine. The magazine was founded in 1970 by John White, who was at that time a curator in the Mineral Sciences Department of the Smithsonian Institution. With the initial help of a financial backer, Arthur Montgomery, White succeeded in launching and bootstrapping the fledgling publication to the point where it was marginally self-sustaining. After seven years as editor and publisher, White stepped aside for a new Editor, Wendell Wilson.

Since then the Mineralogical Record has grown steadily in size, quality and prominence, thanks to the contributions of over 700 authors, photographers, artists, advertisers and donors. It has become a collective labor of love on the part of the entire mineralogical community worldwide. It is the only journal to have a new mineral species named in its honor (minrecordite), and it is the only journal to have received the Carnegie Mineralogical Award. Subscriptions, back issues, books and a variety of free databases are available online at www.MineralogicalRecord.com.



MINERALOGICAL SOCIETY OF AMERICA

If you are interested in earth, planetary, industrial, or biologic minerals or mineral-like materials, you may want to learn about the Mineralogical Society of America



3635 Concorde Pkwy Ste 500
Chantilly VA 20151-1110 USA
phone: +1 (703) 652-9950
fax: +1 (703) 652-9951
website: www.minsoam.org



Mineralogical Association of
Canada



mindat.org

