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# The Mineral i n m i n u t e s

## February Program

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**Prez Says...**  
by Dave Nanney  
MSDC President



**H**a p p y  
February.  
I , m

writing this note from Seattle on the morning after our blood moon. It might not surprise you, but we didn’t see the moon here last night with clouds and light rain. We’ll spend a couple of weeks supporting our granddaughter while her mom is on business travel. Oh, the sacrifices we make for this young lady...

I want to report we had a very successful Board of Director’s meeting last week. Having successfully accomplished the celebration of our 75th anniversary, this meeting was pretty calm. We did vote not to change our fiscal year from Dec 31 to June 30. It seems we might have to file IRS documents and it was considered the better part of valor to avoid that exercise. Because our moneys are small and the cash flow very transparent, we decided to report on the current year boundary but to manage off the summer break. We figure everyone will have paid their dues by then, all the donations will have been made, so we will have a more stable year to year comparison to use to manage our club resources. I want to thank the board for a very good discussion of this area and especially thank our Treasurer, John Weidner, for all his efforts on our behalf.

Many of us got to accompany

## “Fossil Insects from the Eocene of Montana” Presented by Dr. Dale Greewalt, Smithsonian Institution



Dr. Greewalt  
(Center)

In the valley between Glacier National Park and the Great Bear Wilderness Area in Montana, the Flathead River has eroded a passage exposing shale formed from the sediments of an ancient lakebed known to geologists as Lake Kishenehn. Over the last 7 summers, scientists from the Paleobiology Department of the Smithsonian National Museum of Natural History have collected over 7,000 specimens of this shale, which contains some of the most exceptionally preserved insect fossils found in the world. Their level of preservation at this location even includes original bio-molecular components.

# January Business Meeting Synopsis

By Andy Thompson, Secretary

President Dave Nanney called the January meeting to order and thanked the past presidents in attendance (Steve Johnson and Andy Thompson). He asked if there were any "Geology in the News" reports, of which there were several. John Weidner reported the Vulcan Quarry in Fairfax, Virginia, will close in the next decade and become a reservoir. Dave reported a 3.9 quake occurred northwest of Mt. Saint Helen. Dave also noted the phenomenon of a geologic shift which is gradually developing in the Yakama, Washington area, namely Rattlesnake Ridge has about one million cubic yards of earth which are likely to slide down toward the very busy highway, Route 82. That volume is the equivalent of about 300 Olympic-size swimming pools. Google provides many videos of this ongoing scene.

Concerning the club's Board of Directors membership, given Leslie Nanney's three-year term has been successfully completed, Dave thanked her and noted the nomination committee had proposed Amanda Parker to step into Leslie's shoes, which motion was accepted, seconded and unanimously approved.

Concerning the club's finances, Treasurer John Weidner circulated a financial statement indicating that due to generous donations, the expenses of the 75th celebration were covered with no additional financial loss taken by the club. There was discussion of when, practically speaking, was the best month for making a yearly report, June or December. The suggestion was made that the board of directors visit the question at the next BOD meeting on 27 January.

Dave Nanney thanked Steve Johnson for publishing the excellent January newsletter replete with excellent photos of the 75th anniversary celebration. That led to many positive comments about the event. Many said a high point of the evening was the "75th Anniversary Honor Award" given to Susan Fisher for her "Leadership, Mineral Expertise and Inspiration."

Andy Thompson then made a brief announcement that the Eastern Federation (EFMLS) Wildacres sessions are now open for registration. To learn more about the interesting and inexpensive offerings, go to the website, [efmls-wildacres.org/](http://efmls-wildacres.org/). It provides key information and a registration form for the Spring session of May 21-27, and for the Fall session of September 3-9.

Dave Hennessey, V.P. for Programs, announced that the presenter for the 7 February meeting will be Dale Greenwalt who has been working with curating the Smithsonian's fossil insect collection. He has a special interest in finding and studying insect fossils of the Eocene period located in the shale deposits in Northwest Montana.

Having concluded all business before the club, Dave called for and received a motion to close the business meeting, which motion was seconded and approved.

Professor Shelley Jaye on our field trip to Corridor H in W. Virginia. While very happy for her, I am sad to report that our friend Shelley is retiring from Northern Virginia Community College this summer and will move to the Olympic Peninsula. Shelley has accomplished a huge amount on behalf of her students, developing internships with USGS for students with strong geologic interests. She has helped the college acquire advanced equipment putting it among the best equipped in the area. Beyond that, she has welcomed a number of us seniors into her classes and treated us with the utmost respect. Shelley Jaye will be missed by all the students who don't get to learn at her feet. But it is time, and as Leslie and I start our ninth year of retirement, we have to support Shelley and Bob Jaye as they move to their next phase of life. Thank you for everything you have done for us all.

**DUES ARE DUE-** please close this loop if your annual dues are still outstanding. We appreciate everyone who has already paid for 2018.

We are under 70 days + or - a week, from the first azaleas blooming but who's counting? ME!!!!

See you in March.

Editor's Note: Crystal Shapes are from Goldschmidt's "Atlas der Krystallformen"

## CLUB INFO

### MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA

Meetings are the First Wednesday of the Month (Jan-Jun and Sep-Dec). We meet in the lobby of the Smithsonian National Museum of Natural History at 7:45pm.  
WEBSITE <http://mineralogicalsocietyofdc.org/>  
FACEBOOK [www.facebook.com/MineralogicalSociety-OfTheDistrictOfColumbia](http://www.facebook.com/MineralogicalSociety-OfTheDistrictOfColumbia)

## 2018 Officers & Directors

President	Dave Nanney, <a href="mailto:dnanney@cox.net">dnanney@cox.net</a>
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Treasurer	John Weidner, (mail: 7099 Game Lord Dr, Springfield, VA 22153-1312)
Directors	Yuri Kalish Amanda Parker Ken Reynolds
Editor	Steve Johnson
Webmaster	Betty Thompson
Webmaster	Casper Voogt

Our presenter this month, Dr. Dale Greenwalt, will discuss specimen collection and preservation, and what the specimens reveal about the evolution of specific insects. Dale has 10 years of experience in the curation of fossil insect collections at the Smithsonian National Museum of Natural History. With the administrative support of Conrad Labandeira, he initiated the Kishenehn Formation fossil insect collection project and manages all fieldwork and curation of the collection. In addition, he is responsible for interactions with and reports to the U.S. Forest Service, which manages the Flathead National Forest where the fossils are found.

Dale has a Ph.D. in Comparative Biochemistry from the University of Iowa. He retired from Cambrex Bio Science Walkersville, Inc., after serving as its technical director of assay development from 1999 to 2006 and joined the Paleobiology Department at the Smithsonian as a volunteer in 2007. He has been there ever since. He is also (since 2004) president and program director for the Paleontological Society of Washington.

Please join us in taking Dale to dinner on February 7th before the club meeting. We will be meeting at 6:00 pm at Elephant & Castle Restaurant, 1201 Pennsylvania Ave, NW, Washington, DC, about 2 blocks from the Smithsonian Institution National Museum of Natural History (NMNH) where our club meeting is held. If you cannot make it to dinner, we will meet in the NMNH lobby at 7:30 pm and head up to the Cathy Kerby Room for Dale's presentation.

## January Program: "Mineral Collecting in Kola, Russia" Presented by Casper Voogt

By Andy Thompson, Secretary

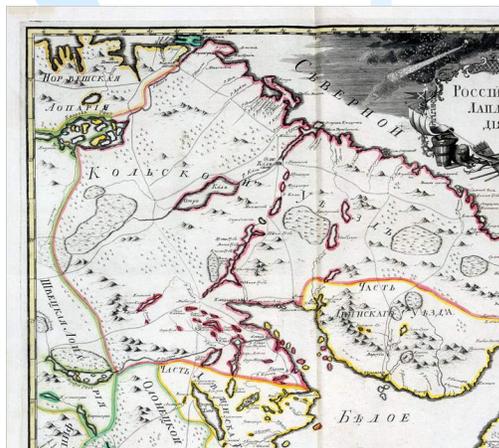
David Hennessey introduced Casper Voogt as the evening's presenter, respected by all including for his work as MSDC's co-webmaster. Casper is widely known for his Plethora Design firm's technical support of many area mineral clubs, for his international collecting and occasionally serving as a dealer selling mineral specimens. He has made numerous trips abroad through the international Min.Dat organization and as with last month's January MSDC meeting, he shared his research and photography with his fellow MSDC club members.



His topic, "Mineral Collecting in Kola, Russia", opened listeners to some of the geological and mining history of the country's mineral-rich, north east corner, the Kola Peninsula. Along with the mineral wealth, the Kola region was also the gateway to the arctic. Made habitable by the Gulf Stream current, Kola's surrounding waterways are typically ice-free which has allowed its major city, Murmansk, to play a central

role in coordinating the former Soviet Union's industrial mining and arctic exploration.

Casper explained that what made this region such a valuable mining and mineral resource was its unique igneous intrusions which occurred starting 3 billion years ago and continued until about 360 million years ago. The intrusions made the area rich in alkali metals, especially sodium and the highly valued and famous agpaite pegmatites. The later minerals, Casper noted, are similar to those found at Narsarsuk, Greenland and



Mont Saint-Hilaire, Quebec, Canada. They are world famous for containing complex silicates of zirconium, titanium and rare earth minerals. The agpaite pegs also have high contents of beryllium, niobium and

tantalum. They are also a source of more than 300 mineral species as well as fertile ground for the discovery of new minerals.

With that background in mind, Casper began his field collecting at Umbozero Mine where one of his first finds was a hand-sized rock containing titanite (calcium, titanium nesosilicate). But aside from that, he reported finding little other specimens of interest. What was fascinating for him was taking photos of the architecture of the abundant abandoned buildings and debris fields where locals today hunt for scrap metal.



A more reliable source for finding specimens was visiting local collector-dealers such as Viktor at Lovozero. Viktor specialized in collecting and selling minerals from the Kola Peninsula.

The Mindat explorers moved on to the Kovdor region where mining for Iron is the only remaining game in town. Since about 1980 roughly 70% of the buildings have been abandoned. There the entire group donned safety clothing, except for hard hats and walked around the large industrial machinery for grinding and processing the iron ore. They

took a bus down into the open mine pit in daylight, but learned the mine operates 24/7. Casper managed to find a magnetite specimen which he passed around for examination by his MSDC listeners.



Given the abundance of industrial smoke billowing into the Kovdor air day and night, it is no wonder these iron smelters are the main source in the air pollution for which this area is famous.

The Mindat adventurers moved on to the region of Kirovsk. Being so far north at the Arctic Circle, and in the middle of nowhere, far from city lights, the Russian sky often treated the group to beautiful displays of the aurora borealis.



In daylight, however, Casper's travelers hiked across the landscape of volcanic rock which was often devoid of trees and sported abundant moss and lichen. In the local mine dump sites, they sought titanite with some success. In the town of Kirovsk, once again Casper found numerous abandoned buildings, some with colorful exteriors.



and made famous by Catherine the Great whose art and cultural collections gave birth to the Hermitage Museum, visited by the group.

Vast as its art and cultural displays were, the group hit pay dirt in visiting a second site in town, the St. Petersburg Mineralogical Museum of SPBGU whose cabinets were full of mineral displays.

From there, the group moved further south to Russia's capital and to the Moscow State University Geological Museum, again, with mineral display cabinets bursting at the seams.

From there, they moved on to the famous Fersman Museum. There Casper found a very large specimen of his favorite mineral, sulfur.

The picture below, showing the cat, speaks volumes about a tradition made famous by Catherine the Great. She mandated that

the Hermitage had to have at all times 100 cats in attendance, in order to maintain a mouse-free museum. Her requirement conveyed to museums throughout the land.



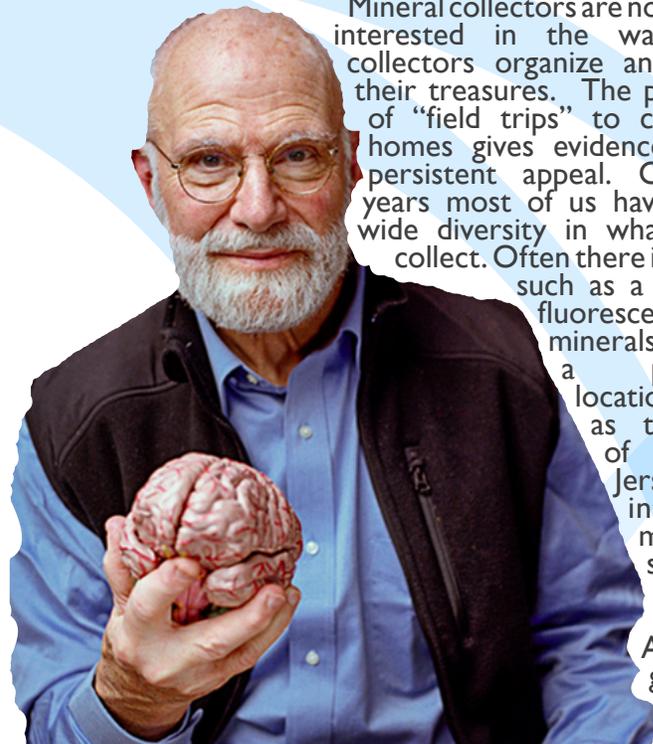
The final challenge for Casper and his band of travelers to get their treasures shipped home. The Mindat organizers had that base covered and museum employees helped them fill out the paperwork, photographed every specimen and shipped their findings through Munich, Germany and on to the States.





# “Collecting Can Be Elementary: Happy Thallium Birthday”

By Andy Thompson



Mineral collectors are notoriously interested in the way fellow collectors organize and display their treasures. The popularity of “field trips” to collectors’ homes gives evidence of this persistent appeal. Over the years most of us have seen a wide diversity in what people collect. Often there is a theme such as a focus on fluorescent rocks, minerals from a particular location such as the state of New Jersey or an interesting metal such as copper.

Additional genres include

radioactive elements, large specimens, micromounts or transparent crystals containing ghosts (crystals within crystals). Of course, for many, it is simply a matter of collecting what is available from exploratory field trips into quarries or rock shops, whether the minerals are beautiful or rough. And it’s all good.

But have you ever come across a collection of specimens based on age? I’m not referring to geologic ages such as 2+ billion-year-old boulder from northern Canada which today flanks the northern edge of the Smithsonian’s Native American Museum. Rather, I’m referring to a person’s age and the atomic number element that corresponds to the person’s age.

Recently I came across an opinion article written by neurologist Oliver Sacks (1933-15), a professor then teaching at New York University School of Medicine. He was famous for his research and writing helping everyone understand the unusual workings of the human brain. The 1990 film *Awakenings*, featured Robin Williams playing the real-life Dr. Sacks, and Robert DeNero playing a patient, helped make Sacks a household name. The article in question was published on 24 July 2015 in the *New York Times*. In that opinion piece he shared with the public the fact that at the age of 82 he was battling metastatic cancer. Within that context, Sacks told about his life-long enchantment with physical sciences, including minerals, which served as a personal anchor for him in times of personal uncertainty.

Born in Great Britain, he reflected on his childhood while living in London. “I have tended since early boyhood to deal with loss — losing people dear to me — by turning to the nonhuman. When I was sent away to a boarding school as a child of 6, at the outset of the Second World War, numbers became my friends; when I returned to London at 10, the elements and the periodic table became my companions. Times of stress throughout my life have led me to turn, or return, to the physical sciences, a world where there is no

life, but also no death.”

This attraction reminds me of a similar appreciation described by the writer Paul Tillich, who some have described as the most influential philosopher and theologian of the 20th century. Tillich wrote that for him, stones were a symbol of what is permanent in this world, in contrast to the ambiguities he encountered in the death of a loved one, in human relationships, existential philosophy and Christian theology.

Oliver Sacks’ personal interest in stones, however, included at least one very specific criteria for his collecting. In his later years, he associated his chronological age with certain corresponding elements based on their atomic number. He spoke of his 81st year, for example, as being symbolized by thallium which has 81 protons. He prominently displayed a specimen in his living space.

“And now, at this juncture, when death is no longer an abstract concept, but a presence — an all-too-close, not-to-be-denied presence — I am again surrounding myself, as I did when I was a boy, with metals and minerals, little emblems of eternity. At one end of my writing table, I have element 81 in a charming box, sent to me by element-friends in England: It says, ‘Thallium Birthday,’ a souvenir of my 81st birthday...” His 82nd year he said, he “devoted to lead, element 82, for my just celebrated 82nd birthday.”

He marked his future similarly, saying he doubted he would make it to his bismuth (83rd) birthday or beyond. For his distant years he said: “Here, too, is a little lead casket, containing element 90, thorium, crystalline thorium, as beautiful as diamonds, and, of course, radioactive — hence the lead casket.”

Imagine having a small collection of minerals celebrating significant years throughout one’s life: sulfur marking a sweet 16th birthday or getting one’s driver license; potassium for graduation at 18; titanium for entering the job market or marriage at 22; iron for becoming a parent at 26; silvery white rare earth gadolinium at 64 for retirement; mercury for the quick-silver celebration of one’s 80th birthday.

No doubt Oliver Sacks’ approach to collecting minerals initially appears to be far from the beaten path. Yet for marriages and organizations, it is common practice to associate anniversaries with minerals, such as 75 years with diamonds and 50 years with gold. The December 2017 combined celebration of MSDC’s 75th and the MNCA’s 50th, displayed those two elements on the cover of the evening’s program. You get the idea.

This common practice is not exactly the same as Sacks’ approach because his was based on the atomic numbers of the elements, actually of their number of protons, which is not what couples and organizations base their gold and silver references upon. Gold and silver have atomic numbers of 79 and 47 respectively, so there is no match there with Sacks’ method. But at least couples and organizations are associating their anniversaries with elements, even if they are not consistent with their place in the periodic table, structured as it is on each element’s atomic number.

Sacks and his “element-friends” enjoyed associating and displaying minerals in relation to birthdays. That’s a personal approach some readers may find interesting, although we expect few collectors will reorganize their specimens based on their mineral elements’ atomic number. Rather, sharing the story of how this renowned brain researcher celebrated his special minerals affirms one more way collectors make connections with the natural world and with one another.

# MSDC's Celebration of 75c Years Promoting Mineralogy

Synopsis by Andy Thompson (MSDC Secretary)

The Saturday evening of December 3rd, 2017, witnessed 74 mineral enthusiasts and honored guests gathered in a hotel ball room to celebrate the 75th anniversary of the Mineralogical Society of DC and the 50th anniversary of the Micromineralogists of the National Capital Area (MNCA). David Nanney, President of MSDC, emceed the evening and began by warmly welcoming all attendees. He singled out the evening's honored guests including four geologists from the Smithsonian's Mineral Department and their spouses, namely Dr. Jeff Post and Ann, Tim Rose and Donna, Dr. Mike Wise and Vickie, Dr. Russ Feather and Melanie. He also thanked Dr. Julia Nord of GMU and Professor Shelley Jaye of NVCC for their valued contributions to both clubs, and expressed appreciation to the volunteers who serve at the National Museum of Natural History's gem and geology exhibits.

The printed program highlighted the complementary nature of the two clubs' missions, promoting interest in mineralogy, geology and earth sciences, and the Smithsonian's mission "for the increase and diffusion of knowledge." The program began with both clubs' presidents, Nanney and David MacLean, thanking their members for attending and giving awards to a few well-deserved members (more on that below). Then turning to the larger world of national organizations, Matt Charsky, former AFMS and EFMLS president, well-known to the attendees, thanked both clubs for their significant contributions to the Federations. In particular he noted that MSDC was one of the three clubs which founded the Eastern Federation in 1950. He added that over the years, numerous MSDC members have served as president of the EFMLS and that the club has provided significant financial contributions to the Federation.

Each club then had its historian take the mic and provide a walk through time, with a focus on some of the members, events and contributions the clubs have made over the decades.

Kathy Hrenchka provided an interesting pictorial review of the people, past and present, who have led MNCA from 1967 through the next five decades. For a fuller explanation, visit their award-winning website and especially click on the link for the December 2017 Mineral Mite newsletter for photos and club history.



Tom Tucker, former president of MSDC and a student of its history, made the evening's next presentation and highlighted some of that club's salient moments. Working directly from the published monthly Mineral Minutes newsletters, he shared some of the persons and events which struck him as significant. He began by citing one of the earliest club members, Walter (Wally) Gilbert, who as a 13-year-old attended meetings in 1942 and then grew up to become a bio-chemist, physicist

and mathematician. Wally went on to be awarded a Nobel prize in 1980 for his 1975 work with the sequencing of nucleic acid. As a researcher he developed a breakthrough method for speedily

sequencing the human genome and later became an international corporate leader in biotechnology.

Tom shared he was also struck by the fact that although MSDC began during WWII, the newsletter did not talk directly about the war. But reading between the lines, one could see the war made its impact felt. The nation's alertness to possible saboteurs, for example, helped explain why MSDC members panning for gold near the Cabin John Viaduct or collecting near Great Falls were chased from the areas by Park Service officers. Instead, MSDC members took field trips to safer areas such as GWU's museum, to Fort Washington and to the Leesburg, Virginia Goose Creek Quarry for prehnite. One newsletter indicated that MSDC had 132 members by the end of the war in 1945.

Tom, an avid explorer of caves, noted that in the early 1940s, the Smithsonian strongly supported interest in caving. In the fall of 1945, immediately after the war, MSDC's monthly meetings featured its first talk on the structure of atoms. That, of course, was just months after the August detonation of the first atomic bomb. It was clear from Tom's thick stack of annotated back issues of Mineral Minutes, that his historical research went well beyond the club's early days. But given the time limitations of the 75th anniversary evening, he concluded his historical overview which left many hoping for a future presentation to bring the club's history forward to today.

President Dave Nanney thanked both club historians for their presentations and took that moment to introduce the Smithsonian's mineral specialist, Tim Rose, who for decades has been the sponsor and strong supporter of MSDC. Dave presented Tim with a check to help support the mission and work of the S.I.'s Department of Mineral Sciences.



Dave also took the occasion to recognize Ed & Susan Fisher's outstanding dedication to the mission of MSDC and announced Susan was the recipient of the 75th Anniversary Honor Award. The certificate cites her "Leadership, Mineral Expertise and Inspiration." That brought the entire audience to their feet to give Susan a well-deserved standing ovation for her extraordinary contributions over the years. Even the official memento for the 75th, a micro diamond crystal mounted within a magnifying cube given to each dinner attendee, was put together by Susan, with assistance from Tom and Ed.

## Synopsis of Dr. Jeffrey Post's Presentation

"Smithsonian Gems and Minerals – The Last 75 Years"

The evening then reached its culmination with Dave introducing the evening's most honored guest, Dr. Jeffrey Post, head of the Smithsonian's Mineral Sciences Department. He framed his talk by saying he would talk about what was going on with the Smithsonian's collection during the decades when MSDC and MNCA clubs were engaging their members. He structured his talk around several reorganizations of the Smithsonian's collection made possible by the extraordinarily generous gifts of contributors.

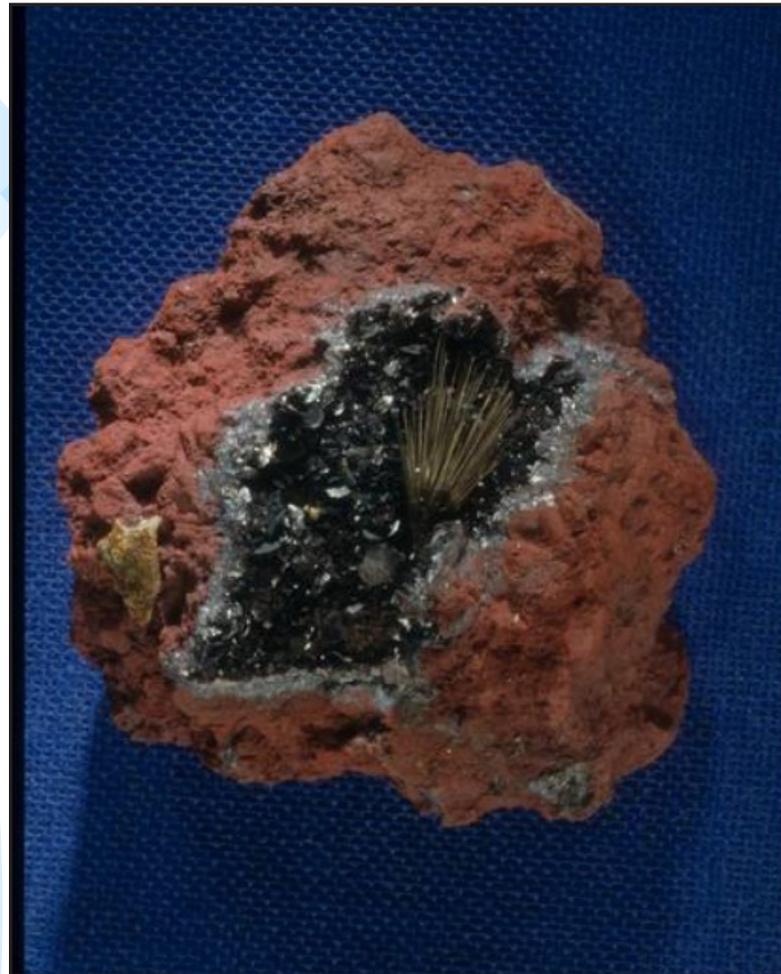


Jeff began by showing numerous photos of the Museum's early mineral displays. He highlighted one prominent gem that was front and center during and beyond the 1930s, namely the world's largest flawless quartz crystal ball. It measured nearly 13 inches in diameter and, he said, was a gift by Mrs. Worcester Reed Warner in 1930. The same quartz globe remains unique in the world and was prominent in many of Jeff's subsequent slides of later Mineral Hall expansions.



In the 1920s, two significant contributions came to what was then called the National Museum. The donations were

collections from Washington Augustus Roebling (Brooklyn Bridge builder) and Frederick Canfield. Roebling, upon his death in 1926, passed along to his family his collection of 16,000 specimens. His son, in turn, donated it to the Smithsonian along with an endowment of \$150,000. Combined with minerals and endowments from Frederic Canfield and Dr. Isaac Lee, the Museum's collection rose to the level of being world class.



A next leap forward came in the late 1950s with the arrival of the Hope Diamond donated by New York jeweler Harry Winston. Jeff noted that despite its incredibly high value, it was sent to the Smithsonian by the U.S. mail. The package is in the Smithsonian Postal Museum. Jeff provided some of the gem's historical background including its relationship to the French Blue Diamond. He noted the Smithsonian's recent groundbreaking research which, based on computer comparisons of the two gems' geometry, made a credible case the Hope Diamond came about by carefully cutting back the size the historic French Blue.

It should be noted that some of the most significant gems in the Smithsonian collection arrived by way of trade rather than donation. The 127-carat Portuguese Diamond, for example, was obtained by an exchange for numerous smaller diamonds.

Jeff added that although the Portuguese Diamond is the world's largest faceted gem in the collection, it is not the one Jeff would rescue in case of a fire. For him, that honor falls to an exquisite mineral, a millerite with hematite and quartz specimen which was collected from Antwerp, New York and is shown below.

Listening to Jeff's presentation, the dinner attendees could not miss that the Smithsonian's origin and development has



been marked by a succession of very generous gifts, not only from the initial bequest by James Smithson in the late 1820s, but forward to the Hope Diamond and forward to today. Dr. Post's presentation was consistently footnoted by citing and showing stunning pictures of numerous major gem and mineral gifts which allowed the national collection to expand and reorganize to provide more effective displays for the public.

It became clear that philanthropists who make significant contributions to the Smithsonian will always have their names remembered and honored by the curators of their gifts and by the Museum's visitors. He noted, for example, that actress Angelina Jolie was surprised to discover it was possible to donate gems and minerals to the Smithsonian, and recently she has done so.

By 1959 and 1960, the growth of the collection required an expansion of the display area into The Hall of Minerals. For the purposes of this synopsis, we here limit our summary to highlight but a few further minerals Jeff noted including the world's largest topaz, weighing 153 pounds, discovered in Brazil. Also, in 1964 Marjorie Merriweather Post donated the spectacular Blue Heart Diamond discovered in South Africa. That gift was followed by many additional extraordinary pieces of jewelry from the Post collection.

Listeners began to realize that what Jeff was doing was telling the story of how many social and industrial philanthropists, through their passion and gifts, were giving back to the nation, embodied in the Smithsonian's collection.

The national collection grew significantly with the acquisition of a European collection. Karl Bosch of Germany was a Nobel laureate (1931) whose process for extracting nitrogen from the air, combining it with hydrogen, and creating ammonia fertilizer for agriculture ultimately helped feed one-third of the world's population. Yale University borrowed and displayed the collection for a period before the Smithsonian purchased the majority of the specimens and the Bosch family donated the remainder of the very extensive collection of European minerals.

Once again, by 1995, this enlarged collection needed a new Exhibit Hall which reopened in 1997. Previous exhibits were organized using the Dana classification number

system, based on the chemistry and crystal structure of the specimens. The organizing principle for this latest display, however, had a different basis, namely on telling nature's story in a way visitors could grasp. For example, because all gem stones start out as minerals, the new exhibits now display gems and minerals side by side, allowing visitors to recognize the continuity between the rough minerals and the polished gems.

Jeff also noted the Smithsonian's commitment to ongoing research, and referred to work currently conducted by his colleagues, including with meteorites, and using recently acquired high tech instrumentation to identify the previously unknown mineral content of many specimens.

He also pointed to the global picture, that the Smithsonian's specimens are intended to further research which is accomplished through long-standing partnerships with museums and research facilities around the world. He concluded by encouraging his audience to visit the Smithsonian's new exhibit, "Objects of Wonder" which runs through 2018. The display highlights salient items from the Natural History Museum's many diverse departments, again, pointing to the broader context to which the Department of Minerals contributes. He showed a picture of the Department of Mineral Sciences' contribution, "Blue Flame", one of the world's largest (more than 150 pounds) and finest gem quality specimens of lapis lazuli from the Hindu Kush Mountains of Afghanistan.



President Dave Nanney thanked Jeff for his extraordinary presentation which was greatly appreciated and received enthusiastic applause. Attendees recognized they had just witnessed a first-class overview of the mineral collection's growth during the last 75 years as well as the many donors' generosity and curators' commitment to the growth and diffusion of scientific knowledge. Dave concluded the anniversary's proceedings by thanking all who attended and wished them a safe journey home.

# Mineralogical Society of America Editors' Picks

With the permission of Keith Putirka, the following are the Editor's picks of Highlights and Breakthroughs & Invited Centennial Articles from the December 2017 and 2018 issues of the American Mineralogist: Journal of Earth and Planetary Materials.

<http://www.minsocam.org>

## 10 Days for Pre-Eruption Magma Assembly at Laki

On page 1 of the January 2018 (vol. 103, 1) issue Douglas Rumble provides a review of  $^{17}\text{O}$ , and its fractionation from its sister  $^{18}\text{O}$  isotopes on Earth. Rumble shows that  $\text{O}$  produced by photosynthesis never reaches  $^{18}\text{O}$ - $^{16}\text{O}$  or  $^{17}\text{O}$ - $^{16}\text{O}$  isotope exchange equilibrium with seawater. Furthermore, the molecules  $^{17}\text{O}^{18}\text{O}$  and  $^{18}\text{O}^{18}\text{O}$  produced by photosynthesis do not equilibrate at the temperatures prevalent during photosynthesis. The fractionation may result from the parent water molecules, in a protein called Photosystem II, being situated in energetically distinct sites. Rumble advocates for collaboration between isotope biogeochemists and structural biologists to determine the mechanisms of metabolic isotope exchange in relation to the atomic structure of enzyme catalysis in proteins.

## Pushing Down on Me, Pushing Down on You

On page 69 of the January 2018 (vol. 103, 1), Anzolini et al. examine  $\text{CaSiO}_3$ -walstromite, the most common of Ca-silicate inclusions in putative ultra-deep diamonds, with a presumed  $\text{CaSiO}_3$ -perovskite precursor. These authors use Raman barometry, ab initio methods, and quantitative models (e.g., see Angel et al., Notable paper of Oct. 2014 p. 2146 of that issue) to obtain the entrapment pressure of a  $\text{CaSiO}_3$  inclusion. By assuming entrapment temperatures of 1200-2000 K, entrapment pressures range from 8.1 to 9.3 GPa, which they translate to depths of 240-280 km. These are minimum pressure estimates as the diamond host contains some cracks, and has undergone an unknown amount of plastic deformation. The authors suggest that these pressures are clearly deep and most likely sublithospheric and so are not inconsistent with an ultra-deep origin for these diamonds.

## A New Model for MVT Sulfide Deposits

On page 91 of the January 2018 (vol. 103, 1), Zhou et al. provide a detailed geochemical and structural study of a Mississippi Valley Type (MVT) Zn-Pb sulfide deposit in southern China. The authors use a combination of Pb, C, O, and S isotope ratios yield a new model to explain the occurrence of sulfides in early Cambrian carbonate host rocks. The authors suggest, for example, that Pb was sourced from metamorphic rocks that form the lower crust and that O isotopes from associated carbonates indicates a mixture of metamorphic fluids and host carbonates. Their model is that deep-crustal fluids were transported into overlying carbonate causing reduction of S and rapid precipitation of sulfides. Large sulfide crystals were precipitated by cyclic dissolution re-precipitation reactions, as controlled by water-rock interactions that can drive  $\text{CO}_2$  degassing.

## Novel Bonding in Deep Earth Carbonates

On page 171 of the January 2018 (vol. 103, 1) Vennari and Williams present new experimental evidence for coordination changes in C, at pressures of 63-86 GPa. In this pressure interval, they find that C may bond to an additional oxygen in some parts of a high P structure (called dolomite III), a coordination they refer to as "3+1". A fourfold coordination would, of course, weaken the C-O bond as it would have a lower electrostatic valence, and with a more complex C-bonding environment, the authors argue that dolomite III may be able to house a wide range of elements that would be incompatible in ambient silicate phases. Yet another implication is that the dolomite III/IV transition may have a positive Clapeyron slope that would stabilize dolomite III at high temperature in Earth's lower mantle. But we still lack phase equilibrium evidence that carbonates exist in the deep mantle, nor observational suggestions that the effects of putative carbonates are observable in volcanic systems. Future work must surely test the relevance of these studies.

## Under Pressure

On page 2349 of the December 2017 (vol. 102, 12) issue Ziberna et al. present a new calibration of several equilibria whose intersections are sensitive to pressure. The value in these findings is that pressure is such a crucial geologic parameter to determine, and yet among condensed phases volume changes are so small across most reactions that viable barometers are quite rare. The new models presented in this work yield pressure estimates that have errors of  $\pm 1-2$  kbar, which is about at the limit of precision for condensed phase equilibria and is certainly more than precise enough to place the target rock types (mafic and ultramafic rocks) to differentiate whether a given set of mineral assemblages form in the upper, middle, or lower crust, or upper mantle.

## Volcanic Pressure-Time Paths, from Nanolites

On page 2367 of the December 2017 (vol. 102, 12) issue, Mujin et al. investigate microlites and nanometer-scale crystals that they term nanolites, from the 2011 eruption at Shinmoedake volcano, whose crystal size distributions may reveal fragmentation and re-welding of magmatic materials during eruption. Their FE-SEM and TEM study allow them to study crystals at a stunningly small scale and identify gaps in growth patterns that would appear to record magmatic events at very, very short time scales. In their model, they attempt to describe nano-scale textural and mineralogical patterns as pressure-time paths, that in turn affect magma dehydration and temperature changes, which can affect (spur or inhibit) crystal nucleation and growth.

## The History of a Pluton in a Crystal

On page 2390 of the December 2017 (vol. 102, 12) issue Barnes et al. present new major and trace element data involving zoning profiles of amphiboles from arc-related plutons. They find core-to-rim patterns that record monotonic cooling, and associated changes in trace elements that record the progressive saturation and in some cases the later dissolution, of both major and accessory phases. The key advance is the recognition that amphiboles are saturated over a wide enough T range to record the saturation of a wide range of phases, including zircon and biotite. And because of its complexity, amphiboles provide information about the P-T conditions and the changing magma compositions from which various minerals form as a pluton or batholith is assembled.

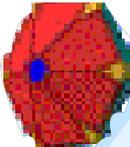
## Melts: retained by and expelled from crystal mushes

On page 2467 of the December 2017 (vol. 102, 12) issue, Fiedrich et al. use a range of methods, including whole rock and mineral compositions, mass balance, and cathodoluminescence imaging, to quantify that amount of melt that is trapped between crystals, in various units of the Adamello batholith of northern Italy. Their goal is to calculate "crystallized liquid fractions" or CLFs, which should approximate the melt that is trapped when magmas reach a critical crystallinity so as to form a rigid (melt-trapping) framework. They find that the amounts of trapped liquid vary widely, ranging from 7-70%, and tend to be lowest for systems with strong CPO, which indicates that syn-magmatic deformation may be an efficient mechanism by which melts are expelled from an otherwise rigid crystal-liquid mush.

## As in Barite

On page 2512 of the December 2017 (vol. 102, 12) issue, Ma et al. investigate the conditions under which As(V) partitions into Barite. They find that As may be readily incorporated into barite and at  $\text{pH} > 5$  can form a stable Ba-Arsenate phase. Their work illustrates the conditions under which aqueous As may be fixed to a crystalline phase, depending upon the concentrations and pH conditions, that may be of crucial aid to hazard assessments and remediation efforts.

## Useful Mineral Links:

	American Federation of Mineralogical Societies (AFMS)	<a href="http://www.amfed.org">www.amfed.org</a>
	Eastern Federation of Mineralogical and Lapidary Societies (EFMLS)	<a href="http://www.amfed.org/efmls">www.amfed.org/efmls</a>
 mindat.org	MINDAT	<a href="http://www.mindat.org">www.mindat.org</a>
	Mineralogical Society of America (MSA)	<a href="http://www.minoscam.org">www.minoscam.org</a>
	Friends of Mineralogy	<a href="http://www.friendsofmineralogy.org/">www.friendsofmineralogy.org/</a>
	WebMineral	<a href="http://webmineral.com">webmineral.com</a>
	The Geological Society of America (GSA)	<a href="http://www.geosociety.org/">www.geosociety.org/</a>
	Jeff Scovil Mineral Photography (not advertising - just great photos)	<a href="http://scovilphotography.com/">scovilphotography.com/</a>
	United States Geological Survey (USGS)	<a href="http://www.usgs.gov">www.usgs.gov</a>
	The Geological Society of Washington (GSW)	<a href="http://www.gswweb.org/">http://www.gswweb.org/</a>

## Upcoming Local (or mostly local) Geology and Mineral Events of Interest:

### February

- 19 NVMC Meeting
- 21 MNCA Meeting

### March

3 – 4: 55th Annual Earth Science Gem & Mineral Show sponsored by the Delaware Mineralogical Society. University of Delaware – Wilmington Campus, Arsht Conference Center; 2800 Pennsylvania Ave (Rt 52), Wilmington, DE 19806.

Info: [www.delminsociety.net](http://www.delminsociety.net)

- 7 MSDC March Meeting
- 19 NVMC Meeting
- 21 MNCA Meeting

24-25: 49th Annual Gem and Mineral Show sponsored by the Chehanna Rock & Mineral Club. Wysox Vol. Fire Co Social Hall, 111 Lake Rd; Wysox, PA. Info: [www.chehanna-rocks.com](http://www.chehanna-rocks.com)

24-25: 2018 Mineral Treasures and Fossil Fair sponsored by the Philadelphia Mineral Society & Delaware Valley Paleontological Society. LuLu Temple, 5140 Butler Pike, Plymouth Meeting, PA (PA Turnpike exit 333, or I-476, exit 20). Info: [www.phillyrocks.org](http://www.phillyrocks.org) or [cleibold@verizon.net](mailto:cleibold@verizon.net)

### April

4 MSDC April Meeting

7–8: 45th Annual Mineral, Gem, Jewelry & Fossil show sponsored by the New Haven Mineral Club. Amity Regional Middle School, 1—Ohman Ave; Orange, CT. Info: [www.newhavenmineralclub.org](http://www.newhavenmineralclub.org)

12–15: Tar Heel Mineral Club annual show and EFMLS/AFMS Convention, Raleigh, NC

AFMS Annual Meeting - Thursday April 12

EFMLS Annual Meeting - Friday April 13

AFMS/EFMLS Awards Banquet - Saturday, April 14

Breakfast with the Editors & Webmasters - Sun. April 15

Info: [www.amfed.org](http://www.amfed.org)

14: 14th Annual Earl & Malvina Packard Rock, Gem &



# AFMS Code of Ethics



- I will respect both private and public property and will do no collecting on privately owned land without the owner's permission.
- I will keep informed on all laws, regulations of rules governing collecting on public lands and will observe them.
- I will to the best of my ability, ascertain the boundary lines of property on which I plan to collect.
- I will use no firearms or blasting material in collecting areas.
- I will cause no willful damage to property of any kind - fences, signs, and buildings.
- I will leave all gates as found.
- I will build fires in designated or safe places only and will be certain they are completely extinguished before leaving the area.
- I will discard no burning material - matches, cigarettes, etc.
- I will fill all excavation holes which may be dangerous to livestock. [Editor's Note/Observation: I would also include wildlife as well as livestock.]
- I will not contaminate wells, creeks or other water supply.
- I will cause no willful damage to collecting material and will take home only what I can reasonably use.
- I will practice conservation and undertake to utilize fully and well the materials I have collected and will recycle my surplus for the pleasure and benefit of others.
- I will support the rockhound project H.E.L.P. (Help Eliminate Litter Please) and will leave all collecting areas devoid of litter, regardless of how found.
- I will cooperate with field trip leaders and the se in designated authority in all collecting areas.
- I will report to my club or Federation officers, Bureau of Land management or other authorities, any deposit of petrified wood or other materials on public lands which should be protected for the enjoyment of future generations for public educational and scientific purposes.
- I will appreciate and protect our heritage of natural resources.
- I will observe the "Golden Rule", will use "Good Outdoor Manners" and will at all times conduct myself in a manner which will add to the stature and Public "image" of rockhounds everywhere.

**MEMBERSHIP APPLICATION OR RENEWAL  
THE MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA (MSDC)**

Family ~ \$25.00 per year. One address.

Individual ~ \$20.00 per year.

New \*  Renewal Dues are for Year \_\_\_\_\_ \*

For new members who join in the last months of the year, membership will extend through the following year with no additional dues.

**ANNUAL DUES – PLEASE PAY YOUR DUES PROMPTLY.**

Pay at next meeting or mail to:

Mineralogical Society of DC  
c/o John Weidner  
7099 Game Lord Drive  
Springfield, VA 22153-1312

Name(s) (First and Last) \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip: \_\_\_\_\_

Phone(s): Home/Work/Mobile \_\_\_\_\_

Email(s): \_\_\_\_\_

**OK TO INCLUDE YOU ON CLUB MEMBERSHIP LIST?**

Yes – Include name, address, phone, email.

If you want any information omitted from the membership list, please note:

Omit my:  Email;  Home phone;  Work phone;  Mobile phone;  Address;  Name

**SPECIAL CLUB-RELATED INTERESTS?** \_\_\_\_\_

Meeting Dates, Time, and Location: The first Wednesday of each month. (No meeting in July and August.) The National Museum of Natural History, Smithsonian Institution, 10th Street and Constitution Ave, Washington D.C. We will gather at the Constitution Avenue entrance at 7:45 PM to meet our guard who will escort us to the Cathy Kirby Room. Street parking: Parking is available in the Smithsonian Staff Parking – Just tell the guard at the gate that you are attending the Mineral Club Meeting.



THE MINERAL MINUTES

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NEWSLETTER OF THE MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA

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