

*The Mineralogical Society
of the
District of Columbia*

THE MINERAL MINUTES



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The Mineralogical Society of the District of Columbia meets monthly (except July and August) at the Smithsonian on the first Wednesday of the month, We meet at the Natural History Museum located at 10th Street and Constitution Ave., NW in Washington, DC. at 7:45 PM. Please see our website mineralogicalsocietyofdc.org for additional information.

Pre-Meeting Dinner: Will be cancelled for the November 4, 2015 meeting.

Program for the November 4, 2015 Meeting: Postcards: Images and Messages About Minerals, Mines, and Miners presented by Erich Grundel

Wednesday, November 4, 2015 7:45 pm
Smithsonian Natural History Museum, 10th Street and Constitution Avenue, NW

Erich Grundel is a past-president and long-time member of MSDC. He is also a dedicated mineral collector and researcher into the history of mineral occurrences. Many of his articles have won awards in Eastern Federation and American Federation of Mineralogical Society

competitions. Below is a very enlightening article pertaining to the history of postcards and how they record some of the history of mineral occurrences.

The Message is in the Medium

- Erich Grundel

Hominids, not necessarily just our genus *Homo sapiens*, have been leaving messages for posterity for a long time. About 35-40,000 years ago in places as distant from each other as Australia, France, Indonesia and Spain, drawings, using in part mineral pigments, were left on cave and cliff walls. Their meanings are as yet unknown to us. This urge to cover surfaces with images and messages has not disappeared, witness the global existence of graffiti.

Around 5500 years ago there arose in several places the phenomenon that is a defining characteristic of us: writing. The Mesopotamian cultures of the Tigris-Euphrates rivers area (Iraq) used slabs of wet clay minerals to incise marks in them. The clay tablets were then dried and thus we have the well known and preserved cuneiform writings of the Assyrians, Babylonians and Sumerians,

Not far away, along the banks of the Nile river, another civilization created its own system of writing and preservation. By the time of the First Dynasty, Egyptians were using graphic symbols applied to the matted surface of papyrus to give us the famous hieroglyphics as well as a derived term from the plant that is with us today: paper. The oldest geologic map (Turin Papyrus) is a more than 3000 year old depiction of gold mines in Egypt. Simultaneously, writing (Indus Script) in the form of short strings of symbols and figures engraved, painted or incised on soapstone, clay and other media appeared in the Harappan Civilization of the Indus Valley along the border of what today is India and Pakistan. This system, unlike the others mentioned, has yet to be deciphered.

About a thousand years later a new medium was produced. Animal hides could be treated to produce a tough, smooth surface upon which one could write: parchment. Under the right conditions these documents could survive for millennia, for example the famous Dead Sea Scrolls. At the same time scrolls of copper and silver were being produced upon which biblical verses were being engraved.

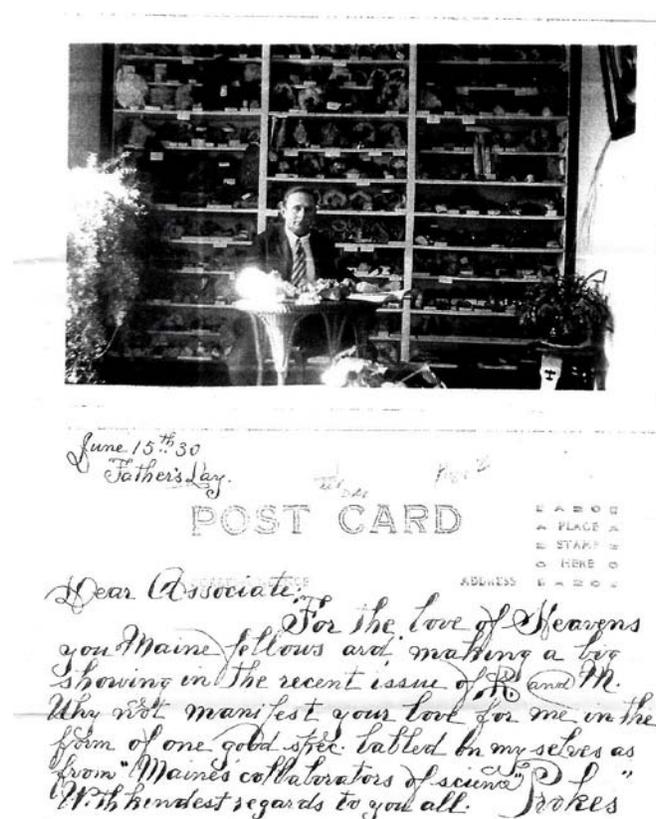
Around the 2nd C. BCE paper, the most successful of all media, was developed in China. Its use eventually spread through trade to Europe via the Arab nations. It would be another two millennia before new modes of recording information appeared to challenge it. In the 19th and 20th Centuries such things as silver emulsions on glass (photographs) and celluloid strips (film), metal wires, plastic disks and wax cylinders (sound recordings), magnetic tape, cathode ray tubes, liquid crystal displays, silicon wafers and many other innovations were developed.

All this is presented as a lead into a brief discussion of a niche medium in the form of rectangular pieces of heavy stock paper: postcards. The first postcard was sent in England in 1840. The first U.S. postcard was sent in 1848. In the U.S. throughout the 19th Century the printing of postcards was a monopoly of the Post Office. To get around this, private companies printed "postal cards" and "souvenir cards". Near the end of the century a law was passed that liberalized the printing of postcards. There were still some restrictions on what a postcard could look like. Eventually all restrictions were removed and by the time of WWI postcards had entered what is called their "Golden Era".

The subject matter depicted on postcards is as varied as the contents of the dictionary and encyclopedia. Minerals and related topics are no exception. At first there were few examples of mineralogical subjects on postcards from the 19th century but that soon changed. The country that produced some of the earliest postcards of interest was the Union of South Africa. It's already dominant position as the leading producer in the world of diamonds and gold led to many interesting postcards.

At the same time in the United States the economy was being fueled in part by the prodigious output of metals, primarily from western mines. Those communities shared their pride with the rest of the world partly through postcards. Places like Bisbee, Arizona; Butte, Montana and the Tri-State District would produce postcards throughout their economic lifetimes and sometimes well beyond that. Some of the postcards from these places are quite remarkable both in content and construction.

Collecting postcards is not unlike collecting minerals. There is a term for this hobby: deltiology (Greek: δελτιος; writing tablet). Collectors have clubs, shows, dealers and there are collections in museums. A big difference is that there are no field trips. Postcards are still around but their future, like most printed media, is cloudy (pardon the pun). Today, an image of the Washington Monument or Old Faithful as a backdrop to a selfie is unlikely to survive as long as a postcard or film based photograph of the same subject. Time will determine if, in the future, people will collect selfies the way they currently collect the little paper rectangles.



A mineral collector has a postcard made of himself and his collection. The message notes an article in *Rocks and Minerals* (R&M). June, 1930.

Synopsis of the October 7, 2015 MSDC Business Meeting

- Andy Thompson, Secretary -

1. President Steve Johnson called the meeting to order and recognized attending past presidents.
2. **Old Business** items needed no further discussion so Steve asked for approval of the Minutes of the September Meeting as published in the October Mineral Minutes. A motion to approve was made, seconded and unanimously accepted.

3. **New Business** items discussed included :

A. Holly McNeil, a member of GLMSMC and MSDC, reiterated that GLMSMC has invited us to be join them as guests at their annual holiday part on 14 December at the Rockville MD Senior Center. It is a pot luck and traditionally everyone brings a dish or food of their choice, whether ourderves, finger foods, drinks, deserts, and traditionally this has worked out well without any coordinator or formal sign-up sheet. Although MSDC members are guests, several members offered that it was also our custom to bring food as well. MSDC thanks Holly for the invitation and noted that we will be delighted to attend. When GLMSMC breaks for their business meeting, MSDC members will also break for their election of officers and any other business as needed.

B. Kathy Hrenchka noted the upcoming birthday, 21 October, of our beloved Cynthia Payne. All are invited to be in touch to share in her day of celebration.

C. This Sunday, 11 October, is the field trip to Corridor H in West Virginia. Dave Nanney has been spearheading the event and coordinating with Professor Shelley Jaye who will head the caravan of MSDC members and friends and explain the geologic formations recently unearthed by the new road's construction. This field trip is a follow up of the presentation she gave to club members in September.

4. **Visitors:** we had one new attendee, Mark and one 'almost new' attendee Ken Reynolds who returned after an earlier visit

5. **Treasurer's Report:** MSDC continues to be solvent and has sufficient funds available to meet upcoming expenses

6. **"Geology in the News"** yielded reports of intense rain fall and floods in the Carolinas.

7. Members then called for the close of business which was seconded and approved.

Synopsis of Keith William's Presentation: "Crystallography From A Mineral Collector's Prospective"

- Andy Thompson

"Over the years, we have been treated to a number of excellent presentations on the crystal formations of minerals. But Keith's was one of the best," said an MSDC member who attended the October MSDC club meeting.

"Perhaps what helped most, beyond his hand outs and the 3 large crystal specimens he passed around the room, was his clear perspective." He approached it from the point of view of the mineral collector who was trying to correctly identify an unknown mineral. So it makes sense that knowing the six or seven main crystal forms and which minerals are associated with each does help to narrow down the likely mineral identity.

Although trained as a geologist at Indiana University and hired as a mine geologist, it was his subsequent forty years of hands-on experiences as a collector, dealer and life-long student of minerals and especially micro minerals which schooled Keith in the art and science of mineral identification. That skill was the reward for a life time of studying crystal morphology. Mastering the ability to pick up a specimen and quickly identify its axes, faces, and general appearance, including whether it is metallic or non-metallic, have given Keith the edge and the pleasure in mineral identification.

By way of general background, Keith explained that the study and classification of crystals began in the early 1800s with the work of Mohs and his scale for minerals' hardness, followed by others including William Miller and his classification of minerals based on the relationship between the crystal lattice planes and how they intersected. Numerous researchers subsequently published photos, drawings and texts including, in the mid-1900s, Victor Goldschmidt's multivolume atlas of crystals. Having and consulting such books on crystal classification, then as now, Keith said, are essential tools for correctly identifying minerals.

Keith said he found two reference books particularly helpful: Minerals and Their Localities by Jan H. Bernard, and J. Hrysl, 2006. Although expensive, it can be obtained through the Mineralogical Record Magazine or Excalibur Minerals. The second is Dana's Textbook of Mineralogy, Fourth Edition by W.E. Ford, published by John Wiley and Sons, New York, 2006.

He also made his case for knowing crystal structures by citing examples of sharp eyed collectors who were able to buy valuable specimens from knowledgeable collectors and other dealers who had misidentified the minerals. One in particular recognized that the mineral being offered was actually a previously unknown specimen which he was able to obtain inexpensively.

As a practical demonstration, Keith passed around several mineral samples, one of which appeared to be a large dark red "garnet" and which was clearly labeled as such. No one objected to this identification until Keith started raising questions and, of course, it was not a garnet at all. Rather, because the specimen's crystal habit was trigonal (3 equal axis, horizontal in a common plane and intersecting at 60 degrees with the 4th axis at 90 degrees to the other three), it could not be a garnet which has an isometric system (three axis of equal length and at right angles to each other). The mystery specimen was tourmaline whose crystal habit is identified as having a hexagonal system with a trigonal division.

Briefly put, all crystals fall into one of six main structural systems: 1) isometric such as halite and pyrite, 2) tetragonal such as zircon and chalcopyrites, 3) hexagonal with a trigonal division such as

quartz and cinnabar, 4) orthorhombic such as sulphur and stibnite, 5) monoclinic such as mica and wolframite, 6) the most complicated being triclinic such as feldspar and kyanite. Keith passed around two additional samples as examples, namely zircon which has a tetragonal habit and a calcite which has a hexagonal system and trigonal division.

Keith further noted that practically speaking, when out in the field on a collecting trip, it helps to be aware of the mineral environment.

Attendees then raised questions, some of which pertained to their own challenges encountered when attempting to identify crystal axes. Keith responded with practical suggestions including to rely on the above publications which address variations in mineral shapes and give an abundance of drawings and photographs.

The group and Dave Nanney, V.P. for monthly programs, expressed their gratitude for Keith's having shared such helpful suggestions for using the six crystal habits to correctly identify minerals. The evening's program then concluded with socializing and snacks provided by the Siegals, Weidners, Fishers and Thompsons.

Remember: Elections for officers comes in December. If you are interested in taking a leadership role in MSDC, please contact President Steve Johnson or Secretary Andy Thompson. There is also a need for a newsletter editor and volunteers for program chairmen.

Happy Thanksgiving: Enjoy a time with friends and family and give thanks for all the bounty we enjoy!



(Editor's note: Cynthia Payne is a long-time member of MSDC. She celebrated her 95th birthday in mid-October. Over the years she has held many offices in MSDC (President in 1980) and in the Micromineralogists of the National Capital Area. She has also contributed many articles to the newsletters of both organizations. The following was written by Cynthia in 1997 and was reprinted in the October 2015 issue of *The Mineral Mite*, the Micromineralogists of the National Capital Area newsletter (and reprinted here with permission of that newsletter.))

Recollections of Cynthia Czapek Barnes Payne

By Cynthia in 1997



A class in jewelry-making taught by William T. Baxter at Bethesda Chevy Chase (BBC) High school was responsible for my joining the Mineralogical Society of the District of Columbia (MSDC). At the second class I found out that I didn't know the difference between jade and aventurine, and why they cut and polished differently. Jack Barbour, who was in the class, told me about the Gem and lapidary Society of the District of Columbia and the Mineralogical Society of the District of Columbia.

I joined both clubs in late 1965 and soon found out that I could learn a lot more about minerals at the MSDC. We had lectures every month, (Some of which I didn't understand at all), and field trips every month. I remember getting to a site and saying "OK, what am I looking for?" Experienced members were always helpful, showing me what to look for, and where. There were so many places to collect from then. We would visit some every year. Certain favorite places where one could be sure of finding something interesting included Goose Creek Quarry at Belmont Station, (hurricane Hazel filled it with water); Centreville, Chantilly; Virginia Trap rock; Amelia; Baker Mountain, Virginia; Texas and Marriotsville, Maryland; State Line Chrome Mine; (although I never did find any of that beautiful Williamsite); Gornog and Cornwall, Pennsylvania; Mineral, Virginia; Frostburg, Maryland, (and we almost froze up there one day in May); Pennsylvania Glass Sand Quarry; Harris Mica Mine, Virginia; Cedar Hill, Pennsylvania; Timberville, Virginia; Faylor, Pennsylvania; Hunting Hill Quarry, (the correct name according to John Griesbach, who was there when they started the first pit, Rockville to most people); Vesuvius, Virginia; Union Bridge, Virginia and more which I can't name at the moment. Have I made present members jealous? When the renovated Mineral Hall at the Smithsonian was completed, all our club members were invited to the opening evening celebration. I remember "oohing and aahing" over the wonderful displays and those beautiful specimens.

In 1958 I went to my first Eastern Federation show in Ashville, North Carolina. Our club case, which Ted Schultz had taken there and set up, took 1st Place in Minerals. That show was followed by a week of field trips. I came home with the springs of my car sagging. I had some material for swapping and to put in our auctions. I made a lot of friends from all over the country.

The club and individual members always exhibited in the Gem and lapidary Club's annual show. Phil Cosminsky was usually there with his microscope and his little goodies. I stopped to say hello and by the time I got away, I was hooked on micromounting.

When I joined the Society, Sylvia Czayo, who had been secretary, was out of the country and that led to all sorts of confusion. I couldn't understand why anyone should confuse Sylvia Czayo and Cynthia Czapek. When she came back we became good friends and laughed about it, but that didn't stop the confusion until I got married in 1964 and changed my name to Barnes. She was secretary and I was treasurer at various times in between. Sylvia is still interested in minerals. I've seen her several times when I've been in Tucson, where she lives. She is now learning to facet.

I remember being treasurer in 1962 and 1964, and the discussions we had about raising dues, because I couldn't write a check until we had an auction, or I collected some dues. I am treasurer again and am happy to say we are in better financial condition that we were 30 years ago.

There are people who are gone that I think of every so often and still miss for themselves and for what he did for the Society. I think of Doug Alverson the most, perhaps because he did so much and died so young. Doug was secretary for many years, and I doubt that anyone else ever wrote minutes like Doug did. I believe some members came mostly to hear him read them, at times they were more interesting than the program. He always included a detailed account of the previous speaker, and if the lecture had been way over my head, I usually could understand the topic from Doug's way of talking about it. Finally, Doug said he was tired of the job, so we elected him president in 1967. He and I made a deal. By the time I was responsible for gathering the specimens and setting up the Society's displays for some time. I agreed to become vice president, the person who is usually responsible for programs, if Doug would take that duty. I would continue to set up club displays for shows. We both felt strongly that MSDC should always exhibit in Federation shows, being one of the 3 founding members of the Eastern Federation.

I remember Frank Berek who was registrar for many years. He kept name tags for everyone and would be at the door of old Room 43 early and hand each person his or her tag as he or she went in. He also greeted visitors and made them feel welcome by introducing them to some member to talk to. I remember Helene and Will Halliday. She was the perfect hospitality chairperson for years, and I spent many pleasant hours in Will's workshop making favors for the 1967 show. And Cedric Gleason, addressing Mineral Minutes and licking stamps at his dining room table. Ruth and Vernon Wertz; he was editor of the Mineral Minutes. They both wrote a column for rocks and Minerals, and many others.

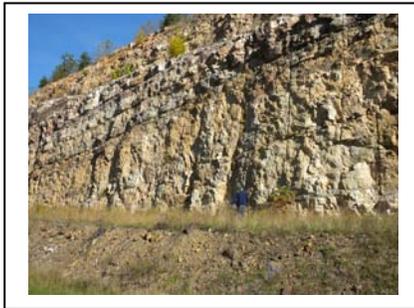
At the end of 1978, being told that I had held every other office, and that it was past time the Society had a woman president, I agreed to the nomination, and as everyone knows, that means you are elected. I learned just how much effort all my predecessors had put into the job. It's hard to believe 36 years have gone by since I joined MSDC, and for a few years I could not be very active, but have enjoyed learning about minerals, paying ridiculous prices at auctions, (sometimes too high, sometimes too low), meeting other people interested in the same things I am, and making some very wonderful friends. I really cannot expect 36 more years, but I intend to keep participating as long as I am able.

A Field Trip along West Virginia's Corridor H - Susan Fisher

(Editors note: The following is a short summary of the field trip along West Virginia's Corridor H. Betty Thompson and others are preparing a more complete pictorial record of the trip to be published on our website and facebook page later. It was a great trip and we thank Professor Shelley Jaye for taking the time to show us outstanding examples of how our current continent was formed.)

It isn't often that one gets to see about 100 million years of earth history along with parts of three (3) mountain building orogenies on one field trip, but that is just what happened on October 11, 2015, when we followed Professor Shelley Jaye on a tour of Corridor H in West Virginia. The trip consisted of drive along Corridor H, US 48, with stops at road cuts showing evidence of what was happening during the Silurian through the early Mississippian and Pennsylvanian periods. The trip was an easy one even for members who are less agile as the sites visited may be seen from the road with no scrambling required unless one wants to actually touch the rock face. The geology revealed in the cuts vividly demonstrates the Wilson Cycle as mountains were built and eroded, seas opened and closed, and existing land masses were modified. The environmental conditions were recorded in rock groups that showed periods of intense uplift and deformation followed by quieter periods. The energetic periods of uplift were evidenced by intense deformation of older rock layers. These were followed by quiet periods shown in rocks deposited in less energetic environments.

The trip started with a stop at the Silurian age Hanging Rock anticline. This is a beautiful anticline showing both limbs.



Both limbs of the Hanging rock anticline.

The stop at Baker Quarry showed a large wall of Silurian/Devonian age mud cracks that had undergone lithification then been tilted to almost vertical.



A wall of mud cracks

Another stop showed Devonian age delta environment where evidence of plant roots and other organic material had been preserved and sand channels had been cut in the shale.



Sand channels and "root casts"

Evidence of a receding glacier during the late Devonian to early Mississippian was captured in a mass transport deposit made up of jumbled drop stones



Mass transport deposit

Even the fossil enthusiasts were pleased with a chance to collect Mississippian and Pennsylvanian age fossils at the last two stops. Many of these were in the bits of shale that had fallen to the edge of the cut.

Fossil bearing shale by edge of road



This was a most instructive field trip and one that should be made by anyone interested in the geologic history of our area. Thank you Professor Jaye!

American Mineralogist: Journal of Earth and Planetary Science: editors pick of "Noted Papers."

(Editor's note: The following is reprinted with permission from the *American Mineralogist: Journal of Earth and Planetary Science: editors pick of "Noted Papers."* While many of these papers are very technical in nature, these summaries give you an idea of the research that is taking place currently. This is the **Editors Selections, Oct. 2015**. You may view the American Mineralogist Noted Papers at http://www.minsocam.org/MSA/Ammin/AM_Notable_Articles.html, A special note of thanks to President Steve Johnson for arranging this. Please let me know if you find this interesting.)

Highlights and Breakthroughs

Dating Young Mafic Volcanics with U-Th Geochronology

On page 2017 of this issue, Bernal provides an overview of a new approach to U-Th geochronology, as provided by Wu et al., beginning on page 2082. The new study provides a means to date young, silica undersaturated volcanic rocks, through the analysis of baddeleyite, which appears to crystallize largely in vesicles in such rocks. The age dates, obtained for lavas from Campi Flegrei, near Naples, Italy, are similar to K-Ar ages, and are thought to -- at least mostly -- reflect eruption ages, although some age dates may reflect late-stage pre-eruptive crystal growth. As Bernal notes, this advances open up new avenues of research and possibly much better understanding of the timescales of crystallization and eruptive emplacement of mafic volcanic systems.

Invited Centennial Article/Outlooks in Earth & Planetary Sciences

Spinel as indicators of redox history and planetary parentage

On page 2018 of this issue, Papike et al. use partial melting experiments to examine the crystal chemistry of spinels, and the effects of valence state on the partitioning of V, Fe, and Cr. They show that increasing fO_2 from IW - 1 to FMQ + 2, produces an increase from a mostly normal spinel structure (>90%), to a structure containing up to 25% inverse spinel. This structural change affects the relative compatibilities of V^{3+} and V^{4+} , since the inverse structure can incorporate larger fractions of the more oxidized species. Their work allows the use of V^{4+}/V^{3+} ratios to be more quantitatively related to parental "parentage", since V^{4+}/V^{3+} ratios vary strongly between terrestrial, martian, and lunar samples and so can be used to reconstruct contrasting fO_2 histories.

Diffusion Timescales: 1D vs. 3D Modeling

On page 2026 of this issue, Shea et al. measure diffusion profiles in olivine, to assess the timescales of magmatic processes. Their work shows that results obtained from random 1D profiles can yield timescales that differ from the 3D case by factors that range from 0.1 to 25. Moreover, 1D profiles, even when corrected for mineral anisotropy, still differ from 3D results by factors ranging from 0.2 to 10. The authors find that a set of selection criteria, including size, crystal shape and diffusion plateaus can be used to increase accuracy to 5% and decrease precision to 15-20% relative, when results from as many as 20 traverses from such selections are averaged.

Phosphorous in Olivine

This month, two papers in the Special Section: Olivine, feature studies of P in this nesosilicate. On page 2053 of this issue, Watson et al. investigate P diffusion in olivine and molten melt, concluding that anomalously high P concentrations can develop in olivine when P is built up in a melt boundary layer during growth, but this mechanism requires growth speeds approaching those relevant to dendrite formation. Alternatively, high P contents of olivine may be a consequence of "growth entrapment" of a high P near-surface region in the olivine lattice, which can occur at more modest growth speeds. Either way, cooling must occur on a time scale of months to preserve delicate P zoning features. Then on page 2043 of this issue Fowler-Gerace and Tait show that very high P concentrations are present in olivine from a pallasite meteorite (a class of meteorites where olivines are entrained in a metallic matrix).

Their textural and compositional analysis indicates that high P regions in these olivine grains formed before complete cooling of the metal matrix but after the olivines were rounded. They relate the high P overgrowths to very rapid crystal growth, recording an impact event on the pallasite parent body.

Origin of High $^3\text{He}/^4\text{He}$ Basalts

On page 2066 of this issue Garapic et al. present new analysis of high $^3\text{He}/^4\text{He}$ basalts from Hawaii, Samoa, Iceland and Galapagos. Their study shows that these lavas have high Ti contents and enriched Pb-isotopic signatures. The Ti contents are far too high to be obtained by even very low degree partial melting of a primitive, let alone a depleted mantle source. But the high Ti contents and enriched Pb-isotope signatures are plausible if at least a portion of the source regions are mixed with recycled MORB crust. But in their view, the high $^3\text{He}/^4\text{He}$ ratios are not related to the subducted MORB material. Instead, they argue that high $^3\text{He}/^4\text{He}$ is indeed derived from a primitive mantle source, but that such a source exists only in a form that has been mixed with recycled eclogites derived from subducted MORB.

A new hygrometer for volcanic systems

On page 2172 of this issue, Waters and Lange present a new calibration for a plagioclase-liquid hygrometer. What's especially important in the present update is that the authors present rigorous tests of the new model, using data from five different studies that are not used for calibration, including anhydrous, water-undersaturated, and highly viscous melt compositions. These tests indicate that when temperature is known, water in plagioclase-saturated liquids can be predicted to ± 0.5 wt%.

10-fold Symmetry

On page 2340 of this issue, Bindi et al. report the first mineral with decagonal (10-fold rotational) symmetry, decagonite. This represents only the second quasicrystalline mineral to be recognized by the IMA, after icosahedrite, which instead exhibits a fivefold rotational symmetry. Synthetic quasicrystals are often found in three-component alloys, many of which contain Al, the dominant component of both quasicrystalline minerals. The existence of these quasicrystalline minerals through geological times is of strong relevance to discussions concerning the stability of quasicrystals in condensed matter physics.

Affirmative Action Needed for Minerals

On page 2344 of this issue Robert Hazen et al. give a statistical analysis from data drawn from large mineralogical databases to predict that at >1500 mineral species remain to be discovered, representing about a quarter of the >6000 species so far described. Their model shows that the as-yet undiscovered minerals are not uniformly distributed across the periodic table, and that sociological aspects of mineral collection, e.g., perceptions of beauty, distinct color, etc., strongly affect the chance of reporting. Obvious implications are that a new emphasis on hypothesis-driven discovery is needed to provide a distribution of known species that more accurately reflects natural variation.

Upcoming Events

Nov 7-8: Oaks, PA - The Tuscarora Lapidary Society will host their 46th annual fine gem, jewelry and mineral show, "Gemarama 2015: Rocks in the USA". Hours: Sat. 10-6; Sun. 10-5. at HALL C at the Greater Philadelphia EXPO Center at Oaks, PA. Dealers of finished jewelry, cut and uncut stones, fossils, beads and tools. Demonstrations of jewelry artistry by members of TLS. Exhibits, children's activities and door prizes. Food available and free parking. More information and discount tickets are available at www.lapidary.org.

November 21–22: Fairfax, VA 24th Annual Gem, Mineral, and Fossil Show

Cosponsors: **Northern Virginia Mineral Club & George Mason University's Department of Atmospheric, Oceanic, and Earth Sciences,**

George Mason University, The Hub Ball-room, Rte 123 & Braddock Rd, Fairfax, VA

Saturday Nov 21st 10–6 and Sunday Nov 22nd Sun 10–4

Adults \$6, seniors \$4, teens (13–17) \$3, 12 and under free, Scouts in uniform & students w/ID free

info: <http://www.novamineralclub.org/events/2015-show>.

November 21-22: Lebanon, PA: Gem Miner's Holiday, Lebanon, Expo Center, Route 72, 5 miles north of PA turnpike,, exit 266 (old exit 20) right on Rocherty Road; Sat: 10 am - 5 pm, Sun: 11 am - 4 pm; admission \$5, children under 12 free; www.gem-show.com

Nov 27-29: Salem, VA - 36th Annual Roanoke Valley Mineral & Gem Society Show, Friday, Nov 27, 2015 - 2pm to 7pm, Saturday, Nov 28, 2015 - 10am to 6pm, Sunday, Nov 29, 2015 - Noon to 5pm. Salem Civic Center, 1001 Boulevard, Salem, VA 24153, Free Parking. Hobby related exhibitors, Fluorescent Mineral Display, Geode Cutting. Admission \$4, ticket good for all three days. Children under age 16 free. Door prizes drawn hourly. Grand Prize drawn 4:30pm Sunday. For further information, CKWLT@aol.com

Check out www.amfed.org/EFMLS for more show dates and news from the American Federation and the Eastern Federation of Mineralogical and Lapidary Societies



Visitors are always welcome at our monthly meetings and dinners!

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, P.O. Box 9957
Alexandria, VA 22304

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?

MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA

(2015 Officers & Board Members)

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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: **THERE ARE NOW PARKING FEES, PAYABLE AT THE KIOSKS, AND ENFORCEMENT UNTIL 10 PM.**



THE MINERAL MINUTES

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Newsletter of the Mineralogical Society of the District of Columbia

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