

*The Mineralogical Society of the  
District of Columbia*



# ***THE MINERAL MINUTES***

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January's Meeting is Wednesday, 6 January. We will be meeting at 7:45pm in the lobby of the Museum of Natural History

### **IN THIS ISSUE:**

Remembering Cynthia Payne	Page 1
Prez Says...	Page 2
Minutes of the December Meeting	Page 3
MSA Editor's Picks	Page 4



Yes, that is the Hope Diamond! Cynthia gave generously of her time as a docent at the Smithsonian.

Cynthia Czapek Barnes Payne passed away on November 15, 2015. She will be greatly missed by her family, friends and all who knew her. We will all miss her knowledge and enthusiasm for all things in the natural world. She was a very passionate mineral collector and proficient micromounter. Cynthia was a world traveler and made friends in the mineral collecting world everywhere she went. She enjoyed field collecting and traded minerals with enthusiasts from Australia to Scandinavia. She particularly enjoyed acquiring unusual calcite specimens from little-known locations. In addition to amassing impressive calcite and micromount collections, Cynthia's accomplishments include:

President, vice-president, secretary, and treasurer of Mineral Society of the District of Columbia; Charter member and holder of numerous offices in the Micromineralogists of the National Capital

Area; Eastern Federation of Mineralogical and Lapidary Societies, Inc. committee member and judge; Wildacres Functioning Committee and instructor; A Smithsonian Institution Museum technician and volunteer in the Mineral Sciences Department; and Member of the Micromineralogist Hall of Fame (inducted 2006).

Cynthia began her mineral collecting career the way many of us do, picking up rocks as a child. She was born in Patterson, New Jersey, in October 1920. She and her sisters walked to school past the now-famous New Street Quarry and she often picked up the glittering zeolites that had been scattered during the quarrying operations. After graduation from high school, she moved to New York City and worked in a dental office. In the early 1940's, Cynthia moved to Glen Echo, Maryland and went to work for the Army Map Service. Being interested in jewelry design, she signed up for a class. Soon she discovered that she needed to know about mineralogy to understand why various rocks and minerals behaved differently when cut. This interest led her to join local mineralogical groups and take any available mineralogical classes.

While working at the Army Map Service, she met and married her first husband, Warring Barnes in 1964. Together they formed a musical instrument restoration business as well as collecting

minerals from the local quarries. At one time they even had a key to the gate at the Goose Creek Quarry at Belmont Station and permission to collect there.

After Warring Barnes' untimely death, Cynthia pursued a career in photography and developed a real talent. Years later, even after moving to an assisted living facility, she was still winning prizes for her pictures. In the early 1990's she became reacquainted with a friend, Clarence Payne. They married in 1993 and began to travel. Cynthia and Clarence visited Scandinavia, Russia, England and Australia as well as trips to Arizona and Alaska. Cynthia made friends in each place and collected and traded minerals in each. All during this time, Cynthia was very active in numerous mineral societies and her contributions included teaching micromounting and exhibiting minerals at local and Eastern Federation shows. In 2006, Cynthia was honored by being inducted into the Micromineralogist Hall of Fame.

The mineral collecting community has been enriched by Cynthia's contributions. Many of us owe much of our knowledge and fervor to Cynthia's guidance and enthusiasm. Cynthia shared, mentored and encouraged many beginning collectors. Her interest in minerals was not diminished by age or illness and she will continue as a role model for all of us who were lucky enough to have known her

## Prez Says..

I started writing this message just after our joint Christmas party with the GLMSMC, the Gem, Lapidary & Mineral Society of Montgomery County. We had a very nice turnout and really a great spread to celebrate the holidays, and to share our affection for Andy Muir. This brings a bitter

sweet flavor to the holidays. We lost both Andy and Cynthia Payne this year, both members who added immensely to our mineral knowledge and to our circle of friends. They will both be on our minds this holiday as we celebrate with our family and friends.

I assume the duties of MSDC President very reluctantly, as so many of

you know so much more about the mineral world. I will bring our interest and enthusiasm as I follow in the footsteps of previous presidents who really knew their stuff. I especially want to thank Steve Johnson, our past president, for his efforts to support our club. Steve brought a lot of mineral knowledge and his expertise as a world traveler during his military service. Steve has agreed to continue to support our club as the editor.

I want to also thank Rebecca Siegal for her service as our treasurer. John Weidner will assume those duties in 2016. Susan Fisher stepped in as editor after the incredible efforts of Sheryl Sims and we thank her as well. Your club is only as good as you make it, and those who have stepped up to take positions are the reason we have been able to sustain this club for over 74 years.

Dave Hennessey has stepped into the Vice President (programs) role by successfully scheduling speakers through May. Dave brings his mineral expertise as a long standing mineral dealer, with extensive connections across the mineral community. I can promise you that 2016 will be a continuation of excellence as our group of

## **January 6th Program – HERKIMER DIAMONDS!**

Our program for January 6th will be on “Herkimer Diamonds”, the amazing double-terminated quartz crystals found in and around Herkimer County, New York. Herkimer Diamonds are known for their glassy luster, incredible clarity and bright sparkle that makes them look (kind of) like actual diamonds. The term “Herkimer Diamond” has become a generic name that is often used to describe similar double-terminated quartz crystals wherever they

mineral friends brings an outstanding group of excellent speakers. Finally, I want to thank all of you for supporting Leslie and me during our ten years of mineral learning and collecting. Susan Fisher brought us to MSDC ten years ago, so it's to her credit as I assume this position. We have learned a huge amount in the last years, and far more important, gotten to know so many really great friends.

I asked Ed Fisher to assist in the 2016 membership renewal cycle by insuring that every member both renews their membership, and update their contact and interest information. We need to insure our speakers support your personal mineralogical interests so Ed will be asking questions about your desires for 2016. Our club is only as good as you make it so we will be reaching out to everyone to identify how we can better support your interests.

Finally let me first wish everyone a Happy New Year, and then invite you to share an exciting 2016 with MSDC.

Dave Nanney  
Really new president, Mineralogical  
Society of DC  
dnanney@cox.net

are found in the world, but the Herkimer District (Herkimer, Fulton, and Montgomery counties in New York) is the premier location for these beauties.

The diamonds form in voids (pockets) in the host rock which allow crystals to grow terminations at both ends of the C-axis. Many of the pockets are quite large and contain multiple diamonds. Sometimes the diamonds grow together with multiple double-terminated crystals forming large magnificent conglomerations. Most have no striations on their prism faces, which is one of the reasons they appear so clear. Some

occur as “smoky” crystals and others have dark inclusions of the mineral anthraxolite, which adds to their interest.

Our speaker for this presentation will be Scott Braley, who had the good fortune to collect at the Ace of Diamonds Mine (one of the major commercial mining ventures in the Herkimer District) during 2015. He will be sharing information on the nature and history of the deposits and his personal experience collecting a “pocket” of Herkimer Diamonds at the Ace of Diamonds Mine.

Scott is an active collector, a member or several local clubs, and a past president of the Gem, Lapidary, and Mineral Society of Montgomery County MD. In “real” life, Scott is an emergency planning and crisis management subject matter expert. His focus is the protection of health and the environment during and after radiological,

chemical and natural disasters. Scott has an MS in Civil Engineering and an MS in Nuclear Engineering. He recently retired from the Air Force and plans to head back to academia in the near future to collect his PhD. We are pleased to catch him for this presentation before he heads off to the ivory tower of academia.

Please join us in taking Scott to dinner on January 6th 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 Scott’s presentation.

## **Minutes of the Business Meeting of 14 December 2015**

President Steve Johnson called the business meeting to order. Given the meeting’s setting was the annual holiday party, it was necessarily brief and sharply focused.

Officers for 2016 - Steve’s first priority was to hold the election of the MSDC board officers for 2016. He announced the slate as follows: President – Dave Nanney; Vice President for Programs – Dave Hennessey; Treasurer – John Weidner; Secretary – Andy Thompson. Each position was voted individually for 2016 and the slate was approved in its entirety by verbal acclamation.

Directors for 2016 - Given that two of the newly elected officers thereby left their current position as board Directors, the group decided to defer the election of the three vacant Director positions until early 2016 and thereby allow time to survey all members as to their possible interest and for further discussion of all interested parties.

New Signatures for the Bank - Newly elected Treasurer, John Weidner, along with outgoing Treasurer Rebecca Siegal had previously met with the bank officials to facilitate a smooth transition of signers of the MSDC accounts. Accordingly, during the meeting, John gathered the signatures needed for the bank documentation.

Thanks to Outgoing Officers - President Elect Dave Nanney, on behalf of all the MSDC members, thanks Steve for his 3 years of service as president, and Rebecca for her two years as Treasurer. He also thanked Susan Fisher for serving as the Editor Pro Tem for the past year. A few club members raised the question of who would be the new MSDC editor of the club's Mineral Minutes given the practical need for one person to be designated to receive the photos and business minutes

from the Holiday Party to be published in the January 2016 issue. Steve reiterated his willingness to serve as Editor and his openness to collaborate with Rebecca.

Adjournment - With no further business to be addressed, members proposed and seconded the meeting be closed, a motion which carried unanimously. All joined with the GLMSMC club members and continued the Holiday dinner party.

## Mineralogical Society of America Editors' Picks

With the permission of Keith Putrika, the following are the Editor's picks of notable articles for the Nov-Dec 2015 issue of the *American Mineralogist: Journal of Earth and Planetary Materials*.

### **The Bond Valence Model and a Theory of Structural Chemistry**

On page 2365 of this issue, I. David Brown provides an overview of Hawthorne's contribution "Toward Theoretical Mineralogy", which appeared on page 696 of this volume. As yet, we still do not have a "theory of mineralogy", at least not in the same way that we have a theory of gravity or of biological evolution. As mineralogists well know, thousands of mineralogical structures have been identified, and many more have been synthesized, but just a few dominate Earth and its solar system. But why? As Brown explains, Hawthorne addresses the issue with a concept referred to as the "valence matching rule". This is a variation on Pauling's rules, where we define the "bonding strength" of an atom, a quantity closely related to Pauling's electrostatic

valence bond strength, from the standpoint of both the anion and the cation: given their charge and a typical coordination number a characteristic bonding strength can be predicted. Bonds are most stable when the bonding strength is the same for both the cation and anion. If the bonding strengths differ by more than a factor of two, the bond is unstable, and so unlikely to form; the concept can be taken further, where bonding strength is proportional to Lewis acid/base strength. As Brown states, Hawthorne's new work "elevates the Bond Valence Model to the level of a theory of structural chemistry".

### *Highlights and Breakthroughs* **Silicate Liquid Immiscibility**

On page 2367 of this issue, Bernard Charlier reviews the experimental work of Hou and Veksler (2015), which appeared on

page 1304 of this volume. In the latter work, experimental data are presented that indicate that immiscible ferrobaltic liquid may be stable at high temperatures—above 1150°C. As Charlier explains, the high T experiments yield silicate liquids that are andesitic, with SiO<sub>2</sub> contents in the range of 53-56% SiO<sub>2</sub> (and 14-18%FeO<sub>t</sub>). The experiments thus indicate that high SiO<sub>2</sub> contents, as well as elevated FeO<sub>t</sub>, may be hallmarks of silicate compositions that can reach immiscibility at high T. This then raises the issue of whether tholeiitic liquids can reach immiscibility at high T, since sufficiently high SiO<sub>2</sub> contents may occur due to Fe-Ti oxides, but then decreasing FeO<sub>t</sub> would drive liquids away from the two-liquid solvus. But the new experiments may support recent work indicating liquid immiscibility in the Bushveld.

### **Evidence for Plate Tectonics in The Archean**

On page 2369 of this issue, Igor Puchtel provides an overview of Blichert-Toft et al.'s geochemical results on komatiites from the Barberton Greenstone Belt in South Africa, which appears on page 2387 of this issue. In earlier work, Puchtel and his co-workers also examined 3.5 Ga komatiites, and discovered a de-coupling of the Sm-Nd and Lu-Hf isotopic systems. The decoupling can be explained by internal mantle differentiation, i.e., partial crystallization of a magma ocean. However, as Puchtel explains, Blichert-Toft et al. find even greater degrees of de-coupling at 3.5 Ga, to an extent that cannot be explained by internal mantle differentiation alone. One possibility is that subducted pelagic

sediments contribute to the isotopic signature of some 3.5 Ga komatiites. Such sediments would have little zircon, and so contain high Lu/Hf, which over time would develop high eHf isotopic signatures. This implies that a modern-like form of plate tectonics was operative before 3.5 Ga.

### *Roebbling Medal Lecture*

### **How Trace Elements Change Their Stripes**

On page 2371 of this issue, Wood and Kiseeva examine how elements under certain conditions are lithophile, but under other conditions become chalcophile, and vice versa. They show that the sulfide/silicate liquid partitioning of chalcophile behavior, while generally linear with respect to element valency (slope) and T and P (intercept), that the linear coefficients depend upon how a given element interacts with oxygen. This interaction can be quantified as the difference in lithophile and chalcophile properties of a given element, and FeO. Their new experiments indicate that “lithophile” or “chalcophile” behavior can depend on the FeO content of a silicate liquid, and that elements that normally behave as lithophile, may become chalcophile at either very low or very high FeO contents of coexisting silicate melts. Such behavior implies that elements such as U or Th, under reducing conditions and with the addition of sufficient S, might partition into a growing metallic core, rather than a silicate mantle, which in turn could affect the powering of a geodynamo.

Invited Centennial Article

### **Petrology on Mars**

On page 2380 of this issue, McSween reviews the petrology of Mars. This review reveals some interesting and important features: First, and unsurprisingly, the martian surface is dominated by lavas, volcanoclastics, and ultramafic cumulates. But among these, alkalic rocks are common in the more ancient terranes, but are mostly absent from younger terranes that are dominated by tholeiitic compositions, which suggest some manner of temporal evolution. But highly evolved compositions, such as granites, are effectively absent. Some silica rich sediments have been observed that were probably created by hydrothermal processes. There is some evidence for metamorphism, in the form of metabasalts and serpentinites, indicating low-P hydrothermal processes. But until such rocks are analyzed directly at the surface, metamorphic processes are still speculative.

#### **Oxidizing Accretion and Implications for Si in the Core**

On page 2739 of this issue, Georg and Shahr present geochemical models of

accretion and simultaneous core formation on Earth, and examine the implications of oxidizing conditions and its effects on metal-silicate partitioning. They find that greater FeO<sub>T</sub> contents in the Bulk Silicate Earth (BSE) imply greater amounts of FeO, and thus more O, in the resulting core. This O content in turn affects the partitioning of Si into the core. With initial FeO in the BSE of 11 wt%, Si has a maximum concentration of ~2 wt% in the core; this maximum Si content increases to ~3% when initial FeO of the BSE increases to 15 wt%. An implication of oxidizing accretion is that Si partitioning into the core is too weak to greatly affect Si isotope contrasts between the core and mantle. So under oxidizing conditions, the mantle should have a near-chondritic Si isotope signature, unless pressure or temperature play some role in affecting isotopic partitioning. A tentative conclusion, then, is that solar nebula processes may be responsible for generating Si isotope contrasts in the inner solar system.

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:  
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**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)**

President: Dave Nanney, dnanney@cox.net

Vice President & Program Chair: Dave Hennessey

Secretary: Andy Thompson, thompson01@starpower.net

Treasurer: John Weidner, (mail: c/o MSDC, P.O. Box 9957, Alexandria, VA 22304)

Directors:

Editor (Acting): S. Johnson, novaya2@cox.net

Co-Web Masters: Betty Thompson & Casper Voogt, <http://mineralogicalsocietyofdc.org/>

**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, 10<sup>th</sup> 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

Mineralogical Society of DC

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