

# Mineralogical Society of the District of Columbia

## *MINERAL MINUTES*



*Vol. 70, No. 5*

*Mineral Minutes*

*May 2011*

**Club Meeting: Wednesday, May 4, 7:45 PM**

The regular monthly meeting of the MSDC will take place as noted above. We meet at 7:45 PM in the lobby of the Smithsonian Natural History Museum.

**Program and Speaker: – Program Announcement for May 4, 2011**

**Speaker: Dr. Richard Walker, University of Maryland**

**Title: New Insights to Late Stages of Planetary Accretion to Earth, Moon and Mars**

Highly siderophile elements, such as gold and platinum, are elements that are strongly partitioned into metallic cores during planetary differentiation, so the relatively high abundances of these elements in Earth's mantle have been a longstanding geochemical puzzle.

Late accretion of approximately one weight percent of Earth's mass from planetesimals following core formation is one way to account for the abundances, but a deficit of these elements in the lunar mantle creates a problem for this hypothesis. One way around this problem is if late accretion to Earth (and Mars) consisted of a very limited number of relatively large (Pluto mass) bodies. Bodies of this mass did not strike the Moon.

**Place:** The National Museum of Natural History, Smithsonian Institution, 10<sup>th</sup> Street NW and Constitution Avenue, 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. NOTE: MSDC members may park in the Natural History Museum parking lot (entrance on Constitution Avenue, NW) by giving your name to the guard. If you park on the street, **THERE ARE PARKING FEES, PAYABLE AT THE KIOSKS, AND ENFORCEMENT UNTIL 10 PM.**

**Dinner:** Some of us will meet for dinner at the Pier 7 Restaurant at 6:00 PM before the club meeting. If you are planning on attending, please let Andy Thompson or Tom Tucker know so that reservations can be made.

**PREZ SAYS – A WORD FROM OUR PRESIDENT**

**Tom Tucker, President**

We want to thank Susan Fisher for taking on the responsibility of getting this issue of the Minutes off to you in good order. And we wish Mary Bateman well in her move to New Jersey, and all the attendant complications we know that entails. I hope your computer gets to working properly Mary !

The last I heard from Andy Thompson, Betty Thompson was recovering, slowly, from her recent surgery - we certainly wish her well - I miss her smiles and jolly greetings at the meetings. Oh, and some of the goodies she often brings too.

Cynthia Payne fell and sustained injuries just after our last meeting, and was in a care facility the last I heard, for rehab treatment. As Cynthia has seen a mite more years than most of the rest of us, we know recovery can be more tedious. Cynthia - we hope you are recovering well, and will be back at the meetings in good order.

Lest this begin to sound like a "nursing home" newsletter, I'll turn to a subject that interests us all, I hope, geology and minerals. The other day I attended the annual Virginia Geologic Symposium, at the Division of Geology and Mineral Resources (DGMR) facilities in Charlottesville, Virginia. There were 12 oral presentations covering a wide range of current geologic research in Virginia, and an additional 22 (!) poster presentations. I think I can fairly say that mineralogy was NEVER mentioned. It's interesting that the minerals we are so interested in, which form the building blocks of essentially everything else that was discussed in the symposium, only get a passing mention, if that.

Some topics that were presented: geologic mapping in Virginia - there are several ongoing mapping projects, such as the ones our speaker Scott Southworth discussed in his January meeting presentation, but perhaps a key factor that became apparent - the paper geologic map is a "dinosaur", a thing on the past. The "professional" will be using GIS based data, and digital files in various formats I don't comprehend, and can't access.

Steve Whitmeyer, a professor at JMU, gave a presentation on using Google Earth to create a multi-level geologic map of Virginia. It's amazing what he can do with it, if he has the computer resources and the ability to manipulate the data files. It's the future, and it's "really cool". It will be especially valuable as a teaching tool.

Other presentations included a description of the Midlothian Mines Park - a community park near Richmond which includes the remains of abandoned coal mines. While I totally concur with the need to abate hazardous and environmentally degraded abandoned mines, the zeal with which the Abandoned Mines Lands reclamation personnel wish to fill every hole they find is disturbing. It seems they've never met a "hole" they didn't want to fill in and cover up, no matter its impact on the environment or society.

There were a number of other interesting talks about a variety of subjects - the complete schedule can be found on the DGMR website. The most interesting for me, of course, was an excellent presentation by Dan Doctor, of the USGS, on the development of caves in the Shenandoah Valley

- with some modern interpretations. And the day ended naturally with another digital technology related talk, by Callan Bentley, from Northern Virginia Community College. He discussed "Gigapans", and their use in geology. You might look at the website, [www.gigapans.org](http://www.gigapans.org), for a whole new approach to visualizing what's around us, geology or whatever. By the way, Callan has a website for discussing the local area geology - very interesting, and it can lead to many other interesting links.

Needless to say, it was an excellent day of presentations and sharing of knowledge. It's a credit to what's left of the Virginia Geological Survey that they are able to continue this annual function.

**MSDC MINUTES, APRIL 6, 2011**  
**Denise Whitman, Secretary**

President Tom Tucker called the meeting to order at 8:00 pm in the laboratory room of Bell Hall on the George Washington University campus. Dr. Richard Tollo introduced our speaker for this evening, Allison Rubin, one of his students in the geological sciences program and a recipient of a MSDC scholarship.

Her PowerPoint presentation was entitled "Geology of the Razor Ridge Complex, Southwestern Virginia: Deciphering the volcanic history of an ancient eruptive center." She studied the petrology and geochemistry of these rhyolitic rocks that originated from a series of eruptions that occurred about 760 million years ago during a failed rifting event in a cratonic setting within the supercontinent Rodinia. Less than 200 million years later, the rifting comes to fruition, and Rodinia starts to break apart; the source of the rift is a mantle hot spot. The Razor Ridge rocks were compared to those of nearby Mt. Rogers, a volcanic center that has been studied by other investigators. Rocks of both areas display a high phenocryst content, and are silica- and alkali-rich, and high in rare earth elements. These rocks were found to be comparable to that of another within-plate, mantle-driven hot spot eruptive center: Yellowstone. Allison ended her excellent presentation with a display of Razor Ridge rocks that exhibited features of their volcanic origins.

The meeting was attended by 28 people, including a cadre of GWU geology students. Past presidents Andy Thompson and Ed Fisher were present; and Mary Bateman, a past president of EFMS also came to the meeting. There was no business portion at this session.

Coffee and pastries were provided by the GWU staff. Thanks for a wonderful time!

**MINERAL MINUTES MAY DEADLINE**  
**Mary Bateman, Editor**

The **deadline for the June issue of the *Mineral Minutes*** will be **May 15**. If you have an article or pictures that you wish to share, please e-mail them to Mary Bateman at [mbateman1@verizon.net](mailto:mbateman1@verizon.net) or mail them to 52 Harrison Street, Morristown, NJ 07960.

Don't forget one-paragraph items for the new "Over the Tea Cup" section that is devoted to news of our members, their families and friends of MSDC.

### **UPCOMING EVENTS**

The following are upcoming events/shows within easy commute of the Washington area plus other events of interest:

22<sup>nd</sup> Annual Chesapeake Gem & Mineral Show (May 21) hosted by the Chesapeake Gem & Mineral Society, Ruhl Armory, MD Route 45 at I-695, Towson, MD.

EFMS/AFMS Convention in conjunction with the Gem and Mineral Society of Syracuse, NY, show (July 6-10) Syracuse, NY. Details on the EFMLS website at [www.amfed.org/efmls](http://www.amfed.org/efmls).

Wildacres (September 5-11). Details on the EFMLS website. Speaker in Residence will be Dr. Steve Chamberlain

47<sup>th</sup> Annual Atlantic Coast Gem, Mineral & Jewelry Show (September 24-25) hosted by the Gem Cutters Guild of Baltimore, Howard County Fairgrounds, I-70 at MD Rt. 32, West Friendship, MD

Desaultels Micromount Symposium (September 30-October 2) hosted by the Baltimore Mineral Society, MHA Conference Center, Elkridge, MD

### **OVER THE TEACUP**

Betty Thompson and Cynthia Payne continue on their course of recovery. We continue to keep both of these special ladies in our thoughts and prayers for speedy recoveries.

Mary Bateman will have a new address and telephone number as of May 15. Details are: 52 Harrison Street, Morristown, NJ 07960, phone: 973-993-3192, e-mail (unchanged): [mbateman1@verizon.net](mailto:mbateman1@verizon.net). Mary has agreed to continue on as editor of *Mineral Minutes*.

**NOTE:** If you have some news that you would like to share "Over the Teacup," please let the editor know. Items of interest should be no more than a paragraph long and might consist of an ill member, an award you or a fellow club member or family member might have received, a graduation or birth in your immediate family, news of a former member, a special anniversary or birthday of yourself or a member, etc. Pictures will be welcome to go along with your note. Please identify the photo as to photographer, date (if known), and name(s) of person(s) (from left to right by row) appearing the the picture.

## **Iron, A Life-Giving Metal**

### **Andy Thompson**

Iron is the most abundant metal found in our entire planet and constitutes the earth's inner and outer core. It is also the fourth most common element found in the earth's crust, constituting 5% of its mass, after slightly more abundant aluminum and silicon, with oxygen being the most massive (46.6%) element. Yet iron's lackluster appearance and absence from jewelry boxes make it very easy to ignore.

But by reviewing a few brief references to contemporary research and by taking a backward glance at iron's cultural history, we invite readers to a greater appreciation for it and to suggest iron is a metal quite precious in its own right.

Geologists, mineral club members, biologists and the general public recently have been hearing whispers that the origins of all organic life may well have been dependent on the chemistry of mineral crystal lattice work, including that of iron. The idea is that life may have begun deep within the oceans, close to moderately high temperature hydrothermal vents. Pyrite, an iron sulfur blend with a positive electrical valence, could well have offered a particularly attractive surface on which pre-biotic chemicals with a negative valence could find a welcome home. Gradually, by associating with and adhering to mineral structures, the first large organic molecules could have found protection and support for their own development, and gradually evolved into larger and more complex forms of life (Robert Hazen, <http://calitreview.com/193>). This is one line of thinking about the origins of life.

Once life got started, however that happened, many of the same scientists have found evidence that organic life forms returned the favor and spawned the next generation of new minerals. Before life existed on earth, scientists such as Hazen calculated only 1500 minerals existed. But once microbes started giving off oxygen and interacting with elements such as iron, that number rose closer to today's 4,500 minerals. What we have here is the notion of co-evolution, namely that small organic molecules took shelter in or adhered to mineral lattice structures and thrived. Then biological forms of life gave off oxygen and subsequently interacted with chemical elements to form new minerals. Scientists, including many at the Carnegie Institute, especially Dr. Robert M. Hazen, have helped popularize this perspective (<https://hazen.gi.ciw.edu/research/origins>). To honor his work, another researcher named a newly discovered mineral "Hazenite" (<http://www.economist.com/node/12592248>).

So we have some data that there's a relationship between the mineral iron and life itself. At the risk of stretching this theme beyond the reader's tolerance, let's extend this notion a bit further. We all know that iron is in our very blood. But how many people connect the dots to realize that its role is to be the vehicle for carrying life-giving oxygen throughout the entire body? Without sufficient iron, anemia sets in and makes the person's physical and mental well being difficult at best. So iron not only helped start life, but on a daily basis sustains it as well.

Similarly little known is the pivotal role iron has played in the creation of nations, from biblical Israel to our own American colonies. The story of Israelite Samson and Philistine Delilah (Judges 13-16) and that of young David and Philistine giant Goliath (I Samuel 17) have become part of our western heritage. Both stories trumpet an imagined greatness of Israel triumphing over their Philistine enemies. If truth be told, those folk stories are really dependent on the triumph of iron over bronze, of the later iron age over the earlier bronze age.

About 1200 BC, Israel, an agricultural people, was stuck firmly in the bronze age. The best metal they could produce was a combination of copper and tin, resulting in bronze tools and weapons that were no match for the much stronger iron. Around that time, a mysterious, highly cultured people, the Philistines, arrived from the Mediterranean Sea. Their advanced metal-working knowledge used furnaces capable of generating sufficient heat to melt iron at 2180 Fahrenheit. With the addition of a little carbon, their tools and weapons were well on their way to having the strength of low-grade steel. As a result, for centuries, this highly cultured people dominated the Israelites, whose ultimate defense was to write a religious history which portrayed the Philistines as, well, philistine, namely uncultured. In fact, however, the reverse was true. The Israelites suffered by comparison because with inferior furnaces capable of temperatures only in the 1,800 degree range, melting copper was the best they could handle.

The Hebrew scriptures' book of 1 Samuel (13: 19) records the Israelite complaint that the Philistines forbade Israel not only from producing iron but even required the former to bring their tools to the latter for sharpening. That pattern of oppression is consistent with dominant people's ability to be in total control of their own proprietary technology and thereby maintain their national advantage.

This control of higher technology may ring a bell in readers' minds, because the same pattern of colonization surfaced almost three thousand years later when Great Britain similarly dominated the American colonies. The British Parliament imposed a duty on all iron which the American colonies shipped to London. Similarly, the British Board of Trade protected their own iron smelting industry by forbidding the American colonies to produce and export any grades of iron higher than pig or bar iron. The Brits kept that higher quality production, manufacturing and profits for themselves, mandated the colonies be subservient to England and used the colonies simply as a natural resource.

From the first discovery of iron in the American colonies in North Carolina in 1545, to its first exports from the many East coast towns and villages, the tensions between the colonies and Great Britain gradually began to build. In time, the sheer quantity of iron shipped from the colonies began to threaten the British homeland's iron-ore industry, resulting in Parliament in 1679 imposing a duty on all iron imports. By 1750, British law did away with the import duty but forbade the American colonies from producing higher grades of iron, anything above the pig or bar iron quality. That inhibition of the free flow of high quality iron within the American colonies and between the two peoples caused an economic anemia in the colonies which, along with other suppressive measures, led to the eventual American Revolution of which the Boston Tea Party was but the tip of the iceberg.

What most people today don't grasp is the extraordinary extent of the American resources and productivity. By the time the Americans declared independence in 1776, the colonial iron industry equaled the output of the entire British iron industry, an extraordinary accomplishment indeed.

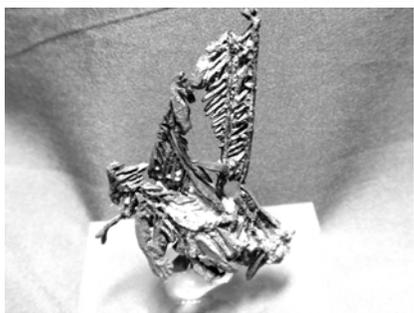
Another interesting factoid concerning the free flow of iron and the growth of prosperity and culture is associated with the Father of our country, George Washington. The wealth of the Washington family was rooted in iron production and export from the Accokeek mine and furnace in Virginia and additional iron works in southern Maryland. It was the proceeds from iron production which enabled George's father, Captain Augustine, his half-brother Lawrence and eventually for George himself, to rise in society and gain prominence as a young military officer (<http://terpconnect.umd.edu/~gdouglas/ironores/pages/georgew.html>). Imagine if the

Washington family had no iron-related wealth. What would the colonial army be without its general? Would United States have been fatherless?

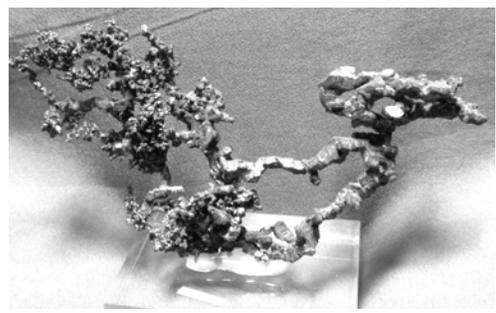
In summary, contemporary researchers have proposed there was a critical association between the co-evolution of biological life and minerals, with iron playing a prominent role. Individuals depend on it for sustaining human life itself. Even the growth of nations was rooted in how various cultures, from the biblical peoples to those of colonial America developed this technology. Progress depended on learning how to work with oxygenating iron by high temperature smelting and then reaping the huge benefits for military, economic and social development. So let's raise our glass to honor iron and the life-giving contributions it makes to our becoming fully human.

### My Favorite Things - Native Copper Susan Fisher

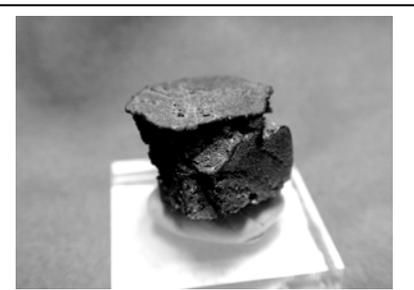
Again, I have been thinking about my favorite things in the mineral world. It is obvious to all who know me that I have never met a mineral that I didn't like, but I do have some favorites. For sheer sculptural beauty, it is difficult to surpass native copper. It can be bold and massive or feathery and fanciful. It can team up with other metals, notably silver, to produce some fantastic combinations. It can co-exist with other minerals to produce colorful displays or it can replace other minerals. It can occur as massive boulders, disseminated grains, sheets, wires, crystals or crystal twins as well as pseudomorphs after other minerals. Early man discovered its usefulness when he found that he could pound naturally occurring native copper boulders into useful items with no smelting required. Today copper plays a critical role in our lives, and native copper can add beauty and interest to our collections. Take a closer look at the native copper in your collection and you may rediscover a truly fascinating mineral.



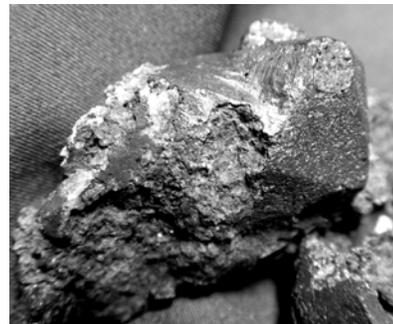
Native Copper, Cliff Mine near Eagle Harbor, Keweenaw Co., Michigan, size 4 x 5.5 cm



Native Copper .spinel twins, White Pine Mine, White Pine, Ontonagan Co., Michigan, size 5 x 11 cm.



Native Copper pseudomorph after aragonite, Corocoro, Pacajes Province, La Paz Department, Bolivia, size 1.2 x 1.5 cm



Native Copper, Upper Peninsula, Michigan, overall size: 5.2 x 2.5 x 3 cm, crystal: 1 cm on edge

**MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA**

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Web page: <b>www.mineralsocietyofDC.org</b>		

**Meetings** are held the first Wednesday of each month at 7:45 p.m., in the Kirby room, the National Museum of Natural History, Smithsonian Institution, Washington, DC. (No meetings are held during July and August.) The purpose of this Society is to promote interest in mineralogy, geology, and related earth sciences and to encourage mineral collecting. An annual scholarship is awarded to a deserving student in the related field.

**Dues** – Due by 10 January. \$20 for a single membership, \$25 for families.

The *Mineral Minutes* is the bulletin of The Mineralogical Society of the District of Columbia, Inc.

The Mineralogical Society of the District of Columbia is one of the founding Societies of the Eastern Federation of Mineralogical and Lapidary Societies.

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***MINERAL MINUTES***

**Newsletter of the Mineralogical  
Society of the District of Columbia**

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**FIRST CLASS**  
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**HAPPY MAY DAY**

**Time Sensitive Dated Material**

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**VISITORS ARE ALWAYS WELCOME AT OUR MONTHLY MEETINGS!**  
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