Microminerologists of the National Capital Area, Inc.

MNCA Website dcmicrominerals.org

The Mineral Mite

Vol. 48 – No. 2 **Washington D.C. – A Journal for Micromineralogists** **February 2015**

January 28 Time: 7:30 p.m. – 10 p.m.

Long Branch Nature Center, 625 S. Carlin Springs Rd. Arlington, VA 22206

Program: Foote Lithium Mine at Kings Mountain, North Carolina

By Dave Fryauff, Vice President

Dave Fryauff will present micromineral collecting from the Foote Lithium Mine at Kings Mountain, Cleveland County, North Carolina. Thanks to the guidance of Jason Smith, I enjoyed a good day of collecting in the Foote Mine "east dump" and came away with a back pack of mostly oxidized spodumene-rich pegmatite. Further cleaning & examination of this rock yielded a surprisingly good representation of the phosphate minerals that this mine has become famous for. I have micros mounted for microscopy & outstanding photos from Mindat & Jason Smith (JBS) who is the source of virtually all the mineral photos from the Foote Mine.

President's Message:

By: Dave MacLean

We have the opportunity to show our craft at the GLMSMC show March 21-22, 2015 at the Montgomery County Fairgrounds in Rockville, Maryland. We need volunteers to demonstrate micromounting.

This Saturday 14 February, we can visit with Dr. Lance Kearns at JMU, Harrisonburg,, VA; 125 miles and 2 and 1/2 hours away. Several months ago Lance mentioned that he was seeking donations of minerals to sell. I am elemental with analysis and magnification by SEM-XRF.

The EFMLS convention is March 27-29 in Hickory, NC. Who is planning to go and willing to serve as a delegate? I talked with Merrill Dickinson at EFMLS. He asked me how the EFMLS could serve MNCA and how we could help EFMLS? Many of its administrative people hold 3-4 positions, Let's talk about this on February 24.

Photo of the Month

Malachite Broughton talc mine, Saint-Pierre-de-Broughton, Les Appalaches RCM, Chaudiere-Applaches, Quebec, Canada .35 mm ramshorn

Robert Rothenberg; photomicrographer

Previous Meeting Minutes: 1/28/15

By: George Reimherr, Secretary

The club treasurer, Michael Pabst, opened the meeting at 8:00 p.m., as the club's president and vice president were both on travel, out of the DC area. Nine members were present at the meeting. The minutes for the previous month were approved, as printed in *The Mineral Mite*. The treasurer then gave the treasurer's report.

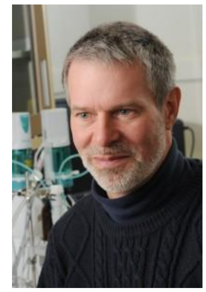
Old business -- The members discussed, briefly, the upcoming visit to James Madison University, scheduled for February 14, 2015. It was noted that other clubs have a similar visit scheduled for other weekends in January and February, so that if someone cannot attend the visit on February 14th, that person may attend one of the other scheduled visits, instead.
New business -- none.
The business meeting ended about 8:15 p.m.

Previous Program Reviewed 1/28/15

By: George Reimherr, Secretary

The program for the evening consisted of a talk, on a DVD, from the 2014 Dallas Mineral Collecting Symposium on August 22-23, 2014. The talk, by Dr. Robert Hazen, is titled "The Great Oxidation Event - Diversity of Colorful Mineral Specimens". His talk explained that many of the most beautiful minerals on Earth could not have occurred before the rise of atmospheric oxygen.

"The Great Oxidation Event – Diversity of Colorful Mineral Species"



Robert M. Hazen, Senior Staff Scientist at the Carnegie Institution's Geophysical Laboratory and Clarence Robinson Professor of Earth Science at George Mason University, received the B.S. and S.M. in geology at the Massachusetts Institute of Technology (1971), and the Ph.D. at Harvard University in earth science (1975).

He is author of 350 scientific articles and 20 books, including (Genesis: The Scientific Quest for Life's Origin. The Past President of the Mineralogical Society of America, Hazen's recent research focuses on the role of minerals in the origin of life, the co-evolution of the geo- and biospheres, and the development of complex systems. He is also Principal Investigator of the Deep Carbon Observatory, a 10-year project to study the chemical and biological roles of carbon in Earth's interior (http://dco.ciw.edu).

Hazen is active in presenting science to nonscientists through writing, radio, TV, public lectures, and video courses. In addition Hazen is a professional trumpeter and is a member of the National Gallery Orchestra and the National Philharmonic.

Thorium Minerals

By Michael Pabst, Treasurer

In the last few articles, we have been swept away by the beauty of Vanadis, the Norse goddess who donated her name to vanadium. But we risk angering Thor if we continue to ignore thorium. Thorium is closely related to uranium. So before examining other vanadium minerals, we should first pause to consider thorium minerals.

Like uranium, thorium is a member of the actinide group of elements. Only three of the actinides are primordial: thorium, uranium, and plutonium. Other actinides are found naturally only in trace amounts as products of radioactive decay: actinium, protactinium, neptunium, americium, curium, berkelium, and californium. Californium is the heaviest naturally occurring element; heavier elements in the periodic table are all synthetic. The actinides sit in the periodic table directly below the lanthanides, which are also known as the rare earth elements. Specifically, thorium sits below cerium, and uranium sits below neodymium. Like the rare earth elements, which are similar in their chemical and physical properties, thorium and uranium are similar to each other, and they are also similar to the rare earth elements. Thorium is also often found with zirconium and hafnium, two elements that are neighbors to the lanthanides and actinides in the periodic table. Yttrium, which is a lighter element in the same column of the periodic table as the lanthanides and actinides, and titanium, which is the lighter sibling of zirconium and hafnium, may also be associated with thorium in minerals and rocks.

Both thorium and uranium are found mostly in the 4+ oxidation state. Thorium oxide (Thorianite) and uranium oxide (Uraninite) both contain their respective elements in the 4+ oxidation state. Both are usually found as black cubes, when well crystallized. And because thorium and uranium are so close in their chemical properties, both elements are usually mixed together to some extent in Thorianite and Uraninite, with the name depending upon which element is dominant.

From the standpoint of mineralogy, perhaps the most important difference between thorium and uranium is that thorium has a maximum oxidation state of 4+, whereas uranium can be further oxidized to 6+. As we saw in previous articles, the colorful uranium minerals are the oxidized 6+ uranium minerals. However, thorium always exists at 4+ or lower, and therefore thorium does not form colorful 6+ compounds. Some thorium silicates are green, although the green color may not be due to thorium itself. (Plutonium also has multiple oxidation states up to 7+, and can form colorful chemical compounds, although it is unlikely that any minerals will ever be found in which Pu is dominant.)

Thorianite Let us begin by examining black cubes of Thorianite. Thorianite is a thorium oxide, which usually also contains uranium oxide, $(Th,U)O_2$. In a previous article (December 2013) I showed a picture of "Urano-Thorianite" from Yates mine, Otter Lake, Pontiac RCM, Outaouais, Quebec, Canada. The specimen featured a penetration twin of Thorianite cubes, and also contained Diopside, Phlogopite, and Calcite. You can look up this earlier article on our website, dcmicrominerals.org, under the Newsletters' tab, selecting Archived Newsletters.

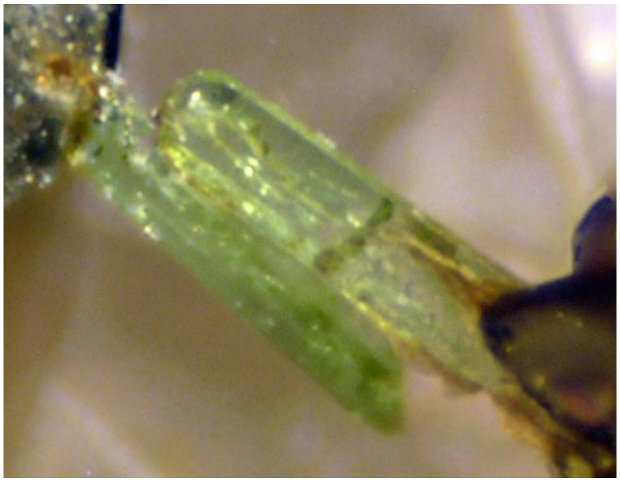
Thorianite (black) with **Zircon** (yellow) from Huddersfield Uranium Mine, Otter Lake, Pontiac RCM, Outaouais, Québec, Canada. Field of view 7.5 mm; the specimen is 6 x 5 mm.

Thorianite (ThO_2) is isometric hexoctahedral, ($4/m\ \bar{3}\ 2/m$), with a highly symmetrical crystal structure like that of Uraninite (UO_2). Zircon ($ZrSiO_4$), which is tetragonal (4/*mmm*), may contain minor Th, U, Hf, Y/REE, Pb, and other heavy metal ions. The Zircon group also contains Hafnon, hafnium silicate, and Thorite, a thorium silicate that we will describe below.

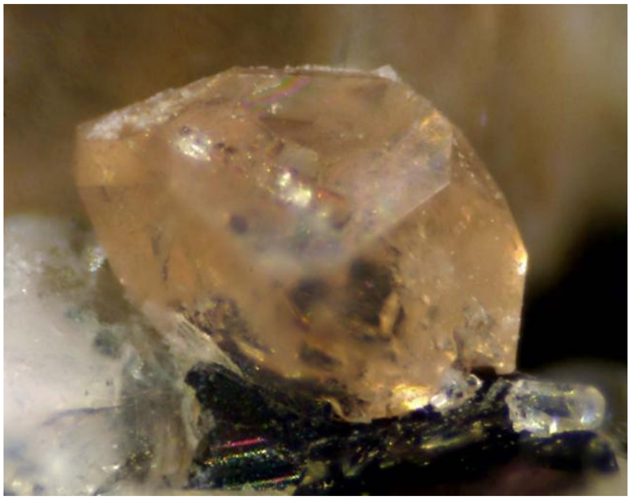
Thorianite (tiny black cube) (ThO_2), labeled as coming from the former Ceylon. Probable locality is Balangoda, Ratnapure District, Sabaragamuwa Province, Sri Lanka. The cube is 3 mm on edge.

A third specimen of **Thorianite** consists of a tiny loose cube. To give a better impression of the size of this tiny cube, I have also flipped it and placed it on a dime with President Roosevelt listening for radioactivity.

Thorite Thorite is the first of the green thorium silicates that we will look at. Thorite is a tetragonal (4/*mmm*) nesosilicate. Thorite is a member of the Zircon group, which includes Zircon ($ZrSiO_4$), Hafnon ($HfSiO_4$), and Thorite $(Th,U)SiO_4$. It is easy to confuse the names Thorianite and Thorite. As shown above, Thorianite is thorium oxide (black) (ThO_2), whereas Thorite is thorium silicate (green) $(Th,U)SiO_4$.



Thorite (green) from Bassano Romano, Viterbo Province, Latium, Italy. Field of view 0.5 mm.

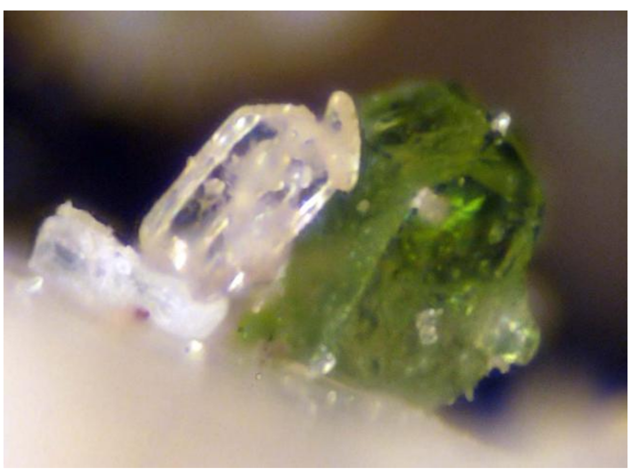


This specimen also contains Zircon (pink). Field of view 1 mm. The specimen also features Pyroxene (dark green), and possibly Stillwellite-(Ce) (pink) (not shown).

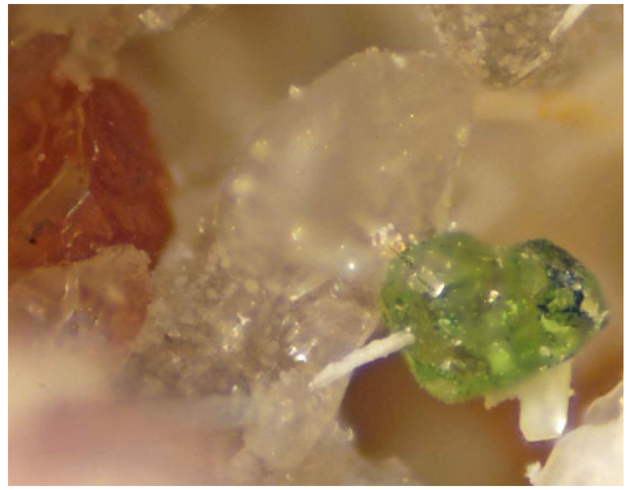
Thorium Minerals continued

Huttonite Huttonite ($ThSiO_4$) is the high temperature dimorph of Thorite, forming at temperatures >1225°C. Like Thorite, Huttonite is a nesosilicate. But unlike Thorite, which is tetragonal, Huttonite is monoclinic (2/*m*) with β = 104.92°. I do not have a specimen of Huttonite, but as usual we can rely on Stephan Wolfsried to provide a splendid specimen and photograph on Mindat. The specimen that I would like you to see comes from the Laach lake volcanic complex, Eifel, Rhineland-Palatinate, Germany. Please see Mindat: http://www.mindat.org/photo-95162.html.

Ekanite Ekanite (green) is also a thorium silicate, but it contains divalent cations in its structure: $(Ca,Fe^{2+},Pb)_2(Th,U)[Si_8O_{20}]$. Ekanite is tetragonal (422), meaning that it has no mirror planes, but only one 4-fold axis of symmetry and two 2-fold axes of symmetry. So Ekanite is not as symmetrical as Thorite. Ekanite is a phyllosilicate. It is possible to find chunks of crystalline Ekanite that are big enough to facet. Because of its radioactivity, Ekanite might make a good gem for a Superhero, or perhaps for an ex-spouse or mother-in-law. (Let's pretend I did not write that last bit. Officially, I do not condone irradiating relatives.)



Ekanite crystal (green) from Case Collina Quarry, Pitigliano, Grosseto Province, Tuscany, Italy.
Field of view 0.5 mm.



Ekanite crystals (green) with orange Titanite?, from the same specimen. Field of view 1 mm.

Like the green Thorite crystal pictured earlier, these green Ekanite crystals are less than 0.5 mm, making it difficult to get a clear photograph that shows the shapes of the crystals adequately. I used an incandescent light to illuminate these specimens, because an LED light tended to wash out the colors. This poor response to LED lights is also characteristic of rare earth minerals. As a reward and incentive for writing this article, I bought this specimen this January from Excalibur Minerals.

Steacyite The green color of thorium silicates may not always be evident. Steacyite is a thorium silicate that is found at Mont St. Hilaire, Quebec. I would have preferred that the brown-gray blocks, shown below, were green and transparent. Pretty green transparent Steacyite does occur at a volcanic locality in the Azores. Please see the pictures on Mindat: http://www.mindat.org/photo-482974.html, and http://www.mindat.org/photo-468280.html.

The chemical formula for Steacyite is $(\square,K)(Na,Ca)_2(Th,U)[Si_8O_{20}]$. The box □ indicates a vacancy in the crystal lattice. Steacyite is tetragonal (4/*mmm*) and a cyclosilicate. There is a similar mineral Turkestanite $(K,\square)(Ca,Na)_2(Th,U)[Si_8O_{20}]$ that also occurs as nice green crystals. Please see Mindat: http://www.mindat.org/photo-655389.html.

Steacyite (brown-gray) from Poudrette (DeMix) Quarry, Mont Saint-Hilaire, Montérégie, Québec, Canada. Field of view is 2.5 mm on the top and 1 mm on the bottom. Both crystal groups are from the same specimen.

The minerals described here are not the only thorium-containing minerals. Thorium is three times more abundant than uranium, and thorium is found in small amounts in many minerals. Thorium occurs in many rare earth minerals, including Monazite, Aeschynite, Bastnäsite, and Euxenite.

Most thorium is mined from monazite sands. Monazite is a rare earth phosphate, roughly $(Ce,La)PO_4$, and thorium can sneak in at levels of about 5-12%. Current demand for thorium is met as a byproduct of extracting rare earth elements from monazite sands. The presence of thorium in Monazite might be related to the fact that Monazite is isostructural with Huttonite.

Thorium has a radioactive half-life of 14 billion years for the only abundant isotope, which is ^{232}Th. This compares with the half-life of ^{238}U at 4.5 billion years and ^{235}U at 0.7 billion years. So thorium is less radioactive than uranium. In contrast, plutonium, the third primordial actinide element, is more radioactive than uranium, with a half-life of 80 million years for ^{244}plutonium, which is just long enough to be present in nature in trace amounts. ^{232}Th is not fissile, and the other thorium isotopes exist in nature only in trace amounts. After neutron bombardment in a reactor, ^{232}Th can be converted to ^{233}U, which is fissile. In this way, thorium can be used for nuclear power plants. One possible advantage is that thorium might be harder to pervert to making nuclear weapons. For more information on thorium power plants, please Google "Thorium-based nuclear power". Or just enjoy the pictures!

About the Author: Michael Pabst

Michael and Karen Pabst have collected micro-minerals for nearly 50 years. Michael has a special interest in minerals that are aesthetic and that contain rare earth elements and radioactive elements.

Michael Pabst is a retired professor of biochemistry at the University of Colorado in Denver, and at the University of Tennessee in Memphis. His research centered upon improving *innate* resistance to infection, to confront the problem that so many microbes have become antibiotic-resistant.

Photomicrography by Michael Pabst

Natural History Museum in London: in Search of "The Aurora Pyramid of Hope" Colored Diamond Collection

By Kathy Hrechka , Editor

The "Aurora Pyramid of Hope" is a suite of naturally colored diamonds on display in a mircomounter's design at the Natural History Museum in London. Containing 296 stones at a combined weight of 267.45 carats, this famed collection illustrates the full range of fancy colors in diamonds. These rare treasures are housed in The Vault, a new permanent gallery that opened at the museum in 2007.

Most of the diamonds in the collection are less than one carat in weight. The Aurora collection of 296 diamonds consists of diamonds belonging to 12 different varieties of pure colors. These colors are blue, green, olive, yellow, brown, orange, red, pink, purple, black, gray and white. The shapes of the diamonds included all possible shapes in which diamonds are cut in the diamond industry today, such as round, oval, cushion, pear, marquise, heart, trillion, emerald, asscher, princess, radiant etc.

The collection is owned by Aurora Gems, Inc., a diamond merchant specializing in fancy color diamonds. The collection has been displayed on loan in a pyramid-shaped display case in various major museums since 1998. Aurora Gems was founded by Harry Rodman (1909–2008) a gold refiner from the Bronx, and Alan Bronstein, a diamond dealer from New Jersey, who began collecting colored diamonds in 1979.

Yellow and orange colored diamonds are caused by single nitrogen atoms scattered in the crystal. Nitrogen atoms absorb visible light in the blue region of the spectrum, causing its complementary color yellow to appear. Very rarely nitrogen atoms absorb visible light in the green region of the spectrum causing its complementary color orange to appear.

Colorless diamonds result due to the absence of factors that cause color in diamonds, such as chemical impurities, and structural abnormalities. Their occurrence is 1-2 % of all naturally occurring diamonds.

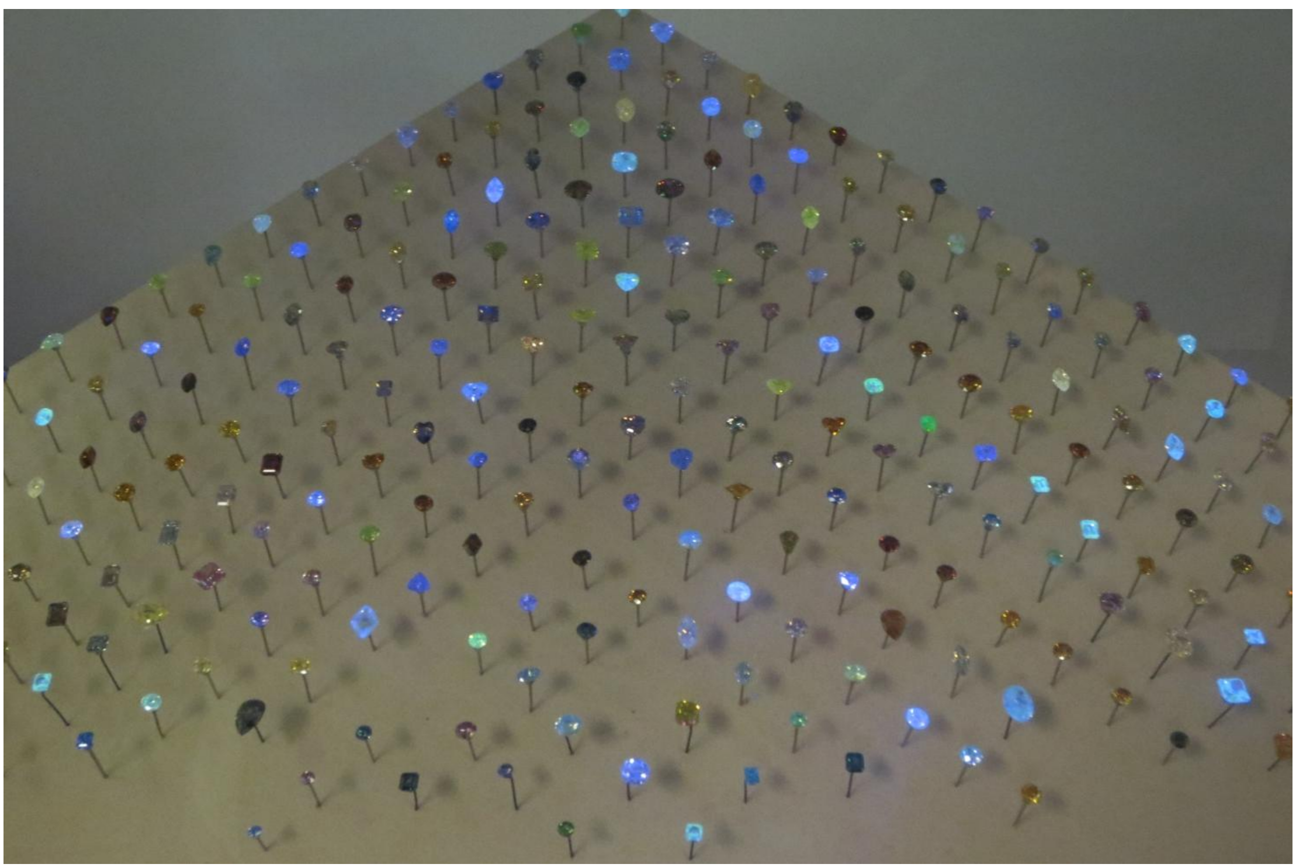
Pink, red, purple, and brown colored diamonds are caused by the plastic deformation of the crystal structure. There occurrence however is less than 0.1 % of all natural diamonds. The occurrence of plastically distorted brown diamonds is very high in the Argyle diamond mines, and accounts for almost 80 % of the production of gem quality diamonds.

Green colored diamonds are caused by the exposure of diamonds over long periods of time to natural radiation like alpha, beta and gamma radiation, which alters the structure of the diamond, producing the green color. The occurrence of green diamonds is less than 0.1 % of all naturally occurring diamonds.

Blue colored diamonds contain trace quantities of boron impurities in the crystal structure, as well as semi-conducting properties to the diamond. Their occurrence is less than 0.1 % of all naturally occurringdiamonds.

Black colored diamonds are caused by iron compounds like hematite and magnetite associated with the crystals. Black diamonds are not made up of large single crystals like conventional diamonds, but are aggregates of millions of tiny crystals. They do not originate in lamproite and kimberlite pipes like the conventional diamonds.

Aurora Diamond Pyramid Fluorescing under Short Wave Ultraviolet Lighting



The original 260-gem collection was on public display at the American Museum of Natural History in New York from 1989 to 2005 in the Morgan Hall of Gems. It was the centerpiece for the museum's 1998 exhibition *The Nature of Diamonds* which toured Japan, Canada and the U.S. In 2005 the collection moved to the Natural History Museum of London. At that time 36 new specimens were added to the original 260 diamonds, for a total weight of 267.45 carats (53.490 g).

Note from the author: I recently accompanied our daughter, Julia to London where she is studying abroad for a college semester. I decided to venture off to the Natural History Museum one entire day to study the Geology Hall. Great choice!

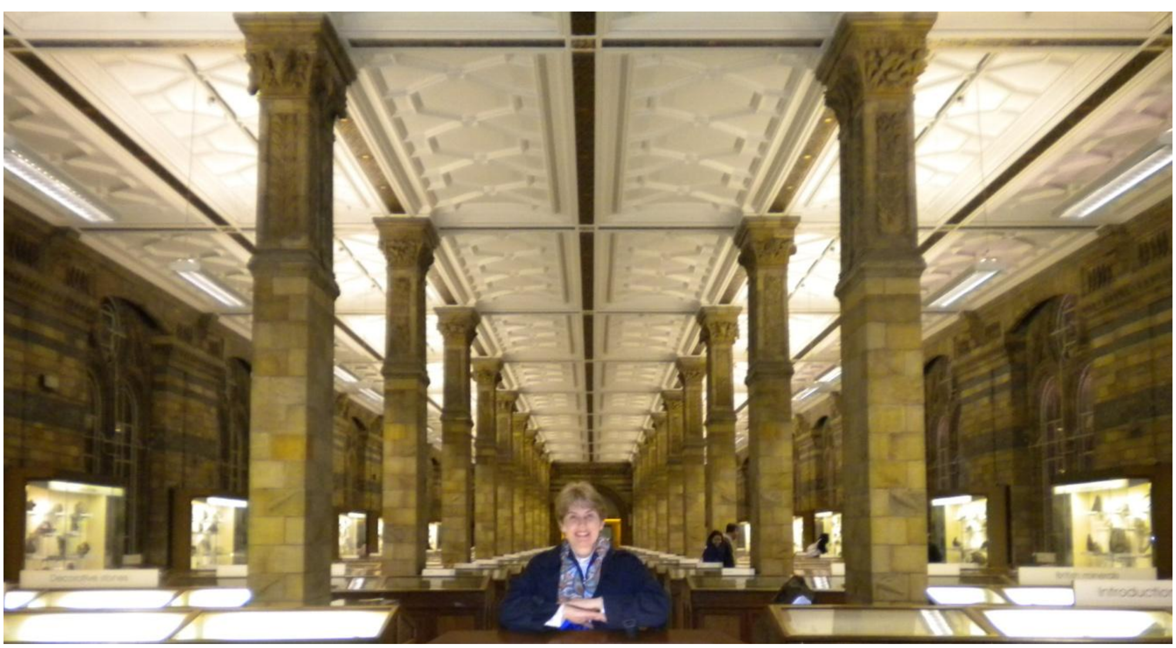
I was dazzled by the most beautifully colored diamond collection in the Vault, all displayed in a micromounter's fashion. What made the display fascinating was the fact that the lighting rotated from natural to ultraviolet light. I spent my time trying to memorize the cuts and colors of each diamond, as they were organized in a unique pattern. I was looking for a blue diamond, waiting for it to fluoresce fiery red like the Hope Diamond at the Smithsonian. I found no such match.

I was also looking for the smithsonite minerals, named after the Smithsonian's founder, James Smithson. I also took the "behind the scenes tour", where I was privileged to observe Type specimens of Charles Darwin's collection. No photos were allowed in the Darwin archive area.

Smithsonites from various world localities

The Natural History Museum in London is home to life and earth science specimens comprising some eight million items within five main collections: botany, entomology, mineralogy, palaeontology, and zoology. The museum is particularly famous for its exhibition of dinosaur skeletons and its ornate nineteenth century architecture.

Greetings; Kathy at entrance of Geology Hall



Main Entrance; Dippy in the center of the hall

The large *Diplodocus* cast which dominates the vaulted central hall, known as Dippy a 105-foot long replica *Diplodocus carnegii* skeleton, was a gift by Andrew Carnegie in 1905, which is a copy of the original held at the Carnegie Museum in Pittsburg, Pennsylvania.

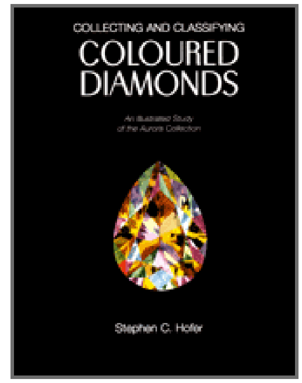
Although commonly referred to as the Natural History Museum, it was actually officially known as the British Museum (Natural History) until 1992, despite legal separation from the British Museum itself in 1963. Originating from collections within the British Museum, the landmark Alfred Waterhouse building was built and opened by 1881, and later incorporated the Geological Museum.

The Darwin Centre (named after Charles Darwin (1809-82) is a more recent addition, designed as a new home for the museum's collection of tens of millions of preserved specimens, as well as new work spaces for the museum's scientific staff, and new educational visitor experiences. Built in two distinct phases, with two new buildings adjacent to the main Waterhouse building, it is the most significant new development project in the museum's history. Phase one of the Darwin Centre opened to the public in 2002, and houses the zoological department's 'spirit collections' organisms preserved in alcohol. Many of Darwin's specimens originated from his five year HMS Beagle voyage. Phase two was unveiled in September, 2008 and opened to the general public in September 2009.

Aurora Colored Diamond Books

Reviewed by Kathy Hrechka, Editor

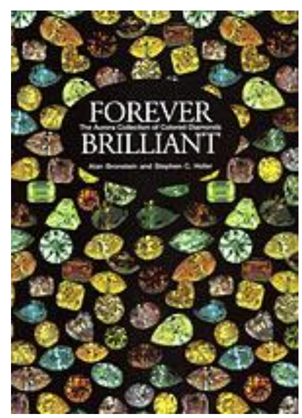
<u>Collecting and Classifying Colored Diamonds, an Illustrated Study of the Aurora Collection</u>
By Steven C. Hofer
Published in March 1998   700 photos, 742 pages



I reserved this book from the Mineral Sciences library at the Smithsonian. I have to read it in the library, because it was signed on February 23, 1999 to the Smithsonian by the author Hoker, and the Aurora Pyramid of Hope Colored Diamond Collection curator/owners Bronstein, and Rodman

I enjoyed reading about the specifications of each of the 260 diamonds in the book, however no localities were listed, just simple quotes from various persons.

<u>Forever Brilliant; The Aurora Diamond Collection of Colored Diamonds</u>
By Alan Bronstein and Stephen Hofer
Published in August 2000   265 photos 90 pages



I recently purchased this book, due to my personal interest in micromounting diamonds. I got exactly what I wanted; photos of each diamond including the specifications. I was particularly interested in localities of the red diamonds. No localities were listed.

Photos courtesy of Kathy

References for article:
http://www.auroragems.com/glossary.html,
wikipedia.org/wiki/Natural History Museum, London,
http://en.wikipedia.org/wiki/Aurora_PyramidofHope
http://www.internetstones.com/aurora-diamond-collection-alan-bronstein-harry-rodman.html

Geology Field Trip to JMU 2-14-15
a Visit with Dr. Lance E. Kearns

By Kathy Hrechka

On February fourteen, many of our local geology club members carpooled to James Madison University to have a special tour of the JMU Mineral Museum with Dr. Lance E. Kearns. Kearns had many mineral and micromounts available for our mineral study choices. Fellowship and mineral excitement in his lab made an enjoyable day at JMU. I was able to briefly view the famous Dr. Philip Cosminsky micro collection.

Mineral Museum designed by Dr. Lance E. Kearns

Laura Dwyer; retired geologist & new to MNCA

Nelson Seese, Dr. Kearns, & Mrs. Seese

Karen & Michael Pabst; front row

David Fryauff, Scott Duresky, & George Reimherr
Cindy Kearns, Tom Tucker, & Laura Dwyer below

American Federation of Mineralogical Societies

AFMS)
www.amfed.org

Eastern Federation of Mineralogical and Lapidary Societies

(EFMLS)
www.amfed.org/efmls

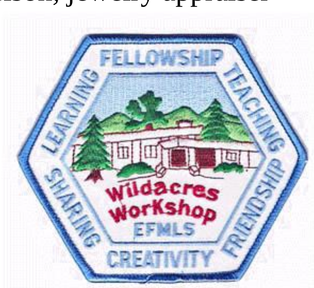
American Federation Mineralogical Societies Show
October 23-25, 2015 Austin, Texas

Purpose of the AFMS: To promote popular interest and education in the various Earth Sciences, and in particular the subjects of Geology, Mineralogy, Paleontology, Lapidary and other related subjects, and to sponsor and provide means of coordinating the work and efforts of all persons and groups interested therein; to sponsor and encourage the formation and international development of Societies and Regional Federations and by and through such means to strive toward greater international good will and fellowship.

Wildacres; 2015 EFMLS Workshops

By Steve Weinberger, Wildacres Committee Chair

May 18 – 24: Bob Jones, Sr. Editor for Rock & Gem Magazine will be with us in spring.
August 24-30: Denise Nelson, jewelry appraiser and designer will be our fall speaker.
Little Switzerland, NC;
Cost $390 plus supplies



Check EFMLS website Tab Wildacres for complete details.

MNCA Weather alert: SNOW CONTINGENCY
If schools in Arlington County are to be cancelled, or let out early, because of weather on the day of our scheduled meeting, we will have no meeting. Call the MNCA President or a Board Member

**Communication and Involvement
Are the Keys to Our Success!**

Geology Events:

February:

23: NVMC Meeting 7:30 pm - 10 pm
USGS Mapping Conflict Diamonds, in Africa
Long Branch Nature Center, Arlington, VA

25: MNCA Meeting 7:30 pm - 10 pm
Dave Fryauff, Foot Lithium Mine Kings Mt., NC
Long Branch Nature Center, Arlington, VA

March

7–8: 52nd Earth Science Gem & Mineral Show
Delaware Mineralogical Society, Inc. Delaware Technical & Community College,
400 Stanton-Christiana Road, Newark, DE

15: 2nd Northern Virginia Maker Faire NOVA Labs and Fairfax County Schools; Major STEM event; advance tickets $15 adults, $5 students at door $20 adults, $8 students; Reston, VA; http://makerfairenova.com/

21–22: 51st Annual Gem, Lapidary & Mineral Show; Gem, Lapidary & Mineral Society of Montgomery County; Montgomery Co. Fairgrounds, Gaithersburg MD; Sat 10–6, Sun 11–5; $6 for 12 & older, Free children, Scouts in uniform

27-29: EFMLS Show & Convention Hickory, NC
Convention Center, 1960 13th Ave. Dr. SE

April

10-11:42ndAnnual Atlantic Micromounters Conference; Microminearalogists of the National Capital Area; Springhill Suites Alexandria Marriott, 6065 Richmond Hwy, Alexandria, VA. Registration at www.dcmicrominerals.org/.

23-26: 42nd Rochester Mineralogical Symposium
Radisson Hotel Rochester Airport
175 Jefferson Road Rochester, NY 14623

42nd Annual
Atlantic Micromounters' Conference
April 10 – 11, 2015
Presented by
The Micromineralogists of the National Capital Area, Inc.

Our featured speaker
Robert Rothenberg;
Micromounter Extraordinaire
from Oneonta, New York.

Robert has collected micros since 1964, and has been a photomicrographer for the past ten years.

2015; Special recognition goes to Barbara Sky, and charter member Cynthia Payne.

Location: Springhill Suites by Marriott, Alexandria.
6065 Richmond Hwy, Alexandria, VA 22303
Phone (571) 481-4441

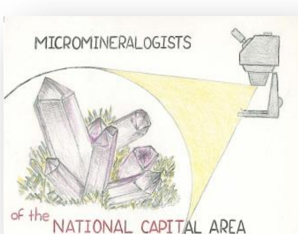
Registration:
Kathy Hrechka, MNCA Conference Chair
kshrechka@msn.com

Details are posted on our club website:
Tab Events - Conference
www.dcmicrominerals.org

Mirco donations are needed for the "live auction"

.

Bring your micromount donations to our next meeting, or mail to:
Michael Pabst
270 Rachel Drive
Penn Laird, VA 22846



Micromineralogists of the National Capital Area
Meeting: The 4th Wed. of each month 7:30 -10 p.m.
Long Branch Nature Center, (Except Easter & Dec.)
625 S. Carlin Springs Road, Arlington VA 22204

MNCA Purpose: To promote, educate and encourage interest in geology, mineralogy, and related sciences.

Pres: Dave MacLean, dbmaclean@maclean-fogg.com
Vice Pres: David Fryauff, fryauffd@yahoo.com
Secretary: George Reimherr, greim@cox.net
Treasurer: Michael Pabst, Michaeljpabst@yahoo.com
Editor/ Historian: Kathy Hrechka, kshrechka@msn.com
Website: Julia Hrechka, dcmicrominerals@gmail.com
Conference: Kathy Hrechka, kshrechka@msn.com

The society is a member of:
* Eastern Federation of Mineralogical and Lapidary Societies (EFMLS) www.amfed.org/efmls
*American Federation of Mineralogical Societies (AFMS) www.amfed.org Affiliation

Dues: MNCA Membership Dues for 2015
$15 (single) or $20 (family)
Payable to MNCA - Michael Pabst, Treasurer
270 Rachel Drive
Penn Laird, VA 22846

Editor's Note:
by Kathy Hrechka
Send your articles and photos to your editor.
Club Article Deadline is 10th of each month.
***The Mineral Mite* will be emailed on 15th.**
No newsletter July/August

AFMS Editor's Award
First Place 2011 - Mini Bulletins

February Articles:
***Michael Pabst**
***Kathy Hrechka**