THE NORTHERN VIRGINIA MINERAL CLUB INC

The Mineral Newsletter

Meeting: November 13 Time: 7:45 p.m.

Long Branch Nature Center, 625 S. Carlin Springs Rd., Arlington, VA 22204

Cerussite

Tsumeb Mine, Namibia

Source: Wikipedia.
Photo: Rob Lavinsky, iRocks.com.

Deadline for Submissions

November 20

Please make your submission by the 20th of the month! Submissions received later might go into a later newsletter.

Volume 58, No. 9
November 2017
Explore our website!

November Meeting Program:

Geology of Natural Bridge

In this issue …

Mineral of the Month
Cerussite

by Mike Kaas

Cerussite is a secondary lead carbonate mineral, a member of the Aragonite Group. It is found in oxidized zones of lead and polymetallic ore deposits, usually as a weathering product of galena and/or other lead ore minerals. It was named in 1845 by Wilhelm Karl von Haidinger from the Latin word *cerussa*, meaning "white lead." The type locality is Vicenza Province, Veneto, Italy.

Uses and Sources

Although the toxic properties of lead frequently make the headlines or "go viral" on social media, lead has many safe and essential uses, not least in the manufacture of automobile batteries (which are recycled at the end of their useful life) and in the lead coverings used for radiation protection—remember the last time you had an x-ray?

The Tsumeb Mine in Namibia produced a large quantity of fine cerussite specimens from its oxidized ore zones. The upper levels of the Broken Hill Mine in Australia also produced excellent specimens. In the United States, many specimens have come from the Bunker Hill Mine (Kellogg, ID); the Mammoth Mine (Tiger, AZ); the Campbell Shaft (Bisbee, AZ); and the Wheatley Mine (Phoenixville, PA).

Cerussite from the Tsumeb Mine in Namibia. Malachite tints the clear cerussite green; the gold is mimetite. Source: Wikipedia; photo: Rob Lavinsky, iRocks.com.

Northern Virginia Mineral Club members,

Please join our guest speaker, Hutch Brown, for dinner at the Olive Garden on November 13 at 6 p.m.

Olive Garden, Baileys Cross Roads (across from Skyline Towers), 3548 South Jefferson St. (intersecting Leesburg Pike), Falls Church, VA
Phone: 703-671-7507

Reservations are under Vice-President Ti Meredith. Please RSVP to me at ti.meredith@aol.com.

Virginia Occurrence

Leonard Watson, in his *Lead and Zinc Deposits of Virginia* (see the excerpt below), described the cerussite found in the 1800s at the Wythe Lead and Zinc Mines at Austinville in southwestern Virginia (Watson 1905). Although galena was the primary lead mineral at Austinville, the density of the cerussite would have attracted the miners' attention.

Unfortunately, few specimens have survived. Following the Civil War, zinc became the primary product of the mines at Austinville.

Cerussite.—This is lead carbonate and it is also known as white lead ore. It is a secondary mineral derived from the alteration of galenite in the zone of oxidation. When chemically pure cerussite contains 83.5 per cent. of metallic lead. It has been noted in more than a trace only at one locality in the State, namely, the old Wythe Lead and Zinc Mines at Austinville, in Wythe county, where it is not an altogether uncommon ore among the altered forms.

It occurs distributed through the residual clays of the limestone as stringers and small irregular masses. The earthy form greatly predominates. As such the clayey admixture is readily identified by its weight, specific gravity. Crystals grouped in clusters and aggregates of white and light grayish color, distributed through the clay, are not uncommon. It further occurs as a white powder-like coating on the crystals and masses of granular galenite.

Technical Details

Chemical formula.....$PbCO_3$
Crystal form .....Orthorhombic
Moh's hardness 3–3.5
Density 6.5–6.6
Color .....Clear, white, gray, blue, light yellow, or green
Streak .....White
Cleavage.....Good
Fracture .....Conchoidal
Luster .....Adamantine, vitreous, resinous, pearly, dull, earthy

Sources and Web Links

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Wikipedia, https://en.wikipedia.org/wiki/Cerussite.

Light of the Desert, *the world's largest faceted cerussite, located in the Royal Ontario Museum, Toronto, Canada. Source: Wikipedia.*

Natural Bridge, Rockbridge County, VA. Source: Wikipedia.

Geology of Natural Bridge

November 13 Program

Natural Bridge is a huge span of rock across a creek in western Virginia. Along with Niagara Falls, it was once considered the foremost natural wonder of the New World. Thomas Jefferson, an avid naturalist, bought the site and vowed to protect it. Today, it is a tourist destination on land owned by a conservation fund and managed as a Virginia state park.

How did the bridge form? Rivers and streams are not known for blasting through solid rock. Natural Bridge remained an enigma to early naturalists like Jefferson.

Hutch Brown, our speaker, will explore the origins of Natural Bridge, beginning with the bedrock. Hutch will explain where the bedrock came from and how it formed nearby hills in tectonic processes originating hundreds of millions of years ago.

Natural Bridge itself is a story of karst—of the interaction of rainwater with limestone to form sinkholes, caves, and underground streams. Hutch will explain the corresponding processes and how they can result in a natural bridge.

Robert Hutchins "Hutch" Brown has a Ph.D. in German Literature from the University of California at Berkeley. In 1993, Hutch moved to northern Virginia, where he worked as a contract editor for USGS and other federal agencies. In 2000, the U.S. Forest Service hired Hutch as a speechwriter for the Chief. In addition to writing speeches, Hutch has edited the Forest Service's journal on wildland fire management.

In 2012, inspired by his teenage son's interest in mineral collecting, Hutch joined the NVMC and became the club's newsletter editor in 2013. In addition to editing the newsletter, he writes about the structural geology of our area.

Club Officer Elections Coming Up!

It's that time of year again! At the December club meeting, we will elect club officers for 2018.

Ti Meredith and Dave MacLean have offered to serve again, respectively, as vice-president and secretary. But we still need candidates for president and treasurer, preferably two nominations for each position.

According to our club bylaws, the ***president*** presides at all meetings, appoints the chairs of standing committees, administers the club budget, coordinates the duties of officers and committee chairmen, and performs other appropriate duties.

The ***treasurer*** receives dues and other moneys, disburses funds as authorized by the president, keeps the accounts, submits an annual itemized report, presents the accounts to the club at the first meeting of the year, and keeps the list of club members up to date.

Former club officers are willing to mentor new officers, so don't be shy! Nominate a friend, a family member, or yourself, and we will vote in December.

Send nominations to parkeramandalynn@gmail.com.

Amanda Parker
Chair, Nominating Committee

Teamwork of Geese

Author unknown

Editor's note: *The piece is adapted from* Livermore Lithogram *(newsletter of the Livermore Lithophiles, Livermore, CA), September 2008, p. 5.*

Have you ever wondered why migrating geese fly in a V-formation?

As each bird flaps its wings, it creates uplift for the bird following. When a goose gets tired, it rotates back into the formation, and another goose flies up to the point position.

If people had as much sense as geese, they would realize that their success depends on working as a team, taking turns doing the hard tasks and sharing leadership.

Geese in the rear of the V-formation honk to encourage those up front to up their speed. In past newsletters, I have been doing some "honking" to encourage members of this club to step forward and take on some of the important jobs in the club.

Like geese, people who share a common direction and sense of community can get where they are going quicker and easier than if they try to go it alone.

Fly with the geese—join the NVMC Hall of Fame!

NVMC Hall of Fame: Club Officers, 2008–2017

Year	President	Vice-President	Secretary	Treasurer
2017	Bob Cooke	Ti Meredith	David MacLean	Rick Reiber
2016	Bob Cooke	Ti Meredith	David MacLean	Rick Reiber
2015	Wayne Sukow	Kathy Hrechka	David MacLean	Rick Reiber
2014	Wayne Sukow	Kathy Hrechka	Ti Meredith/ Laurie Steiger	Kenny Loveless/ Rick Reiber
2013	Rick Reiber	Kathy Hrechka	David MacLean	Kenny Loveless
2012	Sue Marcus	Barry Remer	Kathy Hrechka	Rick Reiber
2011	Barry Remer	Sue Marcus	Kathy Hrechka	Rick Reiber
2010	Barry Remer	Sue Marcus	Kathy Hrechka	Rick Reiber
2009	Wayne Sukow	Barry Remer	Kathy Hrechka	Rick Reiber
2008	Wayne Sukow	Jenn Hammond	Kathy Hrechka	Rick Reiber

The Prez Sez

by Bob Cooke

This month's focus will be on the 26th Annual Gem, Mineral, and Fossil Show at George Mason University on November 18–19, with setup on Friday, November 17.

Although volunteer signups are never quite as numerous as we'd like, I am getting concerned about the general sense of indifference toward the upcoming show. At October's meeting, only one person added his name to the signup sheet for volunteers. A recent check of our online signups revealed that only 14 percent of the positions are filled.

This annual mineral show is what defines us as a club. Profits from the show allow us to provide scholarships to worthy students at George Mason University, James Madison University, and Northern Virginia Community College, as well as make donations to mineralogical institutions like the Smithsonian. Our annual dues are not enough to rent a meeting place, buy the insurance necessary for field trips, finance the annual Holiday Party, and cover all the other expenses of running a club like ours.

Click this link to see the online list of volunteer positions at SignUp.com: http://signup.com/go/lwwnZir.

The club needs your help to make the 26th Annual Gem, Mineral, and Fossil Show possible. Please do what you can!

Thank you!

Bob

GeoWord of the Day

(from the American Geoscience Institute)

pole

In crystallography, a line that is perpendicular to a crystal face and that passes through the center of the crystal. See also: *face pole*.

(from the *Glossary of Geology*, 5th edition, revised)

Holiday Party

The NVMC and MNCA joint holiday party will be on December 18 at the Long Branch Nature Center. Cochairs Holly Perlick and Marie Johnston will be organizing the event with an online signup app. Details will come in an email to members as planning progresses.

If you would like to help Holly and Marie, please get in touch at haturner4@verizon.net or marie.johnston@gsa.gov.

Humor

Old Farmer's Advice

Author unknown

Editor's note: *Adapted from* Livermore Lithogram *(newsletter of the Livermore Valley Lithophiles, Livermore, CA), March 2015, p. 10.*

"Keep skunks and politicians at a distance."

"A bumblebee is considerably faster than a John Deere tractor."

"Forgive your enemies; it messes up their heads."

"Do not corner something that you know is meaner than you."

"When you wallow with pigs, expect to get dirty."

"Most of the stuff people worry about, ain't never gonna happen nohow."

"Don't interfere with somethin' that ain't bothering you none."

"Your biggest troublemaker watches you from the mirror every mornin'."

"Good judgment comes from experience, and a lotta that comes from bad judgment."

"If you get to thinkin' you're a person of some consequence, try orderin' somebody else's dog around."

Meeting Minutes
October 23, 2017

by David MacLean

President Bob Cooke called the meeting to order at 7:45 p.m. at the Long Branch Nature Center in Arlington, VA.

Program: Fossil Insects From Montana

The meeting began with the program for the evening. Dale Greenwalt, curator of fossil insect collections at the Smithsonian National Museum of Natural History, delivered a presentation on fossil insects of the Eocene from Montana.

Business Meeting

Following the program and a break, the club convened a short business meeting.

Recognitions

The president recognized past Presidents Rick Reiber and Barry Remer.

The club guests had left the meeting after the evening program, so they could not be recognized.

Door prize winners included Steven Parker, Holly Perlick, and Joseph Poranski.

The minutes of the September 25 meeting were approved as published in *The Mineral Newsletter*.

Nametags

The president initiated a discussion about the new nametags. The club had accepted the new nametag design at a previous meeting. The cost will be in the range of $10–12 per nametag.

The club was asked to consider various options: making the nametags complimentary to club members, charging about $5 each, or asking members to pay $10 each. The cost of the reduced price of $5 would be included in the 2018 budget.

Upcoming Annual Club Show

The 26th Annual Show is coming up on November 18–19 (see the article below beginning on page 8). The show will be at the Johnson Center at George Mason University in Fairfax, VA.

Show Chair Tom Taaffe invited members to sign up for tasks and time slots to help out with the show. He made signup sheets available at the meeting; instructions for signing up online are on page 8 below.

Top: *Dale Greenwalt introducing his presentation on insect fossils from the Eocene in Montana.* **Bottom:** *A mosquito fossil in shale from about 46 million years ago. Sources: Top—photo: Ti Mededith; bottom—Dale Greenwalt presentation.*

Tom urged members to pass out show notice cards everywhere they go and to put show notices in various local print publications and on local event websites. He also asked for donations of minerals and fossils for the show's silent auction, for door prizes, and for the Kids' Mini-Mines.

New Business

Club officer elections for 2018 will be held at the December club meeting. The president asked Nominating Committee Chair Amanda Parker about the status of nominees for the four club offices.

Incumbent Vice-President Ti Meredith and incumbent Secretary David MacLean said they are willing to be

nominees for their present offices. However, nominees for president and treasurer are still needed. Rick Reiber, the retiring treasurer, will be glad to help the new treasurer learn the system for keeping accounts.

All nominees will be presented at the November club meeting.

The NVMC and MNCA joint holiday party is planned for the club meeting on December 18. The clubs will hold a partial potluck at the Long Branch Nature Center. Cochairs Holly Perlick and Marie Johnston will ask for food contributions.

Announcements

Results were announced from the annual newsletter contest held by the EFMLS. Our club did well! See the results in the article beginning on page 15.

The next NVMC meeting will begin at 7:45 p.m. on **Monday, November 13**, at the Long Branch Nature Center. ***Note:*** This is an earlier date than usual to help club members prepare for the annual club show on the following weekend.

The special exhibit case at the Gem Hall in the Smithsonian National Museum of Natural History contains replica representations in cubic zirconia of the two pieces removed from the Hope Diamond early in its history. It also contains a crystal group called the "Cranberry Crown."

There is a new group interested in fossils and minerals at NOVA Labs in Reston, VA. NOVA Labs is a membership-driven "makerspace," where members use tools and equipment to design and create things. For more information, click here.

Display Table

Celia Zeibel showed geodes containing quartz crystals and botryoidal chalcedony collected from the mouth of a creek feeding the Green River in Kentucky. Some of the geodes at that locality were too big to carry.

Similar geodes are found in the Harrodsburg limestone formation at its contact with the Borden shale formation near Harrodsburg, IN. Geodes at Harrisburg, IN, and in Monroe County, IN, contain quartz, calcite, goethite, dolomite, and sphalerite. Geodes in streams usually contain only quartz; the water probably leaches out calcite and other minerals.

Congratulations, Celia, and thanks for a great display! And thanks to your dad as well!

Celia Zeibel and her fabulous display of geodes. Photo: Ti Meredith.

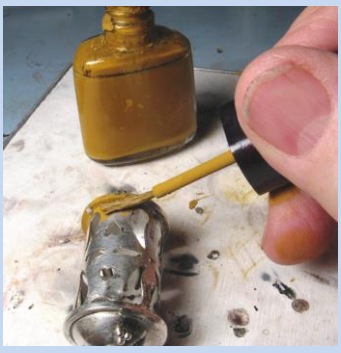
Bench Tip: Ochre Applicator

Brad Smith

Yellow ochre is used to be sure the solder won't flow on an area of your piece while you're soldering another area. The only problem with ochre is coming up with a good way to store and apply it.

I use recycled nail polish bottles. They seal well and have a built-in brush applicator. Just clean them out with a little acetone or nail polish remover, and they're ready to go.

See Brad's jewelry books at
amazon.com/author/bradfordsmith



26th Annual Show Coming Up!

November 18–19, 2017

by Tom Taaffe, Show Chair

The NVMC holds its 26th Annual Gem, Mineral, and Fossil Show on November 18 and 19 at George Mason University.

The big change this year is that our show is moving two buildings over to the Johnson Center. The show site will be Dewberry Hall inside the Johnson Center.

New GMU Location!!

Dewberry Hall is a wonderful facility that will hold all our show offerings, with everything in one large room. That includes our dealer booths, the kids' activity area, and our exhibits, demonstrations, and silent auction. This is our first time in this room, and we have a new floor plan. But we will be figuring some things out as we go forward.

Setup is on Friday evening, November 17, starting at about 5 p.m.

SHOW VOLUNTEERS NEEDED !!

We will need a host of club volunteers over the course of both show days and for setup on Friday. We have a number of tasks to perform and positions to fill. We encourage volunteers to sign up for shifts of at least 2 hours—more, if you can manage it.

We are very grateful to all the volunteers who so generously helped out at past shows, and we hope that many of you will return to help us again at the 2017 show. We need volunteers for the tasks and activities summarized below.

If you can volunteer or have any questions, please contact Tom Taaffe at rockcllctr@gmail.com or call me at 703-281-3767; you can also text me at 571-345-5310. Or you can volunteer by contacting President Bob Cooke at rdotcooke@gmail.com.

Quick and easy!

Club Show Volunteer Signup

We're using SignUp.com to organize volunteer signups for the 26th Annual Show.

Here's how it works in three easy steps:

1. Click this link to see our signup on SignUp.com: http://signup.com/go/lwwnZir
2. Review the options listed and choose the spot(s) you like.
3. Sign up! It's easy! You will NOT need to register an account or keep a password on SignUp.com.

Note: SignUp.com does not share your email address with anyone. If you prefer not to use your email address, please contact me at rdotcooke@gmail.com and I can sign you up manually.

Also, a paper copy of the signup list will be available at the November NVMC meeting. You can sign up there, and I'll update the master list accordingly.

Thanks!

NVMC President,
Bob Cooke

Friday Night Setup (A): Volunteers bring materials from the club's storage unit, arriving at about 5 p.m. Materials include exhibit cases, heavy-duty electrical cords, table coverings, miscellaneous supplies, mineral specimens for the auction and for the Kids' Mini-Mines, and materials for the kids' activity room. If we have not already done so, we will also need to bring all the campus directional signs. This task typically requires two to three vehicles and their drivers, depending on the size of the vehicles. The club storage unit is conveniently located a few miles from GMU.

Friday Night Setup (B)—Loading Dock Procedures: The Johnson Center has an elevated loading dock with three bays. ***Note:*** The Johnson Center *does not* have a parking lot, so loading in and out will be quite different from the Hub. We hope to gain

permission to use nearby Parking Lot A on Friday night; otherwise, volunteers will need to park in the closest GMU parking garage.

We will have a system worked out. Club volunteers as well as student volunteers will be needed to first help unload all club materials (which we hope to have finished by 6 p.m.).

Starting at 6 p.m., we will need volunteers to help incoming dealers unload their goods at the three bays at the loading dock and help guide and transport the goods into Dewberry Hall. Dealers will have assigned times (staggered) to prevent delays. Some of the dealers will be scheduled to load in on Friday night and some will be scheduled for Saturday morning.

Friday Night Setup (C): Starting at about 5 p.m. at Dewberry Hall in the Johnson Center, volunteers will help arrange and adjust tables for the dealers first, then for exhibits. Then they will assemble the exhibit cases.

Volunteers will also set up the kids' activity area, arranging the quizzes, Kids' Mini-Mines, and workstations. Other setup tasks will include distributing and securing heavy-duty electrical cords for each booth section in the ballroom and helping to make sure that the table floor plan is accurate.

Admission Desk: Volunteers greet show attendees, collect admission fees, and issue door prize tickets. You can sign up for work shifts on Saturday from 10 a.m. to 5:30 p.m. and Sunday from 10 a.m. to 3:30 p.m.

Kids' Activities: Volunteers administer mineral- and fossil-related quizzes, manage the Mini-Mines, and offer learning opportunities. Hours are Saturday from 10 a.m. to 6 p.m. and Sunday from 10 a.m. to 4 p.m. Peak times, when help is needed most, are Saturday from 11 a.m. to 5 p.m. and Sunday from 12 p.m. to 3 p.m.

Silent Auction: Volunteers organize donated specimens, create bid slips, monitor 1 hour of the actual auction, collect winning bids, and distribute specimens. Hours are Sunday from 1 p.m. to 2 p.m. We usually need three to four volunteers.

Floaters: Club volunteers attend the show and help as the need arises. Often, the kids' activity tables or the admission desk gets overwhelmed, and our floaters step in to help out during the rush. When things calm down, they go back to enjoying the mineral show.

Door Prize Announcer-Manager: A club volunteer pulls hourly winning door prize tickets for kids as well

Annual Gem, Mineral, and Fossil Show
Participating Dealers

Alan's Quality Minerals, NJ

Arrowwood Minerals, Dick Ertel, VA

John Culberson, TX

Jonathan Ertman, Rockville, MD

Bob Farrar, Bowie, MD

The Garnet Group, Casper Voogt, VA

Geosol Imports, Rob Evans, Dillsburg, PA

Greg Graupp, Lebanon, PA (cabochons)

Hartstein Fossils, Gene Hartstein, DE

Dave Hennessey, Woodbridge, VA

Jan Minerals, Jehan Sher, Lorton, VA

George Loud, Hilton Head, SC

KBT Minerals & Fossils, Tom Taaffe, Vienna, VA

The Mineral House, Tom & Pam Kottyan, Bucyrus, OH

The Prospector Shop, Marianne Cannon, Acme, PA

Barry Remer, Reston, VA

Don Soechting, Charlottesville, VA (agates)

Williams Minerals, Keith Williams, Rio, WV

Yinan Wang, Arlington, VA

Display at the GMU Club Show in November 2015. Photo: Sheryl Sims.

as for adults, announces the winners, escorts winners to the door prize table, and supervises prize selection.

Floater/Security: Volunteers roam the show to make sure everything is running smoothly and that exhibits, activities, and demonstrations are not being overrun and volunteers are not overstressed. We ask for up to 4-hour shifts (half a day) for these trouble-shooting positions. For example, you might work on Saturday from 10 a.m. to 2 p.m. or from 2 p.m. to 6 p.m., but we will happily accept whatever a volunteer can do.

Sunday Takedown: This is the reverse of the Friday night setup, starting at 4 p.m. at the show's close on Sunday. Volunteers carefully take apart exhibit cases and pack them away, gathering up all club materials: the Kids' Mini-Mines and kids' specimens, the heavy-duty electrical cords, and everything else. Volunteers deliver these items to the club's storage unit and put them away. Additionally, we need someone with a vehicle to gather all the campus directional and shuttle signs and make them ready for returning to the club's storage unit. Sunday night takedown goes fast if numerous people help and volunteer their vehicles for the return trip to the storage unit. You don't need a vehicle to help out, but a few (perhaps three) people with vehicles will be needed.

Mineral Show Parking: We anticipate that designated parking will be in Parking Lot A, just as it was in 2016. It will be a short and easy walk to the Johnson Center. We anticipate that our shuttle route stop and pattern will be similar but will likely change to fit our new venue. Our GMU sponsor (the Department of Atmospheric, Oceanic and Earth Sciences) will have directional signs placed around campus to point the way to show parking and the shuttle stops.

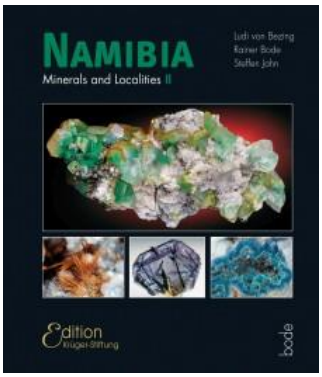
Book Review
Namibia Minerals and Localities

Editor's note: *Adapted from* M.R. News *(September 2017). Thanks to Sue Marcus for the reference!*

Namibia-II: Minerals and Localities, by Ludi von Bezing, Rainer Bode, and Steffen Jahn

And here it is! The long-anticipated second half of Rainer Bode's monumental documentation of the mines and minerals of Namibia (in English)!

The first half (Namibia-I), published in 2014, is now out of print. This new second volume presents over 900 gem and mineral species from Namibia, shown in over 1,600 full-color, never-before-seen photos.



Organized alphabetically by species, the book is not just an aesthetic feast but also a useful reference. A bibliography and a species index are included at the end.

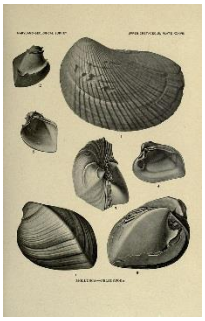
Save the dates!
Field Trip Opportunities

NOVA's Annandale campus offers 1-day weekend courses—essentially, field trips—related to our hobby. You can get more information at the Field Studies in Geology—GOL 135 Website.

Geology of Holmes Run Gorge

November 18, 2017, 9 a.m.–5:30 p.m. Holmes Run Gorge is a canyonlike area in Alexandria. Attend a 3.5-hour class at the college, followed by a 5-hour geologic tour of the gorge. Then you have 2 weeks to complete an online assignment.

Cretaceous Geology of Maryland/Fossil Hunt



January 10, 2018, start at 10 a.m. Well-known dinosaur expert and paleontologist Dr. Peter M. Kranz will lead this fun outdoor expedition to nearby fossil sites, where you can discover many exciting fossils to take home. Must have own transportation.

Paleozoic Geology of Virginia/West Virginia

April 7, 2018, 7 a.m.–9 p.m. This field trip will let you explore the late Silurian and Devonian geology of western Virginia and West Virginia, considering ancient depositional settings (tropical marine reefs, lagoons, shelves, deep basins, and terrestrial flood plains) and fossils, as well as later deformation (faulting and folding) associated with the Valley and Ridge Province.

Minerals Come From Mines

Profile of the Tsumeb Mine, Namibia

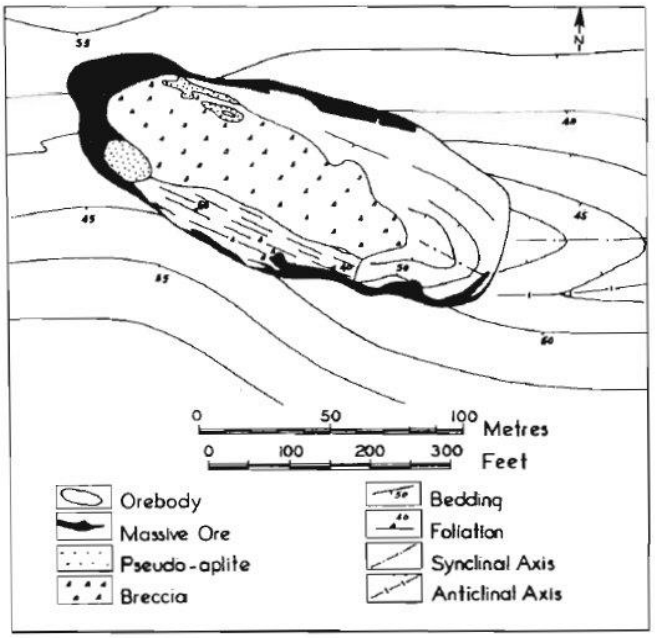
by Mike Kaas

Editor's note: *The article marks the beginning of a new series of pieces on the history of individual mines.*

The Tsumeb (pronounced SOO-meb) Mine is located in the town of the same name in the Oshikoto region of northern Namibia (S 19.242°, E 17.713°), about 300 air miles from the west coast and 360 rail miles from the port at Walvis Bay. No longer in operation, Tsumeb was a polymetallic mine producing copper, lead, zinc, silver, and germanium from high-grade and extremely complex ores. The mine became famous for the large number of mineral species found there—as of 2014, 292 mineral species, including 70 for which the mine is the type locality (Tsumeb.com 2015a).

The orebody was a breccia pipe structure containing zones of massive sulfides as well as disseminated sulfide and oxide minerals. The variety of minerals is partially the result of three different vertical oxidation zones in the orebody. At depth, the orebody widened.

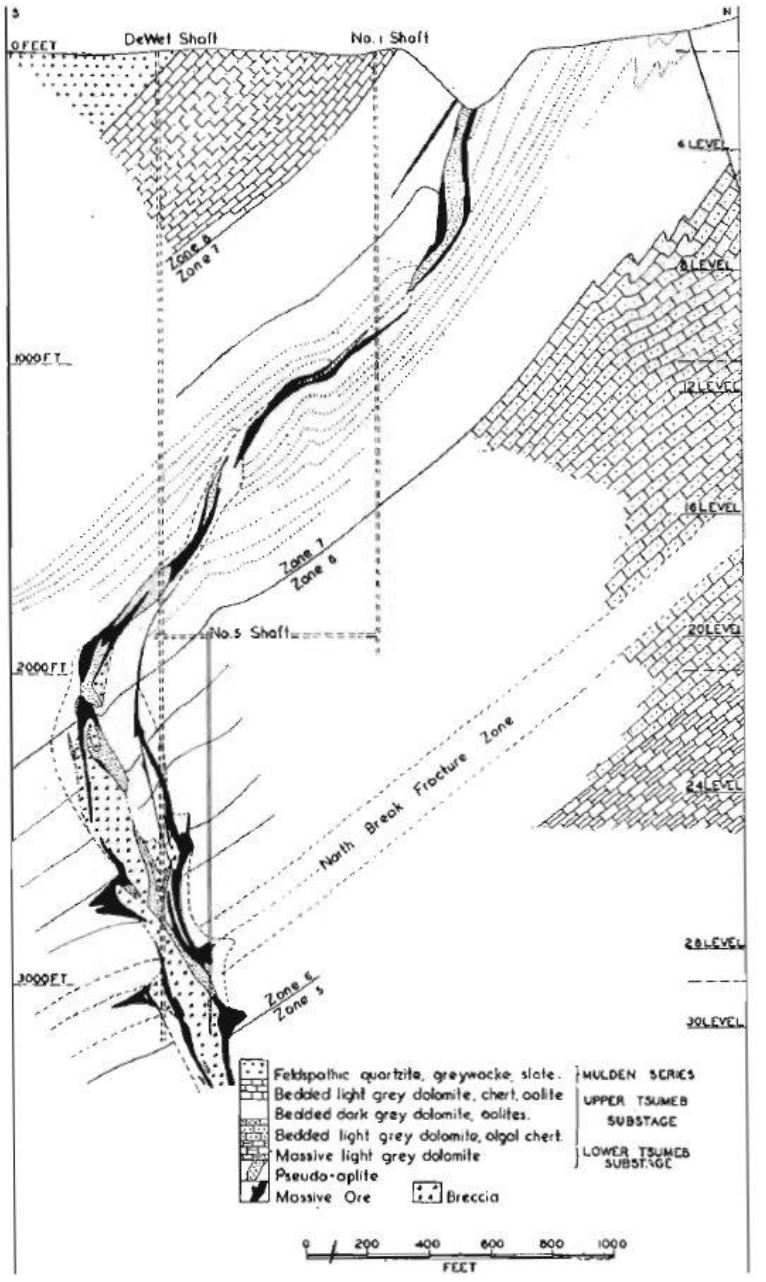
As early as 1851, European explorers noted copper ore in the northern part of what is now Namibia—which became an independent nation in 1990. However, the actual outcrop of the Tsumeb orebody, the Green Hill, wasn't discovered by Europeans until 1893.



Horizontal section across the 26th level of the Tsumeb Mine orebody (after Beall 1962).

In 1884, Namibia became the German protectorate of South West Africa. Mining at Tsumeb did not take place until 1907, after the Otavi Mines and Railroad Company (OMEG) constructed a railroad link.

Mining stopped during World War I but restarted in 1921. The Great Depression caused the mine to close in 1932. The mine reopened in 1939, but when World



Vertical section through the Tsumeb Mine orebody (after Beall 1962). Dots = feldspathic quartzite, graywacke, slate; gray = pseudo-aplite; black = massive ore; bricks/white space = dolomite.

War II broke out, South Africa seized the assets of OMEG.

During the South African occupation, the mine continued to produce from stockpiled ore until 1946, when production again stopped. In 1947, the mine was sold to the Tsumeb Corporation Ltd., a consortium in which the Newmont Mining Corporation (29 percent) and American Metal Company (29 percent) were major owners (Beall 1962). A new concentrator introduced the flotation process for Tsumeb's complex ores.

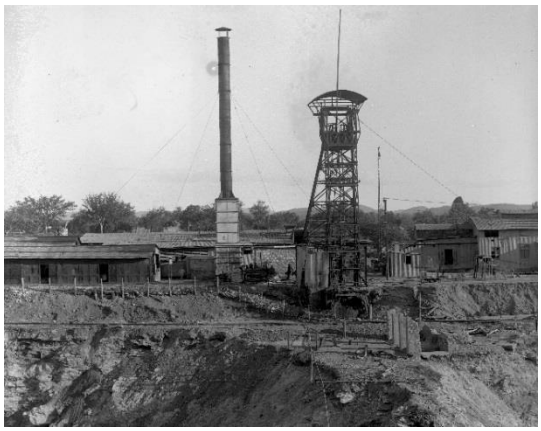
In 1949, construction of the De Wet Shaft began in order to reach the deeper ores. A new copper smelter was built in 1959 and a new lead smelter in 1960. 1965 saw record production of 733,000 tonnes (808,000 short tons) of ore.

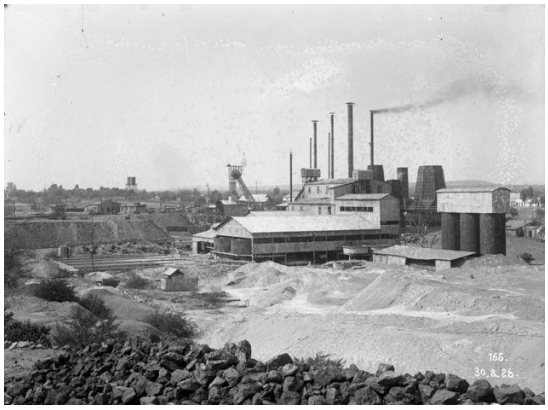
In 1984, Gold Fields South Africa Ltd. purchased Tsumeb Corporation Ltd. The lead smelter was closed in 1994. In 1996, the mine was closed due to a combination of declining ore grades, high costs (especially for dewatering), and violent labor strife. At the time of closure, the mine had reached the 44th level, over 4,400 feet deep.

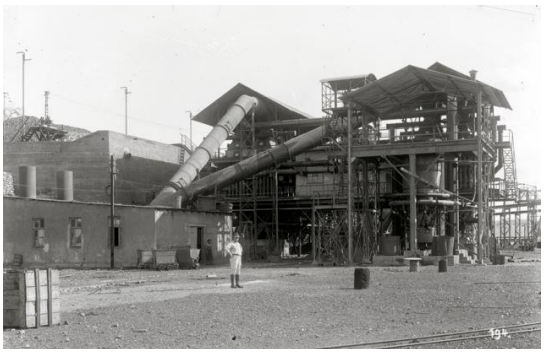
Subsequent efforts to reopen the mine, including one for mineral specimens, have been unsuccessful. The copper smelter continues to operate under new ownership using concentrates from other sources.

Minerals from Tsumeb were collected from the early days of mining until the mine closed. The minerals are well represented in many museum and private collections and well documented in the literature and on the web (N.a. 1977; Tsumeb.com 2015a).

The famous Newmont Azurite (about 1 foot long) was discovered at Tsumeb in 1952. Source: Courtesy of the American Museum of Natural History.

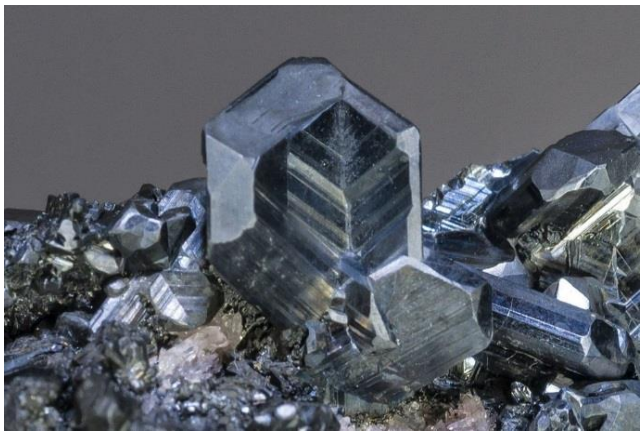


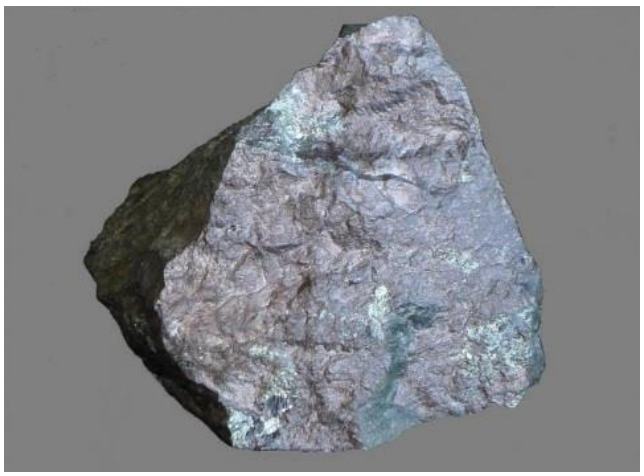




Top to bottom: Early surface mining at Tsumeb, ca. 1907; the old OMEG No. 1 shaft, ca. 1925; the Tsumeb Mine complex, ca. 1926; the Tsumeb lead smelter, ca. 1926. Source: Digital Namibian Archive (n.d.).

Four of the particularly spectacular or unusual specimens are shown here (above and below). The Geology, Gems, and Minerals Gallery at the Smithsonian National Museum of Natural History has a full case of specimens from Tsumeb on display, including two smithsonites, one pink and one blue-green.





Top: The "snowflake" or "honeycomb" cerussite was an important secondary lead mineral at Tsumeb. Middle: Chalcocite was an important copper mineral. Bottom: Germanite was the source of Tsumeb's germanium production. Source: Tsumeb.com (2015b–d).

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Can't Get to the Park? Try the Virtual Museum!

Thanks to Sue Marcus for the reference!

Formed over billions of years, the Grand Canyon is home to ancient fossils and remains of extinct mammals, but it also bears evidence of human activity dating back about 10,000 years.

For those who can't get there, the American Southwest Virtual Museum has photographs, maps, information, and virtual tours of the Grand Canyon and other national parks and museums across the Southwest. You can view archeological materials and models of excavation sites, learn about natural resources, comb through historic photographs, and even take visitor center and trail tours. For more information, go to http://swvirtualmuseum.nau.edu.

Island Arcs: How Do They Form?

by Hutch Brown

Ocean trenches are … *deep*! The deepest part of the ocean anywhere in the world is in the Mariana Trench in the western Pacific Ocean (fig. 1). It's called Challenger Deep, and it is 36,201 feet below sea level.

The Mariana Trench is part of a series of volcanic islands in the shape of an outward-bending arc; one island is the U.S. territory of Guam. The western Pacific has other island arcs as well, all bordered by deep-sea trenches—the dark blue in figure 1. Island arcs include, for example, Japan and the Philippines.

An island arc forms at the edge of an oceanic plate, in this case the Philippine Plate (fig. 2). The westward-moving Pacific Plate is heavier at its outer edge, so it dives under the lighter Philippine Plate to form a deep-sea trench—the Mariana Trench. The friction between the colliding plates generates tremendous heat (fig. 2), melting the rock and sending magma rising to the surface, where it forms volcanic islands behind the trench—the Mariana Islands.

The driving force is the ocean of magma in what geologists call the asthenosphere, which underlies the Earth's lithosphere (fig. 3). The asthenosphere has convection currents. Superheated magma rises from deep in the Earth's mantle to the surface at an ocean ridge, where it forms new crust. As it adds crust, the magma peels apart two oceanic plates. Each plate gradually cools, thickens, and sinks at its outer edge.

Where it collides with a lighter plate, the heavier plate dives under it, forming a deep-sea trench in the zone

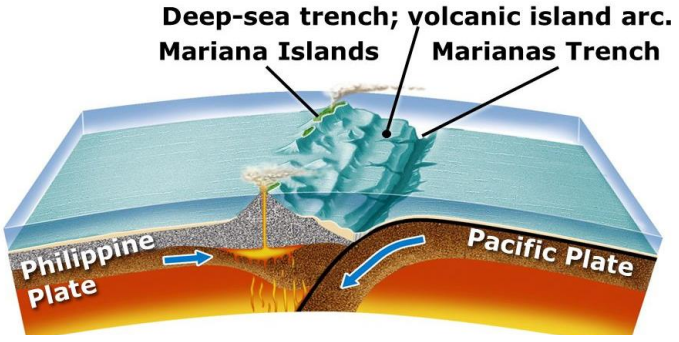

Figure 2—*Where two oceanic plates collide, the heavier plate (right) subducts under the lighter plate (left), forming a deep-sea trench. Rising magma from the colliding plates forms an arc of volcanic islands behind the trench. Source: Press and others (2006).*

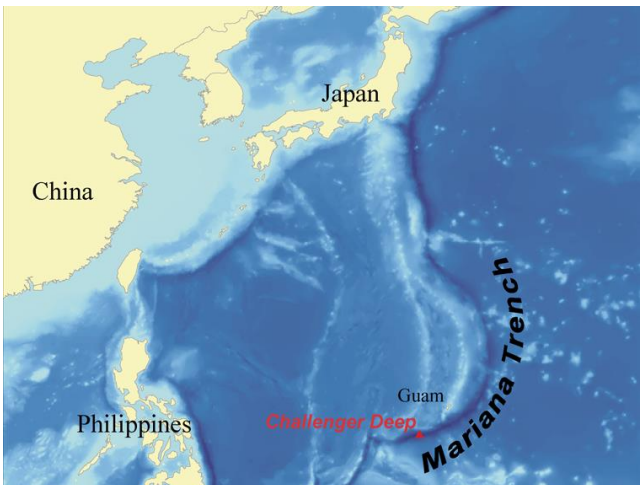

Figure 1—*The Mariana Trench in the Pacific Ocean south of Japan contains Challenger Deep, the lowest point on Earth. The trench is part of a volcanic island arc called the Marianas. The largest island is Guam, a U.S. territory. Source: Wikipedia (2017).*

of subduction, along with an arc of volcanic islands. The sinking plate melts and circulates through the Earth's mantle in a convection current of magma (fig. 3), and the process starts all over again.

Sources

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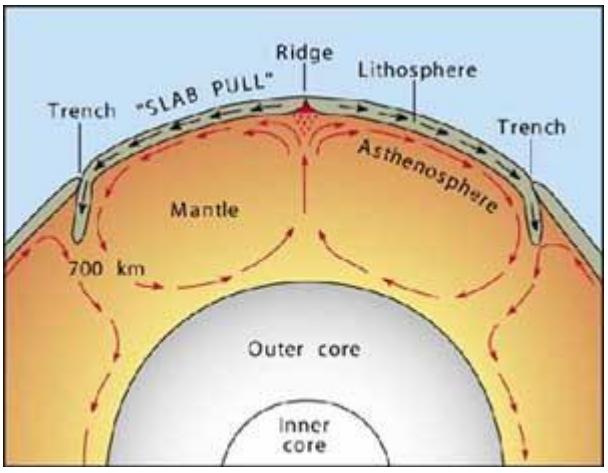

Figure 3—*Convection currents circulate magma through the Earth's liquid mantle, forming new crust and carrying heavy old crust into the mantle to be recycled. Source: UCMP (2002).*

Safety Matters
Juniors!

by Ellery Borow, EFMLS Safety Chair

Editor's note: *The article is adapted from* EFMLS News *(January 2011), p. 6.*

Many clubs are fortunate to have a number of junior members. Even clubs that do not have an active junior contingent are frequently involved with children as family members of guests, as attendees at our shows, or as fellow rockhounds at our digs and field trips.

Kids are all around us. Children are predisposed to learning; and we, as adults, are the teachers. Like it or not and aware of it or not, we are constantly watched by young adults, who learn from us.

Children are truly amazing in their capacity to take in information from their surroundings; and that begs the question: What examples are we setting when children are observing us (and even when they aren't)? Are we always following good safety practices? Are we always wearing safety glasses when appropriate?

We, as adults, know the right things to do with regard to safety matters, but do we always make sure we follow those important safety rules and guidelines, especially when children are present?

With the year drawing to a close and a new year ahead of us, please give some consideration to how we set good safety examples for the children around us. Whether or not we like it or know it, kids are watching what we do and learning from our example, good or bad.

Let's resolve to set the best example we can. Our children deserve nothing less!

Federation News
BEAC Contest

by Hutch Brown, Editor

Each year, the EFMLS Bulletin Editors Advisory Committee (BEAC) holds a contest for club newsletters. For the 2017 contest, our club submitted articles and newsletter samples from the 2016 calendar year.

The EFMLS gets the submissions and judges them in a regional contest. The top winners in each category are then sent to the AFMS, which judges them in a national contest.

Mary Bateman, EFMLS Bulletin Editors Advisory Chair

How Are Newsletters Judged?

Newsletter editors volunteer to judge the competing newsletters. They evaluate the newsletters in four categories: mini (5 pages or less); small (6 to 11 pages); large (12 pages or more); and "new editor."

In each category, the judges use a standard list of 29 evaluation criteria, such as "news of members" and "Eastern Federation news." For each criterion, the judges give points; for "spelling and grammar acceptable," for example, they give up to 5 points. They can give up to a total of 100 points overall, and the newsletter with the highest number of points wins.

2017 Results—Newsletters

Our club's entry, *The Mineral Newsletter*, took first place for large newsletters in the EFMLS competition and fourth place in the AFMS competition.

Maybe you've wondered what other winning newsletters look like. For the 2017 BEAC competition, the first-place winners are listed below. You can click on each one to go to the newsletter website.

EFMLS Trophies

- **Mini newsletters:** No entry
- **Small newsletters:** *The Collecting Bag* (Richmond Gem & Mineral Society, Richmond, VA)
- **Large newsletters:** *The Mineral Newsletter* (NVMC)
- **New editors:** *Tarheel Rockhound* (Catawba Valley Gem & Mineral Club, Hickory, NC)

AFMS Trophies

- **Mini newsletters:** *Chips and Chatter* (Pleasant Oaks Gem and Mineral Club of Dallas, Richardson, TX)
- **Small newsletters:** *Rock-N-Rose* (East Texas Gem and Mineral Society, Tyler, TX)
- **Large newsletters:** *Mineral Minutes* (Colorado Mineral Society)

- **New editors:** *The Rockhound Record* (Mineralogical Society of Arizona, Mesa, AZ)

2017 Results—Individual Articles

In addition to evaluating club newsletters, the BEAC judges assess individual articles in multiple categories. Judges look for particular things (such as "attracts and holds interest" and "of interest to club"). They award points accordingly.

As editor, I submitted nine articles for our club (three per category and up to two per author, the maximum allowed). Results were as follows:

Educational/Technical Articles—

Sue Marcus, "Mineral of the Month: Vanadinite" (February issue)—***Sixth place***

Sue Marcus, "Mineral of the Month: Stibnite" (May issue)—***Seventh place***

Sheryl Sims, "Let's Go Crazy With Purple Gemstones!" (June issue)—***Honorable mention***

Nontechnical Articles—

Mike Kaas, "Getting the Big [Geologic] Picture" (February issue)—***Fourth place***

Sheryl Sims, "It's All in the Name: The Controversy Over Negro Mountain" (February issue)—***Fifth place***

David MacLean, "Two Student Presentations" (February issue)—***Eighth place***

Written Features—

Hutch Brown, "Book Review: *The River and the Rocks*" (December issue)—***Fourth place***

Kathy Hrechka, "2016 NFMS/AFMS Show: Treasures of the Northwest" (September issue)—***Ninth place***

Sheryl Sims, "2016 EFMLS Conference: Why You Should Attend Federation Conventions" (November issue)—***Tenth place***

Mike Kaas's article "Getting the Big [Geologic] Picture" (in the February 2016 issue) was judged in the followup AFMS contest, where it took eighth place.

Congratulations, Mike! Congratulations to all our authors, and special thanks to everyone who contributed to our newsletter! Keep those contributions coming!

2018 Submissions

The newsletter contest is designed to help editors improve their newsletters by adding elements they might not have considered before. Frankly, the value our club gets from participating in this part of the contest might be reaching a point of diminishing returns.

However, because our newsletter won the EFMLS trophy for 2017, it is ineligible for the contest for the next 2 years. We can revisit the issue in 2019.

Of course, I will continue to submit individual articles for judging. It can be fun for the authors, who hopefully also benefit from judges' comments, helping them improve their writing skills.

The submissions deadline for the 2018 contest is earlier this year than usual (in November rather than the following January), so I had to pick articles for submission already. Drawing from newsletters in the 2017 calendar year (January through November), I will be submitting the following articles:

Educational/Technical Articles—

Hutch Brown, "Lake Drummond: A Carolina Bay? Part 1" (October issue)

Mike Kaas, "Profile of the Tsumeb Mine, Namibia" (November issue)

Sue Marcus, "Mineral of the Month: Sphalerite" (September issue)

Nontechnical Articles—

Bob Cooke, "History of the Fred Schaefermeyer Scholarship Fund" (January issue)

Ken Rock, "Looking for Jade in Myanmar" (June issue)

Sheryl Sims, "Death Becomes It" (February issue)

Written Features—

Hutch Brown, "Book Review: *Geology and the Gettysburg Campaign*" (October issue)

Patricia Flavin, "Fossil Collecting Trip, Calvert Cliffs, MD" (May issue)

Amanda Parker, "My First Fossil Hunt!" (May issue)

Best of luck to all our authors!

First-Place Article

The April Birthstone Is the Diamond

by Lee Elms

Editor's note: *The article is adapted from* Chips and Chatter *(newsletter of the Pleasant Oaks Mineral Club of Dallas, TX), April 2016, pp. 1–2. It won first place in the 2017 AFMS contest in the category "Adult Articles."*

The origin of the birthstones is believed to date back to the breastplate of Aaron, which contained 12 gemstones representing the 12 tribes of Israel. The April birthstone, diamond, symbolizes affection, strength, eternity, and, of course, everlasting love.

The diamond is the ultimate gemstone, having few weaknesses and many strengths. It is the hardest substance found in nature (AGS 2017). Diamonds have a long history as beautiful objects of desire. In the first century AD, the Roman naturalist Pliny stated that a diamond is the most valuable not only of precious stones but of all things in this world (GIA 2017).

The word "diamond" comes from the Greek expression *adamao*, meaning "I tame" or "I subdue." The adjective *adamas* was used to describe the hardest substance known and eventually became synonymous with diamond. The Greeks and Romans believed that diamonds were tears of the gods and splinters from falling stars (CBS News 2002).

The first diamonds were found over 4,000 years ago in the alluvium of the Godaravi, Krishna, and Penner Rivers in India. The Hindus attributed so much power to them that they placed them in the eyes of the statues of deities (Coutsoukis 2007). It was believed not only that diamonds could bring luck and success but also that they could counter the effects of astrological events. Plato even wrote about diamonds as living beings, embodying celestial spirits. Their rarity, durability, and beauty made them popular among medieval royalty.

Today, diamonds continue to hold a deep fascination as the world's ultimate symbol of wealth. Modern diamond mining as we know it began in South Africa in the late 19th century. The top seven diamond-producing countries, accounting for 80 percent of the world's rough diamond supply, are Angola, Australia, Botswana, the Democratic Republic of the Congo, Namibia, Russia, and South Africa (Coutsoukis 2007).

The Hope Diamond. Source: Wikipedia.

What is a diamond's color? The color of the most popular diamonds is a transparent silver. Diamonds also come in a variety of colors such as pink, red, blue, brown, black, and yellow. The colored diamonds are considered to be the rarest and most expensive types of diamonds.

The largest diamond stone ever found was from Africa. It was 3106.75 carats (1.37 pounds or 621.35 grams) and is called the Cullinan Diamond (JIP 2017).

Today, there are many ways to cut a diamond to show off the fire inside, and now there are even ways to set diamonds so that they move and vibrate and constantly sparkle. Just walk into any jewelry store and be amazed at the beauty in those showcases. And we mere mortals can afford to own these precious objects, "The Tears of the Gods."

Oh, by the way, my birthday is in April, so yes, I do own a diamond or two.

Sources

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Coutsoukis, P. 2007. History of diamonds—Diamonds A to Z.

GIA (Gemological Institute of America). 2017. Diamond history and lore.

JIP (Jewelry Information Place). 2017. April birthstone.

November 2017—Upcoming Events in Our Area/Region (see details below)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 MSDC mtg, Washington, DC	2	3	4
5 **Daylight savings time ends**	6 GLMSMC mtg, Rock-vle, MD	7	8	9	10	11 Show: New York **Veterans Day**
12 Show: New York	13 **NVMC mtg, Arlington, VA**	14	15 MNCA mtg, Arlington, VA	16	17 **NVMC/GMU Show setup**	18 **NVMC/GMU Show** **NOVA field trip**
19 **NVMC/ GMU Show**	20	21	22	23 **Thanks-giving Day**	24	25 Show: Mor-ristown, NJ
26 Show: Mor-ristown, NJ	27	28	29	30		

Event Details

4: Washington, DC—Monthly meeting; Mineralogical Society of the District of Columbia; 7:45–10; Smithsonian Natural History Museum, Constitution Avenue lobby.

9: Rockville, MD—Monthly meeting; Gem, Lapidary, and Mineral Society of Montgomery County; 7:30–10; Rockville Senior Center, 1150 Carnation Drive.

11–12: New York, NY—Fall New York City Gem & Mineral Show; New York Mineralogical Club; Watson Hotel, 440 West 57th St; info: Tony Nikischer, www.excaliburmineral.com.

13: Arlington, VA—Monthly meeting; Northern Virginia Mineral Club; 7:45–10; Long Branch Nature Center, 625 S Carlin Springs Rd.

15: Arlington, VA—Monthly meeting; Microminer-alogists of the National Capital Area; 7:45–10; Long Branch Nature Center, 625 S Carlin Springs Rd.

17–19: Fairfax, VA—25th 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, Johnson Ctr, Dewberry Hall, Rte 123 & Braddock Rd; Sat 10–6, Sun 10–4; adults $6, seniors $4, teens (13–17) $3, 12 and under free, Scouts in uniform & students w/ID free; info: https://www.novamineral-club.org/events/2017-show.

18: Alexandria, VA—Geology field trip, Holmes Run Gorge; 9–5:30; NOVA; info, reg: GOL 135 Website.

25–26: Morristown, NJ—Rock and Mineral Weekend; Morris Museum Mineralogical Society; Morris Museum, 6 Normandy Heights Rd; info: kfrancis@morrismuseum.org.

NEW GMU LOCATION FOR 2017!!

26th Annual GEM, MINERAL AND FOSSIL SHOW

Presented by The Northern Virginia Club, Inc. www.novamineralclub.org
Sponsored by the Dept. of Atmospheric, Oceanic and Earth Sciences at GMU

Date: November 18 & 19, 2017

Place: Dewberry Hall, Johnson Center
George Mason University Campus
Braddock Rd. & Route 123, Fairfax, VA

Hours: Saturday 10 am - 6 pm, Sunday 10 am - 4 pm

Admission: Adults: $6, Seniors: $4, Teens (13-17): $3
Children 12 & under & Scouts in uniform are FREE
GMU Students w/valid ID are FREE

$1 OFF
Adult admission with this card (applies to all adults + seniors in your group)

Demonstrations, Exhibits, Kids Activities, and Door Prizes.
Mini-mines for children to dig in and get free fossils and minerals.
Over 20 Dealers with Fossils, Minerals, Crystals and Gems for sale.

Use Parking lot A, enter Lot A from Nottoway River Lane.
Look for our Courtesy Shuttle & Designated Walking Path to Mineral Show

Please help get the word out!
Print out and distribute the flyer!

Hutch Brown, Editor
4814 N. 3rd Street
Arlington, VA 22203

THE NORTHERN VIRGINIA MINERAL CLUB INC
Crystals are the flowers of the Mineral Kingdom

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Mineral of the Month: Cerussite

PLEASE VISIT OUR WEBSITE AT:
http://www.novamineralclub

The Northern Virginia Mineral Club

You can send your newsletter articles to:

Hutch Brown, Editor
4814 N. 3rd Street
Arlington, VA 22203
hutchbrown41@gmail.com

Visitors are always welcome at our club meetings!

RENEW YOUR MEMBERSHIP!

SEND YOUR DUES TO:
Rick Reiber, Treasurer, NVMC
PO Box 9851, Alexandria, VA 22304

OR

Bring your dues to the next meeting.

Purpose: To encourage interest in and learning about geology, mineralogy, lapidary arts, and related sciences. The club is a member of the Eastern Federation of Mineralogical and Lapidary Societies (EFMLS—at http://www.amfed.org/efmls) and the American Federation of Mineralogical Societies (AFMS—at http://www. amfed.org).

Dues: Due by January 1 of each year; $15 individual, $20 family, $6 junior (under 16, sponsored by an adult member).

Meetings: At 7:45 p.m. on the fourth Monday of each month (except May and December)* at **Long Branch Nature Center**, 625 Carlin Springs Road, Arlington, VA 22204. (No meeting in July or August.)

**Changes are announced in the newsletter; we follow the snow schedule of Arlington County schools.*