THE NORTHERN VIRGINIA MINERAL CLUB INC

The Mineral Newsletter

Meeting: December 16 Time: 6:30 p.m.

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

Volume 56, No. 10
December 2015
You can explore our club website:
http://www.novamineralclub.org/

Merry Christmas!

Happy Hannukah!

Holiday Party
December 16, 6:30–9:30 p.m.

The NVMC and the Micromineralogists of the National Capital Area are jointly hosting this year's holiday party at the Long Branch Nature Center (our usual club meeting place). We welcome Alec Brenner, our Cal Tech student, at our holiday party. He will present a short program based on his research in optical mineralogy: "Searching for Water in Meteorites."

The NVMC will pay for barbeque from Red Hot & Blue. The MNCA will provide drinks. We are asking club members, on a voluntary basis, to provide appetizers and desserts. If your last name begins with A–L, please bring an appetizer; if you last name begins with M–Z, please bring a dessert..

In the holiday spirit, we are asking club members, on a voluntary basis, to bring a wrapped gift marked FOSSIL, MINERAL, or LAPIDARY.

Please come and enjoy!

Club Officer Elections Coming Up!

The NVMC will elect club officers for 2016 at the December meeting before the holiday party. Nominated are:

President ..... Bob Cooke
Vice-President ..... Ti Meredith
Treasurer ..... Rick Reiber
Secretary ..... David MacLean

NVMC members:

If you have not yet paid your annual dues, now is the time! You can use the form on page 18.

Tanzanite
December birthstone

Mineral Collection.
Photo: Chip Clark.

Perovskite: Most Common Mineral

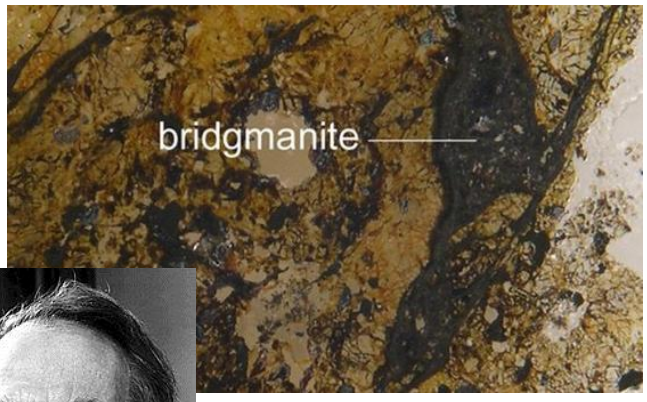
by Ed Goldberg

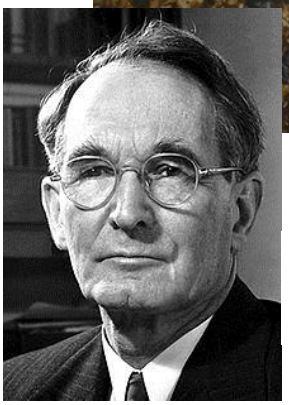
Editor's note: The piece is adapted from The Conglomerate *(newsletter of the Baltimore Mineral Society, Baltimore, MD), July 2014, p. 5.*

For many years, geophysicists have supposed that the Earth's lower mantle is made up of a high-pressure mineral not seen on the Earth's surface. Because the mantle is so large, that mineral would be the most common mineral in the Earth's crust.

But until recently, the mineral had no name. The International Mineralogical Association is the gatekeeper for mineral designations, and they insist that a mineral cannot be named until it's structure is known. Because none of this high-pressure material can form at the Earth's surface, its structure could not be determined; therefore, it could not be named.

Now scientists studying the Tenham meteorite in Queensland, Australia, have found tiny traces of the mineral that formed when the meteorite hit the Earth in 1879. From the tiny bits in the meteorite, they determined the mineral's structure, and the association has now approved the name bridgmanite, in honor of Percy Williams Bridgman (1882–1961), an expert in high-pressure physics.





Bridgmanite (above) was named for Percy Williams Bridgman (left). Source: Wikipedia.

In this issue …

Sad News: Cynthia Payne

Cynthia Payne, who was very active in our hobby, passed away on Sunday, November 15, 2015. Cynthia was a longstanding member of the Mineralogical Society of the District of Columbia, a founding member of the Micromineralogists of the National Capital Area, Inc., and a member of the Micromounters Hall of Fame. Her enthusiasm, knowledge, friendship, and guidance will be greatly missed.

Deadline for Submissions

January 2

So we can send out the newsletter on time, please make your submission by the 1st of the month! Submissions received later might go into a later newsletter.

When It Comes to Gems and Minerals—the Message Is Clear Cut!

by Sheryl E. Sims

GEMOLOGY 101: I had a wonderful meeting with Girl Scout Troop 4841 on Tuesday, November 17. They are a combined Senior/Ambassador Girl Scout Troop that meets at my church.

I was asked to give a short presentation on gemstones and to discuss the four C's: clarity, color, cut, and carat. We talked about a few other general mineral-related matters as well. The Scouts also enjoyed a "flashing rock" demonstration, where each of them created sparks by rubbing large pieces of quartz together.

The Girl Scouts were great, and they were enthusiastic about learning what our mineral club does. I invited them to join and to attend our upcoming gem and mineral show. I look forward to seeing them there.

Sheryl Sims (center) with Girl Scouts from Troop 4841. Photo: Linda Larson and Sandy Graf, Troop coleaders.

What About Other Club Newsletters?

by Hutch Brown, Editor

Ever wonder what they're like?

Many of you already know, because you belong to multiple clubs.

We're lucky: We live in a metropolitan area packed with people interested in geology, mineralogy, and so forth. Flourishing clubs range from northern Virginia to Baltimore, all with very good newsletters.

I regularly peruse newsletters from around the nation. That's part of my job as your newsletter editor. If you're interested, you can click here to access a registry of mineral clubs from across the United States, along with their newsletters.

Other newsletters have interesting articles, and my job is to seek them out. Our newsletter typically contains at least one, with attribution. (This is common practice for mineral club newsletters.)

If you know of a great piece in another newsletter—or, for that matter, in any other source—please let me know! I will run it—and give you the credit!

GMU Club Show

A Gem Among Gems

by Sheryl E. Sims

The Northern Virginia Mineral Club held its 24th Annual Gem, Mineral, and Fossil Show at George Mason University (GMU) on November 21–22. This year's show proved to be yet another success. We had good attendance and our usual array of vendors.

This year, for fire safety, the Hub Ballroom was reserved for vendors' tables alone. Visitors to the show seemed pleased to have more room for viewing specimens; several commented that they liked not having

to navigate around the kids' tables. There were many wonderful specimens to covet and buy!

One of the things that I enjoyed most was watching the children learning and actively engaging in the many mineral activities in the two classrooms for kids. From tiny tots to teens, there was something for everyone!

Although not located in our immediate show area this year, the Scouts made a good showing, with about a hundred Boy and Girl Scouts in attendance! Many participated in our show as well as in the STEM (science, technology, engineering, and math) sessions in the Exploratory Hall next door.

It was also nice to see our members as well as GMU students helping out in various ways to keep the show running smoothly. Those assisting with the shuttle from the parking lot were especially appreciated. It was great seeing mineral friends who traveled some distance to support our show, such as Dr. Lance and Cynthia Kearns as well as Steve and Carolyn Weinberger.

Jim Kostka and Tom Taffee have the master list of all the helpers, so I won't try to list all of the people who should be thanked for their hard work. I'm sure we will do that at a later time. I do, however, want to thank Jim and Tom for all they did to make our show such a success!

Thanks to Sheryl Sims for all the great photos!

Exploring Minerals in France: Part 2

by Sue Marcus

Is mineral collecting your vacation? Or are minerals part of your vacation? Here's the second part of how we incorporated seeing, buying, and trading minerals into our September trip to France.

Mineral and Fossil Show

By sheer luck, we happened upon a 1-day mineral and fossil show in Blois. We were in the right place at the right time—and Roger wasn't keen on visiting Versailles but was willing to stop here on our way to Paris. This show was all dealers and slightly larger than our own club show.

Fossils are big in France; I wish I'd brought some to trade. Some dealers would trade and some would not. Again, I was mostly looking for French specimens, although I also purchased a couple of odd Indian fluorites and a couple of Moroccan specimens from dealers with family in those countries.

Paris Minerals

In Paris, we had two minerals-related stops. I'll end with the better one.

We were very unimpressed by the mineral gallery in the National Museum of Natural History in the Jardin

The national mineral gallery in Paris, with the author standing in front of smoky quartz and amethyst displays. Photo: Roger Haskins.

The Blois mineral and fossil show. Bottom: Roger Haskins with local dealers (each holding a glass of beer). Photos: Sue Marcus.

des Plantes. There's an entrance fee but no shop, not even post cards for sale. The museum consists of one long hall with huge, mostly quartz crystals down the middle. Impressive, but … quartz? We did see an outstanding—I'd say world-class—beryllonite.

I visited our final stop—a dealer in minerals, fossils, and meteorites—several times, waiting for the manager to be in and trying to get up my courage to ask to trade. Online, Carion Minereaux seemed expensive, but it was very close to the flat we'd rented.

Inside, there were lots of familiar minerals that didn't interest me—from Arizona, Mexico, and so forth—and the owners like meteorites, again not our thing. But there was one aragonite from Argentina (I know, not France!) that caught my eye, priced at 35 euro (about $39). Probably worth it, though not to me.

I finally saw the apparent manager and tried my luck—and my luck was in! I lost some weight in specimens to bring home and got one specimen I wanted.

It turns out that the "manager" is Louis Carion, son of the founder. We had a great chat! The family has been going to the Tucson show since the 1980s and has been there many more times than we have. They've even bought a house there! We talked of great finds and collectors, and I left very happy.

Beryllonite in the national mineral gallery in Paris. Photo: Sue Marcus.

Chocolate Gold

Then there's the gold. Roger and I have never eaten more gold than we did on this trip! Many French pastry shops decorate their chocolate tarts with gold foil. We love chocolate tarts and ate them wherever and whenever we could find them. Sorry folks, the gold wasn't the draw this time!

Fluorite on smoky quartz in the national mineral gallery in Paris. Photo: Sue Marcus.

Roger Haskins enjoying chocolate tarts decorated with gold foil. Photo: Sue Marcus.

AFMS News

Safety Matters—The Example

by Ellery Borow, AFMS Safety Chair

Editor's note: The article is adapted from the A.F.M.S. Newsletter *(September 2015), p. 5.*

The examples we set for the kids around us are profound. Whether it's our own kids, the neighbors' kids, the playground kids, the kids in the grocery store, or the kids on our field trips, kids are watching what we adults do.

On field trips, safety is important, and if adults set a good example, it can make an impression on kids. Kids will mimic, adopt, accept, follow, and learn from the examples we set.

Kids want to grow up and do the things adults do. If we, as responsible adults, set good examples, then the pathway to adulthood will be that much safer for the child.

On your next rock-collecting adventure, think about putting your proper footwear on first, wearing your safety goggles first, and placing gloves on your hands first. Mind where you toss your leaverite, how you use your collecting tools, and how you interact with others—kids might be watching.

Even if the kids are hundreds of feet away from where we are working, they will do what kids do best. Their curiosity will make them watch, and the little sponges in their heads will absorb the things we do and the words we speak. Even without your knowing it, kids are watching you—that is their nature.

What if the kids around us are far away—too far away to see whether or not we are wearing safety glasses? Should we then drop our guard and dismiss the need to wear goggles and gloves and use proper tool techniques?

Perhaps you have noted the incredible tendency of kids to show up just as we make our greatest mistakes (such as not wearing those goggles). But even without kids around, we also deserve to be safe. It's just that, with kids around, we need to be extra vigilant about setting a good example.

Also, please consider this: If we set a good example, then the parents of the kids around us will have a much easier time teaching their kids the right things to do because everyone around them will be doing the right things.

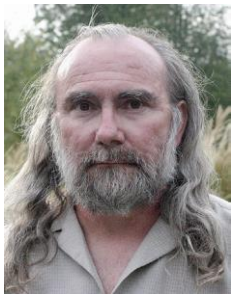
What a great relief for a parent of young children! It's no fun for a parent to have to keep saying to their child, "No, don't do what they are doing" or "No, that guy over there is not following the safety rules for the trip."

Be safe, act safe, set a safe example, and see the smiles. Be safe because everyone's safety matters!

EFMLS News

The Great Rockhound Debate

by Andy B. Celmer, EFMLS Historian



Editor's note: The article is excerpted and adapted from EFMLS News *(May 2015), p. 5.*

In the *EFMLS Newsletter* for November 1963, editor Vernon Wertz published an article on "the Rockhound question." He noted a "large amount of comment" on whether use of the term "rockhound" is appropriate and stated that EFMLS official records and correspondence were refraining from its use.

However, an editorial by Francis W. "Bud" Trapp, President of The Gem and Lapidary Society of Washington, DC, defended the use of the term "rockhounder" as inclusive of all aspects of our hobby, noting that another such term did not exist.

Bud suggested that the term was no more derogatory than "doughboys," "Yankee," or "Johnny Reb." He counted 65 clubs with the term "rockhound" in the club name, saying that those 65 clubs might not be eager to change their names.

Bud cited an article by Dr. George Switzer in the November 1951 issue of *National Geographic Magazine* under the title, "Rockhounds Uncover Earth's Mineral Beauty." The author began the article thusly: "Years ago, when I first became a Rockhound, …"

Bud concluded his editorial with the slogan of the forthcoming Eastern and American Federation Convention in 1967: "Washington, DC—Rockhound Heaven in '67, National Gem and Mineral Show." He argued that it was a much better slogan than, say, "Come All Ye Mineral Collectors and Lapidarists to Washington, DC, in 1967."

Tribune Tower: A Tower That Rocks

by Sheryl E. Sims

Piercing the Chicago skies stands a neo-Gothic building called the Tribune Tower. Within its walls are the Chicago Tribune, Tribune Publishing, and Tribune Media Company.

It wasn't until recently that this would have made any impression on me. True, the Tribune Tower is unique in its architecture. Having won first place for being "the most beautiful and distinctive office building in the world," this building was truly a standout when it was built in 1925, the brainchild of New York architects John Mead Howells and Raymond Hood.

But to me what makes the Tribune Tower so unique is the fact that Chicago Tribune correspondents have brought back rocks and bricks from important historic sites all over the world. Some of the stones and bricks are embedded in the lower walls of the building, along with etchings naming the original locations.

Think of a significant political or social event in the history of the world and there is a good chance that it is represented in the walls of the tower. Here are just a few examples:

Source: Wikipedia.

Source: Wikipedia.

Taj Mahal, India: White marble mausoleum.

Clementine Hall, Vatican City: Hall of the Apostolic Palace near St. Peter's Basilica.

Parthenon, Athenian Acropolis, Greece: Marble temple.

Hagia Sophia, Turkey: Imperial mosque (formerly Christian patriarchal basilica).

Palace of Westminster, UK: Meeting place of the British House of Commons and House of Lords.

United States: A rock or brick from each state.

Pyramid of Giza, Egypt: Casing stones from one of the Seven Wonders of the Ancient World.

Lincoln's Tomb, Springfield, IL: Marble from the tomb of Abraham Lincoln and family.

The Great Wall of China: Brick, stone, wood, and earth.

Independence Hall, Philadelphia, PA: Site where Congress adopted the Declaration of Independence and the Constitution.

Angkor Wat, Cambodia: Capital Temple, the largest religious monument in the world.

Petrified Forest, AZ: Petrified wood.

Berlin Wall: Barrier that once divided East and West Berlin. Demolished in 1992.

Notre Dame, Paris: Catholic cathedral.

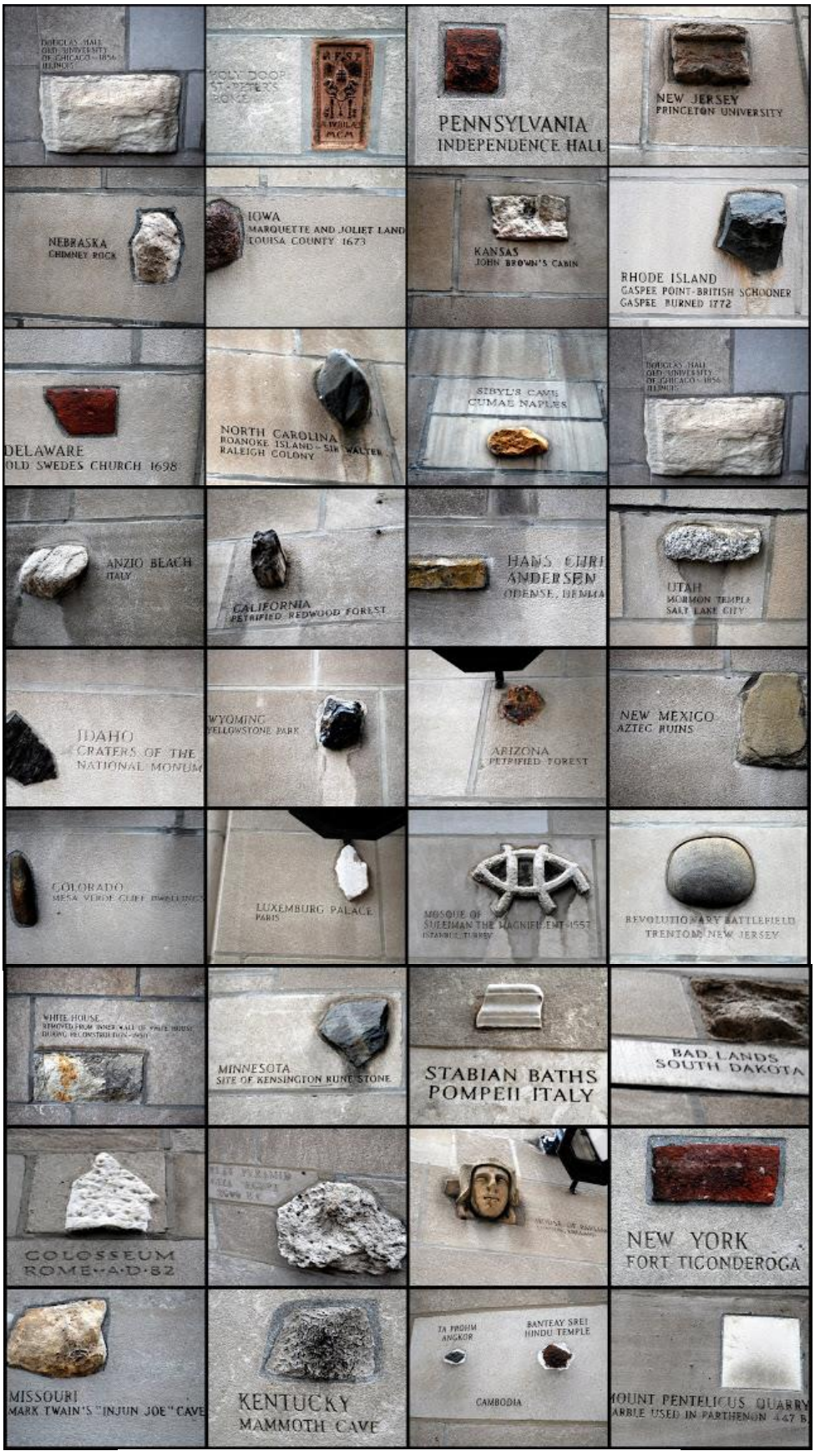
The Alamo, TX: Roman Catholic mission and fortress compound in 1836.

Fort Santiago, Manila, Philippines: Citadel built by the Spanish; most important historical site in Manila.

I find the whole idea of this building having memories encased in rocks, bricks, iron, and other materials embedded in its walls fascinating! Who knew that so many points of interest could be found between "a rock and a hard place?"

Ft. Santiago, Notre Dame, and a temple in Hunan, China. Source: Wikipedia.

World Trade Center. Source: Wikipedia.



Chicago Tribune building stones. Source: Wikipedia.

Red Hatters Visit Vulcan Manassas Quarry

by Sue Marcus

Where do I take a group of over-50-year-old ladies for a good time? The Vulcan Manassas Quarry, of course!

On September 30, I had the pleasure of leading my chapter of the Red Hat Society on a field trip to the quarry. Red Hatters are women over 50 (though we had a couple of younger tag-a-longs) who get together for fun and companionship. None but me had ever been to a quarry before and all were eager to learn. The most frequently heard comment was, "I've lived nearby all my life and never knew it was there!"

Plant manager and geologist Chris Carroll, assisted by KT, explained the processing, shipping, and quarrying of the materials. The women were awed by the cost of the haul truck tires and by the vastness of the quarry operations. We heard about the extensive regulations the quarry management must follow, not only the usual water, air, and safety regulations but also not blasting until after school is out—the quarry property now adjoins two schools.

The Vulcan staff laid out a hands-on display of minerals and mineral products. Chris said that he receives his first work-related phone call at 3:20 a.m. and expects to leave work at 6 p.m.; he and KT were patient and chipper throughout our visit. The ladies learned about the complexity of providing a commodity they had taken for granted.

And, yes—of course I passed out flyers for our club show!

GeoWord of the Day

(from the American Geoscience Institute)

phenomenal gem

A gemstone exhibiting an optical phenomenon, such as asterism, chatoyancy, or play of color.

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

Red Hatters at the Vulcan Manassas Quarry. Photo: Sue Marcus.

Christmas Firemen

Editor's note: The story is adapted from MOROKS *(newsletter of the Monrovia Rockhounds, Monrovia, CA), December 2014, p. 3.*

Around Christmas time, a visitor from New York was passing through a small town in the South when he spotted a remarkable Nativity Scene. It showed great skill and talent in whoever had created it, but one small feature bothered him: The three wise men were wearing firemen's helmets.

Baffled, he left. At a small convenience store at the edge of town, he asked the lady behind the counter about the Nativity Scene, and she said she knew it well. But when he asked about the firemen's helmets, she flew into a rage.

"Don't you damn Yankees ever read the Bible?" she shouted.

The man assured her that he did but simply couldn't recall anything about firemen in the Bible. The lady pulled her Bible out from under the counter and ruffled through the pages, finally jabbing her finger at a passage and sticking it into the man's face.

"See, it says right there," she said triumphantly. "'The three wise men came from afar.'"

Story of Geology

James Hutton: Father of Geology

by Hutch Brown

Editor's note: *The author is solely responsible for the views expressed here, which do not necessarily reflect those of other NVMC members. If you would like to comment or contribute to our newsletter, please contact me at hutchbrown41@gmail.com.*

Most naturalists in 1800 embraced a school of thought known as Neptunism, championed by the German geologist Abraham Gottlob Werner (1749–1817). In accordance with the biblical story of Genesis, Werner taught that ancient global oceans molded the Earth's surface, laying down layers of rock in stages. A cataclysmic deluge sculpted caves, arches, canyons, and other landforms in short periods of time as great floodwaters rose and then receded again, scouring the Earth with unimaginable force.

People who believe in the literal truth of the Bible, some with degrees in geology, still hold similar views (see, for example, Oard 2009; Williams 2003). But the vast majority of geologists today no longer subscribe to the Neptunist school of thought.

Why not? What changed?

Plutonism

Even in the 18th century, not all scientists were Neptunists. The Italian abbot and naturalist Anton Moro (1687–1764) was one of the first to propose that the Earth was filled with molten rock, based on his study of volcanism and volcanic rocks. The French naturalist Georges-Louis Leclerc, Count of Buffon (1707–88), hypothesized that the Earth derived from the sun—that it was a ball of molten material, mainly iron, that was slowly cooling.

Indeed, one of the chief weaknesses of Neptunism was its failure to satisfactorily account for volcanism. Werner attributed basalt dikes and sills to sedimentation on ancient ocean floors, despite growing evidence that basalt resulted from upwelling molten matter from within the Earth.

Well into the 19th century, Neptunism still held sway, but doubts were growing. The alternative view—that the Earth had fiery rather than watery origins—was known as Plutonism for Pluto, the Roman god of the underworld (versus Neptune, god of the sea).

Henry Raeburn, James Hutton *(1776), detail. Oil on canvas. Source: Wikipedia.*

One naturalist, more than any other, can take credit for the eventual triumph of Plutonism: James Hutton (1726–97), known as the Father of Geology.

Enlightenment Scholar

Born into a family of merchants, Hutton grew up in Edinburgh, Scotland. He studied medicine and chemistry at the university, and his chemical experiments with a partner led him to discover how to make the halide mineral sal ammoniac (NH_4Cl) from soot. The partners turned their discovery into a profitable chemical works that manufactured crystalline salts used in dyes, metalworking, and smelling salts.

After inheriting two small farms, Hutton spent the next 14 years as a gentleman farmer. Seeing the effects of wind and weather on his lands, he developed a keen interest in the fledgling science of geology. A visitor described his study as "so full of fossils and chemical apparatus that there is hardly room to sit down." (Sound familiar, anyone?)

In 1768, Hutton moved back to Edinburgh, where he spent the next three decades moving in Enlightenment circles while refining his views on geology. In the 1780s, his papers were read at the Royal Society of Edinburgh, a club of contemporary scientists. Hutton capped his research with a three-volume work published in 1794 under the title *An Investigation of the Principles of Knowledge and of the Progress of Reason, from Sense to Science and Philosophy*. (The work is said to be just as dull as the title.)

Uniformitarianism

Hutton's work might have been hard to read, but his ideas were revolutionary. In his experience as a farmer and during his travels in Europe, Hutton observed the constant erosion of rocks and soils, with sediments washing out to sea. He reasoned that sediments accumulating on seafloors gradually thicken and compact into rock layers, a notion similar to the Neptunist view that rocks precipitated from seawater.

But Hutton was no Neptunist. Recognizing that erosion and deposition can be followed by uplift of rock layers from the ocean floor into new landforms, Hutton reasoned that the cause was subterranean heat. In his view, high pressures and temperatures deep within the Earth warmed and melted the Earth's crust, resulting in processes ranging from doming to volcanism and creating formations of basalt and granite as well as mineral veins.

In fact, Hutton recognized that the Earth's landforms are subject to a continuous cycle of erosion, sedimentation, compaction, and uplift (fig. 1). He fundamentally broke with the Neptunist view that the Earth had a known beginning commensurate with the biblical story of Creation. "The result, therefore, of this physical enquiry," Hutton wrote, "is that we find no vestige of a beginning, no prospect of an end."

Hutton's central contribution to geology was his notion of a cycle of ongoing creation and destruction at about the same rate we see around us today, with miniscule changes within a single century or even millennium. Geologists call it the rock cycle (fig. 1). A logical corollary of the rock cycle is that the Earth is not thousands of years old—as a literal reading of the story of Genesis might suggest—but millions or even billions.

Building on Hutton's work, 19th-century geologists developed a school of thought known as Uniformitarianism (as opposed to the Catastrophism preached by the Neptunists): the notion that geological processes of creation and destruction, through incremental change at uniform rates, have been shaping and reshaping the Earth for eons. As Hutton put it, even the oldest rocks are made up of "materials furnished from the ruins of former continents."

Unconformities

During his travels, using methods familiar to modern field geologists, Hutton found evidence to support his

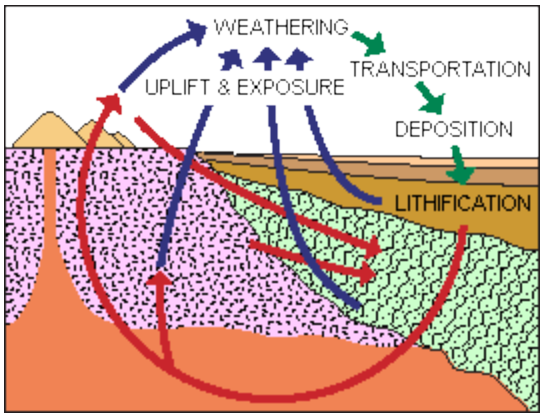


Figure 1—*The rock cycle combines elements of both Plutonism and Neptunism. Source: UCMP (2008).*

theory. In Scotland alone, he found multiple examples of what geologists call unconformities—junctures of rock layers showing a gap in the geological record (fig. 2). For example, horizontal rock layers overlying vertical ones indicate a period when the older uplifted rocks were exposed to erosion before being covered by much younger sediments.

The classic example of an unconformity is exposed in a cliff on the Scottish coast at Siccar Point (fig. 3). Vertical layers of early Silurian graywacke (intermediate between shale and sandstone), laid down in a

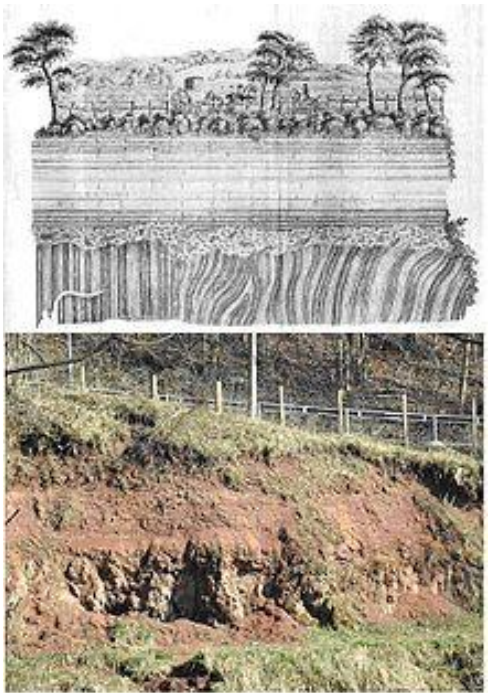


Figure 2—*Hutton's Unconformity at Jedburgh, Scotland, today (bottom) and in an illustration from 1787 (top). Horizontal layers of sandstone cover vertical layers of shale. Source: Wikipedia.*

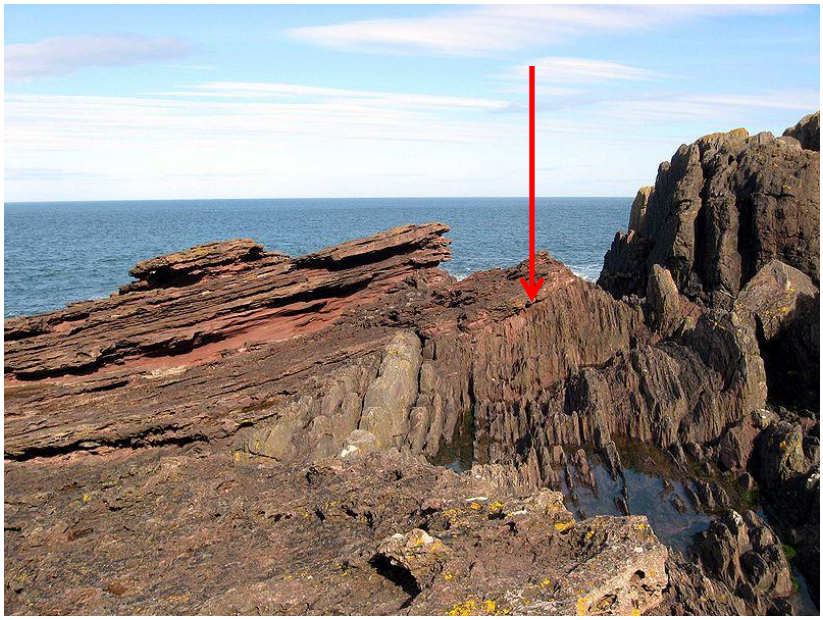


Figure 3—*Hutton's Unconformity at Siccar Point, Scotland. Nearly horizontal layers of red sandstone overlie vertical layers of graywacke. Source: Wikipedia.*

deep-sea environment about 425 million years ago, are covered by horizontal layers of late Devonian sandstone, deposited about 345 million years ago on a coastal plain subject to periodic flooding by the sea.

Hutton didn't know all this, but he did know that the unconformity he discovered attested to geological processes at work over vast periods of time. He could tell from ripple marks in the vertical layers that clays, silts, and sands were laid down in an ancient sea, over time forming rock that ranged from shale to graywacke.

Hutton could also tell from the vertical structure of the formation that the rock had been uplifted and tilted over time. In his view, the engine of uplift was subterranean heat, as evidenced by hot springs and volcanoes. Hutton proposed that molten matter within the Earth causes its crust to warm and expand, resulting in the gradual uplift that forms mountains and causes rock formations to tilt, fold, and fault.

The vertical layers of rock abruptly ended where they were covered by sandstone. From the unconformity, Hutton could tell that the rock had been uplifted from the ocean and exposed to wind and weather over a period of time. How much time—and how much rock had weathered away—were impossible for him to tell using the methods available at the time.

From the overlying horizontal layers of sandstone, however, Hutton could infer that the vertical layers of rock were again exposed to a marine environment. He surmised that offshore sands covered the site for a very long time, finally accumulating enough weight and pressure to form the red sandstone we see today. The boundary between the two rock types at Siccar Point and elsewhere is called Hutton's Unconformity.

Hutton's Legacy

The science of geology owes a tremendous amount to Hutton's discoveries. The Uniformitarian school of thought finally put science on track to trace the geological history of rock formations and to accurately calculate their age—and, ultimately, the age of the Earth itself. Based on Hutton's work, scientists began focusing on heat and pressure from within the Earth as the engine driving uplift, faulting, and folding as well as the formation of igneous and metamorphic rocks. Yet Hutton also borrowed from the Neptunist school of thought, notably the idea that many sedimentary rocks form in marine environments.

Hutton's work marked a final break between science and religion. The natural theologians of the early modern period (from about 1500 to 1800) strove to demonstrate the literal truth of the Bible by finding the biblical story of Creation inscribed in the face of the Earth. Accordingly, they postulated the very premise they set out to prove, a textbook case of circular reasoning. Their inquiries were ultimately grounded in their faith in the received truth of the Word of God as recorded in the Bible.

By contrast, in a classic exercise of scientific methodology, Hutton postulated nothing but the empirically verifiable evidence of the material world around him. He formulated a natural explanation for what he observed, then tested his hypothesis based on the evidence he found. The unconformities he discovered confirmed his theory, forming the basis of modern geology.

Indirect Influence

Hutton's impact on the emerging science of geology was indirect because his writing was so abstruse. Fortunately, he had friends and followers whose clear prose popularized his work in the decades following his death. The Scottish scientist John Playfair (1748–1819), one of Hutton's closest associates, published a work in 1802 under the title *Illustrations of the Huttonian Theory of the Earth*. Even more influential

was the Scottish geologist Charles Lyell (1797–1875), whose writings in the 1830s elucidating Uniformitarianism ultimately won the day.

By the mid-19th century, few geologists were left who still embraced Neptunism and the Catastrophic point of view. Latterday followers who believe in the literal truth of the Bible typically take pointed issue with Uniformitarianism. But few others today even remember what Neptunism is, a sign that the battle ended long ago. Geology has moved on.

Acknowledgment

Thanks to Sue Marcus for reviewing and commenting on the article. The author is solely responsible for the views expressed here and for any errors.

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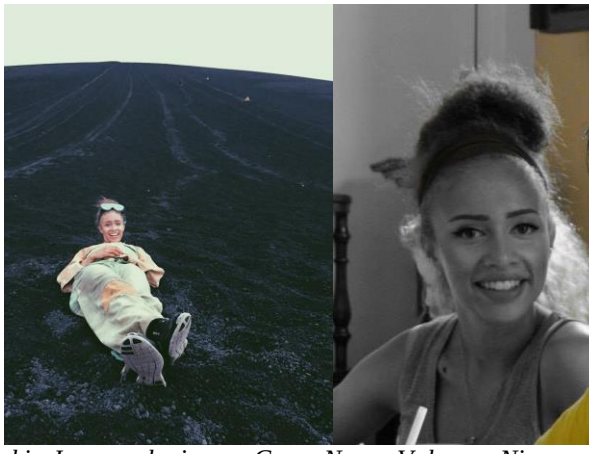

Saskia Jones, relaxing on Cerro Negro Volcano, Nicaragua. Photos: Saskia Jones.

Minding Minds: Geology 101

by Sheryl E. Sims

Saskia Jones, a sophomore at George Mason University (GMU) in Fairfax, VA, has discovered a growing interest in geology. Saskia, a friend of my daughter Amber's, got wind of my passion for rocks and minerals during their high school years together at Hayfield Secondary School in Alexandria, VA.

Although some people might *Remember the Titans*, Amber's friends remember my passion for minerals! I'm sure that Saskia heard about Amber's required presence at sunrise field trips to the Manassas or some other quarry. She probably laughed at the photo of Amber leaning against the car window with her head buried in her arms, with a look on her face that said, "Why me?" Now Saskia knows why!

Saskia became interested in geology last year. Thinking that it would be the easiest science course that she could take, Saskia immediately put all of her "eggs in the basket of geology," as she put it.

She was not surprised to find the class very interesting. She enjoyed studying everything from igneous rocks to the different types of weathering. "So far," she said, "we have covered planets, matter and minerals, igneous rocks, volcanos, sedimentary rocks, weathering and soil, and metamorphic rocks."

What she enjoyed most, however, was the lab work.

"I find it extremely fascinating," Saskia told me, "actually seeing and holding the minerals and rocks in person after I have learned about them in lecture."

As rockhounds and mineral club members, we all know that this is exactly what we long to hear from young people! What could be better than passing our passion for Earth sciences and our hobby to the next generation? There is such a joy that comes from sharing knowledge, excitement—and, yes, even minerals.

I mentioned to Saskia that the NVMC hosts a fantastic annual mineral show, and I asked whether she had met Professor Julia Nord or attended any of her classes. She told me no, because she was studying at GMU. "I have Stacey Verado for lecture," she said, "and Tyler Fabian for lab."

Eclogite from Almenning, Norway. The red-brown mineral is garnet, the green is omphacite, and the white is quartz. Source: Wikipedia.

When asked if her class would be helping out with the mineral show, Saskia replied, "We most likely will not attend because the class is very individualized and the instructors would not put that on top of the students' existing workload."

However, she added that she had never attended a mineral show before and that "I am sure it would be cool." And we all know that our mineral show is one of the "coolest" mineral shows around!

Asked whether or not her class had been on any field trips yet, Saskia stated sadly that it had not. She added that she does not have a favorite mineral yet but that "eclogite is really cool."

According to Wikipedia, eclogite (the "g" is pronounced soft, like "j") is a mafic (meaning high in magnesium and iron) metamorphic rock. Eclogite forms at pressures greater than those typical in the Earth's crust. An unusually dense rock, eclogite can play an important role in driving convection within the solid Earth.

The rock can be striking in appearance, with red to pink garnet (almandine-pyrope) in a green matrix of sodium-rich pyroxene (omphacite). Accessory minerals include kynanite, rutile, quartz, lawsonite, oesite, amphibole, phengite, paragonite, zoisite, dolomite, corundum, and—rarely—diamond.

Eclogite typically results from high-pressure metamorphism of mafic igneous rock (usually basalt or gabbro) as it plunges into the mantle in a subduction zone. Such eclogites are generally formed from precursor mineral assemblages typical of blueschist-facies or amphibolite-facies metamorphism. Eclogite can also form from magmas that crystallize and cool within the mantle or lower crust.

I think Saskia's interest in geology is real, and I look forward to her attending our shows and meetings when her schedule and class workload permits!

Mineral of the Month: Veszelyite

by Hutch Brown

Veszelyite on matrix, from the Black Pine Mine, Phillipsburg, MT, now in the Smithsonian National Mineral Collection. Photo: Chip Clark.

Veszelyite ($(Cu,Zn)_2Zn(PO_4)_2 \cdot 2H_2O$) is a rare copper/zinc hydrated phosphate discovered in 1874 in Romania by A. Veszeli (1820–88), a Hungarian miner who modestly named the mineral for himself.

Ranging from green to deep blue, the mineral occurs in the oxidized zones of base metal deposits. Common associates include malachite.

Veszelyite has a Mohs hardness of 3-1/2 to 4. Its crystal system is monoclinic-prismatic. It has a vitreous luster and a streak ranging from green to white.

Sources: Mindat, Mineralogy Database.

Upcoming Events
(of interest in the mid-Atlantic region)

December

5–6: Miami, FL— Gem, Jewelry, Mineral, and Fossil Show; Miami Mineralogical and Lapidary Guild; Evelyn Greer Park, 8200 SW 124 Street, Pinecrest, FL, just one block off US 1; Sat/Sun 10–5; adults $4, children under 12 free, free parking; info: www.miamigemandmineral.com.

January/February

30–13: Tucson, AZ—Wholesale and retail show; 400 dealers in three locations: InnSuites Hotel, Ramada Ltd., Mineral & Fossil Marketplace; 475 N Granada, 665 N Freeway, 1330 N Oracle; 10–6; free admission; info: Regina Aumente, PO Box 665, Bernalillo, NM 87004, 505-867-0425, mzexpos@gmail.com; Web site: www.mzexpos.com.

February

19–21: Indianapolis, IN—GeoFest: 14th Annual Indiana State Museum Fossil, Gem and Mineral Show; Fri/Sat 10–5, Sun 11–4; museum admission: adults $13, seniors $12, children $8.50; info: Peggy Fisherkeller, 650 West Washington Street, Indianapolis, IN 46204; 317-232-7172; pfisherkeller@indianamuseum.org; Website: www.indianamuseum.org.

March

5–6: Newark, DE—53rd Annual Earth Science Gem and Mineral Show; Delaware Mineralogical Society, Inc.; Delaware Technical and Community College, 400 Stanton-Christiana Road, Newark, DE (I-95 Exit 4B); Sat 10–6, Sun 11–5; adults $6, seniors $5, kids 12–16 $4, 11 and under free; info: www.delminsociety.org or contact gene@fossilnut.com or call Wayne Urion at 302-998-0686.

11–13: Augusta, GA—28th annual Aiken-Augusta Gem, Mineral & Fossil Show; sponsors: Aiken Gem, Mineral and Fossil Society, Augusta Gem and Mineral Society; Fri/Sat 10–7, Sun 11–5; Julian Smith Casino, 2200 Broad Street, August, GA; adults $3/$5 weekend pass, children under 12 free with an adult; info: Chris Glass, 706-284-9239, www aikengmfs.org.

19–20: Sayre, PA—47th Annual Che-Hanna Rock & Mineral Club show; Athens Twp. Volunteer Fire Hall, 211 Herrick Ave; Sat 9–5, Sun 10–4; info: Bob McGuire at 570-928-9238 or uvbob@epix.net.

April

2–3: Orange, CT—43rd Annual Show 2016, Minerals, Gems, Jewelry & Fossils; New Haven Mineral Club; Sat 9:30–5, Sun 9:30–5; Amity Regional Middle School, Sheffield Rd (off Rt 34), Orange, CT. Adults $5, children under 12 free when accompanied by an adult; info: newhavenmineralclub.org.

16: Severna Park, MD— Annual Jewelry Gem and Mineral Show; Patuxent Lapidary Guild, Inc.; Sat 10–5; Earleigh Heights VFC, Rte. 2, Severna Park, MD; over 10 years old $2.00, under 10 free.

GMU club show, November 2015. Photo: Sheryl Sims.

MEMBERSHIP APPLICATION FOR
THE NORTHERN VIRGINIA
MINERAL CLUB, INC.
www.novamineralclub.org

Please Indicate:

New Member: _____

or Renewal: _____

Dues Payment enclosed is for calendar year 201___

Fees are due January 1st or upon submission of a new application.

* New membership dues paid after June will be prorated for ½ year.

Collecting trips / field trips can only be attended by NVMC club members who are current with dues payment and are in "good standing."

Application for Membership

Date: _____

Name: _____

Street: _____ Apt / Unit #: _____

City: _____ State: _____ Zip Code: _____

Phone: _____ Cell: _____

E-Mail: _____

Email is needed to receive newsletter electronically

Applying for:

Individual Adult: (over 18) ($15.00/yr*) Name: _____ adult _____

or Family Membership: ($20.00/yr*) Name: _____ adult _____

Name: _____ adult _____

Name: _____ youth _____ age _____

Name: _____ youth _____ age _____

Name: _____ youth _____ age _____

Name: _____ youth _____ age _____

Family is defined as one address.

Maximum 2 adults living in same home and children under 18 years of age residing at same address.

Hobby Related Interests (check all that apply)

Minerals ___ Fossils ___ Artifacts ___ Micromounts ___ Field Trips ___

Lapidary ___ Tumbling ___ Carving ___ Jewelry ___

Other (please describe) _____

The Club Newsletter is distributed by email using G-Mail. Electronic versions are full color and approximately 1MB in size (Other arrangements to receive the Newsletter by regular USPS mail can be arranged, but there may be an extra yearly charge). The membership lists, emails and your contact information is kept private and is only used for club business or hobby related distributions. If you are concerned about privacy issues, please specify the items that you wish to remain private. _____

I do hereby waive all right to hold *The Northern Virginia Mineral Club, Inc.* and its Officers liable for any personal injury or loss sustained by me or any member of my family while participating in club activities. I also agree to adhere to the rules and regulations of *The Northern Virginia Mineral Club, Inc.* as set forth by its bylaws.

Signature of Applicant: _____

Please pay at meetings or mail to: **Northern Virginia Mineral Club, P.O. Box 10085, Manassas VA 20108**

THE NORTHERN VIRGINIA MINERAL CLUB INC

Crystals are the flowers of the Mineral Kingdom

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The Northern Virginia Mineral Club

You can send your newsletter articles to:

news.nvmc@gmail.com

Visitors are always welcome at our club meetings!

RENEW YOUR MEMBERSHIP!

SEND YOUR DUES TO:
Kenny Loveless, Treasurer, NVMC
PO Box 10085, Manassas, VA 20108

OR

Bring your dues to the next meeting.

Purpose: To promote and 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, 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.*