THE MONTHLY NEWSLETTER OF THE MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA

The Mineral Minutes

Volume 75-07
September 2017

In this Issue:

Prez Says...

by Dave Nanney, MSDC President

The summer heat has finally dropped into the low 80s this week and we are so happy to welcome the cooling breezes into our garden. Leslie and I spent way too many days working in the heat and humidity as we introduced perennials into our overwhelmingly azalea centric collection. We are going to make up for our lack of summer travel with a trip to Seattle this week to help our granddaughter's rise into second grade. We will sadly miss the September meeting as we return at 9PM the same night as our meeting.

Hopefully Amanda and Steve Parker will be in attendance. Amanda had a big summer and is finally recovering. Wish her well in our absence as she is about ready to resume her rock hounding activities.

It appears we have finally made a breakthrough on the MSDC 75th anniversary planning. Dave Hennessey will give an update at the September meeting. I visited a nice location in Vienna thanks to a lead from Tom Tucker and the Fishers. If this pans out, we will be able to host a dinner/speaker meeting with free parking, and a cash bar for a "reasonable" price. 75 years is a big deal so we are absolutely trying to make this a special event.

Dave H. has put together a super fall lineup of speakers for our enjoyment beginning with our own Tom Tucker. Tom was one

September Program

"The Geology of Theodore Roosevelt Island"

Presented by Hutch Brown

by Dave Hennessey

In the bustling Washington DC area, it can be difficult to find a peaceful place where one can hike, do a little bird watching, observe the local flora and fauna, and picnic without having to dodge traffic or spread a picnic blanket on concrete. There are little islands of tranquility here and there. One is a literal island.

Theodore Roosevelt Island is a striking cultural and geographic feature of our area. The largest island in the Potomac River, it has a history of settlement, farming, and other uses by American Indians and later residents in our area.

Hutch Brown will explain some of what geologists know about how the island got there. He will describe the bedrock and the complex geological processes that formed and emplaced it. As time permits, he will offer a theory about the origins of the Potomac River and how the river might have shaped the island (rivers tend to follow folds, fissures, and fractures in the bedrock). In any time left, he will describe how sedimentation is affecting the island today.

Robert Hutchins "Hutch" Brown has a Ph.D. in German Literature from the University of California–Berkeley. After getting his degree in 1992, Hutch moved to northern Virginia, where he worked as a contract editor for various organizations, including the U.S. Geological Survey, the National Science Foundation, and the U.S. Forest Service. He took adult education courses in natural history, including a course in geology. In 2000, the Forest Service hired Hutch as a full-time writer/editor, mainly to write speeches for the Forest Service Chief. In addition to writing speeches, Hutch edits and writes articles for Fire Management Today, the quarterly journal for the Forest Service fire organization. In 2012, inspired by his son Alex's interest in minerals, Hutch joined the Northern Virginia Mineral Club, where he edits and writes articles for the club newsletter. He is interested mainly in the structural geology of our area.

Please join us in taking Hutch to dinner on September 6th before the club meeting. We will be meeting at 6:00 pm at Elephant & Castle Restaurant, 1201 Pennsylvania Ave, NW, Washington, DC, about 2 blocks from the Smithsonian Institution National Museum of Natural History (NMNH) where our club meeting is held. If you cannot make it to dinner, we will meet in the NMNH lobby at 7:30 pm and head up to the Cathy Kerby Room for Hutch's presentation.

Geological and Mineralogical Terms

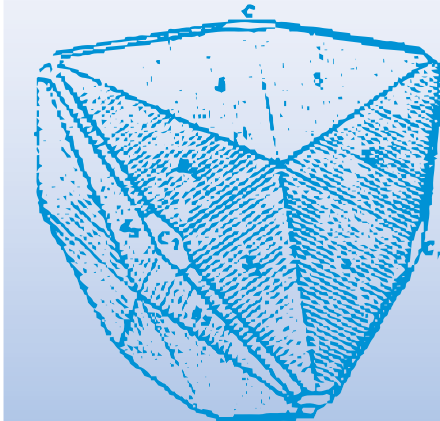
Serpentinite — A rock composed of one or more serpentine group minerals, the name originating from the similarity of the texture of the rock to that of the skin of a snake. Minerals in this group are formed by serpentinization, a hydration and metamorphic transformation of ultramafic rock from the Earth's mantle. The mineral alteration is particularly important at the sea floor at tectonic plate boundaries.

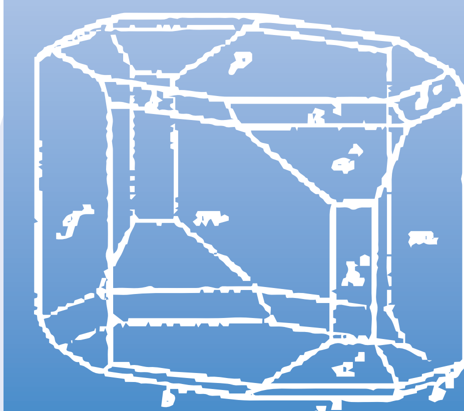
Metamorphic Facies — A set of metamorphic mineral assemblages formed under similar pressures and temperatures. Rocks which contain certain minerals can therefore be linked to certain tectonic settings, times and places in the geological history of the area.

Prehnite-Pumpellyite Facies — A metamorphic facies typical of subseafloor alteration of the oceanic crust around mid-ocean ridge spreading centres. It is a metamorphic grade transitional between zeolite facies and greenschist facies representing a temperature range of 250° to 350°C and a pressure range of approximately two to seven kilobars. The mineral assemblage is dependent on host composition. In mafic rocks the assemblage is chlorite, prehnite, albite, pumpellyite and epidote. In ultramafic rocks the assemblage is serpentine, talc, forsterite, tremolite and chlorite. In argillaceous sedimentary rocks the assemblage is quartz, illite, albite, and stilpnomelane chlorite. In carbonate sediments the assemblage is calcite, dolomite, quartz, clays, talc, and muscovite.

Blueschist Facies — A metamorphic facies formed at relatively low temperature but high pressure, such as occurs in rocks in a subduction zone. The facies is named after the schistose character of the rocks and the blue minerals glaucophane and lawsonite. The blueschist facies forms the following mineral assemblages: in metabasites: glaucophane + lawsonite + chlorite + sphene ± epidote ± phengite ± paragonite, omphacite; in metagreywackes: quartz + jadeite + lawsonite ± phengite, glaucophane, chlorite; In metapelites: phengite + paragonite + carpholite + chlorite + quartz; and in carbonate-rocks (marbles): aragonite.

of the first speakers Leslie and I listened to when we joined MSDC over 11 years ago. He actually used words we understood and included a photo of a native azalea in one of his early slides, meaning he understood where we were coming from. Enjoy his rare return from the mountains.





Editor's Note: Crystal Shapes are from Goldschmidt's "Atlas der Krystallformen"

CLUB INFO

MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA

MEETINGS

Meetings are the First Wednesday of the Month (Jan-Jun and Sep-Dec). We meet in the lobby of the Smithsonian National Museum of Natural History at 7:45pm.

WEBSITE

http://mineralogicalsocietyofdc.org/

FACEBOOK

www.facebook.com/MineralogicalSocietyOfTheDistrictOfColumbia

2017 Officers & Directors

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June Business Meeting Synopsis

By Andy Thompson, Secretary

President Dave Nanney called the June meeting to order and welcomed visitors, friends and members, including returning Steve and Amanda, Cindy, Dave and Donna. Treasurer John Weidner reported that the club continues to enjoy fiscal solvency and an expanding membership. Bob Cooke described the upcoming Northern Va club's monthly meeting, held on the 4th Monday. Their presentation will be given by Casper Voogt (one of our webmasters) who will share his discoveries from when he went on the Mindat field trip to Myanmar, formerly known as Burma. Members approved the minutes of the April Business meeting as published in the May newsletter.

There were no outstanding Old Business items discussed. But by way of New Business, a proposal was made that MSDC consider including in its 75th anniversary celebration some form of joint activity with the Micromounters of the Capital Area who are celebrating their 50th anniversary. Dave welcomed Kathy's proposal and noted that this item will be on the agenda for the next MSDC board members' meeting whose date is TBA.

A motion to close the business meeting was made, seconded and unanimously approved. President Nanney then turned the spotlight on V.P. Dave Hennessey who introduced the evening's speaker, Scott Southworth, of the USGS.

"Maryland Minerals: A Bit of the Unusual, Extreme, and Spectacular"

Presented by Jake Slagle

By Andy Thompson, Secretary

Vice President Dave Hennessey introduced Jake Slagle as the evening's presenter of a tour of unusual and spectacular Maryland minerals he has carefully gathered over the last two decades. Jake's research of Maryland's minerals took him throughout the state's 24 counties and to mineral museums and shows throughout the nation from Harvard to Tucson. As the recent Program Director for the Baltimore Mineral Society for almost the past ten years and its current Secretary, Jake's expertise and collection is exceeded only by his dedication to share his findings with all interested parties.

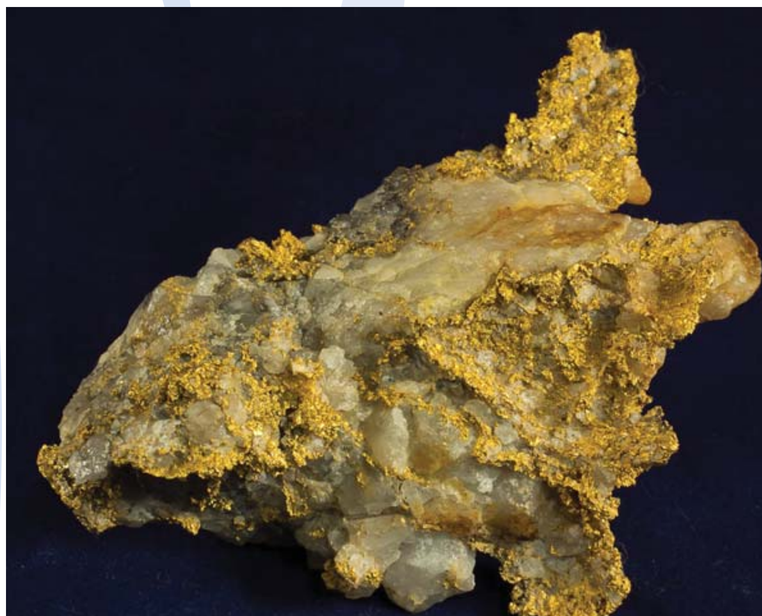
He started the program by focusing on nearby Montgomery County and Rockville's Hunting Hill quarry which he identified as Maryland's greatest mineral locality. Jake's pictures documented that site's coalingite and desautelite, which he noted are found nowhere else in Maryland, as well as xonotlite, pokrovskite, mcguinnessite, vesuvianite and erythrite. Throughout the evening's presentation, Jake's photos highlighted approximately 80 salient minerals found in 11 of the state's counties. Their dimensions ranged from micros to fist-sized, and, when appropriate, Jake included multiple photos of particular specimens to illustrate their complexity and beauty.

To help readers of this synopsis get a sense of the scope of the evening's program, after the meeting Dave Hennessey asked Jake if, thinking about all the minerals he showed MDSC, he could identify several "more remarkable specimens". Jake suggested the following five as having particular interest.

The five photos with this article, in their own way, are iconic of Maryland minerals. The gold specimen, for example, contrary to popular belief, illustrates the fact that Maryland has its own storied history of gold mining. The red-brown spessartine on schorl contains a micro, needle-like yellow spray which aesthetically begs for applause even though its mineral identity is unknown. And the brown grossular garnet is one of the favorite specimens collected from the Hunting Hill quarry, familiar to many MSDC members who collected there before the site closed due to encroaching housing developments.

For collectors of Maryland minerals Jake has organized multiple ways to view his State's collection and other related websites well worth visiting. His Mindat.org home page, for example, located at www.mindat.org/user-11032.html, has photos of and specific collecting information on over 100 specimens, many included in his MSDC presentation. His blog site, Mineral Bliss, located at: http://mineralbliss.blogspot.com/ contains hundreds of interesting narratives by a wide range of authors describing their personal collecting experiences at specific sites. His blog also contains a wealth of resources about related topics and an eBay site for minerals Jake is offering for sale.

The evening's program was an extraordinary tour de force illustrating the wide range of Maryland's beautiful mineral specimens. Dave Hennessey and President Dave Nanney thanked Jake for his extraordinary presentation and MSDC attending members with applause expressed their admiration and gratitude.



Native Gold: Maryland Mine, Montgomery County: Collected in 1940's. Sold by Edward T. Ingalls to U. S. National Park Service in 1971

Millerite: Fire Clay Pits in concretion, Frostburg, Alleghany County, MD -collected in 1950's by the late Harold Levey.

Spessartine on schorl: Road cut in Cecil Co., MD on Appleton Rd. a few hundred yds. North of Rt. 273 Collected in mid-1970's by Dr. Peter Leavans of University of Delaware

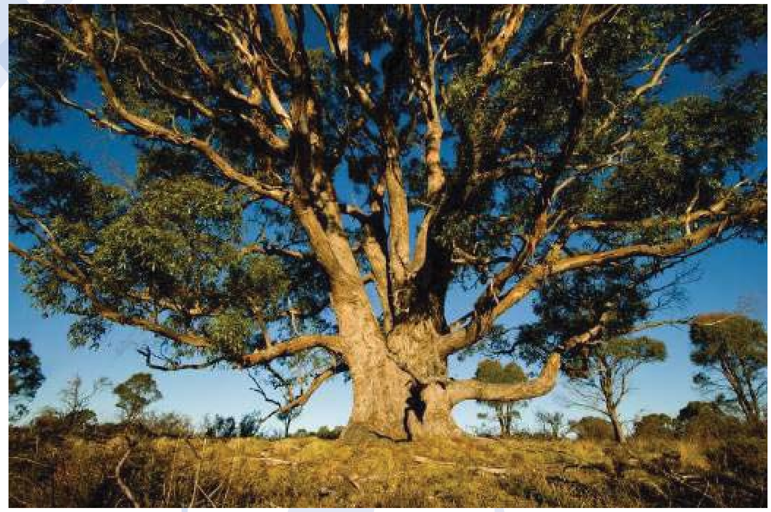
Grossular: Hunting Hill, Montgomery County, MD: Collected in 1990's by Fred Parker

Williamsite : Lowe's Chrome Pit, Cecil Co. MD, Collection of Bob Eberle

Eucalyptus Trees Actually "Mine" Gold and Deposit it in their Leaves

By Ethan A. Huff, staff writer from Nature News

Gone may be the days of having to dig and dredge the earth in search of gold, thanks to a recent discovery by researchers from the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Australia. They found that the common eucalyptus tree, which grows extensively throughout Australia and in many other parts of the world, literally mines gold out of the ground via its extensive root system and deposits this precious metal in its branches and leaves.



Published in the journal Nature Communications, the research that led to this amazing discovery helps bring clarity to an ongoing dispute among scientists of different persuasions as to where the gold previously observed in eucalyptus leaves actually comes from. Some believe that the wind is responsible for carrying and depositing it, while others have suspected that the trees themselves have some kind of special ability to tap underground ore reserves.

It turns out that the latter hypothesis is the correct one: eucalyptus trees grow extremely deep root systems that tap water sources mixed with gold and other minerals. And when the trees take in this water, they also take in the gold, which ends up being processed through the trunk, out the branches and into the leaves.

"The eucalypt acts as a hydraulic pump – its roots extend tens of meters into the ground and draw up water containing the gold," explains Dr. Mel Lintern, a geochemist at CSIRO who helped work on the research. "As the gold is likely to be toxic to the plant, it's moved to the leaves and branches where it can be released or shed to the ground."

This is good news for gold mining industries, which have seen a roughly 45 percent decline in new gold discoveries over the past decade. Though eucalyptus trees are incapable of pulling up substantial quantities of gold – the amount of gold detected in the leaves was about one-fifth the diameter of a human hair in size – they could serve as a beneficial and environmentally friendly detection tool for miners.

"The leaves could be used in combination with other tools as a more cost effective and environmentally friendly detection technique," adds Dr. Lintern, as quoted by Science Daily. "By sampling and analyzing vegetation for traces of minerals, we may get an idea of what's happening below the surface without the need to drill. It's a more targeted way of searching for minerals that reduces costs and impact on the environment."

What is Petoskey stone, and Where Can You Find It?

from GeologyIn.Com

A Petoskey stone is a rock and a fossil, often pebble-shaped, that is composed of a fossilized rugose coral, Hexagonaria percarinata.

Why is it called the Petoskey Stone? The name Petoskey Stone likely came about because it was found and sold as a souvenir from the Petoskey area. The name Petoskey appears to have originated late in the 18th century. Its roots stem from an Ottawa Indian legend. In 1965, Petoskey stone was named the state stone of Michigan.

How was the Petoskey stone formed? So, what is a Petoskey stone? It is a fossil colonial coral that lived in the warm Michigan seas during the Devonian time around 350 million years ago. The name Hexagonaria (meaning six sides) percarinata was designated by Dr. Edwin Stumm in 1969 because of his extensive knowledge of fossils. This type of fossil is found only in the rock strata called the Gravel Point Formation. This formation is part of the Traverse Group of the Devonian Age.

The stones were formed as a result of glaciation, in which sheets of ice plucked stones from the bedrock, grinding off their rough edges and depositing them in the northwestern (and some in the northeastern) portion of Michigan's lower peninsula. In those same areas of Michigan, complete fossilized coral colony heads can be found in the source rocks for the Petoskey stones.

During the Devonian time, Michigan was quite different. Geographically, what is now Michigan was near the equator. A warm shallow sea covered the State. This warm, sunny sea was an ideal habitat for marine life. A Devonian reef had sheltered clams, cephalopods, corals, crinoids, trilobites, fish, and many other life forms.

The soft living tissue of the coral was called a polyp. At the center of this was the area where food was taken in, or the mouth. This dark spot, or eye, has been filled with mud of silt that petrified after falling into the openings. Surrounding the openings were tentacles that were used for gathering food and drawing it into the mouth. The living coral that turned into the Petoskey stone thrived on plankton that lived in the warm sea.

Calcite, silica and other minerals have replaced the first elements of each cell. Each separate chamber, then, on each Petoskey stone, was a member of a thriving colony of living corals. For that reason the Petoskey stone is called a colony coral.

Where can you find the Petoskey stone? Petoskey stones can be found on various beaches and inland locations in Michigan, with many of the most popular being those surrounding Petoskey and Charlevoix. The movement of the frozen lake ice acting on the shore during the winters is thought to turn over stones at the shore of Lake Michigan, exposing new Petoskey stones at the water's edge each spring. Petoskey Stones are also commonly found in Iowa, Indiana, Illinois, Ohio, New York, Canada, Germany, England, and even Asia.

Pleistocene glaciers (about two million years ago) plucked Petoskey stones from the bedrock and spread them over Michigan and surrounding areas. This is why Petoskey stones can be found in gravel pits and along beaches far from the Petoskey area.

The best time to find the Petoskey stones is early spring after the ice on Grand Traverse Bay has melted along the shore. Each year as the ice is broken up and the winds push the ice in different directions, it pushes a new crop of Petoskey stones towards the shores.

How to Polish Petoskey Stones by Hand. Petoskey stones are made up of calcite, and therefore are a good candidate for hand polishing. Calcite is soft enough so that it can be easily worked, but dense enough to take a nice polish.

WHAT YOU NEED TO POLISH THE STONES:
Petoskey stone
Sandpaper (220, 400, or 600 grit)
A thick towel or newspaper
A piece of corduroy or velvet
Polishing powder
Water

Once you have found the stone you want to polish, sand it down with the 220 the sandpaper mentioned above. After rubbing, rinse the stone down and dry it off. Examine the stone for scratch marks, and if there are any, keep on sanding! All scratch marks should be gone! Next, sand again with 400 grit sandpaper. This should remove any coarse spots. Once again, rinse, dry and check. Now sand the paper with the 600 grit to make sure that the stone is smooth and scratch free. When you think it looks perfect, continue sanding for another 10 minutes, just to make sure. At this point, it is time to polish. Sprinkle the damp corduroy or velvet with polishing powder. A short, rotating rubbing will polish the stone. However, if scratches appear, start from the beginning with the 220 grit paper to remove them! When you're finished with the polishing, simply rinse the stone off in clean water, and dry. Now you have your own, hand polished Petoskey stone

Read more at http://www.geologyin.com/

Mineral of the Month – Stibnite – Edited from Wikipedia, Mindat and Geology.Com

This month's mineral is stibnite. This should be in most collections. It forms beautiful, silvery prismatic crystals and nice specimens can be found in a wide range of sizes.

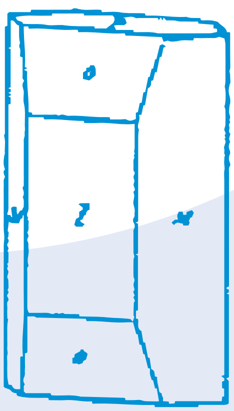
Stibnite, sometimes called antimonite, is a sulfide mineral with the formula Sb_2S_3. This soft grey material crystallizes in an orthorhombic space group. It is the most important source for the metalloid antimony. The name is from the Greek στίβι stibi through the Latin stibium as the old name for the mineral and the element antimony.

Stibnite occurs in hydrothermal deposits and is associated with realgar, orpiment, cinnabar, galena, pyrite, marcasite, arsenopyrite, cervantite, stibiconite, calcite, ankerite, barite and chalcedony.

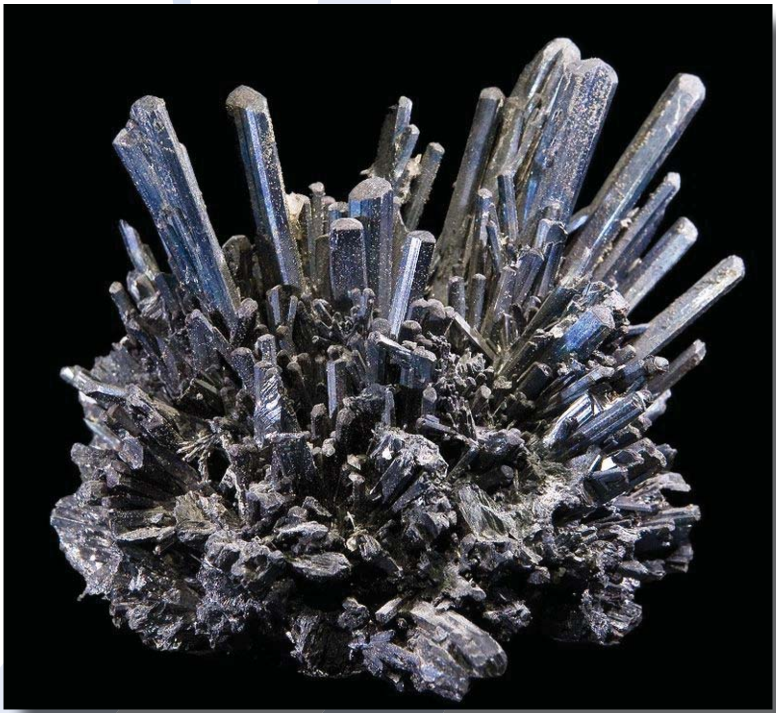
Small deposits of stibnite are common, but large deposits are rare. It occurs in Canada, Mexico, Peru, Japan, China, Germany, Romania, Italy, France, England, Algeria, and Kalimantan, Borneo. In the United States it is found in Arkansas, Idaho, Nevada, California, and Alaska.

As of May 2007, the largest specimen on public display (1000 pounds) is at the American Museum of Natural History. The largest documented single crystals of stibnite measured ~60x5x5 cm and originated from different locations including Japan, France and Germany.

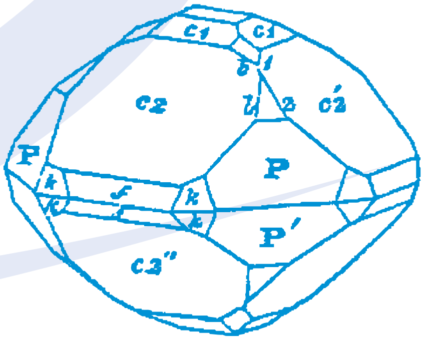
Stibnite	
Category	Sulfides
Formula	Sb_2S_3
Strunz Classification	2.DB.05
Crystal System	Orthorhombic
Crystal Class	Dipyramidal (mmm) (2/m 2/m 2/m)
Color	Lead-gray with pale blue tint
Cleavage	Perfect on {010}, imperfect on {100} {110}
Fracture	Sub-Chonchoidal
Mohs Scale	2
Luster	Metallic
Tenacity	Flexible
Streak	Lead grey
Specific Gravity	4.63



Stibnite from Xikuangshan Antimony Mine, Hunan Province, China. Donated by MSDC member George Loud to the James Madison University Mineral Museum. Photo by Robert Klopfer/Alexander Kopylov



Stibnite - Herja Mine (Kisbánya), Baia Mare (Nagybánya), Maramures Co., Romania - (7x5.8cm). Photo by Didier Descouens. Source: Wikipedia.



Mineralogist/Geologist of the Month - Alfred Wegener (1743-1822)

edited from the Wikipedia entry

Editor's Comment: Wegener work was truly revolutionary but wasn't appreciated until after his death. I remember in college studying about geological theories - specifically geosynclines. Geosyncline theory was described as a subsiding linear trough that was caused by the accumulation of sedimentary rock strata deposited in a basin (straightforward enough)... and then a miracle occurs. The miracle was the compression, deformation, and uplifting into a mountain range, Wegner's work was the first truly give definition to that miracle and is what we know today simply as techtonics which drove so much of what we see of the past and continues to drive our Earth today - geologically, mineralogically, climatologically and meterologically.

Alfred Lothar Wegener (1 November 1880 – November 1930) was a German polar researcher, geophysicist and meteorologist.

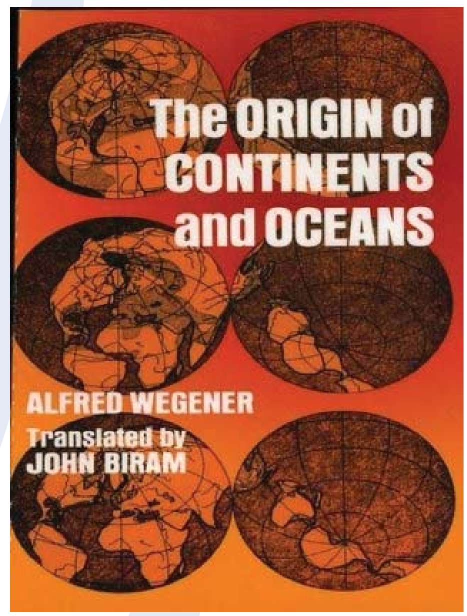
During his lifetime he was primarily known for his achievements in meteorology and as a pioneer of polar research, but today he is most remembered as the originator of the theory of continental drift by hypothesizing in 1912 that the continents are slowly drifting around the Earth (German: Kontinentalverschiebung). His hypothesis was controversial and not widely accepted until the 1950s, when numerous discoveries such as palaeomagnetism provided strong support for continental drift, and thereby a substantial basis for today's model of plate tectonics. Wegener was involved in several expeditions to Greenland to study polar air circulation before the existence of the jet stream was accepted. Expedition participants made many meteorological observations and achieved the first-ever overwintering on the inland Greenland ice sheet as well as the first-ever boring of ice cores on a moving Arctic glacier.

Alfred Wegener was born in Berlin on 1 November 1880 as the youngest of five children in a clergyman's family. His father, Richard Wegener, was a theologian and teacher of classical languages at the Berlinisches Gymnasium zum Grauen Kloster. In 1886 his family purchased a former manor house near Rheinsberg, which they used as a vacation home. Today there is an Alfred Wegener Memorial site and tourist information office in a nearby building that was once the local schoolhouse. He was cousin to film pioneer Paul Wegener.

Wegener attended school at the Köllnisches Gymnasium on Wallstrasse in Berlin, graduating as the best in his class. Afterward he studied Physics, Meteorology and Astronomy in Berlin, Heidelberg and Innsbruck. From 1902 to 1903 during his studies he was an assistant at the Urania astronomical observatory. He obtained a doctorate in astronomy in 1905 based on a dissertation written under the supervision of Julius Bauschinger at Friedrich Wilhelms University (today Humboldt University), Berlin. Wegener had always maintained a strong interest in the developing fields of meteorology and climatology and his studies afterwards focused on these disciplines.

In 1905 Wegener became an assistant at the Aeronautisches Observatorium Lindenberg near Beeskow. He worked there with his brother Kurt, two years his senior, who was likewise a scientist with an interest in meteorology and polar research. The two pioneered the use of weather balloons to track air masses. On a balloon ascent undertaken to carry out meteorological investigations and to test a celestial navigation method using a particular type of quadrant ("Libellenquadrant"), the Wegener brothers set a new record for a continuous balloon flight, remaining aloft 52.5 hours from April 5–7, 1906.

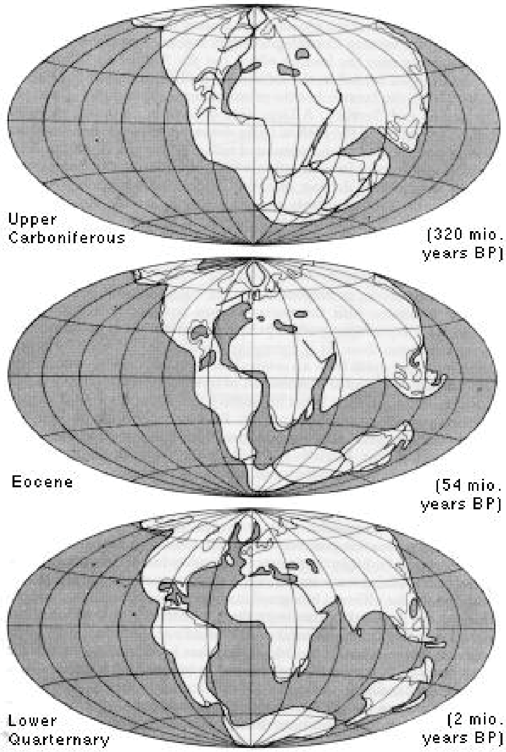
In that same year 1906, Wegener participated in the first of his four Greenland expeditions, later regarding this experience as marking a decisive turning point in his life. The expedition was led by the Dane Ludvig Mylius-Erichsen and charged with studying the last unknown portion of the northeastern coast of Greenland. During the expedition Wegener constructed the first meteorological station in Greenland near Danmarkshavn, where he launched kites and tethered balloons to make meteorological measurements in an Arctic climatic zone. Here Wegener also made his first acquaintance with death in a wilderness of ice when the expedition leader and two of his colleagues died on an exploratory trip undertaken with sled dogs.



After his return in 1908 and until World War I, Wegener was a lecturer in meteorology, applied astronomy and cosmic physics at the University of Marburg. His students and colleagues in Marburg particularly valued his ability to clearly and understandably explain even complex topics and current research findings without sacrificing precision. His lectures formed the basis of what was to become a standard textbook in meteorology, first written In 1909/1910: Thermodynamik der Atmosphäre (Thermodynamics of the Atmosphere), in which he incorporated many of the results of the Greenland expedition.

On 6 January 1912 he publicized his first thoughts about continental drift in a lecture at a session of the Geologischen Vereinigung at the Senckenberg-Museum, Frankfurt am Main and in three articles in the journal Petermanns Geographische Mitteilungen.

After a stopover in Iceland to purchase and test ponies as pack animals, the expedition arrived in Danmarkshavn. Even before the trip to the inland ice began the expedition was almost annihilated by a calving glacier. The Danish expedition leader, Johan Peter Koch, broke his leg when he fell into a glacier crevasse and spent months recovering in a sickbed. Wegener and Koch were the first to winter on the inland ice in northeast Greenland. Inside their hut they drilled to a depth of 25 m with an auger. In summer 1913 the team crossed the inland ice, the four expedition participants covering a distance twice as long as Fridtjof Nansen's southern Greenland crossing in 1888. Only a few kilometers from the western Greenland settlement of Kangersuatsiaq the small team ran out of food while struggling to find their way through difficult glacial breakup terrain. But at the last moment, after the last pony and dog had been eaten, they were picked up at a fjord by the clergyman of Upernavik, who just happened to be visiting a remote congregation at the time.



Wegener obtained a position as a meteorologist at the German Naval Observatory (Deutsche Seewarte) and moved to Hamburg with his wife and their two daughters. In 1921 he was appointed senior lecturer at the new University of Hamburg. From 1919 to 1923 Wegener did pioneering work on reconstructing the climate of past eras (now known as "paleoclimatology"), closely in collaboration with Milutin Milanković, publishing Die Klimate der geologischen Vorzeit ("The Climates of the Geological Past") together with his father-in-law, Wladimir Köppen, in 1924. In 1922 the third, fully revised edition of "The Origin of Continents and Oceans" appeared, and discussion began on his theory of continental drift, first in the German language area and later internationally. Withering criticism was the response of most experts.

In 1924 Wegener was appointed to a professorship in meteorology and geophysics in Graz, which finally provided him with a secure position for himself and his family. He concentrated on physics and the optics of the atmosphere as well as the study of tornados. Scientific assessment of his second Greenland expedition (ice measurements, atmospheric optics, etc.) continued to the end of the 1920s.

In November 1926 Wegener presented his continental drift theory at a symposium of the American Association of Petroleum Geologists in New York City, again earning rejection from everyone but the chairman. Three years later the fourth and final expanded edition of "The Origin of Continents and Oceans" appeared.

In 1929 Wegener embarked on his third trip to Greenland, which laid the groundwork for a later main expedition and included a test of an innovative, propeller-driven snowmobile.

Wegener's last Greenland expedition was in 1930. The 14 participants under his leadership were to establish three permanent stations from which the thickness of the Greenland ice sheet could be measured and year-round Arctic weather observations made. Wegener felt personally responsible for the expedition's success, as the German government had contributed $120,000 ($1.5 million in 2007 dollars). Success depended on enough provisions being transferred from West camp to Eismitte ("mid-ice") for two men to winter there, and this was a factor in the decision that led to his death. Owing to a late thaw, the expedition was six weeks behind schedule and, as summer ended, the men at Eismitte sent a message that they had insufficient fuel and so would return on 20 October.

On 24 September, although the route markers were by now largely buried under snow, Wegener set out with thirteen Greenlanders and his meteorologist Fritz Loewe to supply the camp by dog sled. During the journey, the temperature reached □60°C (□76°F) and Loewe's toes became so frostbitten they had to be amputated with a penknife without anesthetic. Twelve of the Greenlanders returned to West camp. On 19 October the remaining three members of the expedition reached Eismitte. There being only enough supplies for three at Eismitte, Wegener and Rasmus Villumsen took two dog sleds and made for West camp. They took no food for the dogs and killed them one by one to feed the rest until they could run only one sled. While Villumsen rode the sled, Wegener had to use skis, but they never reached the camp: Wegener died and Villumsen was never seen again. The expedition was completed by his brother, Kurt Wegener.

Continental drift theory

Alfred Wegener first thought of this idea by noticing that the different large landmasses of the Earth almost fit together like a jigsaw puzzle. The Continental shelf of the Americas fit closely to Africa and Europe, and Antarctica, Australia, India and Madagascar fitted next to the tip of Southern Africa. But Wegener only published his idea after reading a paper in 1911 which criticized the prevalent hypothesis, that a bridge of land once connected Europe and America, on the grounds that this contradicts isostasy. Wegener's main interest was meteorology, and he wanted to join the Denmark-Greenland expedition scheduled for mid-1912. He presented his Continental Drift hypothesis on 6 January 1912. He analyzed both sides of the Atlantic Ocean for rock type, geological structures and fossils. He noticed that there was a significant similarity between matching sides of the continents, especially in fossil plants.

From 1912, Wegener publicly advocated the existence of "continental drift", arguing that all the continents were once joined together in a single landmass and had since drifted apart. He supposed that the mechanisms causing the drift might be the centrifugal force of the Earth's rotation ("Polflucht") or the astronomical precession. Wegener also speculated on sea-floor spreading and the role of the mid-ocean ridges, stating: the Mid-Atlantic Ridge ... zone in which the floor of the Atlantic, as it keeps spreading, is continuously tearing open and making space for fresh, relatively fluid and hot sima [rising] from depth. However, he did not pursue these ideas in his later works.

In 1915, in the first edition of his book, Die Entstehung der Kontinente und Ozeane, written in German (the first English edition was published in 1924 as The Origin of Continents and Oceans, a translation of the 1922 third German edition), Wegener drew together evidence from various fields to advance the theory that there had once been a giant continent which he named "Urkontinent" (German for "primal continent", analogous to the Greek "Pangaea", meaning "All-Lands" or "All-Earth"). Expanded editions during the 1920s presented further evidence. The last German edition, published in 1929, revealed the significant observation that shallower oceans were geologically younger. It was, however, not translated into English until 1962.

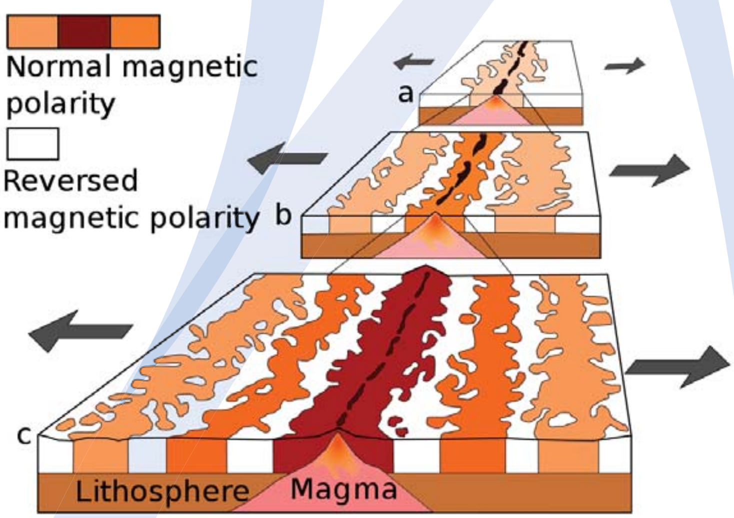
In his work, Wegener presented a large amount of observational evidence in support of continental drift, but the mechanism remained a problem, partly because Wegener's estimate of the velocity of continental motion, 250 cm/year, was too high. (The currently accepted rate for the separation of the Americas from Europe and Africa is about 2.5 cm/year).

While his ideas attracted a few early supporters such as Alexander Du Toit from South Africa, Arthur Holmes in England and Milutin Milanković in Serbia for whom continental drift theory was the premise in investigating polar wandering, the hypothesis was initially met with skepticism from geologists who viewed Wegener as an outsider, and were resistant to change. The one American edition of Wegener's work, published in 1925, which was written in "a dogmatic style that often results from German translations", was received so poorly that the American Association of Petroleum Geologists organized a symposium specifically in opposition to the continental drift hypothesis. The opponents argued, as did the Leipziger geologist Franz Kossmat, that the oceanic crust was too firm for the continents to "simply plough through".

From at least 1910, Wegener imagined the continents once fitting together not at the current shore line, but 200m below this, at the level of the continental shelves, where they match well. Part of the reason Wegener's ideas were not initially accepted was the misapprehension that he was suggesting the continents had fit along the current coastline.

Modern developments

In the early 1950s, the new science of paleomagnetism pioneered at the University of Cambridge by S. K. Runcorn and at Imperial College by P.M.S. Blackett was soon producing data in favour of Wegener's theory. By early 1953 samples taken from India showed that the country had previously been in the Southern hemisphere as predicted by Wegener. By 1959, the theory had enough supporting data that minds were starting to change, particularly in the United Kingdom where, in 1964, the Royal Society held a symposium on the subject.



Additionally, the 1960s saw several developments in geology, notably the discoveries of seafloor spreading and Wadati–Benioff zones, and this led to the rapid resurrection of the continental drift hypothesis and its direct descendant, the theory of plate tectonics. Maps of the geomorphology of the ocean floors created by Marie Tharp in cooperation with Bruce Heezen were an important contribution to the paradigm shift that was starting. Wegener was then recognized as the founding father of one of the major scientific revolutions of the 20th century.

With the advent of the Global Positioning System (GPS), it is possible to measure continental drift directly.

THE MSDC ROCKATHON!!!!!!!

WHERE The Fisher's garage (14981 Gold Post Ct., Centreville, VA 20121

WHEN Saturday, September 23, 2017
10 AM - 3 PM.

MSDC will be celebrating its 75th anniversary this year. To help us to have an appropriate and festive occasion, we are having a fund raiser at the Fisher's garage. It will be a rock, mineral and book sale in the form we have enjoyed at James Madison - no prices - just come, look, pick out some books and/or rocks and minerals and leave a donation. MSDC received a number of books from Cynthia Payne and rocks and minerals from other members' estates. These will be available along with items donated by current members. (If you would like to donate minerals or books to this effort, please contact Susan Fisher, novaya2@cox.net.)

A Little MSDC History - 75 Years and Counting

by Tom Tucker

I've come across another note concerning the early era in which a Society member had been born. It was noted that Dr. Titus Ulke was born in The District, in the year following "the hanging of a woman" (Mary Surratt), in 1866. Thus we've had members who lived in 151 years out of the 241 years of the Nations existence. It's beginning to feel like we've been around a while. Think of all the stories that our members could tell.

Also, while reading the early Mineral Minutes for tid bits of our club history, I came upon a "biography" of one of the charter members, Mr. H.B. Derr. It puts our "vintage" in perspective to learn we had a member born in 1867. His collection had been donated to Farmville State College and VPI, sometime before 1951. The Club took a real chance and made him an honorary life member, at the age of 84.

A typical meeting, circa 1950: As reported in he Mineral Minutes the August, 1950 MSDC meeting was a "garden" gathering at the Windham's in Bethesda, Saturday, August 19th: "The garden was ready with lights; chairs waiting to be set up; roses in full bloom, mother cat and five kittens safely installed in the garage, campfire all ready; three weeks of perfect weather — then you know what happened. The clouds opened and "dumped" the making of a small cloudburst, which didn't stop until 4 inches of rain had fallen,(report of the weatherman). We needed the rain but not at 7 P.M. However, it takes more than a cloudburst to dampen the spirits of our group. Forty-eight members and guest arrived, dripping water, but ready for the evening. Chairs were set up inside and all settled down for an enjoyable evening." The speaker was Dr. Foshag telling of the Jade found in Guatemala. The lawn meeting in July had drawn 85 members and guests !

Mineralogical Society of America Editors' Picks

With the permission of Keith Putirka, the following are the Editor's picks of Highlights and Breakthroughs & Invited Centennial Articles from the June, July and August 2017 issues of the American Mineralogist: Journal of Earth and Planetary Materials.

http://www.minsocam.org

Storing U in Opal

On page 1154 of this issue, Schindler et al., examine the crystal structural controls on the incorporation of U into opal. These authors build on prior work that shows that U may be structurally bound by amorphous Si for millions of years. Their new study shows that U is most likely to be retained along fibers or grain boundaries of opal as various domains are precipitated or transformed by various dissolution-re-precipitation reactions. The U complexes are apparently especially mobile along the boundaries separating domains of opal-CT, a variety that contains microcrystalline cristobalite and tridymite (compared to opal-A, an aggregate of non-crystalline silica). The U so captured may be released as opal transforms to microcrystalline quartz.

Dynamics of Magmatic Processes: A Tipping Point for the Eyjafjallajökull 2010 Eruption

On page 1173 of this issue, Laeger et al. present new analyses of pumice and minerals contained in tephra deposits erupted on May 18 and 22, from the Eyjafjallajökull 2010 eruption in Iceland. Their major and trace element data allow these authors to identify two distinct episodes of mixing, between a mafic recharge basalt magma, and two magma compositions (a trachyandesite and a rhyolite) that geophysical evidence indicates were intruded and stored as sills starting in 1994. Perhaps most interesting is that their merger of mineralogical and geophysical data appears to show that the arrival in 2010 of what is termed "BAS 1" (a basalt composition) signaled what Colin Wilson would call a "tipping point", sending this Icelandic magma plumbing system from a state where the crust can absorb all those magmas delivered from the mantle, into a state of instability, where new batches of mantle-derived magma, in mixed form, are erupted.

Depth of Spin Crossover of Fe3+

On page 1263 of this issue Sinmyo et al. use Mössbauer spectroscopy to measure the valence and spin state of Fe in bridgmanite, at elevated P and ambient T. Prior work has indicated that Fe3+ in bridgmanite may transition from a high spin to an intermediate or low spin state as pressure increases, which may in turn be measurable by a resulting change in magnetic character. The authors find that the spin transition in bridgmanite occurs at 900 km (35 GPa) in a pyrolite mantle, and 1200 km (50 GPa) in MORB-like domains, with the transition occurring at greater depths still at higher temperature. And the transition will, of course, be quite sensitive to fO2. Their results suggest that the spin crossover will not yield detectable contrasts in elastic properties, but might be observed in geomagnetic surveys. This work implies an urgency to measure the depth of a spin crossover in Earth's mantle by geophysical means, which may then be as helpful for understanding the T and fO_2 conditions of the deep mantle, as seismic velocities were in determining the existence of bridgmanite itself.

Resetting Pb in Seismically Deformed Zircon

On page 1311 of this issue, Kovaleva and Klötzli examine zircons in mylonites from the Ivrea-Verbano zone of northern Italy to determine to how zircon trace element and isotope compositions may vary within lattice defects that are generated by seismic activity. They find that post-growth deformation bands can both gain and lose certain trace elements (e.g., Hf, Ti, and P) relative to undeformed parts of the same grain and that these same deformation bands appear to undergo systematic Pb loss. The greatest Pb loss appears to be associated with planar deformation bands that occur at the highest angle relative to an unstrained host lattice. Such Pb loss should lead to the possibility of using coupled structural and isotopic studies of zircon to age date mylonite formation events other any other deformation process that affects zircon microstructures.

Liquid Compositions As Predicted From Amphibole

On page 1353 of this issue, Zhang et al. provide new "chemometric" equations that may be used to reconstruct a silicate liquid using an amphibole composition. Amphiboles are a common phase in arc-related igneous rocks, and because of their compositional complexity, they would appear to offer a powerful tool for determining silicate liquid compositions, which at most arc volcanoes are often highly obscured due to the very common and efficient mixing of diverse magma types. This study revisits an important earlier attempt by Ridolfi and Renzulli (2012) to use an amphibole composition to infer the composition of the silicate liquid in crystallized from. This new work focuses on basanitic to rhyolitic melt compositions, and is accompanied by an interesting test: their new models can successfully predict matric glass compositions in selected ignimbrite samples when using coexisting amphibole rim compositions as input. Their application to natural systems also shows that the variety of liquid compositions, at least at one volcano, may be much greater than one might infer from the bulk composition erupted products alone.

Sapphire – Blue with Inclusions

On page 1373 of this issue, Lin Sutherland provides a review of Palke and Breeding's new study of needle-like rutile in sapphire from several localities, such inclusions being the cause of "silk" and "star" varieties of the gemstone. Palke and Breeding find that rutile (and possibly other Fe-Ti oxides) is not necessarily formed by exsolution. In this interpretation, rutile-bearing sapphires are not indicative of initially high temperatures of crystallization; they also indicate that the trace elements contained within the inclusions may help to characterize both geologic and geographic origin. Additionally, this new work lends support to the idea that blue-colored sapphires may acquire their optical characteristics from Ti-Fe charge transfer within the host sapphire.

Explaining Radon Loss in Minerals

On page 1375 (temporary link) of this issue Krupp et al. measure Rn loss rates for a variety of minerals from various geologic settings and show how such loss rates vary with a number of interesting factors, including grain size, mineral density, temperature, U and Th concentrations, and mineral melting points. They find that Rn emission rates are greatest for minerals with low density and low melting points, and they show that when fission tracks are annealed, Rn loss rates are reduced. The authors thus suggest that Rn may readily diffuse along nuclear tracks. The study does not apply multivariate methods so as to untangle these effects, but this work nonetheless shows that mineralogy, environment, and geologic history can each have a significant effect on Rn concentrations in the atmosphere and groundwaters, and may explain discordant dates in some U-Pb systems.

Mineralogy of Durable Concrete from Ancient Rome

On page 1435 of this issue, Jackson et al. present yet another American Mineralogist publication that has garnered very widespread attention in popular news media. In this work, the authors examine phillipsite and Al-tobermorite: mineral cements in certain Roman marine concrete. The ancient concrete is formed by the interaction of seawater with "Pozzolan", a silica-rich material (often derived from volcanic ash) that upon reaction with seawater produces a highly durable concrete, perhaps more durable than limestone-based Portland derivatives. This new work shows that the growth of zeolite (phillipsite) and Al-tobermorite during seawater-volcanic ash reactions may be key to providing at least some of the structural resiliency of these concrete structures formed in the harbors of ancient Rome. Their work should also aid the identification of natural pozzolans that should optimize the growth of these phases, and so yield durable structures.

Zeolite Dehydration and Extra-Framework Cations

On page 1462 of this issue, Lee et al. present the results of dehydration experiments involving natrolite, containing extra-framework cations (EFC) of various size and charge. They find that dehydration temperatures are inversely proportional to EFC size, which might not be unexpected given a possible Coulomb's Law effect on bonding strength. The authors also find that during dehydration, EFCs migrate from the middle to the edges of the open channels that characterize zeolite structures, which then causes a change in channel orientations relative to crystallographic axes. The authors suggest that EFC type has a greater influence over the stability of zeolite structures than degree of dehydration, with stability increasing with decreasing EFC radius.

What Happens When Lightning Hits Rock?

On page 1470 of this issue, Elmi et al. present a study of fulgurites from a lightning strike of granite exposed at Mt. Mottarone, Baveno (Italy). Fulgurites have long been a curiosity--and perhaps little more--but in this study, the authors delve into the thermal conditions and compositional changes that occur upon lightning-induced partial melting of granite. Their work identifies a mineralogy and energetic conditions that indicate temperatures of ca. 1700 °C, if the system approached equilibrium. They also find that voids in the fulgurite structure result from the degassing of burned organic matter. Beyond the curio aspect, this work tells us that fulgurites may trap ambient gases and reveals much about how materials are affected by lightning strikes, which may then lead to better mitigation of thermal shocks associated with such.

Pyroxenes Stop Subducted Slabs Cold

On page 1516 of this issue, Xu et al., to better understand the conditions under which subducted slabs may stall in the upper mantle, conduct experiments to measure the physical properties of natural augite to 27 GPa and 700 K. Existing studies of pyroxenes focus on idealized end-member compositions, or involve measurements at high P or high T, but not both, forcing modelers to rely on mixing relationships and extrapolate equations of state. This work shows that natural augite-composition clinopyroxenes, if metastably preserved in a sinking plate, do indeed have a sufficiently low density so as to inhibit subduction beyond transition zone depths. Their modeling efforts indicate that natural augite has sufficiently high Fe so as to cause slabs to sink above transition zone depths, but that at the base of the transition zone, if temperatures remain cool, metastable augite may cause slabs to become neutrally buoyant, at least relative to PREM densities.

Carbonate-Silicate Liquid Immiscibility Explained

On page 1561 of this issue, Morizet et al. examine the structural characteristics of carbonate-rich, low-Si melts, analogous to kimberlite and melilitite bulk compositions. Their NMR study reveals that carbonate dissolves in such de-polymerized melts so as to form Free Ionic Clusters (FIC), instead of network-forming complexes. These FIC are composed of carbonate units bonded to network-modifying cations that donate most or all of their charge to the carbonate complex, as opposed to neighboring silicate structural units (analogous to what may be deduced of mineral structures using Pauling's Rules). The FIC are thus nearly completely disconnected from ambient silicate melt constituents, and thus may form the nuclei upon which immiscible carbonate melts exsolve from a silicate solution.

Predicting new minerals

On page 1573 of this issue Grew et al. use B-bearing minerals to examine how the Large Numbers of Rare Events (LNRE) model has fared in predicting the total number of as-yet-to-be-discovered minerals. The LNRE model yields as few as 1600 total yet-to-be-discovered minerals (Hazen et al. 2015). But the LNRE approach assumes a fixed "rule set", and so does not account for new technological methods (let alone shifts in the definition of a "mineral")—potentially leading to under-estimates of natural mineral abundances. The authors show that LNRE model, for example, predicts a total of ca. 500 B mineral species (ca. 200 as yet to be discovered) and note that as few as 19% of all known B minerals were also known as synthetic analogs prior to discovery. This implies that nature is more versatile than the laboratory. However, what appears to be lacking in the LNRE approach is intent. For example, does the low fraction of pre-synthesized B minerals represent limits on our ability to create new compounds, or a lack of compelling reasons to take on an apparently mindless and unproductive task of synthesizing every possible B-related structure? Highs and lows of new mineral descriptions may be related to intent as well—but do not blunt the authors' contention that surprises are ahead.

Predicting new mineral associations

On page 1588 of this issue, Morrison et al. introduce Network Analysis as a means to explore possible genetic relationships between minerals. The use of Network Analysis will already be familiar to Am Min readers, mostly from the models' wide use in sociology—like mapping social media networks, predict voting behavior, or mapping the spread of disease. Applied to mineralogy, the idea is that Network Analysis may reveal new associations that are characteristic of time, place, or conditions of mineral formation. One might riposte that we have a governing theory-thermodynamics-that obviates a statistical approach. The promise of Network Analysis, though, is to examine very large data sets and predict mineral occurrences and phase relationships, especially among rarer minerals and in chemical systems not yet fully explored experimentally. Network analysis, furthermore, facilitates characterization of an environment, an era, or a tectonic setting. These authors use Cu-bearing minerals as a striking example of how network analysis can be employed to reveal how Cu-mineral diversity has increased in both magnitude and kind since the Archean.

Why Cu-Au-Mo Here, And Not There?

On page 1597 of this issue Olson et al. examine the conditions of Cu, Au, and Mo mineralization in the Pebble Porphyry deposits of southwest Alaska, by examining precursor and host granite plutons and dikes. The authors find that the very high degree of enrichments in Cu and Au are related to the differentiation of mafic, hydrous, calc-alkaline, and alkalic magmas under strongly oxidizing conditions; the oxidization conditions are apparently key as they inhibit saturation of silicate liquids with sulfide melts, and so promote the retention of Cu and Au in increasingly sulfate rich magmas. The authors also hypothesis that certain trace element enrichments may have occurred in a so-called "MASH" zone where primitive magmas may have interacted with sulfide-rich cumulates in a lower crust setting. The next step is to determine whether such MASH zones exist, and how oxygen fugacity conditions are affected by a possible lower-crust history.

More N in Earth's mantle

On page 1667 of this issue Kaminsky and Wirth report on a new set of nitride minerals [Fe_2N, Fe_3N, and $Fe_9(N,C)_4$] found as inclusions in putative lower mantle-derived diamond. The authors infer that the nitride minerals derive from the core-mantle boundary, having first formed within the core itself, and then migrating outwards. This inference is apparently based on the association of Fe_7C_3 in yet other inclusions in the same diamond, and the presumed usefulness of high P variants of Fe_7C_3 and Fe_7N_3 to explain some seismic anomalies of the solid core. These same inclusions carry carbonatite-association minerals, which has spurred some interest in high pressure carbonates in the lower mantle as well (see Merlini et al., this issue). But it is not clear whether we must accept all the components that occur in such inclusions as unusual compositions at core/mantle boundary, or as indices of unusual conditions in the upper mantle—which would appear to be required in any case to generate those diamonds that are thought to form exclusively in the uppermost mantle.

Fe-rich magnesiowustite may explain Ultra Low Velocity Zones at the base of the mantle

On page 1709 of this issue, Finklestein et al. conduct high P experiments on a magnesiouwustite (mw) with 78 mol% Fe, to determine its elastic properties. These experiments are motivated by the hypothesis that Ultra Low Velocity Zones (ULVZs) at the base of Earth's mantle might reflect an abundance of such oxides phases relative to ambient bridgmanite (or post-perovskite phases). This work confirms, at least at low temperatures, that the bulk modulus (K) of mw decreases with increased iron content, and that the first pressure derivative (K') is unchanged with composition. Two pressing questions emerge: first, do these elastic property relationships hold at elevated temperatures? Second, could ULVZs be explained solely by way of Fe partitioning between mw and high pressure silicates in a pyrolite mantle, or is an absolute enrichment in bulk Fe contents at the core-mantle boundary required?

Fe/Mn ratios in our planetary neighborhood

On page 1759 of this issue, Papike et al. compare the compositions of olivine and pyroxene from Earth, Moon, Mars, and Angrite meteorites. They conclude that Fe/Mn ratios of these minerals are similar enough between Angrites and Earth to require that the Angrite parent body was initially coagulated in some proximity to Earth. The idea is based on the observation that both Fe and Mn varied with distance from the sun in the early nebula. If is quite clear that Fe in the silicate portions of the terrestrial planets decreases with increasing distance from the sun, for example. But this new work is in seeming contrast to that of Sossi et al. (2016: EPSL), who suggest that Fe/Mn ratios are not only higher in Angrites compared to Earth, but that Fe/Mn ratios are meaningfully and positively correlated with Fe isotope ratios. Both studies, though, come to the same conclusion that inter-planetary contrasts in Fe/Mn are controlled not just by variation in core mass and Fe segregation into a metallic phase, but also by the loss of the more volatile Mn.

Upcoming Local (or mostly local) Geology Events:

September

6 MSDC Meeting
13 GSW Meeting - Alternate Location
13 GLMSMC Meeting
16-17 Gem, Mineral & Jewelry Show sponsored by the Central PA Rock & Mineral Club. Zembo Shrine, Third & Division Sts; Harrisburg, PA. Contact: Betsy Oberheim aoberheim3@comcast.net
16-17 49th Annual Gem & Mineral Show & Sale sponsored by the Mid-Hudson Valley Gem & Mineral Society. Gold's Gym and Family Sports Center, 258 Titusville Rd; Poughkeepsie, NY. Info: Carolyn Reynard sunstone33@verizon.net
22-23 53rd Annual Atlantic Coast Gem, Mineral, Jewelry & Fossil Show hosted by the Gem Cutters Guild of Baltimore. Howard Co. Fairgrounds, West Friendship, MD. Info: gemcuttersguild.com
24 NVMC Meeting
26 MNCA Meeting

October

4 MSDC Meeting
7 Macungie, PA - 2017 Autumn Mineralfest Show sponsored by the Pennsylvania Earth Sciences Association. Macungie Memorial Park, Macungie, PA. www.mineralfest.com
11 GLMSMC Meeting
13-15 Annual Desautels Micromount Symposium hosted by the Baltimore Mineral Society. Info and Registration baltimoremineralsociety.org
21-22 45th Annual Gem & Mineral Show and 67th Eastern Federation Convention. Beals Community Center, 240 Stafford Ave., Bristol, Connecticut. Info: amfed.org/efmls EFMLS Annual Meeting: Friday, October 20.
21-22 44th Annual Jewelry, Gem, Mineral & Fossil Show and Sale sponsored by the Kanawha Rock & Gem Club. So. Charleston Community Center, 601 Jefferson Rd; So. Charleston, WV.
23 NVMC Meeting
25 MNCA Meeting

November

1 MSDC Meeting
8 GLMSMC Meeting
11-12 Fall New York City Gem & Mineral Show hosted by the New York Mineralogical Club. Watson Hotel (formerly Holiday Inn at 57th St), 440 West 57th St; New York, NY. Contact: Tony Nikischer: www.excaliburmineral.com
11-13 W. Springfield, Mass. - Annual East Coast Gem & Mineral Show
18-19 26th Annual Gem, Mineral & Fossil Show sponsored by the Northern Virginia Mineral Club. NEW LOCATION: George Mason University Dewberry Hall, Johnson Center, Braddock Rd & Rte 123; Fairfax, VA. Contact: www.novamineralclub.org
22 MNCA Meeting - depending on Thanksgiving
25-26 Rock and Mineral Weekend sponsored by the Morris Museum Mineralogical Society. Morris Museum, 6 Normany Heights Rd; Morristown, NJ. Info: kfrancis@morrismuseum.org
27 NVMC Meeting

Useful Mineral Links:

AFMS	American Federation of Mineralogical Societies (AFMS)	www.amfed.org
	Eastern Federation of Mineralogical and Lapidary Societies (EFMLS)	www.amfed.org/efmls
mindat.org	MINDAT	www.mindat.org
	Mineralogical Society of America (MSA)	www.minoscam.org
	Friends of Mineralogy	www.friendsofmineralogy.org/
	WebMineral	webmineral.com
THE GEOLOGICAL SOCIETY OF AMERICA	The Geological Society of America (GSA)	www.geosociety.org/
Scovil PHOTOGRAPHY	Jeff Scovil Mineral Photography (not advertising - just great photos)	scovilphotography.com/
USGS science for a changing world	United States Geological Survey (USGS)	www.usgs.gov
	The Geological Society of Washington (GSW)	http://www.gswweb.org/

AFMS Code of Ethics

- I will respect both private and public property and will do no collecting on privately owned land without the owner's permission.
- I will keep informed on all laws, regulations of rules governing collecting on public lands and will observe them.
- I will to the best of my ability, ascertain the boundary lines of property on which I plan to collect.
- I will use no firearms or blasting material in collecting areas.
- I will cause no willful damage to property of any kind - fences, signs, and buildings.
- I will leave all gates as found.
- I will build fires in designated or safe places only and will be certain they are completely extinguished before leaving the area.
- I will discard no burning material - matches, cigarettes, etc.
- I will fill all excavation holes which may be dangerous to livestock. [Editor's Note/ Observation: I would also include wildlife as well as livestock.]
- I will not contaminate wells, creeks or other water supply.
- I will cause no willful damage to collecting material and will take home only what I can reasonably use.
- I will practice conservation and undertake to utilize fully and well the materials I have collected and will recycle my surplus for the pleasure and benefit of others.
- I will support the rockhound project H.E.L.P. (Help Eliminate Litter Please) and will leave all collecting areas devoid of litter, regardless of how found.
- I will cooperate with field trip leaders and the se in designated authority in all collecting areas.
- I will report to my club or Federation officers, Bureau of Land management or other authorities, any deposit of petrified wood or other materials on public lands which should be protected for the enjoyment of future generations for public educational and scientific purposes.
- I will appreciate and protect our heritage of natural resources.
- I will observe the "Golden Rule", will use "Good Outdoor Manners" and will at all times conduct myself in a manner which will add to the stature and Public "image" of rockhounds everywhere.

MSDC Past Presidents

Name	Years served as President
Charles H. Robinson	1941-1945
James H. Benn	1946-1947
John J. Livingston	1948-1950
Phillip R. Cosminsky	1951
Benjamin J. Chromy	1952
John J. Livingston	1953-1954
Paul J. Rees	1954
Antonio C. Bonanno	1955
Paul E. Halter	1956-1957
John O. Griesback	1958
John Sinkankas	1959
William R. Smith	1960
Paul E. Desautels	1961
John R. Cranford	1962
Robert Highbarger	1963
Harry Van Tassel	1964
Grant C. Edwards	1965
Kenneth V. Zahn	1966
Douglas C. Alverson	1967-1968
Robert W. Dunning	1969
John W. Gruger	1970-1971
Angelo G. Cicolani	1972-1973
William H. Wilkinson	1974
Ellsworth E. Sinclair	1975-1976
Angelo Cicolani	1977-1978
	1979
Cynthia C. Payne	1980
Paul E. Smith	1981-1982
Fred C. Schaefermeyer	1983-1984
Erich Grundel	1985
James O'Connor	1986-1989
Erich Grundel	1990
Wilson (Ed) Fisher	1991-1996
Jennie Smith	1996-1997
Wilson (Ed) Fisher	1998-2003

Name	Years served as President
Andy Thompson	2004-2010
Tom Tucker	2011-2012
Stephen Johnson	2013-2015
David Nanney	2016-present

MEMBERSHIP APPLICATION OR RENEWAL
THE MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA (MSDC)

(____) Family ~ $25.00 per year. One address.

(____) Individual ~ $20.00 per year.

(____) New * (____) Renewal Dues are for Year __________*

For new members who join in the last months of the year, membership will extend through the following year with no additional dues.

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Pay at next meeting or mail to:

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c/o John Weidner
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Springfield, VA 22153-1312

Name(s) (First and Last) ____

Address____

City ________________________ State __________ Zip: ____________

Phone(s): Home/Work/Mobile______________________________________

Email(s): ____

OK TO INCLUDE YOU ON CLUB MEMBERSHIP LIST?

(   ) Yes – Include name, address, phone, email.

If you want any information omitted from the membership list, please note:

Omit my: (   ) Email; (   ) Home phone; (   ) Work phone; (   ) Mobile phone; (   ) Address; (   ) Name

SPECIAL CLUB-RELATED INTERESTS? ___________________________________

Meeting Dates, Time, and Location: The first Wednesday of each month. (No meeting in July and August.) The National Museum of Natural History, Smithsonian Institution, 10th Street and Constitution Ave, Washington D.C. We will gather at the Constitution Avenue entrance at 7:45 PM to meet our guard who will escort us to the Cathy Kirby Room. Street parking: Parking is available in the Smithsonian Staff Parking – Just tell the guard at the gate that you are attending the Mineral Club Meeting.

THE MINERAL MINUTES

NEWSLETTER OF THE MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA

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