

Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc., meeting in State College, Pennsylvania
Contact information on back page

Editor (see back page):
David C. Glick

November, 2017

Visit our web site: www.nittanymineral.org

November 15th meeting:

Iceland: A Geological Tour

by

Dr. Charles E. Miller, Jr.

Our November meeting will be held Wednesday the 15th in room 114 (the large auditorium) Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA. Maps are available on our web site.

6:45 to 7:45 p.m.: Social hour, refreshments in the lobby

7:45 to 8:00 p.m.: announcements, questions, answers about 8:00 p.m.: featured program

*The event has free admission, free parking, and free refreshments, and is open to all; **parents/guardians must provide supervision of minors.** Bring your friends and share an interesting evening!*



Iceland is aptly described as the land of “fire and ice.” Virtually all of the geology and scenery there is related to volcanism and glaciers. Dr. Miller will speak about these features and his recent visit there.

See the full illustrated article on page 4.

ATTENDING THE NOVEMBER MEETING?

Donations of **a few high quality, labeled door prize specimens** are invited.

Your donated snacks will be welcomed.

Bring a friend!

DUES

Our new membership year started on November 1. **THANK YOU** to all who have paid their dues. Members who have not renewed will receive a reminder.

December 13th:

Annual Holiday Dinner at Quaker Steak & Lube Restaurant

NOTE: SECOND Wednesday

Please join us!

On Wednesday, Dec. 13, 6:00 p.m.,

rather than our usual meeting and program, we'll have our **Holiday Dinner** at Quaker Steak & Lube Restaurant, 501 Benner Pike (across Benner Pike from the Nittany Mall), State College PA 16801 in their “Corvette Room.” There is actually a real Corvette suspended from the ceiling above part of the Corvette room. The entire restaurant is decorated in automotive



memorabilia making the place and our event a lot of fun!

NMS will pay for appetizer plates to be shared by all those present, then attendees can order and pay for their own dinners. We'll have some door prizes also. If you expect to attend, please **RSVP** to Bob Altamura, raltamura@comcast.net or 814-234-5011 to help us plan. If you haven't signed up and you want to come anyway, that's fine too - **please join us!**

We will continue our past tradition where members can have a table at the dinner to sell minerals / fossils / gems / jewelry / rock crafts. Sellers need to collect PA sales tax. NMS will charge a commission fee at 10% of the vendor's pre-tax sales. If you are interested in selling, please contact Bob Altamura (see above) as soon as possible to secure table openings.

Election Results

by David Glick, NMS President

At the October 18th Annual Meeting of the Corporation, the four incumbent officers were re-elected (see page 8). The Board truly needs **additional volunteers** to get involved with running the Society, providing **new energy and fresh thinking**. In many cases it would be useful to have newcomers spend some time on committees and attending Board meetings before stepping into elected office. **All members: please consider volunteering!**

NMS SEEKS SPACE

by David Glick, NMS President

The NMS Board is considering acquiring some space in a building, or a whole building, that we might use for some of our activities. Some possible uses would be for Junior Rockhounds meetings; a lapidary workshop; club use of books, microscopes and micromount collection; and storage of materials for Minerals Junior Education Day, etc. Please let Dave Glick know if you have any ideas for space that we might lease or purchase.

Geo-Sudoku

by David Glick

This puzzle contains the letters ACDEIONTU. One row or column spells the purpose of our annual day for juniors. As usual, if you've read this issue, you've seen the word, or a variation of it. Each block of 9 squares, each row, and each column must contain each of the nine letters exactly once. The solution is on page 8.

O			N	T	D	C	A	
		D		I	E		U	O
		I	O	C				
A	O		D		I			U
		N			A	O	D	
	E		U	O	C			A
		O		U				
	N	A			O		E	
	D			A		I		

NEW NMS T-SHIRTS AVAILABLE AT MEETINGS!

The Society has arranged for new a printing-run of NMS T-shirts in sizes that have a wide range from Youth- through Adult-sizes including XXL. Color availability includes: Royal Blue, Galapagos Blue, and Texas Orange. Graphic design includes our name and graphically designed map of PA on the front of the shirt and drawing of a crystal cluster, a trilobite, a cabochon, and a faced stone in the pattern of a brilliant all in white ink. Be among the first and select your favorite color and sizes.

Perhaps an NMS T-shirt might make fun Christmas stocking stuffer for someone you know that likes NMS, minerals and the earth sciences. In following the mission of NMS to foster education of the minerals and the earth sciences, we currently will be selling these shirts at near our cost - \$9.00 per shirt.



Bob Altamura will have T-shirts available for purchase (cash or check only) at the November monthly meeting and also at the NMS sales table at the NMS Holiday Dinner which is set for December 13 at 6:00 p.m. at Quaker Steak & Lube (see detailed announcement about the Holiday Dinner elsewhere in this Bulletin). T-shirts also may be purchased by special arrangements contacting Bob (raltamura@wesleyan.edu or 234-5011).

Minerals Junior Education Day Saturday, April 7, 2018

Frank Kowalczyk will be coordinating NMS's 23rd Annual Minerals Junior Education Day. It is set for Saturday, April 7, at Central Pennsylvania Institute of Science & Technology at Pleasant Gap, the same location as the last few years. Please save the date and think about how you might help bring this great event to families in our community.

At this event, kids get an empty egg carton when they check in, then go to a series of stations, each concerning a different aspect of mineral properties, rocks, fossils, etc. They learn about the topic from a demonstration or discussion, and receive a properly labeled specimen or educational item related to the topic, so they gather a whole collection in their egg carton. There is also a sales table with kid-friendly prices.

We are starting early to prepare for the 2018 event, seeking **volunteers** to help to present the stations, and ideas for stations which we (or you) might present. We also welcome advance donations of identified minerals, tumble-polished material, fossils, books, etc. which can be sold at child-friendly prices. To volunteer or get more details, **please contact Frank J. Kowalczyk:**

frank.j.kowalczyk@gmail.com
or 814- 238-8874



Weather Cancellation Policy

In case we experience active winter weather on a meeting date, our policy is to cancel the meeting only if evening classes at Penn State have been cancelled. That cancellation is publicized in the usual radio and TV service announcements.



Penn State notes that weather-related cancellation / closing information can be found at WPSU-FM, the news site <<http://news.psu.edu/>>, and <<http://www.facebook.com/pennstate>>

- Editor

NOVEMBER MEETING DOOR PRIZES!



Dolomite crystals and a few quartz crystals on calcite, Oak Hall Quarry, Centre County, PA. *D. Glick photo*



Celestine crystals with strontianite, Meckley's Quarry, Mandata, Northumberland County, PA. *D. Glick photo*

Ten Years Ago in NMS

In 2007, we were getting ready for a holiday dinner at Quaker Steak & Lube... on the other end of town at the previous location (now Otto's).

Iceland: A Geological Tour

Dr. Charles E. Miller, Jr.



Figure 1: Map showing Iceland on the Mid-Atlantic Ridge. (National Geographic Society)

Iceland is aptly described as the land of “fire and ice.” Virtually all of the geology and scenery there is related to volcanism and glaciers. The country is located on the Mid-Atlantic Ridge (MAR; Figure 1). The section that includes Iceland is also known as the Reykjanes Ridge. At ocean ridges, Earth’s crust splits in a divergent direction, resulting in basalt emplacement. This implies that Iceland is increasing in size due to continued divergence of the MAR. The average spreading rate is about 2.5 centimeters per year. Associated with this sea-floor spreading is other volcanic activity, including volcanoes, lava flows, and geothermal features.

Glaciers influence and reshape the volcanic landforms. During the last Ice Age, Iceland was totally covered with glaciers. Today, five major ice caps cover approximately 11 percent of the country, one of which is greater than 1000 meters thick. The combination of glacial landforms on a volcanic landscape results in spectacular scenery and interesting geology.

Iceland is one of two places on Earth where effects of divergent plate motion can be observed. The other is the Great Rift Valley of Eastern Africa. Thingvellir is a popular national park in Southwest Iceland where the MAR cuts across the country (Figure 2). Here, one can see the rift valley, or graben, associated with divergent plate motion. On opposite sides of the graben are the Eurasian and North American crustal plates. Unfortunately, it appears most tourists have a misconception of what they see in the park. Many Internet sites perpetuate the misconception. This will be discussed in the talk. Of particular note, the rift in this park is a popular attraction for scuba divers.

Where the MAR cuts across Iceland, magma is within 2-3 km of the surface. This near-surface heat source has enabled the country to become a world leader in using geothermal energy. Where geothermal



Figure 2: Thingvellir National Park, Iceland. The people in the fissure think they are walking between the North American and Eurasian crustal plates. **They are not.** Image by the author.

stations are near urban areas, hot water is transferred to buildings, providing 87 percent of that use. The same hot water is piped under pavements to melt snow. In addition, geothermal energy provides 25-30 percent of the electricity for the country and most of the greenhouses, there, are heated with geothermal energy.

One problem with using geothermal energy is the release of carbon dioxide (CO₂) and hydrogen sulfide (H₂S). In Iceland, a recent project - called CarbFix - injects these poisonous gases into basalt where they form carbonate minerals and pyrite, respectively. Once the minerals form, they remain stable for millions of years. In comparison, when CO₂ is injected into other settings, there is always the risk of leakage. Based on the aforementioned successes, a newer project called CarbFix2 is injecting larger quantities of the two gases. Worldwide, there is no shortage of basalt reservoirs in which similar projects could be attempted. Examples include the Columbia River basalts of the U.S. Pacific Northwest, the Deccan Traps in India, and the Siberian Traps in Russia as well as other, albeit smaller, basalt fields.

Of the many volcanic features in the country, columnar jointing is common and spectacular (Figure



Figure 3: Columnar jointing and entablatur basalt at Svartifoss, Iceland. Note broken columns in the stream.
Image by the author.

3). This jointing forms in lava and near-surface igneous intrusions, appearing as columns or colonnades perpendicular to the flow surface. The jointing is from stress when lava cools and contracts. In Iceland, columnar jointing is so common that colonnades are used in landscaping.

Like many others in the world, Iceland's glaciers are, in general, retreating. These, and former glaciers, have significantly modified and created landforms. These new and modified landforms are from glacial erosion and deposition as well as flowing water sustained, in part, from melting glaciers. As one travels the country, virtually everywhere glacial features can be observed. For example, the world's largest glacial outwash plain covers much of coastal Southeastern Iceland. One can also see U-shaped valleys, sculpted mountains, glacial lagoons with icebergs, and fiords. The combination of melting glaciers and plentiful precipitation provides abundant water for erosion and deposition, waterfalls, and hydroelectric power generation. Iceland produces 70 percent of its electricity from hydroelectric power.

After a nearly 35-year quest, the writer hiked into a glacial cave in Iceland (Figure 4). These are usually ephemeral features, disappearing as glaciers melt.

Such caves mostly form from water flowing through and under a glacier after water enters through moulins, or openings in glacier surfaces. Other glacial caves may form from hot springs under the ice. Characteristic of most ice caves are magnificent scenes of translucent blue ice and water-eroded forms called scallops (Figure 4). Glacier ice is often blue because it is so dense that colors other than blue and violet (short wavelengths) are absorbed. Scallops, also typical in limestone caves, are useful in determining water-flow direction and velocity.



Figure 4: Glacier ice cave showing scallops and blue ice.

Image by the author.

One of the best-known glacial settings in Iceland is Jokulsarlon Glacier Lagoon (Figure 5) in Southeast Iceland. In 1991, Iceland recognized this beautiful location by issuing a postage stamp depicting the lagoon. The lake, or lagoon, covering about seven square miles, is replete with icebergs calved from a glacier. In addition, the setting is so appealing that four movies have, in part, been filmed there. These include two James Bond films.



Figure 5: Icebergs at Jokulsarlon Glacier Lagoon, Iceland.

Image by the author.

The combination of Iceland's "fire and ice" sometimes causes giant floods called jokullraups. These massive floods form when eruptions occur under ice caps. Melt water from these floods can range up to 40,000 m³/sec. In comparison, the Amazon River – the world's largest river by discharge - is about 10,000 m³/sec. So great is the force of jokullraups that massive boulders are moved considerable distances.

Some of Iceland's geologic features have become well known in the literature, even to non-geologists. For example, in Southwestern Iceland Geysir – or The Great Geysir – was the first such geothermal feature described in writing. The English word "geyser" derives from the Icelandic name "Geysir." Although its name lingers on, Geysir no longer erupts frequently. In the mineral world, Iceland spar is a transparent variety of calcite exhibiting double refraction. For centuries, the only source of this variety was a mine in Eastern Iceland. It became known as Iceland spar (spar meaning a crystal with smooth surfaces). Vikings may have used Iceland spar for navigation. In addition, this crystal was important in the study of light as a wave.

The variety and abundance of volcanic features in Iceland was a reason for the country serving as a training area for Apollo astronauts. These field trips took place in 1965 and 1967, and, in conjunction with locations elsewhere, prepared the astronauts with geology they would encounter on the Moon.

**Fluorescent
Mineral
Society
Northeast Region
Fluoresophiles
to meet December 2**

from Howie Green, FMS/NERF

The FMS Northeast Region Fluoresophiles (**NERF**) **Ball** will be held on 12/2/17 at the GeoTech Center of the Sterling Hill Mining Museum in Ogdensburg, New Jersey. The meeting runs from 9 AM until 4 PM. All FMS members are invited, as are prospective FMS members and members of other rock clubs.

As usual, an enjoyable and informative program is scheduled:

- **Lorne Loudin**, Research Associate at the GIA laboratory in New York will present his work in *Mapping Distribution of Optical Defects in Diamond Using Photoluminescence Imaging*.

- **Rodney Allen**, Manager Geology Research and Development at the Garpenberg Mine in Sweden, will bring us up to date on Zinc (and Pb-Ag-Cu too) Mining in the 21st *Century*.

- **Stacey Carrier, Ph. D.**, Technical Sales Manager at Hellma USA, will give us *An Introduction to Spectroscopy and Fluorescence*.

- Geologist **Dan Moore** will take us on a tour of his backyard, acquainting us with the *Fluorescent Minerals of the Helvetia Mining District, Pima County, Arizona*

- **Ken St John** will update us on the growth and development of our field collecting branch, *UVNomads*.

The **Midwest Chapter of the FMS** spent a recent weekend in the *Illinois-Kentucky Fluorspar District*. We'll display a suite of fluorescent minerals from that area.

The *Mineral Sell/Trade-a-Thon Extravaganza* will continue during the entire course of the meeting (except during lunch). Last year's turnout was widely held to be the most productive and active exchange of local and worldwide fluorescent minerals EVER. In any event, **BRING TONS OF ROCKS TO SHOW, SWAP, AND SELL!** (Provided your cache will fit on a half table, although we hope to have some additional room this year.)

The infamous *NERF Lunch Players* will be up to their usual culinary tricks, and new food donors will be rewarded. Bring \$10 to cover food expenses. As always, **BYOBeer!**

Safe passage from the SHMM parking lot to the GeoTech Center, bypassing the steep staircase, can be achieved as follows: while facing away from the Museum office, proceed through a gate on the left in the middle of the lot. Continue down the ramp and follow the fluorescent ribbon (noggin alert through the tunnel!).

It is **ESSENTIAL that each attendee RSVP** to Howie Green at howie@uvminerals.org for meeting attendance, menu coordination, and participation, and to suggest or present topics at the meeting. As always, and most importantly, please tell your friends (if you have any).

FEDERATION NEWS

Nittany Mineralogical Society, Inc., is a member of EFMLS, the Eastern Federation of Mineralogical and Lapidary Societies, and therefore an affiliate of AFMS, the American Federation of Mineralogical Societies. We present brief summaries here in order to encourage readers to see the entire newsletters.

The **EFMLS Newsletter** is now being distributed electronically; a link is available on our web site www.nittanymineral.org. The November issue begins with the announcement of the Spring 2018 EFMLS Wildacres Workshop, to be held May 21-27. The Speaker-In-Residence will be Gem carver and jewelry artist Helen Seras-Herman (see gemartcenter.com). New President Barbara Ringhiser introduces herself, and asks, "What do the clubs want from EFMLS?" the safety article discusses a field trip "follower," to round up and keep track of any stragglers in the interest of safety. Recent activity on possible rule changes for national monuments is reviewed. The EFMLS's most prestigious award, the Citation Award, goes to EFMLS past president and Pennsylvanian (Central Pennsylvania Rock and Mineral Club) Betsy Oberheim. Regina Kapta provides a good overview of the all American Club Yearbook competition; the entry deadline is February 15, 2018. Results of the Editors' Contest and other competitions are presented.

The **AFMS Newsletter** is available by the same methods. In the November issue, President Sandy Fuller introduces herself. AFMS Historian Jennifer Haley writes about "Hobbies, The American Way of Life," and the history of participation in mineral and lapidary clubs. The Juniors article addresses how to "Help Them with Displays & Articles for Competition."

The Federations encourage everyone to see the web sites for the complete Newsletters. There's a lot there!

-Editor

Some Upcoming Shows and Meetings

Our web site <http://www.nittanymineral.org> has links to more complete lists and details on mineral shows and meetings around the country. See www.mineralevents.com for more.

Dec. 2, 2017: Fluorescent Mineral Society Northeast Region meeting. Sterling Hill, NJ. Sat. 9-4. See page 7. **MUST RSVP** to howie@uvminerals.org

Jan. 20, 2018: Philadelphia Interclub Swap & Sell, by Phila. Mineralogical Society. Lu Lu Temple, 5140 Butler Pike, Plymouth Meeting, PA 19462. Sat. only, 9-noon. <http://www.phillyrocks.org/>

March 3-4, 2018: Delaware Mineralogical Society Gem, Mineral & Fossil Show, Theme: "Favorite Finds." Symposium.

March 24-25, 2018: Philadelphia Mineral Treasures and Fossil Fair, by Phila. Min. Soc. & Delaware Valley Paleo. Soc. LuLu Temple: 5140 Butler Pike, Plymouth Meeting, PA 19462
<http://www.phillyrocks.org/>

Classifieds

FOR SALE: I am selling a large percentage of my worldwide collection and thousands of Pennsylvania specimens, many self collected and old classics. There's plenty of variety, and plenty for different levels of collector interest. Anyone interested should call to set up an appointment. Thanks,
Skip Colflesh, Hershey, PA
phone 717-805-2027

Geo-Sudoku Solution

O	U	E	N	T	D	C	A	I
N	C	D	A	I	E	T	U	O
T	A	I	O	C	U	D	N	E
A	O	C	D	N	I	E	T	U
U	I	N	T	E	A	O	D	C
D	E	T	U	O	C	N	I	A
I	T	O	E	U	N	A	C	D
C	N	A	I	D	O	U	E	T
E	D	U	C	A	T	I	O	N

Visit us at www.nittanymineral.org

INVITE A FRIEND TO JOIN THE SOCIETY

The Nittany Mineralogical Society prides itself on having among the finest line-up of speakers of any earth sciences club in the nation. Everyone is welcome at our meetings. If you'd like to be part of our Society, dues are \$20 (regular member), \$7 (student rate), \$15 (seniors), \$30 (family of two or more members, names listed). Those joining in March or later may request pro-rated dues. Your dues are used for programs and speakers, refreshments, educational activities, Bulletins, and mailing expenses. Please fill out a membership form (available at www.nittanymineral.org), make checks payable to "Nittany Mineralogical Society, Inc." and send them in as directed, or bring your dues to the next meeting.

We want to welcome you!

CONTACT INFORMATION

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Door Prizes: Dr. Bob Altamura (see above)

Facebook & Publicity: John Dziak: jjd264@psu.edu

The **Bulletin Editor** will welcome your submissions of articles, photos, drawings, cartoons, etc., on minerals, fossils, collecting, lapidary, and club activity topics of interest to the members. Please contact:

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209 Spring Lea Dr. phone: (814) 237-1094 (h)

State College, PA 16801-7226

Newsletter submissions are appreciated by the first Wednesday of the month. Photographs or graphics are encouraged, but please do not embed them in word processor files; send them as separate graphics files (TIF, or good to highest quality JPEG files, about 1050 pixels wide, are preferred). Please provide captions and name of photographer or artist.