

The **BULLETIN**

OF THE NEW YORK MINERALOGICAL CLUB, INC

**Volume 131 No. 8
August 2017**



**Another Huge Diamond Found!
See page 6!**

**LONG ISLAND
OPEN HOUSE**

**EARTH'S ORIGINAL
CRUST**

**MINED
MASTERPIECES**

**EFMLS &
TECHNOLOGY**

**BANQUET
RESERVATION
FORM**



America's Oldest Gem & Mineral Club
Founded 1886 ♦ Incorporated 1937

Bulletin of the New York Mineralogical Club

Founded 1886 ♦ New York City, New York ♦ Incorporated 1937
America's Oldest Mineral & Gem Club

Volume 131, No. 8

August 2017

Special Summer Social Event: Annual Open House



- ♦ This summer's Open House is being hosted by member **Cheryl Neary** at her home out on Long Island.
- ♦ Her home is easily accessed by the **Long Island Railroad** out of Penn Station. (The 10:55 AM or 11:45 AM are strongly suggested.) Transportation from the LI station to her home will be provided.
- ♦ If you are **driving** there, please let me know.
- ♦ **Lunch** will be served but contributions of food and drink for the party are, of course, most welcome!
- ♦ **Cheryl can accommodate only about 25 guests so an RSVP to Mitch is required.**
- ♦ When you contact me, I will provide **additional information** about the party's location and other details.



NYMC Directors & Guests Make Plans for the Future

By Mitch Portnoy

On Sunday, July 23, 2017 the Club's directors as well as several other invited (and highly enthusiastic) members met at my apartment to discuss and make plans for the Club over the next year or so.

An abstract of the afternoon's extensive agenda for this meeting is shown on page 2. As you can see, we had a lot to talk about! In fact, the meeting lasted for nearly four hours.

I emphasized that, given the very healthy state of the Club, we **should "level up"** as many of the activities as we could and add relevant and sensible value whenever possible.

After a brief discussion about "degentrification" and a surprise song about NYMC teamwork sung to the tune of "Together Whenever" with new lyrics written by me, the meeting began.

We quickly went over how successful the June Auction had been, raising enough money to fund a full year's meeting room fees. We then moved on to discussing plans and details about the **October Banquet**. This important topic occupied about half of the meeting's discussions.

I don't want to give away too many of the details about this **amethyst-themed party** but I can guarantee it will be a fun night, filled with surprises – and lots of purple!

I will be meeting with the hotel management soon and Gary Poppe, the Vice President of Special Events there, ALWAYS has some great party ideas for us so even I don't know everything about the event yet!

The most significant decision agreed to by the team was to allow registration for the banquet online and pay for it through PayPal.

This is a remarkably complicated issue and I will not take you through all the controversies, points of view, logistical pit falls and other potential problems here.

Our webmaster, Joe Krabak, was present at the meeting and assured us he could program this on the website with any features and limitations we wanted BUT we

did have to make clear to him what they should be!

In addition, let me assure you that the traditional payment options – checks through the mail or payments on the evening of the gala event will certainly still be permitted.

I will say that the biggest problem related to this are the PayPal fees. We try to price the banquet so as not to affect our treasury. But we also allow, even encourage, members to pay for their next year's dues at the same time. And people also buy items, make donations to pay for the wine, etc. If PayPal is used, they take a percentage of the entire payment! We simply have not (yet?) priced things to include this deduction.

On the other hand, this is the way of the modern digital world and we have to accept that. We therefore will see how things go this year and then decide what we will do going forward.

Lastly, if you walk into the banquet without having made a reservation by either mail, email or telephone to me by the preceding Monday night, you will be **charged a \$10 penalty**, effectively losing the Club subsidy for the evening. **So get your reservations in early in order to avoid this uncomfortable situation!**

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President's Message

By Mitch Portnoy

(Continued from page 1)

Officer's Planning Meeting Agenda

Part I: The NYMC in 2017

1. Introduction
2. June Benefit Auction Debriefing
3. AFMS Bulletin Article Awards
4. Special Benefit Sale Status
5. **August Open House**
6. September Meeting: NY Mineralogy
7. **October Amethyst Banquet**
8. November (Fall) Gem & Mineral Show
9. November Meeting: Iris Quartz
10. December Meeting: Blue Moon
11. Special Publication Status: The NYMC Songbook (See page 3.)

Part II: The NYMC in 2018

12. Leveling Up!
13. January Meeting: Movie Night – *Pederneira*
14. February Meeting – Show & Tell, Chinese Auction
15. March (Spring) Gem & Mineral Show
16. Other Scheduled Meeting Lectures
17. New Summer NYC Mineral Show
18. General Website Update
19. Bulletin Update
20. Other Topics

Club Meeting Minutes for July 12, 2017

By Vivien Gornitz, *Secretary*

Attendance: 42

President Mitch Portnoy presided

This was the second year of the establishment of a regular July meeting.

Announcements:

- ◆ The monthly raffle was held.
- ◆ A quick recap of the NYMC June Benefit Auction was provided.
- ◆ Member were reminded that we still have six flats of terrific "Special Sale" minerals available.
- ◆ The story of Naomi Sarna's "Mets Necklace" was related.
- ◆ There was a general website update.
- ◆ The day's historical events and special holidays were presented.
- ◆ The evening's game, about minerals with a green streak, was played. The prizes were floaty pens containing moonstones, relating to the meeting's special lecture topic.
- ◆ A song about phenomenal gems, sung to the tune of "Impossible Dream" was presented by Mitch.
- ◆ The status of the "NYMC Songbook", the Club's next special publication, was given.
- ◆ A video about an upcoming auction of some valuable moon dust was shown.

- ◆ Members were reminded that the ballet "Jewels" by George Balanchine was playing in Lincoln Center.
- ◆ The evening's special note card set (Phenomenal Gems) was shown and made available for sale.
- ◆ The upcoming NYMC events were quickly gone over; the newest item on the calendar (July 2018), a lecture about type localities by Karenne Snow, was announced.

Special Lecture:

Phenomenal Gemstones

Naomi Sarna and Anna Schumate

While some "phenomenal gemstones" are truly phenomenal, the term here refers specifically to gems that display particular optical effects that depend on the interaction with light. Anna Schumate, Club Vice-President and professional gemologist, briefly reviewed these optical phenomena. Starting with *asterism* and closely-related *chatoyancy* (or the cat's-eye effect), she demonstrated how both involve the way light strikes parallel needle-shaped inclusions or growth tubes aligned with respect to crystallographic axes. In the case of star rubies or sapphires, rutile needles lie perpendicular to the 3 a-axes, forming a 6-rayed star when cut as a cabochon. Rose quartz and very rarely, opal, also show this effect. Diopside and garnet occasionally display 4-rayed stars. Chatoyant gems show a single ray, such as cat's eye chrysoberyl (the most highly prized), and also tourmaline, emerald, aquamarine, and many others.

The "fabulous feldspars" possess a shimmering, bluish milky sheen (*adularescence*) shown by moonstone (adularia, orthoclase, and also albite), or a splash of vivid bright blues, violets, greens, and other spectral colors when viewed in certain directions (*labradorescence*), shown by labradorite, oligoclase. Rainbow moonstone, which closely resembles traditional moonstone, is actually labradorite. Sunstone, a variety of oligoclase, achieves its glittery, sparkling *schiller* thanks to tiny platelets of copper (Oregon) or hematite (India, Tanzania). Closely related is the *aventurescence* of aventurine, colored a glistening green by tiny inclusions of fuchsite (Cr-muscovite).

Some gemstones change color depending on the light source. For example, alexandrite is purple red in incandescent light and green in fluorescent light or daylight. Some garnets and spinels also show a similar color change. Iridescent gems flash the spectral colors as the

viewing angle changes. These rainbow colors are the result of layered structures that cause interference or diffraction of light. A familiar example is an oil slick. Iridescence is seen in pearls, fire agate, iris agate, rainbow obsidian, and in thin fractures within transparent crystals. Precious opals and ammolites generate a striking play of colors as the gem moves.

Naomi Sarna, an award-winning gemstone sculptor and jewelry artist, rounded out the evening with a display of her personal collection of phenomenal gems, among which were some spectacular Ethiopian and Australian opals, and also Mexican fire opal, Oregon sunstone, star rose quartz, and several color-change garnets. She also compared and contrasted the carving qualities of various gem materials.

Members in the News

- ◆ **Pablo Hoffman** appeared on the TV show *The People's Court* on June 7, 2007.
- ◆ **Dr Eric Scerri** went on a long European lecture trip, taking in France, Malta, Italy and the UK during the summer of 2017. At the Royal Institution in London he lectured about the periodic table as he did for us last year.
- ◆ Congratulations to **Paul and Jeannine Speranza** who have reported the arrival of a future member, their grandson Jonathan, on June 13, 2017.

Long-time member **Vesta Sue Rhodes** has continued her personal tradition of being the first member to make a reservation for the annual banquet (as well as pay her 2018 dues)!

Welcome New Members!

Evan & Lev Bassett. Redding, CT

AFMS Article Contest Results

Category: Advanced Articles

3rd Place Trophy

- ◆ *An Appetite for Apatite* by Vivien Gornitz (April 2016)

7th Place Award

- ◆ *Turquoise Trails* by Vivien Gornitz (February 2016)

8th Place Award

- ◆ *Determining Gemstone Country of Origin* by Anna Schumate (Oct 2016)

10th Place Award

- ◆ *Mars Update* by Vivien Gornitz (May thru September 2016)

Category: Regular Articles

10th Place Award

- ◆ *Uncovering the Kashmiri Mystique* by D. Jarrett (April 2016)

The World of Minerals

The *World of Minerals* is a monthly column written by Dr. Vivien Gornitz on timely and interesting topics related to geology, gemology, mineralogy, mineral history, etc.

Vivien is on a summer break – back next month!

Scientists Have Used Solar Energy to Turn Salt Water into Fresh Water

By Jonathan O'Callaghan

Scientists have found a way to get fresh water from salt water using just solar energy. This could be a major breakthrough in desalination techniques.



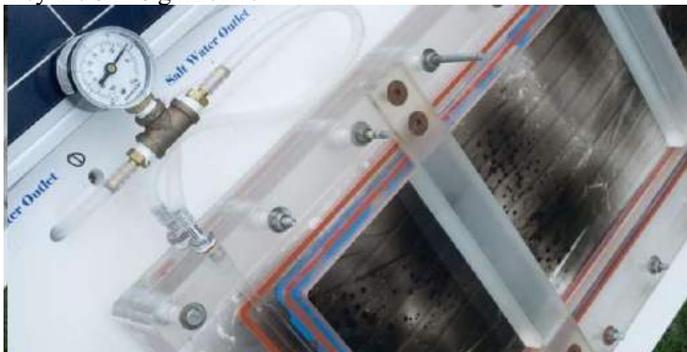
Currently, salt is removed from water using expensive and power-hungry desalination plants, of which there are 18,000 in 150 countries. This essentially boils salt water, with the steam then being captured and condensed to produce water. A huge amount of heat is needed to boil the water, though – half the cost of a plant comes from the energy requirements.

So this new research, published in Proceedings of the National Academy of Sciences, could be a game changer. It was led by the Center for Nanotechnology Enabled Water Treatment (NEWT) at Rice University in Texas.

“Direct solar desalination could be a game changer for some of the estimated 1 billion people who lack access to clean drinking water,” said Rice scientist and water treatment expert Qilin Li, a corresponding author on the study, in a statement.

“This off-grid technology is capable of providing sufficient clean water for family use in a compact footprint, and it can be scaled up to provide water for larger communities.”

Their technique involves something called membrane distillation. Hot salt water flows along one side of a porous membrane, and cold freshwater flows along the other. The result is that water vapor is drawn from the hot to the cold side. But while the energy costs are less, the continuous use of heat means they are still significant.



NEWT's direct solar desalination technology. Jeff Fitlow/Rice University



NEWT's technology, however, is much more effective. It uses engineered nanoparticles, which can convert sunlight into the heat. Adding these to the membrane means that it heats up by itself, so large amounts of energy are not needed to turn the water hot. It's called “nanophotonics-enabled solar membrane distillation” technology, or NESMD.

In a proof of concept experiment, the team used an NESMD chamber measuring the size of three postage stamps, and a few millimeters thick. They managed to get a water production rate of about 6 liters (1.3 gallons) per meter squared per hour from their set-up.

The eventual idea is that people could order panels based on this technology. The number needed would depend on their daily water demands.

“Depending on the water production rate you need, you could calculate how much membrane area you would need,” said Li. “For example, if you need 20 liters per hour, and the panels produce 6 liters per hour per square meter, you would order a little over 3 square meters of panels.”

Source: IFLScience.com from June 22, 2017

NYMC Songbook in Preparation for 2018

By Mitch Portnoy

In June 2016, for the Club's Annual Benefit Auction, I wrote some new lyrics to “Comedy Tonight” (becoming “Minerals Tonight!”) and have continued doing this for virtually every meeting and Club activity afterwards.

This special publication, “The NYMC Songbook,” is a compilation of all these song rewrites used through April 2018.

As of today, the full-color, 32-page booklet contains 22 meeting and event song lyrics. Each booklet will contain a specially-designed and unique centerfold poster.

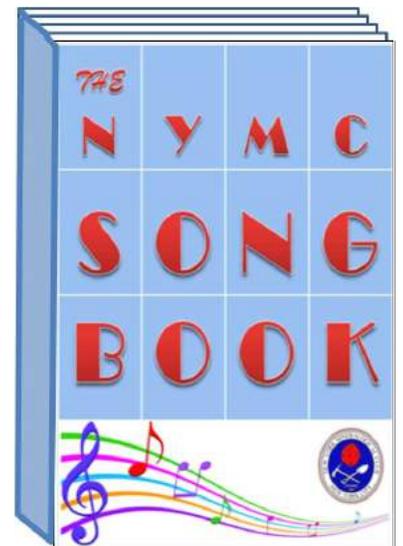
The accompanying CD-ROM will contain each song's PowerPoint presentation that I used at each meeting, as well as the actual music for each song.

It will also contain an interactive, digital version of the paper booklet that will allow you to click on an icon for each song that will play the presentation and music automatically.

How this booklet and CD-ROM will be priced or distributed is still being decided. They will first be available in early 2018, perhaps debuting at the March NYC Gem & Mineral Show.

I intend to submit this booklet to the AFMS for judging in the “Special Publications” contest in 2019.

As always, comments and suggestions are welcome.



Some of the Earth's Original Crust Survives in Northern Canada

By Stephen Luntz



Jonathan O'Neil and Don Francis walk across nearly 3-billion-year-old rocks carrying samples formed from recycled material that dates from the very beginnings of the Earth's crust. Alexander Jean

The world has changed a lot in the almost 4.6 billion years since it formed. The vast majority of the crust that existed at that time has been swept into the mantle, losing all traces of its original composition. However, in northern Quebec, geologists have found traces of what they believe is original continental crust, dating back at least 4.2 billion years.

Australia, Canada, and Greenland have a bit of a competition going on for the world's oldest rocks. Other continents formed substantially more recently. Crystals known as zircons found in the Jack Hills of Western Australia date back 4.4 billion years, based on the decay of radioactive isotopes trapped inside.

These, however, are almost microscopic. In Science, University of Ottawa's Dr Jonathan O'Neil and Dr Richard Carlson of the Carnegie Institution report that parts of Canada, known as the Hudson Bay terrane, are composed of recycled, but much larger, rocks of similar age.



These old rocks in Nunavik, northern Quebec, look quite pretty with water and hardy plants on top. Alexandre Jean

O'Neil and Carlson examined granite rocks aged 2.8 to 2.5 billion years old – impressive dates, but still long after the Earth's first dramatic years. However, the authors found that these rocks have a shortage of the isotope neodymium-142.

Neodymium-142 is a product of radioactive samarium-146, which gives up an alpha particle to form the metal O'Neil and Carlson sought. Samarium-146 has a half-life of 103 million

years. Almost all of the small amount that the Earth started with had gone within the first 400 million years, leaving a legacy of Nd-142 behind. Rocks that formed after this time have consistent amounts of Nd-142, compared to its heavier sibling Nd-144.

On the other hand, rocks formed while there was still appreciable amounts of Sm-146 on Earth should have variable Nd-142:Nd-144 ratios depending on whether their origins are with rocks that incorporated or excluded samarium.

The authors argue that the low ratios of Nd-142 to Nd-144 seen in these samples could only have been produced during the Hadean era, the Earth's first geological period that ended 4 billion years ago. More than a billion years later, these rocks were melted and reformed as the granitoids we see today, but they held onto their original heavy metal composition.

Non-geologists might consider anything that has been remelted to not represent the original crustal material, but to geologists what matters is the elemental composition, which hasn't changed.

Such ancient rocks are only a small part of the Hudson terrane, most of which first emerged from the mantle less than 4 billion years ago.

Much of the information the original rocks might have conveyed to us has been lost in the recycling process, but in a video O'Neil said: "We can piece the puzzle together to try to understand how the oldest continents and the nucleus of our continents formed."



In the right place, you can reach out and touch the origins of the Earth. Rick Carlson

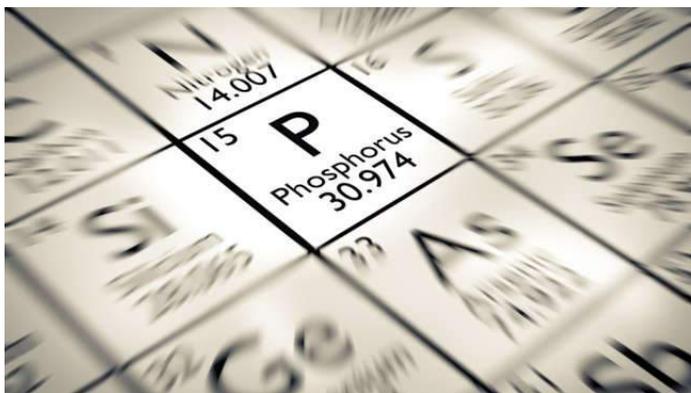
Source: IFLScience.com from March 16, 2017

Phosphorus is Vital for Life on Earth – And We're Running Low

By Vera Thoss

Phosphorus is an essential element which is contained in many cellular compounds, such as DNA and the energy carrier ATP. All life needs phosphorus and agricultural yields are improved when phosphorus is added to growing plants and the diet of livestock. Consequently, it is used globally as a fertilizer – and plays an important role in meeting the world's food requirements.

In order for us to add it, however, we first need to extract it from a concentrated form – and the supply comes almost exclusively from phosphate mines in Morocco (with far smaller quantities coming from China, the US, Jordan and South Africa). Within Morocco, most of the mines are in Western Sahara, a former Spanish colony which was annexed by Morocco in 1975.



The fact that more than 70% of the global supply comes from this single location is problematic, especially as scientists are warning that we are approaching “peak phosphorous”, the point at which demand begins to outstrip supply and intensive agriculture cannot continue to provide current yields. In the worst case scenario, mineable reserves could be exhausted within as little as 35 years.

So what is going on – and how worried should we be?



Natural Limits

In nature, phosphorus only exists bound to oxygen, which is called phosphate. It is in this form that it is mined. Chemists can remove the oxygens bound to it to get elemental white phosphorus, which glows in the dark, but it is so unstable that it spontaneously ignites on exposure to air.

Phosphate easily diffuses through soil or water and can be taken up by cells. When phosphate meets free calcium or iron, they combine to give highly insoluble salts.

In the first half of the 19th century, Justus von Liebig popularized the law of the minimum for agriculture, which states that growth is limited by the least available resource. It was soon discovered that this was often some form of phosphorus.

As a consequence, bones – comprised mostly of calcium and phosphate – from old battlefields were dug up to use in farming. Guano, large accumulations of bird droppings, also contains high concentrations of phosphorus and was used to fertilize crops. But supplies of this were soon depleted. As demand increased, supplies had to be mined instead.

But this applied inorganic phosphate fertilizer is highly mobile and leaches into watercourses. In addition, phosphate rock weathers and is also ultimately washed into the ocean where it either deposits as calcium phosphate or is taken up by marine organisms who also eventually deposit on the ocean floor

when they die. Consequently, terrestrial phosphorous doesn't really disappear, but it can move beyond our reach.

Natural Wastage

To complicate matters further, even the phosphorous we can use is largely wasted. Of the phosphorus mined as fertilizer, only a fifth reaches the food we eat. Some leaches away and some is bound to calcium and iron in the soil. Some plant roots have the ability to extract the latter, but not in large enough quantities to retrieve all of it.

In addition to these inorganic forms, phosphate is also converted into cellular compounds, creating organically-bound phosphorus, such as phospholipids or phytate. After the death of an organism, these organic phosphorus compounds need to be returned into the useable phosphate form. How much organically-bound phosphorus is present in soils depends on the number and activity of the organisms that can do this.



Phosphorous boosts crop yields.

Agricultural soils are usually rich in inorganic phosphorous while in undisturbed ecosystems, such as forests and long-term pastures, organically-bound phosphorus dominates. But agricultural land is often depleted of phosphorus during harvest and land management practices such as ploughing, hence the addition of phosphate-containing fertilizers.

Spreading manure and avoiding tillage are ways of increasing microbial abundance in the soil – and so keeping more phosphorus in an organically-bound form.

The risks of peak phosphorus can be countered with some simple solutions. Eating less meat is a start as huge amounts are used to rear livestock for meat. The chances are that agricultural yields are limited by phosphorus availability and will be further stretched as the global population grows.

Humans are themselves wasteful of phosphorous, as most of what we take in goes straight out again. Fortunately, technologies have been developed to mine phosphorus from sewage, but at present are too expensive to be practical.

Peak phosphorus does not mean that phosphorus will disappear, rather that the reserves with mineable high concentrations are depleting. Instead, we are increasing the background concentrations of phosphorus and adding it to the ocean floor. More sustainable phosphorus use requires a greater appreciation and understanding of the many organisms that make up soils – and the part they play in phosphorus distribution – or we may no longer be able to feed the world at an affordable price.

Source: www.iflscience.com from March 16, 2017

Another Massive Diamond Discovered in Sierra Leone

FREETOWN, Sierra Leone — A pastor in Sierra Leone has discovered the largest uncut diamond found in more than four decades in this West African country and has turned it over to the government, saying he hopes it helps to boost recent development in his impoverished nation.



A 706-carat diamond is pictured on March 16, 2017 in Freetown, Sierra Leone. (Saidu Bahsaidu Bah/Getty Images)

Pastor Emmanuel Momoh found the 706-carat alluvial diamond in Yakadu village in Sierra Leone's diamond-rich east, and it was presented to President Ernest Bai Koroma on Wednesday, said presidential spokesman Abdulai Bayraytay.

The gem, a bit smaller than a hockey puck, is the second largest diamond found in Sierra Leone. In 1972, the 968.9-carat Star of Sierra Leone was found by miners and sold for about \$2.5 million.

Momoh told The Associated Press that he turned in the diamond because he was touched by the development being undertaken in Kono District, where the gem was found. He cited road construction and improvements to electricity after almost 30 years of blackouts.

"I believe the government can do more, especially at a time when the country is undergoing some economic challenges," he said.

Sierra Leone's diamond wealth fueled a decade-long civil war that ended in 2002. Despite its mineral wealth, the country remains one of the poorest in the world.

It was not immediately clear how the pastor came across the diamond.

The president expressed appreciation that there was no attempt to smuggle the gem out of the country, and encouraged others to emulate the pastor's example. He promised the diamond would be sold to the highest bidder and whatever is due to the owner and government would be distributed accordingly.

"A gift from God, and it will be a terrible thing if anyone tries to do something criminal with it," the president said.

Spokesman Bayraytay said the diamond has not yet been valued and has been placed in the Bank of Sierra Leone.

The president has given "clear instruction to the Ministry of Mines that the evaluation, sale and distribution of the proceeds must be done in the most transparent manner," he said.

Source: the Associated Press from March 16, 2017

Rock Stars: Mined Masterpieces

By CBS News

Crystals like amethyst are the ROCK STARS of mineralogy—and one collector's particular obsession Tracy Smith shows us the goods:

Seattle, Washington wears its natural beauty out in the open. But the views can be just as stunning indoors if you know where to look.

In a neighborhood not far from the city, there's a warehouse that looks like Mother Nature's private museum. For security reasons we can't reveal the location, for inside are giant crystals, some the size of a compact car. Perfect formations, in brilliant white or clear as glacial ice.

Smith said, "When I think of crystals, I think of those little, dainty things that people wear around their necks."

"This is not one of those," laughed collector Richard Berger, who found one 7,000-lb. specimen in Namibia.



Richard Berger shows Tracy Smith a crystal the size of a small car.

Berger has spent his adult life – and, he says, most of his money – chasing the biggest, most perfect specimens he could find.

And he's especially proud of concretions: great swirling masses of rock from Fontainebleau, France, formed into fantastical shapes when ancient hot springs suddenly cooled – as if liquid was suddenly frozen.



A sand concretion "crystal" from Fontainebleau, France.

"It went from water to rock in minutes," said Berger.

And what might be more amazing is how Berger's rocks have transformed him.

In 1968, he was a Philadelphia medical student on a road trip across America when he happened across a tiny shack in Wyoming with crystals for sale. “And I saw this little piece, and it’s the most beautiful thing I’d ever seen, right? And I was completely enchanted by it.”

So enchanted, in fact, that he dropped out of medical school and basically roamed the Earth buying the biggest and most startling things ever dug up.

One – that is actually the fossilized bottom of a tropical lake – is imprinted with ancient fish around a palm frond, dug up in what is now Wyoming. “This is a photographic memory of life on planet Earth 52 million years ago,” he said.

And another quartz crystal formation looks like it came straight off a “Superman” movie set.

“This is from Krypton, also known as Arkansas,” Berger said.



Richard Berger has spent his life amassing a monumental collection of crystals, some the size of a car.

Some believe that just handling a crystal can have a healing effect, and they have long been symbols of power. Just look at the crowns used in British coronations.

“And what’s on their head?” said Berger. “Mostly diamonds, rubies, sapphires, emeralds, crystals that have been cut into a variety of shapes, and made into a hat.”

He’s never owned a crown, but by 1977 Berger had collected enough crystals to open a store in his native New York City.

Miriam Dyak and her girlfriend were customers one day in 1982. “He thought my friend was cute; he didn’t really notice me,” Miriam said.

“Paid no attention to her whatsoever,” Richard said. “I made up for it, though!”

Long story short, they married in 1985. And as their relationship grew, so did Richard’s collection.

“Are there times, Miriam, where you have to say to Richard, ‘Enough is enough?’” Smith asked.

“Oh, I’ve tried! I don’t think I’m very effective at that,” Miriam replied.

To which Richard added, “I say that’s an understatement.”

They’ve managed to make a living selling a piece here and there, but most of their money has gone back into this collection – which they say has now become too expensive for them to keep.

“I mean, yes, we need to sell it, ‘cause otherwise we’d have nothing,” Miriam said.

Richard said, “This represents a very, very significant investment. But that doesn’t mean that we left enough for ourselves, right, to live that comfortably. So, you know, we have our 15-year-old car, and we have no stock portfolio, and we don’t own a house. And we live in a 315-square-foot apartment.”

“Yeah, the crystals get 6,000 square feet,” Miriam said.

“Right, and we are sitting on the greatest collection of giant crystals in the world.”



A specimen from Richard Berger’s collection.

They’re hoping to sell it all to someone who will keep the collection intact, and build a museum around it. Berger won’t quote a price, except to say it’s in the multi-millions.

They’ve had offers, but only for individual pieces, like the Wyoming lake bottom.

“We had somebody, six months ago, who wanted to put it in the lobby of a new Sheraton they were building,” Berger said.

And you said? “No. With five cents in the bank, I said no to selling that, right? Because we’re trying to hold the integrity of this collection together. And we don’t want to sell off iconic pieces. At a certain point, if that becomes improbable to sustain, then you go, ‘All right, enough of this.’”

But not yet.

After all, they’re not just rocks: To Berger, they’re the foundation of a dream he wants to share with the world.

“It’s a way of inspiring people, right?” he said. “It’s about inspiration. I think what the world needs right now more than just about anything is inspiration.”

Source: www.cbsnews.com from March 27, 2017

Note: I acted as a consultant to the technical staff for this television segment. – Mitch



Notes From the President: The EFMLS & Technology

By Dave Korzendorfer, EFMLS President

In late February we had a conference call on how EFMLS uses technology and how we can use technology to make our organization more efficient and achieve better awareness among our membership and the public. The following areas were discussed by the group.

Email Communications – The target audience for our email efforts is EFMLS officers and volunteers, clubs, and club officers and volunteers. Email is becoming the preferred method of communication for a lot of EFMLS business. EFMLS collects email information from clubs for their officers for the Directory, but this information is prone to error and frequent change. The accuracy and ongoing changes hinder our ability to use email to reach club officers. The group's consensus was to make a concerted effort to verify the accuracy of the email database for club officers and volunteers and organize it in a way that can be available for "authorized users" to conduct EFMLS business. The recommendation from the group was to appoint a Director of Email to assume responsibility for maintaining the email database, make that database available via the cloud, and include sufficient fields that the database can be sorted for use as needed. It was also suggested that the Regional VPs act as the liaison with clubs in their regions to initially ensure the accuracy of information from the clubs in their regions.

Social Media – Any use of social media by EFMLS is envisioned as a tool for public awareness that clubs in the region can benefit from. Publicizing upcoming club events, such as shows, via social media is becoming very effective at increasing the attendance at shows. It was proposed that EFMLS create policies and procedures for information that is posted from our organization. If the Federation adopts the use of social media, a small group or committee to oversee the posting of information would be required due to the time-sensitive nature of that information. Facebook was discussed as the most likely social media outlet to pursue for the Federation. It was suggested that we contact the other Federations to see what they may be currently doing in the area of social media.

Website – The target audience for the website is both internal and the public. The website is a relatively static source of information, but one that is very important to the Federation as a source of information by a broad audience. The discussion by the group concerning the website was brief, but centered on the flow of information that gets posted to the website, and how we ensure that the information on the website is consistent with the information posted in other EFMLS documents and sources of information.

We can all help with the flow of information by sending information to the webmaster. In fact, I was reminded that there is currently no information about the upcoming 2017 EFMLS Convention which is being held by my own club in Bristol, CT. That was an embarrassing moment and an oversight I intend to correct as soon as I'm done with this note. The point of all this blabbering about technology is that we are trying to put some additional resources in place that we can all use to further the

goals and needs of the organization. We are a diverse group of clubs with common interests, but we can all work together to make EFMLS a better organization. Please think about some of these issues, give us your ideas and suggestions, and consider volunteering to help. Start making a difference!

Source: EFMLS News –April 2017

Graphene Sieve Makes Seawater Drinkable

By Anthony Cuthbertson

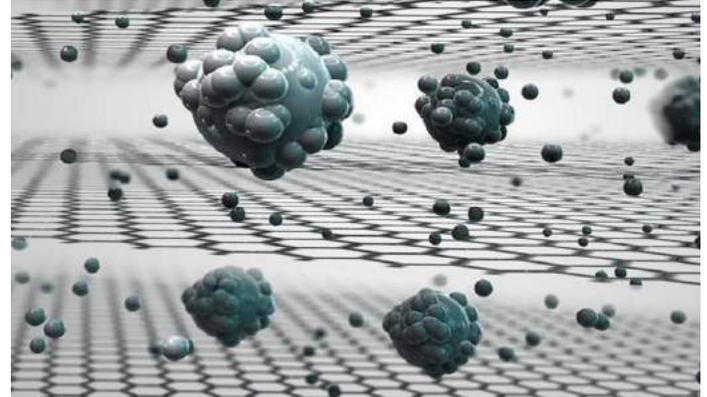
Scientists have created a sieve capable of removing salt from seawater using the "wonder material" graphene.

Researchers at the University of Manchester developed a graphene membrane to desalinate water and make it drinkable, offering the promise of easy and accessible potable water for millions of people around the world.

A study published in the journal *Nature Nanotechnology* describes how the filtration system works by precisely controlling the membrane's pore size to sieve common salts out of salty water.

"Realization of scalable membranes with uniform pore size down to atomic scale is a significant step forward and will open new possibilities for improving the efficiency of desalination technology," said Professor Rahul Nair.

"This is the first clear-cut experiment in this regime. We also demonstrate that there are realistic possibilities to scale up the described approach and mass produce graphene-based membranes with required sieve sizes."



A graphene-based membrane could be used in countries that do not have the financial infrastructure to fund large desalination plants. University of Manchester

Graphene, first created in a laboratory by researchers at the University of Manchester in 2004, consists of carbon atoms in a honeycomb lattice that is 200-times stronger than steel, more conductive than copper and as flexible as rubber.

The remarkable properties of the one-atom thick material mean it has been heralded for its vast potential and widely described as a "wonder material."

Potential applications include indoor solar cells, carbon-reinforced silk and "tattoos" capable of testing and treating diabetes.

"For many years, people have been looking for graphene applications that will make it into mainstream use," Professor Ravi Silva, a graphene researcher at the University of Surrey in the U.K., told *Newsweek* in an interview last year. "We are finally now getting to the point where these applications are going to happen."

Source: Newsweek from April 4, 2017

Topics in Gemology

Topics in Gemology is a monthly column written by Diana Jarrett, GG, RMV, based on gemological questions posed to her over the years by beginners and experts alike. Contact her at diana@dianajarrett.com.



Putting Words to Work

“Good words are worth much and cost little,” said 17th century British poet George Herbert. That may be true. Because, despite their little cost, the payoff can be enormous.”

In the diamond business we are selling diamonds of course. But in tandem with that, we are really selling an object of our affection—a visible touchstone as it were to the intangible emotion of love between couples. So to market these objects of desire, some laconic message needed conveyance to cement the concept that diamonds and love are essential running mates.

What may arguably be the most concise marketing phrase ever to have emerged from Madison Avenue in the 20th century was “A Diamond is Forever”. Four words hold all the emotion of the permanence of love and the unbreakable bond between lovers that could ever be expressed. Standing the test of time, and penetrating the American psyche, this phrase is immediately understood as conveying the very essence of a diamond’s importance.

The history of the slogan’s creation is rich with import for all who want to replicate its punch to a new generation of diamond consumers.



The story goes that in a singular moment of genius a young N.W. Ayer copywriter, one **Frances Gerety** (pictured here) labored past exhaustion deep into the night struggling for a suitable phrase to encapsulate the worth of a diamond. The client De Beers had been unsuccessful in creating the perfect slogan for their products. In a state of despair, Gerety flung her head on the table uttering a weary prayer for divine help. Before she left the table, she scribbled a diamond is forever on a scrap of paper. It’s said that more than 90% of American’s today still recognize that inspired slogan.

I would hazard a guess that the celebrated slogan’s creator knew little to nothing about the molecular structure of diamonds—maybe she didn’t even know they are created from a single mineral, carbon. Did someone spill the beans to her that diamonds are the hardest known substance to man? That remains a mystery. Still this marketing slogan has stuck in the collective culture’s mind for over 7 decades. More than a lifetime has passed since that no famous phrase was penned. But it’s lost none of its luster. The message distilled the emotional connection between a diamond engagement ring and a couple.



The slogan a diamond is forever has appeared on every De Beers ad since 1948. Incidentally, according to Gerety her divine revelation of a slogan did not have the effect one might have imagined when she presented her idea at the next days’ meeting. “Nobody jumped,” she said.

Advertising Age called this memorable phrase, the “Slogan of the Century” in 1999. And last year De Beers gave a refresh and reboot to the slogan as part of its Forevermark diamond campaign. The catchy slogan still has place of pride of De Beers website, centered strategically on its home page. The universality of the phrase is responsible for its longevity. Beyond that, the slogan drives an aspirational message for the couple. Their love should also last forever.

The take-away on this story is certainly relevant for jewelers. It’s not always better to say more. You may be facing the creation of your own company slogan—or perhaps one for a new line you are about to launch. The secret was certainly not with high-sounding expressions or even with many words. Three words did it for De Beers. What it did accomplish was abundantly clear. When it comes to marketing, especially diamonds, we are selling a heartfelt bond.

The Seven Deadly Sins of Statistical Misinterpretation, and How to Avoid Them

By Winnifred Louis & Cassandra Chapman

Statistics is a useful tool for understanding the patterns in the world around us. But our intuition often lets us down when it comes to interpreting those patterns. In this series we look at some of the common mistakes we make and how to avoid them when thinking about statistics, probability and risk.

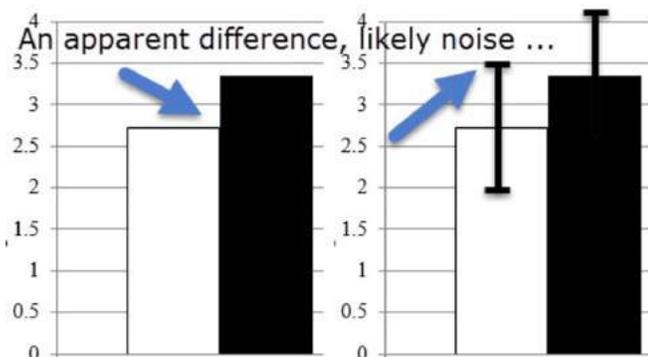


1. Assuming small differences are meaningful

Many of the daily fluctuations in the stock market represent chance rather than anything meaningful. Differences in polls when one party is ahead by a point or two are often just statistical noise.

You can avoid drawing faulty conclusions about the causes of such fluctuations by demanding to see the “margin of error” relating to the numbers.

If the difference is smaller than the margin of error, there is likely no meaningful difference, and the variation is probably just down to random fluctuations.



Error bars illustrate the degree of uncertainty in a score. When such margins of error overlap, the difference is likely to be due to statistical noise.

2. Equating statistical significance with real-world significance

We often hear generalisations about how two groups differ in some way, such as that women are more nurturing while men are physically stronger.

These differences often draw on stereotypes and folk wisdom but often ignore the similarities in people between the two groups, and the variation in people within the groups.

If you pick two men at random, there is likely to be quite a lot of difference in their physical strength. And if you pick one man and one woman, they may end up being very similar in terms of nurturing, or the man may be more nurturing than the woman.

You can avoid this error by asking for the “effect size” of the differences between groups. This is a measure of how much the average of one group differs from the average of another.

If the effect size is small, then the two groups are very similar. Even if the effect size is large, the two groups will still likely have

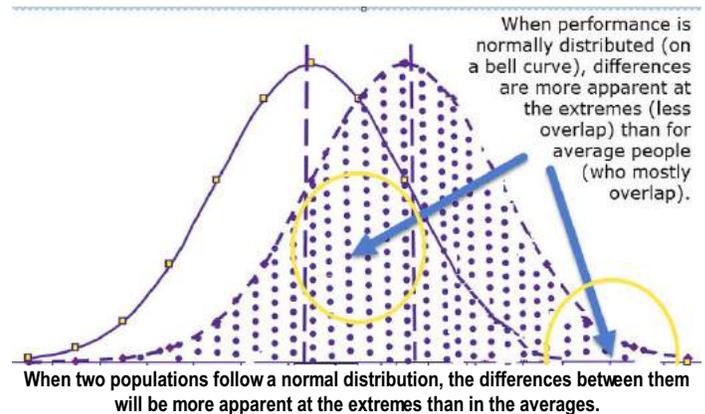
a great deal of variation within them, so not all members of one group will be different from all members of another group.

3. Neglecting to look at extremes

The flipside of effect size is relevant when the thing that you’re focusing on follows a “normal distribution” (sometimes called a “bell curve”). This is where most people are near the average score and only a tiny group is well above or well below average.

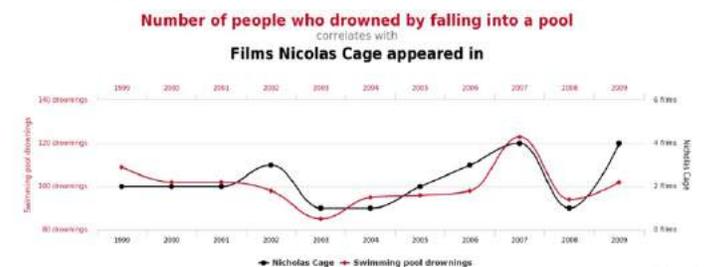
When that happens, a small change in performance for the group produces a difference that means nothing for the average person (see point 2) but that changes the character of the extremes more radically.

Avoid this error by reflecting on whether you’re dealing with extremes or not. When you’re dealing with average people, small group differences often don’t matter. When you care a lot about the extremes, small group differences can matter heaps.



4. Trusting coincidence

Did you know there’s a correlation between the number of people who drowned each year in the United States by falling into a swimming pool and number of films Nicholas Cage appeared in?



If you look hard enough you can find interesting patterns and correlations that are merely due to coincidence.

Just because two things happen to change at the same time, or in similar patterns, does not mean they are related.

Avoid this error by asking how reliable the observed association is. Is it a one-off, or has it happened multiple times? Can future associations be predicted? If you have seen it only once, then it is likely to be due to random chance.

5. Getting causation backwards

When two things are correlated – say, unemployment and mental health issues – it might be tempting to see an “obvious” causal path – say that mental health problems lead to unemployment.

But sometimes the causal path goes in the other direction, such as unemployment causing mental health issues.

You can avoid this error by remembering to think about reverse causality when you see an association. Could the influence go in the other direction? Or could it go both ways, creating a feedback loop?

6. Forgetting to consider outside causes

People often fail to evaluate possible “third factors”, or outside causes, that may create an association between two things because both are actually outcomes of the third factor.

For example, there might be an association between eating at restaurants and better cardiovascular health. That might lead you to believe there is a causal connection between the two.

However, it might turn out that those who can afford to eat at restaurants regularly are in a high socioeconomic bracket, and can also afford better health care, and it’s the health care that affords better cardiovascular health.

You can avoid this error by remembering to think about third factors when you see a correlation. If you’re following up on one thing as a possible cause, ask yourself what, in turn, causes that thing? Could that third factor cause both observed outcomes?

7. Deceptive graphs

A lot of mischief occurs in the scaling and labeling of the vertical axis on graphs. The labels should show the full meaningful range of whatever you’re looking at.

But sometimes the graph maker chooses a narrower range to make a small difference or association look more impactful. On a scale from 0 to 100, two columns might look the same height. But if you graph the same data only showing from 52.5 to 56.5, they might look drastically different.

You can avoid this error by taking care to note graph’s labels along the axes. Be especially skeptical of unlabeled graphs.



Graphs can tell a story – making differences look bigger or smaller depending on scale.

Source: IFLScience.com from April 19, 2017

Japanese Researchers Plan to Drill into the Earth’s Mantle

By Alfredo Carpineti

Japan is starting an expedition to reach a place no human has ever witnessed, although we stand firmly above it: the Earth’s mantle.



Japan’s Agency for Marine-Earth Science and Technology (JAMSTEC) plans to drill through 6 kilometers (3.7 miles) of oceanic crust to reach the mantle for the first time. A team of researchers from JAMSTEC will conduct a preliminary study in the waters of Hawaii in September.

“There are still issues to be resolved, particularly the cost,” Susumu Umino, a professor at Kanazawa University who specializes in petrology, told The Japan News. “However, the preliminary study will be a big step forward for this project to enter a new stage.”

The project is estimated to cost \$540 million and will be carried out by Chikyū, a flagship Japanese deep-sea drilling vessel. The researchers hope to start the mission in the early 2020s, or by 2030 at the very latest.

Two other sites are also being considered, one off the coast of Mexico and one off the coast of Costa Rica. The oceanic crust is much thinner than the continental crust, which is on average around 20 kilometers (12.4 miles).

This newly announced project is just one of many so far unsuccessful attempts at reaching the mantle, with both sea beds and lands drilled. The deepest we have ever got was the Kola Superdeep Borehole, which reached 12,262 meters (over 40,000 feet). Due to lack of funding, the project and the site were abandoned in 2008.

A mixture of high costs and limited technology has hindered previous missions, but the JAMSTEC team believe the technology is now right to bore through the crust and reach the mantle.

What we know of the Earth’s interior was learned indirectly through earthquakes. Even magma from volcanoes doesn’t provide pure samples of the mantle, as it’s all mixed up with molten crust. Drilling provides the unique chance to study the composition of the mantle as it truly is. With that, we could hopefully clarify some unclear points of plate tectonics and maybe even understand how our planet formed.

Source: IFLscience.com April 10, 2017

World’s Most Expensive Earrings Fetch \$57 Million at Sotheby’s

By Corinne Gretler

Sotheby’s set the record auction price for a pair of earrings, selling a duo of blue and pink diamond jewels for \$57 million in Geneva.

The earrings, known as the “Apollo Blue” and the “Artemis Pink,” were bought by the same buyer, who wants to remain anonymous, Sotheby’s said Wednesday. Named after ancient Greek gods, the pear-shaped earrings were estimated at \$50 million to \$68 million combined.

The buyer renamed the 14.54-carat blue diamond “The Memory of Autumn Leaves” and the 16-carat pink diamond “The Dream of Autumn Leaves.” The previous record price for earrings was set by the “Miroir de l’Amour,” two pear-shaped white diamond earrings that Christie’s sold for \$17.7 million in November.

Colored diamonds have been setting records recently. Christie’s sold the 14.62-carat “Oppenheimer Blue” for \$58 million last year, while Sotheby’s adjudicated the 59.6-carat “Pink Star” for \$71 million last month, a record auction price for any gem.

Sotheby’s raised \$151 million in the auction Tuesday, beating the total estimate of \$100 million. Two-thirds of the lots sold beat their high estimate, including a purplish-pink Piaget diamond that sold for \$13 million.

Source: Bloomberg.com from May 17, 2017



Bring an additional friend or loved one!

131st Anniversary New York Mineralogical Club Banquet

Date: October 18, 2017 [Wednesday Evening]
 Time: 6:00 p.m. - 11:00 p.m. [Social Hour & Silent Auction from 6 p.m. - 7 p.m.]
 Place: Watson Hotel (Holiday Inn Midtown), 57th Street Between Ninth & Tenth Avenues, NYC
 Cost: \$30 for Members/Guests (*Advance Payment*); \$35 for Non-Members (or *Payment at the Door*)

Gala Dinner Menu (tentative)

Salad

Choice of Entree:

chicken • salmon • beef • vegetarian

Potatoes & Vegetables

Selection of Breads & Rolls

Red & White Wine

Soft Drink Assortment

“Amethyst” Dessert Selection

Coffee & Tea

Special Guest Lecturer

Elise Ann Skalwold

“From Gemology to Mineral Physics & Back Again”



Amount			
	Please reserve _____ seat(s) for me at the banquet @ \$30.00 per member (or \$35.00 per non-member) each. I will <i>probably</i> be ordering ___ Salmon ___ Chicken ___ Beef ___ Vegetarian for my dinner entree(s).		
	Special Food Instructions (if any):		
	Special Seating Instructions (if any):		
	Also included are my 2018 New York Mineralogical Club Membership Dues (<input type="checkbox"/> \$25 Individual, <input type="checkbox"/> \$35 Family).		
	I am adding a Wine/Dessert Donation to help make the banquet an affair to remember. (Each bottle costs about \$25.)		
	I'd like to get ___ of the Drawstring Backpack(s) which features the Club. (Each backpack costs \$5.00.)		
	Please reserve _____ set(s) of the Boxed Amethyst Note Card Sets for me (Sets @ \$5.00 each include envelopes)		
	I wish to make an Additional Donation as a sponsor to help support the banquet and the NYMC.		
	← Total Included	Other Comments:	
Name(s)			
Street Address			Apt. No.
City		State	Zip
Phone		Email	

2017-18 Club Calendar

Date	Event	Location	Remarks & Information
Sunday August 27	Annual Open House (Party!!)	Patchogue, Long Island, NY: Cheryl Neary Home	RSVP REQUIRED! – Members Only!
September 13	Meeting at 6:30 pm	Watson Hotel, Manhattan	Special Lecture: Mike Hawkins – “New York Mineralogy; <i>Yesterday, Today and Tomorrow</i> ”
Third Wednesday! October 18	Annual Gala Banquet 6:00 pm - 10:00 pm	Mezzanine B & C, Watson Hotel, Manhattan	Theme: <i>Amethyst</i> ; Lecture; Silent Auction; Awards; Amethyst Game; Gifts & Surprises!
November 15	Meeting at 6:30 pm	Watson Hotel, Manhattan	Special Lecture: Alfredo Petrov – “Iris Quartz” ; Special Game
December 13	Meeting at 6:30 pm	Watson Hotel, Manhattan	Special Lecture: Alan Bronstein – “The Blue Moon Diamond” (tentative topic)
January 10, 2018	Special Meeting at 6:00 pm	Watson Hotel, Manhattan	NYMC Movie Night! – Details to follow . . .
February 14	Meeting at 6:30 pm	Watson Hotel, Manhattan	Members’ Show & Tell; Chinese Auction

2017 Show or Event Calendar

Date	Event	Location	Remarks & Information
July 29-30	Annual Mineral, Gem, Fossil & Jewelry Show	Mattituck Jr/Sr High School, Mattituck, Long Island, NY	Organized by the Long Island Mineral & Geology Society
Saturday August 5	22 nd Gem, Mineral & Fossil Sale	Morris Museum, Morristown, NJ	Sponsored by the Morris Museum Mineralogical Society.
August 11-13	East Coast Gem, Mineral & Fossil Show	West Springfield, Massachusetts	Over 200 dealers, huge show, exhibits, relatively easy train or bus access
September 16-17	Annual Show & Sale	Gold’s Gym, Poughkeepsie, New York	Sponsor: Mid-Hudson Valley Gem & Mineral Society; Show Theme - Garnet
September 23-24	Franklin-Sterling Hill Mineral, Gem, and Jewelry Show	Littell Community Center, Franklin, New Jersey	Organized by the Franklin-Ogdensburg Mineralogical Society and the Franklin Mineral Museum
October 7	2017 Autumn Mineralfest	Macungie Memorial Park, Macungie, Pennsylvania	8:30 AM to 3:00 PM; Sponsor: Pennsylvania Earth Sciences Association (PESA)
October 20-22	EFMLS Convention & Show	Bristol, Connecticut	Article Contest Results; Details to follow . . .
October 21	Mineral Symposium	Peabody Museum of Natural History, Yale, New Haven, CT	Full day of programs and lectures; several receptions, great mineral collection
November 4-5	29th Annual Gem, Mineral, Jewelry & Fossil Show	Eastern Greenwich Civic Center, Greenwich, Connecticut	Organized by the Stamford Mineralogical Society
November 11-12	Fall NYC Gem, Mineral, Jewelry & Fossil Show	Grand Ballroom, Watson Hotel (Holiday Inn), New York City	25+ diverse dealers; lectures; wholesale section (with credentials); NYMC Booth

**For more extensive national and regional show information check online:
AFMS Website: <http://www.amfed.org> and/or the EFMLS Website: <http://www.amfed.org/efmls>**



