The BULLETIN

OF THE NEW YORK MINERALOGICAL CLUB, INC

Volume 131 No. 7
July 2017

Montana Sapphires
See page 9!

NAOMI SARNA & ANNA SCHUMATE

208 HUMAN ELEMENTS

BANQUET 2017

TIME CRYSTALS

MONTANA SAPPHIRES

ACCESSIBLE SCIENCE

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

Volume 131, No. 7 ***America's Oldest Mineral & Gem Club*** **July 2017**

July 12th Meeting:

Naomi Sarna & Anna Schumate: "Phenomenal Gemstones"

What do you think of when you hear the term "phenomenal gems"? If you consider the dictionary definition of phenomenal, you may get the impression that they are really great stones, quite exceptional by gem standards. In one respect you would be correct. However, in gemological circles, the term "phenomenal" holds a very special meaning, in that minerals or gemstones classified this way exhibit special optical characteristics–or phenomena.

This July meeting will have two parts, with **Anna Schumate** handling the "Tell" and **Naomi Sarna** doing the "Show" part of this interesting topic.

Anna, currently our Club's Vice President, is a Quality Assurance Gemologist at Gemological Institute of America. Her colorful PowerPoint presentation will cover all the major types of natural gemstone phenomena, such as asterism, chatoyancy, iridescence, etc.

Naomi, also a club member, is internationally famous for her exquisite jewelry and unique gemstone designs. She will bring in actual examples of gemstones and jewelry she created with gems exhibiting many of the optical phenomena presented by Anna.

Many of the other meeting activities will in some way relate to phenomenal gemstones. So come see and hear all about this topic at the Club's July meeting at the Watson Hotel.

Annual NYMC Benefit Auction: A Perfectly Rewarding Evening

By Mitch Portnoy

On the evening of Wednesday, June 15, 2017, the NYMC held its annual benefit auction at the Watson Hotel. The sum of $2,830 was raised as 100% of all lots found their way into the collections of members and friends.

The gems, minerals, books, lapidary arts, and jewelry available this year were of a remarkable variety and quality. This was due not only because of the now-usual generosity of the many donors over the past year but also because of the transfer of a special lifetime mineral collection to the Club. More than 20 minerals offered during the evening came from that collection alone! Examples include a Kingman Mine turquoise specimen, a Russian rhodonite, lapis from Chile and a rhodochrosite slice from Argentina.

Other highlights included several Burmese gemstone collections, a spectacular dioptase from Congo, an "antique" box of valuable rough gemstones, several meteorites from Argentina and a rare book about tanzanite.

Coincidentally, this auction also contained two of the rarest gemstones of the world: a grandidierite (!!) and a painite! Frankly, it was the first time I ver held either of those gemstones.

Once again, we projected the catalog on one screen at the front of the room while the wonderful Auction Management System, into which Diane Beckman was recording who won what and for how much, was projected on a second screen.

At the end of the auction Diane was able to instantly print 100% accurate summary bills for everyone, facilitating the payment procedures. This is a very complicated process to implement, with a lot of wires and the transporting and installation of many machines, but it was worth it.

We also moved the payment tables to the side of the room, rather than in the front as we did last year, completely eliminating congestion as we packed up.

Back home, I am able to generate detailed reports that allow quick analysis. These reports will help us improve the auction in the future for all members.

Prices realized for this auction can be found on page 8 in this bulletin. A summary report is also at the bottom of the page with some interesting details.

This annual auction is the Club's primary fund raiser and pays for much of the annual expenses which seem to be ever-increasing. Our dues alone simply do not cover the full operating costs.

I want to thank all members who participated in the auction and bid so generously. You all got some great things!

I also want to thank all the donors an dealers who gave us so many wonderful minerals, gems, carvings, jewelry, books, etc., for this year's auction.

An lastly, I want to thank the team of volunteers who worked so tirelessly to make this auction such a noted success!

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President's Message

By Mitch Portnoy

Return of the August NYMC Bulletin!

Starting in 1996, as requested by the Club's Directors at that time, I started publishing the Bulletin twelve times a year, abandoning the artificial academic 10-month schedule that the Club had followed for many decades.

In 2002, in order to save some money, we decided to combine the July and August Bulletins into one issue for the entire summer. Remember, at that time all members got their bulletins only through the regular mail. This saved us many hundreds of dollars in copying and mailing costs.

Well, times have changed and things are better for us financially. In addition, the vast majority of members now receive their bulletins electronically, at no distribution costs to the Club.

If you look above at this page's header, it no longer says "July/August"! That's because, starting next month, we will once again publish a separate August Bulletin, and you will receive twelve bulletins in 2017.

Good news, right?

Club Planning Theme: *Leveling Up!*

I will be holding the Club's Annual Planning Meeting in July. Attendance will include the Club's officers and directors as well as a few invited members who have shown an enthusiasm and willingness to contribute to the Club.

Although the agenda for this meeting that I have prepared has 17 topics overall, the bulk of the time will be spent planning the 2017 Annual Banquet; the theme this year is "amethyst". (You will receive LOTS more information and details about this event in the upcoming months, believe me!)

However, the overall thrust for this meeting will be "leveling up".

By this I mean, that given the Club's healthy financial position, immense membership (the largest ever?), and enthusiastic participation rate in all activities, we can do even more or simply enhance what we are already successfully doing.

The "extra" August Bulletin announced above is but one example, already implemented; many October banquet surprises are in the works.

Additional ideas and suggestions are, as always, most welcome.

Club Meeting Minutes for June 14, 2017

By Vivien Gornitz, *Secretary*

Attendance: 50

Location: Mezzanine C

President Mitch Portnoy presided and served as auctioneer

Auction Registration: Anna Schumate

Auction Recording: Diane Beckman and Richard Rossi

Auction Lot Distribution: Mark Kucera

Announcements:

After a few brief announcements about upcoming club meetings and events, an a reprise of the "Minerals Tonight" song that was played at last year's auction, the 2017 auction began at about 6:15 pm.

Special Event:
Annual Benefit Auction
See page 1 for 2017 auction review and page 8 for prices realized.

Welcome New Members!

Roland Mansour . . . . . Brooklyn, NY

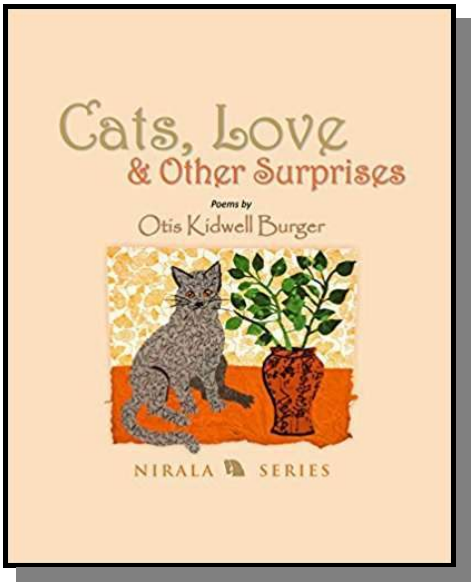
And Welcome Back to:

Kacper Szarejko . . . . . St. Louis, MO

Coming Next Month!

Members in the News

Cats, Love & Other Surprises is an astonishing book of poems by 93-year old **Otis Kidwell Burger**, of New York City. Both a poet and a sculptor, Otis delights in the company of her cats in verse both whimsical and lyrical. Other poems reflect on a long life divided between New York City and a country cabin in the New England woods; these explore family memories, the vagaries of love, and the natural world, to which she is connected by both scientific curiosity (she was a zoology major at Cornell College) and philosophical questioning.



The poems traverse territories from the quotidian to the metaphysical; from rejoicing in the return of a lost cat "sitting on my lap purring/and stitching us together again/with her tiny, needle-sharp claws" to imagining a prehistoric woman artist sitting on the floor of her cave, "whittling a bit of mammoth bone. /I don't know yet if it will be/A horse or a bison. Prey. Food. Perhaps a charm for the hunter./Or perhaps a cave bear, immense, terrible./Death itself, but made small and manageable. A protection." Solemn, yet also witty and accessible, these are American poems of great strength and a quirky animistic sensibility. They are also poignant. Musing on her unmatched "bachelor" socks, the poet imagines their lost, significant others and why they stepped out, never to return. In another poem, she mourns that "the darkness falls/And tucks us in our homes/No more telephones/No more visiting/No more conversations/No more sleepwalking, or I/Would be five miles away soon/And in bed with you." Delightfully illustrated by her own daughter, Katherine Burger, this is a majestic little gift from a marvelous mother/daughter team.

Otis will be bringing a small quantity of her new book of poetry for purchase (and signing!) at the July meeting!

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 soon!

Off the Coast of Southern California, a Threatening Fault Line Just Became More Dangerous

By Jessica Wapner

The odds of the earth moving beneath the feet of Southern Californians just got a lot higher. According to a newly published study, a fault line that stretches along that coast could produce earthquakes far more severe than previously suspected.

The research centered on what has long been considered two distinct geological features: the Newport-Inglewood Fault and the Rose Canyon Fault. It turns out that these two systems are actually one continuous fault. Like an underwater scar, this fault traces a jagged route from San Diego Bay to the Los Angeles Basin. It runs parallel to several highly populated regions of the state and into Tijuana, Mexico, and is never more than 4 miles from shore. And, researchers say, an earthquake emerging from this fault could reach a magnitude of 7.4 on land—enough to cause considerable damage and deaths.

The realization that it's one fault came from multiple sources of information. Seismic surveys done by oil companies decades ago and subsequently made publicly available were combined with more recent data collected by research vessels run by the Scripps Institution of Oceanography. All that information is derived from bouncing sound waves off the surface of the fault structures so that researchers can map the seafloor. This data—gathered through different means, reaching different depths and providing different levels of detail—gave the researchers an unprecedented view of the fault and its potential repercussions.

The fault has four main segments broken up by "stepovers," or breaks. Stepovers of more than 1.8 miles are usually enough to stop the flow of an earthquake, keeping a tremor confined to the segment where it started. And the shorter a fault segment, the smaller an earthquake, explains Valerie Sahakian, the study's lead author and now a geologist with the U.S. Geological Survey. Until now, the stepovers in the Newport-Inglewood/Rose Canyon (NIRC) Fault were presumed to be slightly more than 3 miles wide.

But this new analysis found that the NIRC stepovers are, at most, just over a mile wide. That means the stepovers are unlikely to create a barrier between segments of the fault. Viewed another way, the fault is much longer than once estimated. A rupture that begins in one segment can travel the length of the fault, easily shaking the entirety of this earthly architecture.

These new understandings of the fault—its singularity and short stepovers—led researchers to re-evaluate the probability of a rupture traveling along the entire line of the structure. "That scenario now appears more likely," says Sahakian. The study estimates that the scale of such an event would range from a magnitude of 6.7 to 7.3 or 7.4. The onshore damage anchors the higher end of that calculation.

Using these updated calculations, along with samples from the fault sediment now being analyzed by Sahakian's co-authors, researchers can begin unraveling the history of the fault's activity. "And the more you know about the history," says Larry Brown, a Cornell University geophysicist, "the better you can predict future events."

Sahakian notes that residents of the area may want to take note of this new, more accurate view of the NIRC fault. She cautions against assuming that living farther from Los Angeles—but within range of the San Andreas Fault—is safer, geologically speaking. "People who live in San Diego may think there isn't as great of a risk," says Sahakian. But the new study shows that those living within 4 miles of the NIRC fault are likely to experience consequences from a rupture.

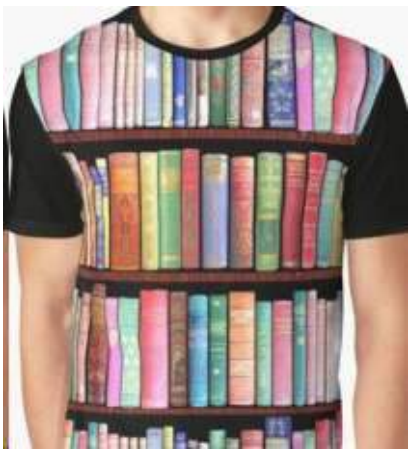
Sahakian's advice to people in the region? "Make sure your bookshelves are bolted to the wall. Always be prepared for a large earthquake."

Source: www.newsweek.com from March 9, 2017

Bookworms are Nicer, Kinder, and More Empathetic People, According to New Study

By Katy Evans

The study, carried out by Kingston University London, and presented at the British Psychological Society conference in Brighton, UK, last week, also found that those who just watched television came across as less kind and understanding of other people.



For the study, the researchers questioned 123 people on their preferences for books, TV shows, and plays. They were also quizzed about the type of entertainment they preferred, from comedy or romance to drama or factual.

Then they were tested on their interpersonal skills, with the researchers asking them about their behavior towards others, whether they considered other people's feelings or understood and respected others' points of view, and whether they actively helped other people.

Drawing on these responses, the researchers found some interesting results. They discovered that those who read more showed greater positive social behavior and a better ability to empathize with others, while those who preferred watching TV didn't show the same ability to empathize and were more likely to show antisocial behavior.

"The findings support previous evidence that exposure to fiction relates to a range of empathetic abilities," said study leader Rose Turner. However, "all forms of fiction are not equal. Associations between empathetic skills, media and genre diverge."

They found people's preferred genres were linked to their interpersonal skills and behavior, with those who preferred fiction displaying the most positive social skills. Romance and drama lovers showed the most empathetic behaviors and the ability to see others' points of view, while comedy fans were apparently able to relate to others the most.

"Engaging with fictional prose and comedy, in particular, could be key to enhancing people's empathetic abilities," Turner said.

The researchers concluded that those who read fiction regularly are more well-adapted to see things from other people's points of view, which makes them better at understanding people. However, they do acknowledge that their study didn't conclude if the effects are causal – does reading make you nicer and more empathetic, or are more empathetic people prone to reading fiction?

Further study is needed on this subject, but in the meantime, picking up a book can't hurt, and might just make the word a nicer place.

Source: IFLScience.com from May 10, 2017

These 208 Minerals Exist Due to Humans

By Mindy Weisberger

Over centuries, humans have left a widening imprint on this planet, marked by a growing need for natural resources, and by the rapid expansion of agriculture and infrastructure.

And a new study has found that one of the hallmarks of this footprint is the appearance of 208 species of minerals that exist solely due to human activity.

One Example: Simonkolleite [$Zn_5(OH)_8Cl_2 \cdot H_2O$] found on a copper mining artifact in Rowley mine, Maricopa County, Arizona. Credit: RRUFF

These minerals represent nearly 4 percent of the 5,200 mineral species recognized by the International Mineralogical Association (IMA), and most can be attributed — directly or indirectly — to mining in locations around the world, forming as a direct result of their rocky environment's uniquely human-made conditions.

Many of the minerals that were linked directly to mining formed within the mines themselves, in dumps for mining by-products or on mining-related artifacts, with some dating as far back as the Bronze Age, the study authors reported. And other minerals emerged naturally but from human-made objects: bronze artifacts in Egypt, tin artifacts in Canada, and lead artifacts in a Tunisian shipwreck.

Earth's history is marked in periods of time known as epochs, which are defined by notable changes in the geologic record. The current epoch, the Holocene, launched about 12,000 to 11,500 years ago, after the end of the Paleolithic Ice Age, but geologists have proposed the introduction of a new epoch called the Anthropocene to characterize a recent period in Earth's history, dating back about two centuries ago.

The Anthropocene indicates the first appearance of evidence for people shaping permanent geologic changes, such as the large-scale removal of rock and sediment, the widespread redistribution of gemstones and mineral specimens, and the global appearance of novel minerals associated with human activity.

According to the new study, the catalog of 208 minerals that exist solely due to human activity represent a clear dividing point in Earth's history — before human activity and after. This impact is expected to last "far into the future," the study authors wrote.

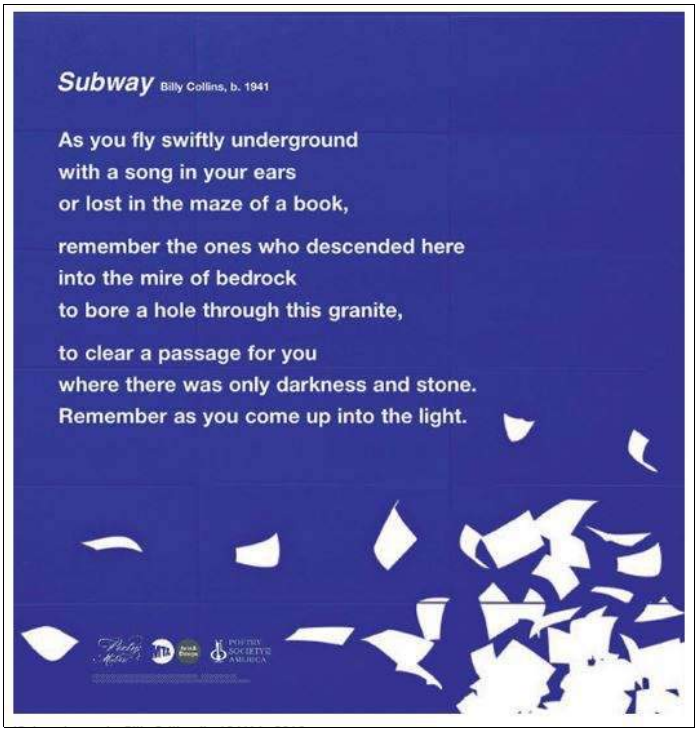
And due to the rapid pace of the new minerals' formation and the likelihood of many more continuing to emerge, their appearance is described by the scientists as equal in significance to — if not greater than — the so-called Great Oxidation event billions of years ago, when the influx of oxygen in Earth's atmosphere spurred the development of about two-thirds of all known minerals.

"Simply put, we live in an era of unparalleled inorganic compound diversification," study co-author **Robert Hazen**, a research scientist at the Carnegie Institution of Washington's Geophysical Laboratory and a professor of Earth Science at George Mason University in Virginia, said in a statement.

"Indeed, if the Great Oxidation eons ago was a 'punctuation event' in Earth's history, the rapid and extensive geological impact of the Anthropocene is an exclamation mark," Hazen added.

The findings were published online March 1 in the journal *American Mineralogist.*

Source: LiveScience.com from March 6, 2017



New Material Can Turn Light, Heat, and Movement into Electricity All at Once

By Alfredo Carpineti

Scientists from the University of Oulu (Finland) have discovered a new material that is capable of turning different types of energy into electricity. The material is a type of perovskite crystal, a family of crystals already known for being able to turn certain types of energy into electricity.

Classic perovskite specimen

The new material, known as KBNNO (based on its chemical formula), can convert heat, visible light, and changes in pressure into electricity. Like other perovskite crystals, KBNNO is ferroelectric. The material is organized into electric dipoles, tiny compass-like needles, and when a physical change happens the dipoles misalign, creating a current.

The study, published in Applied Physics Letters, expands on previous studies that showed KBNNO converts electricity from visible light, although this was tested at temperatures a couple of hundred degrees below zero.

The new research was conducted at room temperature. The team studied KBNNO's ability to turn light into electricity, while also looking at how the material reacted under pressure and when the temperature changed. This was the first time all these properties have been evaluated at once.

The data shows that while the material can use all these changes to make electricity, it is not as good as specific crystals that are more specialized. However, the researchers are actually quite optimistic that they can improve it.

"It is possible that all these properties can be tuned to a maximum point," said lead author Yang Bai in a statement.

A material like this has several applications in industry, including the ability to charge devices from environmental sources without the need to constantly plug them in.

"This will push the development of the Internet of Things and smart cities, where power-consuming sensors and devices can be energy sustainable," Bai added.

The researchers are planning to develop a prototype in the next year, and if they can find the right crystal, commercialization of this technology won't be far down the line.

Source: IFLScience.com from February 16, 2017

Bringing Science Down to Earth

By Eric Scerri

As scientists, we tend to tell our story via breakthroughs, paradigm shifts that shake the foundations of knowledge and remake everyone's understanding of how the world works. It's a tale of high-flying, singular brilliance, of Einsteins and Darwins, of pure genius.

Such a narrative of exceptionalism isn't entirely wrong, but it's wrong enough to help skew the way society thinks about science and to sow doubt about its findings. It puts us and our work too far out of the reach of too many people, and earns us epithets like "elitist" and "arrogant."

The truth about science is much more prosaic. Detailed case studies on the history of chemistry and physics show that the role of genius in advancing those fields — and even the role of rationality — is overstated. Rather than a hyper-intellectual, alien activity practiced by a remote priesthood, science is hit and miss, the ever-changing product of less-than-brilliant people, just like every other human activity.

Have you ever heard of John Nicholson, Anton Van den Broek, Richard Abegg, Charles Bury, John Main Smith, Edmund Stoner and Charles Janet? Don't worry, chances are many experts in the field of atomic structure — on which all of the above-named scientists worked — haven't heard of them either. After all, the feature linking these men is that, broadly speaking, they didn't always know what they were doing. In some cases, much of what they published turned out to be incorrect.

And yet each of them proposed one or two key ideas in their lifetimes that were picked up by others, modified and tested, and eventually led to major breakthroughs.

In the 1910s, the English mathematical physicist John Nicholson published a number of articles in which he proposed that several proto-elements (his term) existed in outer space and were the basis of our familiar terrestrial elements. Their presence in a number of celestial bodies, he claimed, enabled him for the first time to do successful calculations on the light reaching us from the Orion nebula and the solar corona.

At first his findings seemed to hold up, but it soon became clear that the calculations were incorrect or the result of numerological speculations. Nevertheless in the course of his work Nicholson also proposed that the angular momentum of electrons circulating around a nucleus should be "quantized," meaning that it could only occur with specific definite values. This notion would set Danish physicist (and, ultimately, Nobel Prize winner) Niels Bohr off on his theory of the structure of the hydrogen atom. From that, quantum mechanics and all the technological applications based on it — including lasers and semiconductors — would follow.

Something similar happened with each of the other unknown scientists on my list. Their haphazard, often pedestrian work still provided keys to, for example, how the elements in the periodic table should be ordered (Van den Broek) and the "octet rule" that explains much of chemical bonding (Abegg).

When the whole of the history of atomic theory is understood, it's clear that the missing links turned up by these "regular people" scientists, and the details and even the dead ends they accumulated, are every bit as important as the insights of a star such as Bohr.

This view of science casts a dim light on priority disputes — the intense battles over who was or should be considered first to a discovery — which happens even among otherwise perfectly modest scientists. It helps explain why multiple researchers arrive at the same conclusion so often: Science is a cumulative, incremental, collective effort. Fierce competition among individuals is inevitable, and it may serve to develop better science in the short run, but overall, even heroic individual achievements are simply not as important as the ever-evolving whole.

In these doubting days, almost everyone at least accepts the utility of some science. Very few people so doubt the findings of aeronautics, for example, that they won't board an airplane. But a significant portion of the general public still finds science baffling. What is incomprehensible is regarded as questionable; what is puzzling can be dismissed. It doesn't help that science represents our deepest and most reliable knowledge of the world and yet is also provisional — what we know is constantly being adjusted, tested.

In this too, however, science isn't unusual. Like life itself, it progresses by trial and error. It depends on humans simply trying things out, even if its practitioners don't always want to admit it.

Science is what we know to the best of our human abilities. Such as: Vaccinations don't cause autism; GMO corn is as safe as every other crop that has been genetically modified by other means for thousands of years; and Earth is warming past dangerous levels. The process that resulted in these findings isn't incomprehensible, remote or elitist. Even the rarefied field of atomic theory is built on human error and serendipity, on non-geniuses randomly groping around.

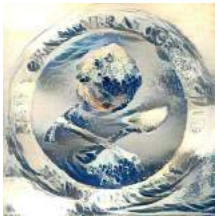
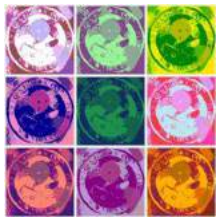
The better science communicates this notion, along with its fundamental ordinariness, the better its chances of being heard, understood and valued.

Eric Scerri teaches chemistry and philosophy of science at UCLA. He lectured to the NYMC recently about the importance of the Periodic Table. His latest book is "A Tale of Seven Scientists and a New Philosophy of Science." His website is www.ericscerri.com.

I Like It, But Is it Art?

By Mitch Portnoy

A few weeks ago, while searching for some graphics to use for a NYMC Website Doodle, I found an online utility that allowed the transformation of an image into a version that looks as if a famous artist of the past had created it. Here are 24 examples of the Club's seal that I "created":

Mary Cassatt	Paul Cezanne	Leonardo Da Vinci	Salvador Dali
Edgar Degas	Robert Delaunay	Charles Demuth	M. C. Escher
			
Paul Gauguin	Hokusai	David Hockney	Winslow Homer
Frida Kahlo	Wassily Kandinsky	Roy Lichtenstein	Claude Monet
Pablo Picasso	Robert Rauschenberg	Rembrandt	Pierre-Auguste Renoir
			
Georges Seurat	Vincent Van Gogh	Andy Warhol	Andy Warhol

NYMC 2017 Benefit Auction Prices Realized

1. Malachite Specimen 12
2. Large Tiger-Eye Specimen 10
3. Fluorite, Quartz 5
4. Large Aragonite 10
5. Mounted "Picture Stone" 12
6. Polished Labradorite 12
7. Rubellite (Red Tourmaline) 30
8. Atacamite 7
9. Creedite & etc. 17
10. Large Andradite Garnet 12
11. Polished Rhodochrosite Slice 22
12. Polished Agate 5
13. Mariposite 15
14. Lepidolite (Purple Mica) 5
15. Large Sodalite Specimen 17
16. Kyanite in Matrix 5
17. Box of 19 Rough Gemstones 140
18. Flint Nodule with "Pastry Crust" 7
19. Azurite Crystals on Malachite 10
20. Chrysocolla Slab & Specimen 12
21. "Antique" Box of 9 Minerals 65
22. 5 Polished Peridots 10
23. Large Orange Calcite 10
24. Small Malachite Dish 12
25. (2) Pectolites 7
26. (5) Vanadinite Specimens 10
27. Opal Pseudomorph after Fossil Wood 30
28. Gorgeous Orange Synthetic Quartz 15
29. Fossil Reptile Poop 15
30. (2) Fossil Ammonites 20
31. Jasper & Silver Pendant 10
32. Amber & Sterling Silver Earrings 20
33. Rhodonite Elephant Pendant 10
34. Peridot, Mother of Pearl in Silver Pendant 15
35. Peridot & Silver Swirl Earrings 12
36. Multicolor Pearl Necklace 40
37. Misc Pearl & Gold Fill Earrings 5
38. Tiger-Eye, Pearl & Crystal Bead Necklace 10
39. *Diamant* Extra Lapis Magazine (in German) 10
40. Blue Lace Agate Bead Necklace 7
41. Meteorite (13.8 grams) 75
42. Meteorite (10.63 grams) 70
43. Dalmatian Jasper 17
44. Translucent Agate Slab 5
45. Glow-in-the-Dark Sphere 15
46. Corundum Crystal & Beryl Crystal 15
47. Polished Malachite & Flashlight 15
48. Large Beryl 15
49. Mounted Rubellite (Tourmaline) in Marble 15
50. Large Schorl (Tourmaline) 15
51. Moss Agate Bowl 20
52. Sodalite Bowl 20
53. Faceted Yellow Cubic Zirconia 11
54. Spectacular Large Dioptase, Cerrusite, etc. 60
55. Petrified Wood (Shows Tree Bark) 15
56. Drilled Picture Stone Pendant 6
57. Antique Jade Carving 40
58. Aesthetic Apophyllite 5
59. Sphalerite/Pyrite/Galena Pseudomorph 40
60. Prehnite 7
61. Turquoise Specimen 20
62. Quartz & Hematite 50
63. Small Polished Hazelite/Malachite 20
64. Large Polished Hazelite/Malachite 30
65. Jadeite Cabs (A, C), Small Jadeite Poster 20
66. (2) Small Ruby in Granite Spheres 20
67. Minyulite (Rare Mineral) 20
68. (4) Minerals from Russia 12
69. (5) Gemstone Cabochons 20
70. (5) Gemstone Cabochons 17
71. Gems from Mogok Panel (Includes Painite!) 100
72. Gems from Mogok Panel 90
73. Chalcotrichite 5
74. Fluorite *(Highly Fluorescent!)* 15
75. Clear Fluorite 35
76. (3) Faceted Emeralds (0.14 ct) 25
77. Large Faceted Yellow Labradorite 50
78. Boulder Opal Gemstone 30
79. (4) Different Color Faceted Garnets 15
80. (3) Gorgeous Opals 50
81. Polished Jasper Slab 5
82. Ocean Picture Jasper 10
83. RARE Faceted Grandidierite Oval 150
84. Copper Mining Spoon 15
85. Copper Mining Spoon 15
86. (1) Hematite & (1) Goethite 5
87. Andradite Garnet 25
88. (10) Colorful Mineral & Gem Postcards 4
89. (9) Mining & Quarry Postcards 15
90. (3) Nevada Mining First Day Covers 10
91. (7) California Mining First Day Covers 15
92. (6) International Mining First Day Covers 20
93. Handmade Silver & Stone Pendant 10
94. Nephrite Jade, 1 side polished 10
95. (1) Tiger Eye Specimen & (1) Dish 10
96. Variscite Slab 12
97. Long Kunzite Crystal 15
98. Opal Cabochon 20
99. Agate & Quartz Geode 25
100. (2) Polished Eggs 7
101. Large Barite Rose 10
102. Polished Malachite / Chrysocolla 10
103. Lapis Lazuli Specimen 20
104. Rhodonite Chunk 20
105. Wulfenite 15
106. *"Tale of 7 Scientists"* by Dr. Eric Scerri 15
107. Aragonite 5
108. Native Cooper with Malachite Coating 17
109. (2) Books about Chinese Jade 5
110. (2) Books about Native American Arts 12
111. *"Tanzanite: Born From Lightning"* 65
112. Large Polished Eudialyte in Matrix 30
113. Green Opal Specimen 30
114. Epidote "Fan" & Quartz Crystals 25
115. Unusual Wood & Silver Pendant 5
116. Spectacular Peridot & Pearl Necklace 15
117. Sapphire & Vermeil Heart Pendant 20
118. Modern Sterling & Gem Pin/Pendant 5
119. Sterling Silver with Peridot Cabochon Ring 30
120. Sterling Silver with Amber Cabochon Ring 30
121. Cats, Love & Other Surprisers 20

The following 4 quartz specimens were generously donated by James Zigras

122. Arkansas Quartz 30
123. Arkansas Quartz 40
124. Arkansas Quartz 50
125. Arkansas Quartz 50
126. Small Polished Eudialyte in Matrix 35

Total Benefit Monies Raised (!!!) $2,830
Average Lot Price $22.50
% Lots Sold 100%

Lot Winning Price Range:

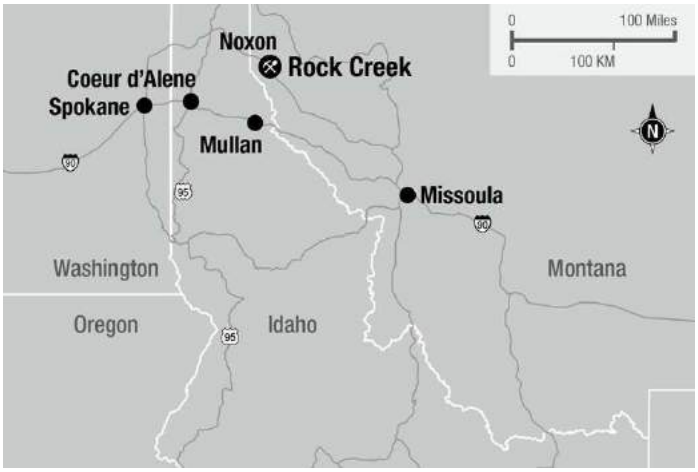
$1 - $10 . . . . . 39 Lots = 31%
$11 - $25 . . . . . 57 Lots = 45%
$27 - $50 . . . . . 21 Lots = 16%
$51 - $100 . . . . . 7 Lots = 6%
$101+ . . . . . 2 Lots = 2%

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.

Something Blue in Big Sky Country

There's another kind of blue besides those azure skies in Montana that take your breath away. Montana's got rocks; blue ones. While we stagger over those some astounding prices realized for sapphire at auction today, there's another source for sapphire that's been gaining devotees. Montana sapphire has been recovered from various deposits in the wide expanse of this western state since the late Nineteenth Century. Rock Creek, near Idaho's border, is the best known sapphire producer since way back.



Early hoards of sapphire recovered there went to Switzerland's robust watch making industry. But today, the still vigorous sapphire producing region is owned by one group (Potentate Mining LLC) with consolidated efforts to introduce the azure stone to modern gemstone lovers.

Diamond and gemstone veteran Arlan Abel promotes Montana sapphire on his business' website, Americut Gems, to which he serves as company president. He stopped by for an exclusive chat recently to explain a little more about this richly hued stone.

While he sells this native gemstone on his website as do a few other experts, American sapphire is not really well known to retailers or consumers. "My impression is that very few stores carry it," Arlan recounts, "and most stone dealers do not have any inventory." Despite American sapphire being harvested for a century by now, its celebrity has never been optimized. "In my experience, many retailers are not aware that it exists. For this reason I assume the buying public has little awareness there is an American sapphire."

Besides an intrinsic beauty which a stone must have to become sought after, the story of its discovery also plays a critical role in resonating with consumers. Arlan shares his personal perspective of its draw for him. "Although you asked about its appeal other than origin," he says, "I must say that origin is a significant factor in my interest, because American sapphire is the exception to the general rule. The United States, compared with many other places throughout the world is relatively barren of precious gemstone production." That reality might spark a game changer for promoting this particular corundum variety. "So I find it especially interesting," he explains "that there are no other places in the entire Western Hemisphere, except in the United States, where commercial production of sapphire is not only possible, but which could become one of the most significant countries for the production of sapphire in the world."

But he points to other reasons besides origin that keep him keen on this home-grown jewel. "American sapphire, especially the Rock Creek variety comes in a range of colors which are difficult to match elsewhere."

Large earth movers assist at Rock Creek Mining; Courtesy Arlan Abel

Savvy consumers today relish the rarity factor and distinct colorations of any stone they collect. With Montana sapphire, he thinks, "They should have a lot of fun selecting Rock Creek sapphire because of its diversity of vivid color." Its full potential is revealed only after cutting, of course.

"When American sapphire is cut and polished with great precision, it can reach a very high degree of brilliance." In fact, corundum is only eclipsed by diamond in its hardness. So good corundum expertly cut looks spectacular. According to Arlan, "Many people have confused the fancy colored variety with colored diamonds." But phenomenal gems are white hot now with a public craving exotic stones. So the color-change variety is highly sought after.

Inside the sapphire processing and cutting facility

"Rock Creek color-change sapphire exhibits greater color-change when exposed to different light sources than do similar phenomenal sapphire types from other localities. Many people know about alexandrite and how expensive a good color-change stone can be." Now that production in Montana is turning up this

exotic variation, it should push these stones to the fore with couture designers. “Few people, including those in the jewelry trade are aware that Rock Creek sapphires frequently exhibit color-change that is every bit as distinct and head-turning as the finest alexandrite. I say Rock Creek because not all American sapphire has this phenomenon to the same degree.”

Rough crystals contrast against the brilliance of polished blue and fancy colored sapphire stones. Courtesy: Arlan Abel

Gemstones are produced in certain geological climates of course, under very precise conditions. This is why gemstones or diamonds don’t just pop up everywhere around the globe. Still it’s not that simple because nature provides a vast range of gemstone producing environments. “It is complicated, Arlan confirms, “Because the various locales that produce sapphire have different geological histories. The better known Yogo sapphire variety is associated with host rock, while the Missouri river varieties are linked to alluvial sites.” Alluvial or riverbed deposits produce crystals which have traveled quite far downstream from some distant origin until it is recovered. Their crystals may have a water worn exterior. “Rock Creek crystals are present in mud flows which suggest a different geological history. This could explain why the Rock Creek deposits are perhaps the richest in the world, sometimes yielding in excess of 100 carats of cut-able goods for every one cubic yard of material excavated.

It remains to be seen if the gemstone buying public will take to the American sapphire variety, but Arlan believes there are reasons to hope that it will. Certainly a part of its allure is a sense of national pride, something that has exploded recently as consumers look for Made in America items. Arlan offers a few more reasons to consider. “Perhaps equally important is the material itself which when cut properly can be extremely brilliant.

As an interesting sidebar, “All of our production is done on computerized robotic machines we designed and manufactured right here in the United States. This computer-based cutting technology makes it possible for us to produce finished goods in all sizes unlike anything that has been produced in the past, with stones from 1.5mm to any size the rough allows. On our computerized machines we can calibrate melee sizes every .25mm and in large sizes up to 6mm we calibrate every .1mm.” The robotics-cut stones also face up identically making the task of matching much easier. Because the proprietary cutting machines are unlike any elsewhere until now, he does not believe that commercial quantities of sapphire melee have ever been cut in the United States before now.

Only time will reveal how much and for how long sapphire production will continue at its current pace. But ongoing testing will help answer that concern. “Rock Creek mine covers an area of approximately 3,000 acres,” he says. “Tests are ongoing but the expectation is that sapphire underlies most of it. Sample testing is still taking place but, to date the yield counts suggest that the deposit is perhaps richer than anywhere else in the world. I think GIA concluded that the deposit should satisfy demand for many generations. “

Since Arlan is recognized as a specialist cutter with unique creativity in the premium stones he cuts, we wanted to learn if he’s been developing something equally exclusive just for these sapphires. “In our 3mm+ sizes for both round and oval we have a special design diamond cut with 65 facets. The prescribed angles represent a compromise between color retention and beauty which we think works the best. We are also producing cushion cuts in the same design. We have the ability to do special custom design upon request. For round stones smaller than 3mm we do a precision hearts and arrows diamond cut.”

One thing’s for sure, this American jewel has the personality and good looks to make it a star. Both designers and collectors love a good story, and this gemstone delivers on that front too. Look for its popularity to soar as sapphire fans discover their favorite sparkler was found in their nation’s own backyard.

Proprietary equipment allows for precision calibration of cut stones

Montana Sapphires at the *Exposition Universelle* of 1900

While the initial response to Montana sapphires was lackluster, their true beauty was ultimately recognized when they were included in a line of fine jewelry created by Tiffany & Co. that was shown at the 1900 Paris Exposition. No longer considered to be of lesser value than the blues, the fancy colored sapphires from Rock Creek took the world by storm, and caused even Tiffany & Co. gemologist **George F. Kunz** to wax poetic about their beauty in a 1901 publication:

> *At no known locality, however, has there ever been found so great a variety of rich colors in corundum gems as here [Rock Creek]. At the Paris Exposition of 1900, there was shown a brooch of over 200 of these stones, ranging*

from 1 to 3 carats each, every one of a different tint or shade. Although the deep-red ruby and the "velvet blue" or "cornflower" sapphire were lacking, yet the richness and variety of the other kinds were unequaled; pale rubies, pink, salmon passing into yellow, pure yellow, yellow brown, and deep brown, pale blues and greens, blue green, etc. Often a single stone would show two or three distinct shades of one color. Many of the colors have never been observed at any other locality. All were of unusual brilliancy, and improve greatly in artificial light. The butterflies and other rich jewels made from these stones possess almost the beauty of natural insects.

Selection of Jewelry with Rock Creek Sapphires

14kt Gold Montana Sapphire Flower Inspired Pendant

1.02 Carats of Rock Creek "Ice Blue" Sapphire Bezeled in 14kt Rose Gold.

Time Crystals Are Now A Thing

By Alfredo Carpineti

Scientists have developed “time crystals”, and while the name sounds like something from *Doctor Who*, they are very real, although they have nothing to do with time travel.

In the same way that a regular crystal has a structure that repeats regularly in space, time crystals have a structure that repeats itself in time. In a paper published in Physical Review Letter, American researchers led by UC Berkeley’s Norman Yao discuss how to make and measure the properties of time crystals.

Time crystals were first obtained a few months ago. Researchers from the University of Maryland constructed a chain of 10 ytterbium atoms and hit them with two lasers several times to keep them out of equilibrium. They found that the chain settled into a stable repetitive pattern, although the material itself remained out of equilibrium. This study marked the beginning of a new class of materials that can’t just settle down in some motionless equilibrium like a diamond.

“Wouldn’t it be super weird if you jiggled Jell-O and found that somehow it responded at a different period?” Yao said in a statement. “But that is the essence of the time crystal. You have some periodic driver that has a period ‘T’, but the system somehow synchronizes so that you observe the system oscillating with a period that is larger than ‘T’.”

The ytterbium queue is only one of the developed time crystals. A different set up was created at Harvard and Yao was involved in both groups. Their results are submitted for publication and will provide a first look into this new architecture of matter.

“This is a new phase of matter, period, but it is also really cool because it is one of the first examples of non-equilibrium matter,” Yao said. “For the last half-century, we have been exploring equilibrium matter, like metals and insulators. We are just now starting to explore a whole new landscape of non-equilibrium matter.”

Time crystals were first proposed in 2012 by Nobel Laureate Frank Wilczek, and while scientists don’t have a use for them yet, they might have the right properties to be useful in pioneering fields like quantum computing in the future.

Derek Jeter Number 2 Retirement Ring

On May 14, 2017 the New York Yankees retired Derek Jeter’s No. 2 jersey and enshrined him in Monument Park. The Yankees also presented Jeter with various gifts to mark the occasion. He received a replica of the Monument Park plaque and retired number, as well as a 14-karat white gold, diamond and blue sapphire career milestone ring, pictured here.

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 and 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 ***probably*** be ordering G **Salmon** G **Chicken** G **Beef** G **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** (G $25 Individual, G $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
July 12	Meeting at 6:30 pm	Watson Hotel, Manhattan	Special Lecture: Anna Schumate & Naomi Sarna – "Natural Phenomenal Gemstones"
Sunday July 23	Officer's Planning Meeting	Upper West Side, NYC	2017 Banquet Planning; Club 2018 Calendar; Overall Theme: *Leveling Up!*
Sunday August 27, 2017	Open House (Party!!)	Long Island, NY - C. Neary Home	Details to Follow; Members Only!
September 13	Meeting at 6:30 pm	Watson Hotel, Manhattan	Special Lecture: Mike Hawkins – "New York Mineralogy; Yesterday, Today and Tomorrow"
Third Wednesday! October 18	Annual Gala Banquet	Mezzanine, Watson Hotel, Manhattan	Theme: *Amethyst*; Lecture; Silent Auction; Awards; Amethyst Game; Gifts & Surprises!
November 15	Meeting at 6:30	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 6:30 pm	Watson Hotel, Manhattan	NYMC Movie Night! – Details to follow . . .

2017 Show or Event Calendar

Date	Event	Location	Remarks & Information
July 29-20	Annual Mineral, Gem, Fossil & Jewelry Show	Mattituck Jr/Sr High School, Mattituck, Long Island, New York	Organized by: Long Island Mineral & Geology 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: Franklin-Ogdensburg Mineralogical Society and the Franklin Mineral Museum
October 20-22	EFMLS Convention & Show	Bristol, Connecticut	Article Contest Results; Details to follow . . .
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 & 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

The New York Mineralogical Club, Inc.

Founded in 1886 for the purpose of increasing interest in the science of mineralogy through the collecting, describing and displaying of minerals and associated gemstones.

Website: www.newyorkmineralogicalclub.org

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Dues: $25 Individual, $35 Family per calendar year. **Meetings**: 2nd Wednesday of every month (except August) at the Watson Hotel (formerly Holiday Inn Midtown Manhattan), 57th Street between Ninth and Tenth Avenues, New York City, New York. Meetings will generally be held in one of the conference rooms on the Mezzanine Level. The doors open at 5:30 P.M. and the meeting starts at 6:45 P.M. **(Please watch for any announced time / date changes.)** This bulletin is published monthly by the New York Mineralogical Club, Inc. The submission deadline for each month's bulletin is the 20th of the preceding month. You may reprint articles or quote from this bulletin for **non-profit usage only** provided credit is given to the New York Mineralogical Club ***and*** **permission** is obtained from the author and/or Editor. The Editor and the New York Mineralogical Club are not responsible for the accuracy or authenticity of information or information in articles accepted for publication, nor are the expressed opinions necessarily those of the officers of the New York Mineralogical Club, Inc.

Next Meeting: Wednesday Evening, July 12, 2017 from 6:00 pm to 9:00 pm

Mezzanine, Watson Hotel (formerly Holiday Inn), 57th St. & Tenth Avenue, New York City

Special Lecture: Naomi Sarna & Anna Schumate — *"Natural Phenomenal Gemstones"*

New York Mineralogical Club, Inc.
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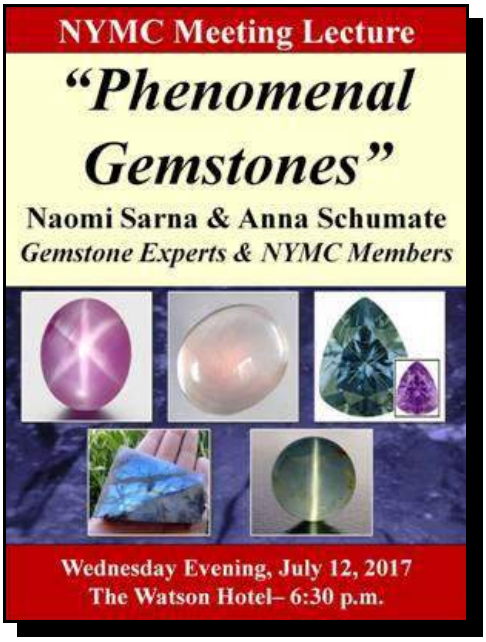
FIRST CLASS

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