

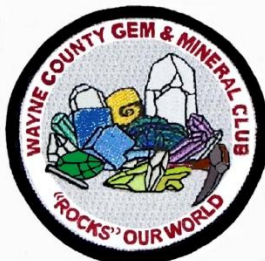
Wayne County Gem and Mineral Club News

February, 2016

Always Looking for Places to Dig!



Bill Lesniak (right) conducts the raffle at the January club meeting.



Website

<http://www.wcgmc.org/>

QUARTZ



Amethyst from Uruguay, club collection (see page 4)

Next Club Meeting Friday February 12th, 7:00 PM

Presbyterian Church, Maple Court, Newark, NY

PROGRAM: QUARTZ (all forms).

- Bring your quartz to show (amethyst, agate, flint, chalcedony, they all count)
- Bring a few "quarters". We will auction and raffle over 3 dozen quartz pieces from the club collection.

SHOW COMMITTEE MEETING will precede the **Feb, 12th** club meeting. Anyone interested in helping come join us at **5:00 PM** at the church location. We particularly need ideas and energy towards advertising for Gemfest 2016.

Club Workshop, Saturday, Feb. 20th

Bring your rocks to saw and polish. The workshop is open to all paid club members; we do ask for \$5/visit from each adult to help maintain equipment.

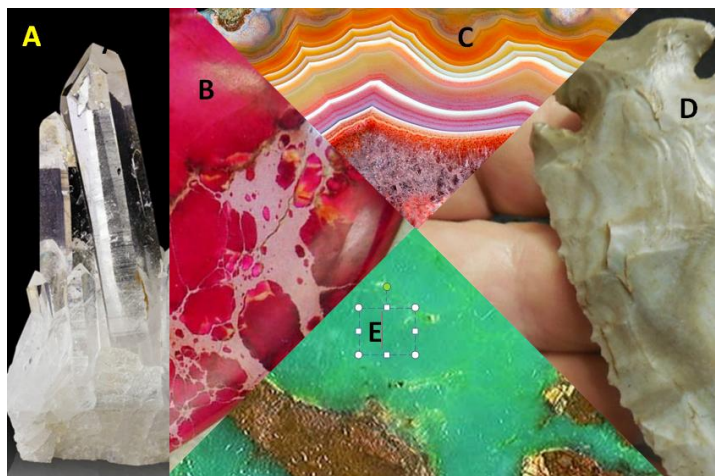
When: 10:00 AM til mid afternoon, Sat. Feb 20th

Where: The Weiler's Barn and Workshop
6676 E. Port Bay Rd, Wolcott, NY

Rules: BYOR (Bring your own rocks) to saw, grind, polish or even facet. Training on equipment is available. Eye protection is recommended.

WINTER WEATHER: An e-mail note will be sent to members if a Friday meeting must be cancelled. Or call Bill Lesniak (315-483-8061), Fred Haynes (585-203-1733) or Glenn Weiler (315-594-8478)

A Full Issue Dedicated to QUARTZ and its many colors and forms



A (quartz crystals) B (Jasper) C (banded agate) D (Flint arrowhead) E (Chrysoprase). Much more inside on these forms of silica and more.

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Mineral Musings by Fred Haynes



The Many Names of Quartz

Quartz is simple. Right? Just a silicon (Si) atom nestled in the center of a tetrahedral form surrounded by four oxygen atoms. Build them together, let the silica-centered tetrahedral motifs share oxygen atoms and bingo we have SiO_2 . Quartz crystals grow from this. They grow into beautiful clear, milky or smoky trigonal crystals with six-sided prisms terminating in six-sided pyramids, simple as a childhood erector set or a Lincoln Log cabin (with that distinctive green roof). Herkimer diamonds are our favorites, but amethyst and citrine colors are nice too.

OK, but now we are told that quartz which grows rapidly or under "special" conditions can be cryptocrystalline, a condition that exists when the individual quartz crystals are too small to see even with an optical microscope. And this apparently changes everything. No longer are we collectors satisfied to apply the common mineral name, albeit with a few modifiers for color (amethyst, citrine, rose quartz).

With cryptocrystalline quartz, we now have a multitude of terms, each with its own modifiers. We have descriptors like agate, chalcedony, onyx, chert, flint,

chrysoprase, and jasper. And then there is opal? So just what do all these different terms mean and why can't we just have one word for this fine grained quartz that we love to collect and carve into cabochons?

Ideally, it could be said that we do have a single word. The ideal name for all cryptocrystalline quartz is chalcedony. Mindat.org (2014) states the definition simply: "Chalcedony is a general term for all varieties of quartz that are made of submicroscopic crystals". Full stop, case closed. But there are so many variations in color, texture, and origin that a number of additional terms have evolved. When properly used, these terms can be very diagnostic. They can tell us something about the origin of the stone, the nature of the host rock in which it grew, or the cause of the associated bright colors. So when can we properly deploy some of these terms?

Chalcedony is the general term for cryptocrystalline quartz or silica and is probably the best term to use when you know little of a stone's origin. Chalcedony typically has a waxy luster and it may be translucent or semi-translucent. Geologists often look for microfibrillar texture before deploying the term chalcedony.

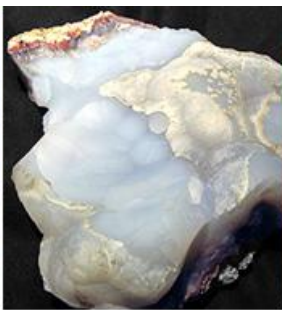
The name dates back nearly 2000 years, appearing in Pliny's *Naturalis Historia* published in 77 A.D. At that time, the term was applied to a translucent stone or rock common to the region around Chalcedon in Asia Minor (now Turkey).

Agates are best characterized by their fineness of grain, intense color, and by color layering. Although agates often grow as nodules within vugs in volcanic rocks, they can form in certain metamorphic rock. As agates grow in layers from the vug walls towards the middle, they can be hollow in the center or they can contain true macroscopic quartz in the center or between their multi-colored bands. Volcanic rocks are more susceptible to weathering than the pure silica agates such that agates released by weathering and transported by water or by recent glaciations can be found long distances from their original source (i.e. along shorelines, in gravel beds, etc.).

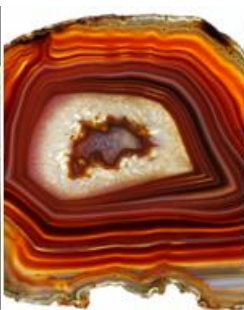
Color and textural features in agates can be diagnostic of their location. For example, the iron-rich deep red banding of Lake Superior agates reflect the composition of their billion year old host basaltic lava. There are



Purple **chalcedony**



chalcedony



Lake Superior **agate**



Raw fire **agate**



Grape **agate**

literally thousands of modifying terms used to describe agates and books have been written on the subject (i.e. Lynch, 2011). Some names signify locations, like Lake Superior agate, Kentucky agate or Mexican Laguna agate. Others carry modifiers that reflect a specific texture: moss agate, lace agate, leopard agate, fire agate, and on and on. Location and descriptive terms are useful because agates can occur with more variety in color and texture than probably any other stone or mineral. Varying growth conditions and/or elemental impurities are to blame, although most of us hardly disapprove of Mother Nature for her work.

Onyx is a banded form of agate where the layering is distinctly parallel and much less chaotic than that associated with typical agate. Commonly, the banding is black and white, but red onyx is also known to occur. Dyed agates can often be very difficult to distinguish from natural onyx. Interestingly, the term has been applied to various carbonate cave formations (ala. Mexican cave onyx), but strictly speaking this is a misuse of the term onyx.

Chert denotes a sedimentary origin. It forms by replacement in nodules or concretions, typically in carbonate rocks when invaded by silica-rich fluids. The Devonian Onondaga limestone of western New York is laced with

dark gray to black chert. Chert is also found in Precambrian sedimentary iron formations, often interlayered with iron oxides and it can be precipitated directly in deep marine settings. Each carry their own diagnostic textures and in some cases, favorable lapidary properties.

Flint is typically a term reserved for chalk or limestone hosted chert. From a lapidary perspective it has come to be associated with higher quality material. We all know of Ohio flint, which is recovered from nodules in both Devonian and Pennsylvanian Period limestones in central Ohio. Flint often splits into flakes or sharp splinters, and this property has permitted its use in tools and weapons since the Stone Age.

Jasper is another term one often sees associated with cryptocrystalline quartz. While there is not a clear and distinct definition, jasper is best used when the material is completely opaque. Although often homogeneous and even-colored, textural variations found in some jaspers make them very popular as lapidary material. Ocean jasper, poppy jasper, leopard jasper are all forms containing eye-like patches of color. Sometimes these patches are almost glass-like in texture, other times they may even show macroscopic quartz crystals in their center.

Chrysoprase is a unique form of chalcedony where a minor amount of nickel imparts a bright green color. It is formed during very low temperature metamorphism in dark volcanic rocks when silica released during metamorphism incorporates nickel derived from olivine into a silica-gel material that solidifies into cryptocrystalline quartz in fractures and sometimes vugs.

The list goes on, but the space here does not. Opal is one of two October birthstones and will get reviewed then. Some may list aventurine as a variety of quartz, but I will argue it is a rock with quartz as a dominant component. Perhaps we'll review that another time. Glasses, like obsidian, are not crystalline and deserve separate attention also.

Just as one can devote a mineral club newsletter to quartz, one could easily devote an entire collection to the single mineral and never run dry of new and distinct material to acquire.

References:

Akhaven, A. C., 2007-2012, The Quartz Page, various pages in website:
<http://www.quartzpage.de/amethyst.html>

Lynch, D.R. & B., 2011, Agates of Lake Superior, Adventure Publications, 223 p.

Various Wikipedia and Mindat.org webpages



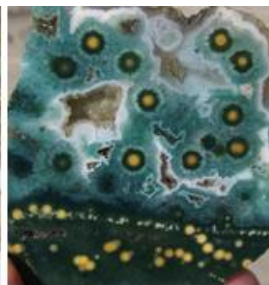
onyx



Gray chert



Ohio flint



Ocean jasper



Chrysoprase



FEBRUARY BIRTHSTONE

by Fred Haynes



Everyone likes the color purple and mineral collectors like shiny crystal surfaces and perfect terminations. Therefore, is it any wonder that amethyst attracts attention? Whether it is spotted in a 2" miniature specimen off matrix, filling a small geode, or covering a huge Brazilian crystal cathedral, eyes are always drawn to the splendor exhibited by a fine amethyst piece. Given its appeal, is it any surprise that amethyst is the February birthstone?



Amethyst is spelled with small chips of the purple mineral, and underscored by a row of polished amethyst stones, all from the WCGMC collection.

Quartz is hard, clear and common. Amethyst is hard, clear, not so common, and purple! One can enjoy amethyst without understanding the rather complex reason behind its color, but it is also interesting to know a little about the minerals in your collection. While complex in detail, it can be generally stated that it takes two very distinct properties to produce the distinct purple hue in amethyst. First, a small amount of iron must replace a few of the silicon atoms in the center of the SiO_4 tetrahedrons upon which quartz is constructed. Second, the host rock must contain sufficient radioactive sources to emit gamma rays that over time irradiate the iron (Akhaven, 2012). This will cause the ferric iron (Fe^{+3}) to jump to the unusual oxidation state of Fe^{+4} . In this state it does not take much iron to impart a purple color and amethyst is born!

There are just about as many textural ways for amethyst to manifest itself as there are localities where it occurs. The very deep purple color of amethyst from Uruguay is probably due to the uniform distribution of iron and the strong presence of radioactive elements in the host basalt. In 1971, Uruguay featured their famous amethyst on a stamp (see banner above). Brazilian amethyst has a similar origin, hosted in fractures and vugs in basaltic lava flows, but can generally be distinguished by a slightly paler purple color.

Much of the world's amethyst grows in fractures and vugs in volcanic rocks. These vugs can be regularly shaped geodes, or very large elongated "caverns" such as the famous Brazilian "amethyst cathedrals".



1997 French Southern and Antarctic Territory Stamp



The Brazilian amethyst cathedral on the right was the raffle prize in 2010 from our sister club in St. Lawrence County at their annual August show.

Another prized form of natural amethyst is the specter. Quartz can grow in stages and sometimes smaller crystals are overgrown by larger ones. When the larger overgrowth is amethyst an exquisite piece is born.



The piece on the left is almost 2" tall and is from John Betts online mineral museum. Switzerland honored the International Year of Crystallography in 2014 by placing a very nice amethyst specter on a postage stamp.

Sometimes, there is so much iron incorporated into the quartz as it grows that the unirradiated sample is red from microscopic hematite inclusions.



Combinations of red colored quartz with amethyst can be particularly appealing as shown by the piece on the 1982 Germany stamp. The internal hematite in the Thunder Bay, Ontario amethyst piece on the right imparts a reddish color to the otherwise purple mineral.

In recent years, WCGMC has collected amethyst in Prospect, Virginia and in Thunder Bay, Ontario. The Schuffin's Acres Farm (previously Simpson Amethyst Mine) in Virginia exploits a mineralized fault zone where amethyst tips and clusters are recovered out of a weathering fault zone. (Jacquot, 2014)



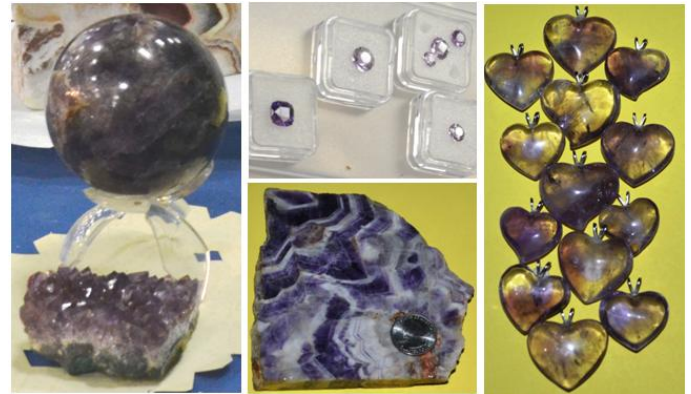
Virginia amethyst: Linda Schmidtgal dug the pieces in the left picture in March 2014, but those in the center and the right are from Mindat and a Youtube video on the location, respectively.

Amethyst is encountered in fractured and brecciated volcanics that covered the midcontinent region around Thunder Bay, Ontario about 1.1 Billion years ago. The Amethyst Mine Panorama (a fee site collecting location) reports a 60-70 year supply of amethyst even after Linda returned to Wayne County with a shelf full of purple in August 2013.



Amethyst in brecciated rock, Thunder Bay, Ontario.

No discussion of amethyst is complete without reviewing its various lapidary uses and its quality as a gemstone. From simple polished stones, to banded cabochons, and, of course to faceted gemstones, amethyst is always finding its way into the project list of anyone working with stone.



WCGMC has quite a collection of lapidary amethyst. The sphere on the left was awarded to a lucky raffle winner at GemFest 2015. Ed Smith has faceted some gems (upper middle) and someone will get a chance to carve up polished sections from the layered amethyst vein (lower middle). Purple hearts on the right only lack a jewelry chain.

References:

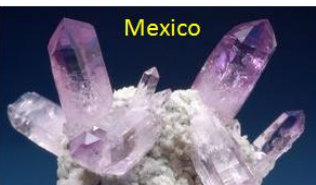
Akhaven, A. C., 2012, The Quartz Page: Amethyst, website: <http://www.quartzpage.de/amethyst.html>

Amethyst Mine Panorama website: <http://www.amethystmine.com/>

Jacquot, R., 2014, Scufflin Acres, Virginia's Earth Shaking Amethyst, v. 1. #2, p. 55



South Africa



Mexico



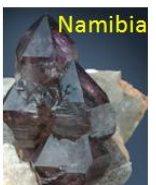
Mexico



Afghanistan



Hungary



Namibia

A few more wonderful amethyst specimens: (photos by A. Akhaven, The Quartz page website)



SITE OF THE MONTH

Moose River by Fred Haynes



When most of us think of quartz in New York State we think of Herkimers. Yes, that is quartz and they are very nice. But last summer WCGMC found another site in the state to collect quartz and get wet at the same time. In September, we searched the shores of the Moose River.



The Moose River in southeastern Lewis County.

The metamorphosed sedimentary rocks cut by the Moose River along the southwestern flank of the Adirondacks are dominated by garnet and cordierite bearing gneiss, dark amphibolites, and biotite schists. But, in at least one location a dipping greenish quartzite unit (metamorphosed and chlorite-coated sandstone) is exposed by the river. The region is mapped as "undivided metasedimentary rock and related migmatite" on the New York State Adirondack Region geology map, which is a fair assessment given the variety of rock types present.

The greenish quartzite encountered on the south side of the river a few miles west of McKeever is locally fractured and brecciated (perhaps a fault zone?). The fractures and vugs are filled with milky quartz. Terminated crystals, mostly pencil sized, but some finger sized, line the fractures and fill vugs, often associated with calcite. Specimens can be found along the shore where the river has eroded the fractured quartzite or they can be found in the river.

At the same embayment in the river where the quartz is found, there are also river rocks of a bluish marbleized limestone with embedded small pyroxene crystals and phlogopite. The quartzite unit can be



Quartz crystals found under water are typically completely covered with an oxide coating (manganese?) and the associated calcite has been slowly etched by the mildly acidic river waters. Craig Stephens found this little gem in about 3 feet of water several feet from the shoreline.

found in outcrop, but the marble unit does not appear to be exposed. Most likely the marble unit is less resistant and is under cover along the shoreline. Significant outcrops of gneiss and migmatite dominate the rest of the shoreline and the rocks in the river.



A sampling of rock from Moose River. The upper row contain quartz crystals. In the lower left is a piece of bluish marble containing augite. The etched calcite rhomb was found in the river.

WCGMC Member
February Birthdays

Dena Tokaya

Inga Wells

Abe Lincoln & George Washington

James Dwight Dana *



Abe and George are a bit delinquent on their dues, but we did not want Dena and Inga to feel alone on the list.

* James Dwight Dana, author of the System of Mineralogy in 1837, was born on February 12, 1813 in Utica, NY and is an honorary member of WCGMC. Wonder how many Herkimers he collected as a child?



Pantone, a world authority on color both in design and in creative use, has named **Rose Quartz** as one of the Colors of the Year for 2016. I guess we all need to give our rose quartz specimen prime display locations this year. **Serenity blue** is also a color of the year. Someone should have told them that kyanite would have been a better name for their second color.



“The Quartz Page” Website

In the course of this research I discovered an absolutely wonderful and highly professional website about “all things quartz”. I would highly recommend a visit and perhaps even a bookmark. Fully indexed and referenced, well constructed and well written, the site contains a wealth of information on both the crystalline and cryptocrystalline varieties of quartz and silica.

Next time you are confused about a silica rock name or a location you may want to give this website a look. In addition to the descriptive information provided, and with

the author’s permission, I have included a number of photos from the site in this issue of our newsletter.

Here is a link to the title page:

<http://www.quartzpage.de/news.html>

Albany Mineral Show **Capital District Mineral Club**

Feb. 13-14 10AM-5PM

New York State Museum, Empire Plaza, 222 Madison Ave. , Albany

Worried about weather and transportation to Albany?

The Syracuse Club has chartered a bus for Saturday and has offered seats. Here is the pertinent info:

GMSS (Gem & Min. Soc. of Syracuse) Bus Trip
Saturday February 13, 2016

Bus leaves The Shoppingtown Lot (Dewitt) at 8 AM
Returns at approx. 10PM, Cost is \$35 per person

Show admission (\$5) and dinner are on your own

contact Mark Grasmeyer@ 315-317-1350 ASAP for a seat.

ARKANSAS QUARTZ – A December Trip



No discussion on quartz is complete without mention of Arkansas. Turns out Linda and Bill made a trek there in December to visit rock shops and collect. They traded heavily with their rockhound friends at the [Atlantis Found! Gardens and Gifts](#) Rock Shop in Mt. Ida. Linda acquired the two larger pieces in this photo there by trade and then collected the larger piece on the left at the Coleman Mine. The chrysanthemum quartz in the left front is from China and is there for scale. It is 4” across.

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Club meets 2nd Friday of each month starting in Sept.

Social meeting at 6:30 PM.

Regular meeting at 7:00 PM

Park Presbyterian Church, Maple Court, Newark, NY

Website – <http://www.wcgmc.org/>

Dues are only \$15 individual or \$20 family for a full season of fun. Send to:

WCGMC, P. O. Box 4, Newark, NY 14513

The Public is always welcomed
First Class, Dated, Meetings & Time Valued



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