

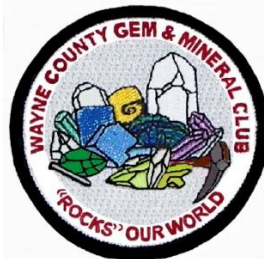
Wayne County Gem and Mineral Club News

September, 2016

Always Looking for Places to Dig!



Eldredgeops rana (left) and *Monodechenella macrocephala* (right) from Green's Landing.
(see pg. 6, 7) Photos and Specimen of Stephen Mayer



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

September Birthstone



Sapphire



Such a centerpiece: Thunder Bay amethyst and Little Pig Mine green fluorite (see pg. 4).

Fall WCGMC Meetings

Our monthly club meetings will resume on **Friday September 9th** at the Park Presbyterian Church, Maple Court, Newark, NY.

We meet at 7:00 PM, but folks start arriving early to socialize and share mineral stories.

Sept. Program: "Rock Potpourri"
Presented by: Dave Millis (Rock Doc)

October 14th: "Summer Collecting"

The October meeting is your chance to show off your summer collecting finds and share stories about your trips. Bring your extras to trade with others. Bring your unknowns for folks to identify or to check for fluorescence.

Mark your calendars for each second Friday of the month after September, including the famous Holiday Party on December 9th. That is one event you will not want to miss.

Club Workshop, Saturday, September 10th

We will restart our monthly Saturday workshops in September. 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. Sept. 10th

Where: The Weiler's Barn and Club 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.



Members of WCGMC and NPGS atop banded siliceous iron formation outcrop near Beardmore, Ontario. The white bands are chert, red bands are jasper (hematitic-rich chert) and the silvery black bands are magnetite chert. We were not allowed to hammer on this outcrop, but across the road we collected plenty of this material where it was intensely folded. **More trip news on page 4.**

Photo by Jerry White (OGS) with Linda Schmidtgal's camera



Mineral Musings

Collecting Thin Sections ?

by Fred Haynes

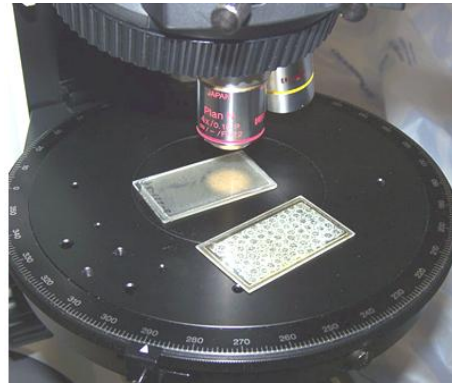


People come in all sizes and so do collectible rocks and minerals. There are collectors who prefer garden rocks, as big as they can carry (or even bigger). These people will do this until their yards or patios are completely covered by rocks. And then they start building piles. You know who you are! There are folks who like cabinet specimens of several inches. You need space to display these also and typically quality cabinet specimen can deplete the wallet all too quickly.

Me, I prefer mineral specimens that are called miniatures, no longer than 2" in their longest dimension. A few dozen can fit on a display shelf or in a drawer. Of course there are thumbnail collectors who specialize in specimens that can fit into a one inch cube. They even have neat little special boxes, called Perky boxes named after the collector/dealer that popularized the theme. And then there are the micromounters. These collectors can purchase much of their material less expensively and the number of available minerals seems endless, but then they require binocular microscopes and perhaps close-up camera lens to best view their prized possession.

But what about collecting minerals on thin section. Is there a place for that? OK, first off what is a thin section? According to the bible of the internet, Wikipedia tells us that a thin section is a "laboratory preparation of a rock, mineral, soil, bone, or even metal for use with a polarizing microscope". Fine, but what is it? Let me try: a thin section is a tiny sliver of rock,

typically mounted/glued onto a microscope slide that permits light to pass through all the transparent mineral phases. As it turns out if you mount a polished rock surface onto a glass microscope slide and grind/polish the surface down to 30 microns in thickness (that's about 1/800th of an inch for the metrically challenged) then many minerals will display characteristic colors and properties upon the transmission of polarized light. In this way minerals can be identified under the microscope. Furthermore their textures and how they are intergrown with each other can be used to interpret how the minerals grew and how a rock might have formed.



Thin sections placed on a rotating microscope stage and ready to be viewed with transmitted light from below.

What is polarized light you say? Normal light from the sun or an artificial source travels as a light wave and vibrates in both horizontal and vertical directions. This light is unpolarized. To polarize light it is necessary to remove one of those components such that the light wave is vibrating in a single plane. The best method to do this involves a simple Polaroid filter that blocks

one of the planes of the incoming light. The light passing through the filter then strikes the thin section completely polarized. So why do this you might ask? Well, there are many reasons, but let's address two.

Pleochroism: Many minerals display a property called pleochroism when subjected to a polarized light source. Simply put they absorb and refract the polarized light differently depending on the angle of incidence of the light into the crystal structure. The result is that the color of the light wave that passes through the mineral changes with orientation, and the mineral is said to exhibit pleochroism.



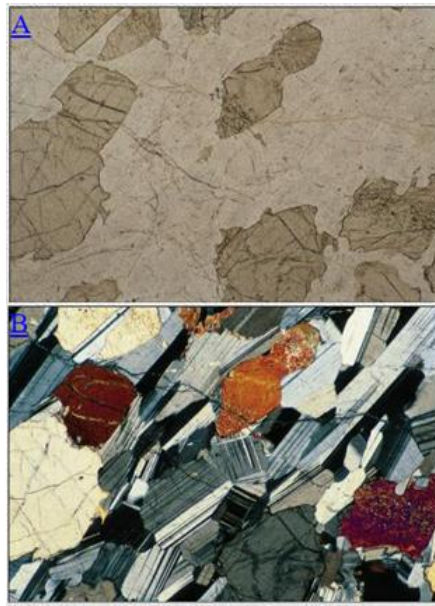
Two views of the same thin section under plane polarized light, but rotated 90 degrees. The brown grains are biotite and show strong pleochroism. The clear minerals in between are a combination of quartz and plagioclase, neither of which exhibits pleochroism.

Rotating the thin section on the microscope stage causes these minerals to literally jump out when viewed as they change colors with orientation. This helps to identify and distinguish many minerals. Many minerals show strong pleochroism: biotite, beryl, many amphiboles, some pyroxenes, titanite, apatite, corundum and tourmaline to name a few.

Birefringence: If one polarizer is good, two must be better! If a polarizer can restrict passing light to one plane, then a second polarizer can be set up to block that direction such that no light will pass. But, if we put our thin section in between the two perpendicular polarizers then any refraction or unalignment of the light caused by the mineral in between will not be blocked. The light that passes through is then solely a function of the capacity of the mineral being observed to refract the polarized light. As with pleochroism, birefringence depends on crystal orientation and rotation of the thin section is a key process in evaluating birefringence. Calcite is very strongly birefringent, other minerals which display colorful birefringence are tremolite, most micas, epidote, some pyroxenes.

Naturally, observing a lack of pleochroism or birefringence can be equally diagnostic. Isotropic phases like fluorite, garnet or spinel will lack these properties when viewed in thin section under polarized light. And, of course, truly opaque minerals like magnetite or most sulfides cannot be investigated with transmitted light. They require reflective light microscopy from above. But that is another whole topic.

It is, of course, more complicated than this and a thin section will contain mineral grains at variable orientations which therefore



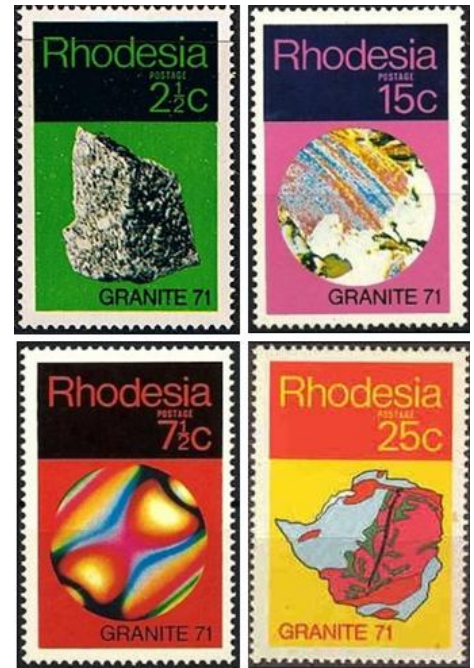
Birefringence and twinning: At the top plane polarized light passes through a thin section of a gabbro. The darker minerals are pyroxene, the lighter minerals are plagioclase. When a second polarizer is inserted above the thin section (lower photo), lamellar albite twinning is observed in the plagioclase and the birefringence of the pyroxene is also evident.

exhibit varying properties, but a trained petrographer (geologist specializing in describing rocks) can combine observations under incident light, unpolarized transmitted light, plane polarized light and doubly polarized light (or crossed nicols) to identify minerals and rock properties.

OR perhaps one can just collect thin sections cuz they are pretty in the microscope?

CAVEAT: The problem with collecting thin sections is that the tools of the trade are quite expensive. A decent binocular polarizing microscope is several thousand dollars new, although refurbished scopes are available for just over \$1300. Thin section machines can be even more expensive and the process is tedious and a bit of an art. Grind your rocks too far and there will be nothing left. Stop before they get down to 30 microns and the characteristic properties will not be

evident. Of course you can send your rocks out for thin sectioning, but that service is not inexpensive either. Expect to pay \$20 or more for a standard thin section.



The African nation of Rhodesia honored an international Geology Seminar on Granites held in Salisbury in 1971 by issuing a series of four stamps. The 2 ½ cent issue on the upper left depicts a simple granite hand sample. The 15 cent variety set on pink shows a thin section view of muscovite and quartz viewed with plane polarized light. The muscovite shows pleochroism while the quartz is clear. A beautiful biaxial interference figure from a single muscovite grain is depicted on the 7½ cent stamp. This interference pattern occurs when a flake of muscovite is viewed with both polarizers in place. The final 25 cent stamp in the set shows a geologic map of Rhodesia with the various granites colored red and orange. The famous gold belts in Rhodesia are depicted in green.

References:

Phillips, W. M., 1971, Mineral Optics, Freeman and Company, 247 p.

Rhodesia Postal Service, 1971, First Day of Issue Information Card for Stamps Honoring Granite Seminar



NORTH OF LAKE SUPERIOR: 2800 MILES IN 10 DAYS



By Fred Haynes: Where should I start? The 10 day August trip to Thunder Bay and back again was a blast. We all returned with enough minerals and memories to last through the winter (or at least until our trip to the Adirondacks in September!).

But first and foremost: Just as the 1959 stamp Issue in the header was a joint issue of the USA and Canada, this trip was a two country trip with WCGMC and the Niagara Peninsula Geological Society (NPGS) of St. Catharine's, Ontario. Those of us from WCGMC thank NPGS for allowing us to join them, and in particular to their field trip leader Ashley Pollock, who planned the itinerary and set up the many visits requiring permission and outside leadership.



We had a camp cook! John Anderson, here displaying his loyalty for the Ottawa Senators, cooks breakfast at Rossport Provincial Park campsite. For the five nights we camped in two Ontario parks John cooked breakfast and dinner for all 15 of us while his wife Patti went rockhounding. He even found time to make us sandwiches for lunch. John claims he awoke at 4:30 to make sandwiches and prep for breakfast, but none of us actually know if this is true! BUT, coffee was always ready at 6:30 and eggs or pancakes soon followed.

The NPGS portion of the trip included five plus days and more than fifteen great sites from Sault Ste. Marie, Ontario to just west of Thunder Bay. Amethyst in Thunder Bay was the highlight, but we collected fluorite at two locations, silver at another, Mary Ellen jasper, banded iron formation, and all sorts of neat rocks at wonderful Lake Superior stone beaches. We were led to an old mine site by Jerry White of the Ontario Geological Society where we even found visible gold. Matt Weiler found a piece with both gold and brightly fluorescent scheelite.



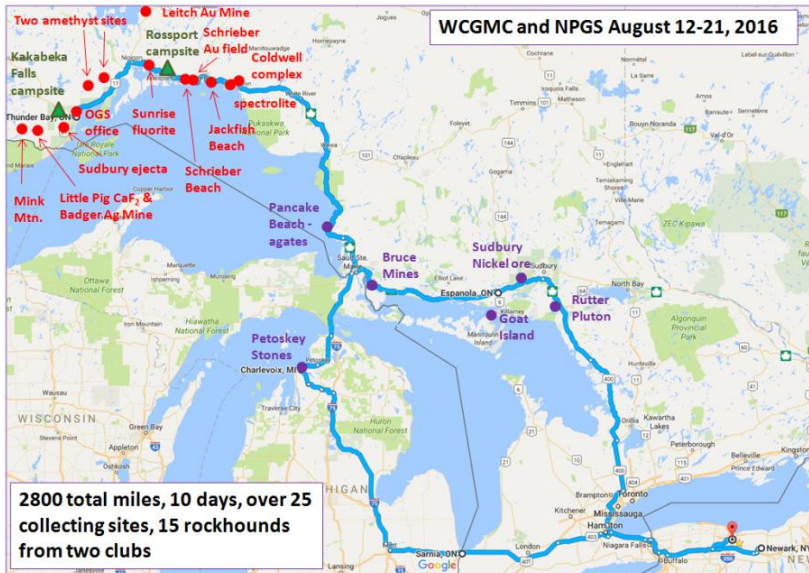
Doesn't Eva Jane look like a traffic cop at the portal into the Badger Silver Mine. It was more than 20 degrees cooler down where Linda is standing than it was out on the dumps. Yes that is Mario trying his best to hide behind the leaves.
Photo by Ashley Pollock, NPGS



Matt Weiler had an interesting week. He made friends with an inuksuk, one of literally thousands we saw atop the roadcuts along the Trans Canadian Highway. The person-like stone cairns are used by the Inuit and other arctic peoples to mark trails, offer greeting, or in cases like this, just to indicate "someone was there". At Jackfish beach, Matt took a nap on a bed of stones. Perhaps he knew that this dad would need serious help extracting a quartz lined vug from a roadcut near Kakabeka Falls in the days ahead.

WCGMC members took our time getting to and from Sault Ste. Marie adding several stops along a northern route through Sudbury, Ontario on the way and in Michigan (yes Petoskey stones) on the way home. There is way to much to report on in one note in one newsletter so you can expect to see stories and pictures from the trip throughout the winter.

We have also set aside the October club meeting for all to bring their summer finds. Expect to see a lot of northern Ontario stones and minerals. Amethyst and fluorite for sure, but also polished pieces of nickel ore from Sudbury, Mary Ellen jasper (stromatolites) from Mink Mountain and Petoskey stones (Silurian *Hexagonaria* coral) from Lake Michigan.



What a trip: 2800 miles (or is it 4600 kilometers!). Red stops were planned by Niagara Peninsular Geol. Soc. WCGMC made stops in blue on Ontario route to Sault Ste. Marie where we met the NPGS and on the Michigan route on the way home.

There are more pictures posted on our Facebook page linked [here](#) for those of you Facebook users. And more will follow in subsequent newsletters.



We did see three live black bears along the roadside one our trip, but none stuck around for a group photo or for that matter a mug shot. This guy did, however, and on the way home we got a group picture. If you wonder why Winnie the Pooh, stories written by British author A.A. Milne, is immortalized by this "statue" in Little River, Ontario, then link to [this Wikipedia site](#) and find out!

Photo with Linda Schimdtgall's camera

Sapphire for September

Wow, too much news this month, and not much room left for the month's beautiful birthstone. But we do not want to disappoint our members with September birthdays.

Fortunately sapphire is the bright blue form of the mineral corundum, which has already been discussed as the red variety is ruby ([see July birthstone note](#)). Trace amopunts of iron and/or titanium provide the blue color.

Sapphires grow in metamorphic rocks like schist and gneiss, but gem sapphires are almost always recovered after weathering and erosion has liberated the extremely hard crystals. Following

transport by streams, they are found in sediments where they are often "mined" by hand.



A raw sapphire shows the crystal form. Heating often deepens the color and improves the clarity.

The highest quality, deepest blue sapphires have been recovered in stream deposits in Myanmar (Burma), Sri Lanka, northern India and other southeast Asia countries. Sapphire has been cherished since the Middle Ages, with clergy often wearing sapphire to symbolize heaven.

Star sapphires, such as that depicted on the Australia stamp in the birthday box, are also popular. Intersecting tiny inclusions (often rutile needles) produce the six-rayed "star" in a phenomena called asterism when the sapphire is viewed under a single bring light.

**WCGMC Member
September Birthdays**

[Rob Bancroft](#)

[Debbie Breese](#)

[George Cataldo](#)

[Donna Dow](#)

[Chris Elam](#)

[Linda Schimdtgall](#)

[Gary Thomas](#)

[Donna Watkins](#)






Wayne County Fair



The WCGMC was multi-tasking in August. While several of us were off in northern Ontario collecting stones and getting dirty, others were representing the club at the Wayne County Fair. Thanks to work by Laurie Frey we were able to sponsor a booth. Bill Lesniak did yeoman work getting information and rocks to the booth. Bill received help manning the booth from Sandy & Rich Wirth, Ken Rowe, Donna Dow, Tammi Murtha and son Jon, Kathleen Cappon, Henry Becker, and Julie Daniels over the course of the event.

But that was not all. Our very own junior member Cheyenne Daniels entered an exhibit that was selected to advance to the New York State Fair. Her exhibit will be in the 4-H building (near the Indian Village) for the duration of the state fair which runs from August 25th -Sept. 5th in Syracuse.



And here is Cheyenne and her State Fair exhibit currently on display in Syracuse. Photo by Julie Daniels

But that is still not all. The 4-H group from Ontario County prominently displayed egg crate rock/mineral collections acquired during WCGMC event back in June at Camp Beechwood.



Ontario County 4-H display at Wayne County Fair.

Photo by Bill Lesniak.

Local Field Trips in August

But that is still not all! While the fair was in progress and with collectors in Canada, Bill Chapman led two separate single day WCGMC trips here in western New York. On Tuesday August 16th he led folks to Ace of Diamonds in Middleville, NY for Herkimer Diamonds. They report success with the general search, but the new sluice on site for sifting loose material did not seem to have adequate water flow to process much loose material. Most of the group's success was obtained the old fashioned way, breaking the large boulders in search of vugs or sifting the rubble piles by hand for loose "diamonds".

Bill travelled to Herkimer County with Sue Hoch and they stopped at Little Falls on the way home to look for trilobites in the Utica Shale. The site is known for being prolific for trilobite parts, in particular cephalons (heads), but with full trilobites being most elusive. Bill and Sue report that their August visit fit this description. Most trilobite segments found were molts and/or partial pieces.

On Saturday August 20th Bill led 6 members (including a new family) on a fossil hunt at three Middle Devonian sites. The group met on Rte. 18 in Canandaigua in search of trilobites and then ventured to sites in Bristol and in Honeoye Falls. In a creek in Bristol a 6" long, 1" diameter cephalopod was found. The Honeoye site featured partial trilobites, lots of brachiopods, and several Genus of crinoids, some of which are quite different from those found elsewhere in the region.

JOINT CLUB TRIP TO GREEN'S LANDING

On August 7th, Stephen Mayer led ten WCGMC members and a like number from the Rochester Academy of Science Fossil Section on our annual fossil hunt in Green's Landing south of Canandaigua. The site is on private property, but the owner graciously allows us access one day each year.

We were blessed by a wonderful low temperature, low humidity day and were not disappointed by the fossil finds. A record four species of trilobites were uncovered. *Eldredgeops rana*, *Monodechenella macrocephala*, *Dipluera dekayi*, and *Bellacartwrightia phyllocaudata* were all found in either the Jaycox member of the Ludlowville Formation or the lowermost Deep Run Member of the Moscow Formation. [See photo on page 1]

(see base of page 7 for more on this trip)

WCGMC 2016 Field Trip Schedule

last update (8/25/2016)

Fall planning: The season is shortening, but we still have some trips planned and will plan more. You should always contact the trip leader for details and possible changes. Or come to our monthly meeting and help plan. Additional dates will be added with each newsletter, and on the website.

Remember to attend a WCGMC field trip you must be a club member, or a member of an affiliated club if you do not live in our region.

Sept 15-18 (long weekend)—Adirondacks (Thurs – Moose River, Fine roadcut; Friday-Valentine Mine, Seavey Quarry, Rose Road at night; Sat. –Benson Mines, Rose Road; Sunday – Talcville (hexagonite).

Please let Fred Haynes know if you plan to attend. We have accommodations in Star Lake, but first come first serve for beds. Inform me ASAP as to numbers requiring accommodations and which nights.

Sept 22-25 (Buffalo Geol. Society) – To attend you must join BGS - 4 day trip to Cincinnati and 3 world class fossil Locations (Napoleon and St. Paul Quarries in Indiana, Mt. Orab site for Isotelus, etc.) and maybe more *Bill Lesniak and Fred Haynes are attending. Contact either if you want more detail.*

October 8-9: Walworth – Sat. 7-2, Sun. 7-noon – (Details to follow) And we will schedule more in October

SHOWS and OTHER EVENTS TO KEEP ON YOUR RADAR in the next few months

October 22-23 – Rochester Gem, Mineral, Jewelry and Fossil Show and Sale, sponsored by Rochester Lapidary Society, <http://www.rochesterlapidary.org/show/index.htm>



Stephen Mayer has been to Ridgemount Quarry three times this summer. He has made quite a haul collecting eurypterids in the Silurian Williamson Formation.

Green's Landing, a joint WCGMC and RAS field trip in August



Pterinopecten undosus

RAS member Gerry Kloc collected, reconstructed, and photographed the *Heliophyllum halli* on the left. The unusual splayed bivalve on the right was found by Fred Haynes in the Green's Landing Coral Bed.

Wayne County Gem & Mineral Contacts

ELECTED OFFICERS

Glenn Weiler – President gwexterior@gmail.com
315-594-8478
Jerry Donahue – VP Chester145322@yahoo.com
585-548-3200
Eva Jane Weiler – Secretary gwexterior@gmail.com
315-594-8478
Bill Lesniak – Treasurer/Webmaster
Dirtman300@aol.com 315-483-8061

Board of Directors

Ken Rowe gotrox88@localnet.com 315-331-1438
Susie Hoch smhrockfinder@rocketmail.com
585-794-7287
Linda Schmidtgal lees@tds.net 315-365-2448
Laurie Frey Lmcfaul328@aol.com 315-483-9894

APPOINTED POSITIONS

Bill Chapman – Field Trip Chair
batnpill@empacc.net 607-868-4649
Fred Haynes – Newsletter Editor
fredmhaynes55@gmail.com 585-203-1733
Glenn Weiler – Workshop Coordinator
Linda Schmidtgal – Collection Curator

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

Visit us on Facebook:

<https://www.facebook.com/groups/1675855046010058/>

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



Wayne County Gem and Mineral Club
P.O. Box 4
Newark, New York 14513