Wayne County Gem and Mineral Club News

November, 2015 **Always Looking for Places to Dig!**

These 91 dravite (variety of tourmaline) crystals are from Yinniethbarra Station in Pilbara, Western Australia (see page 4). They are each about 1" long and are part of the WCGMC collection.

Website
http://www.wcgmc.org/

Joggins Fossil Cliffs (see p.6)

Walworth Quarry: Ken and Isaac St. John: like father like son *(see page 7)*

Club Meeting, Friday Nov. 13, 7:00 PM

Presbyterian Church, Maple Court, Newark, NY

Program: "Yellow Minerals"

Bring yellow gems and minerals from your collection. Sulfur, wulfenite, grossular, citrine, wavellite, fluorite (they all count). So does honey colored calcite. Use your imagination. Does pyrite count? How about gold? Yes and yes. Does anyone have a yellow fossil?

Club Workshop, Saturday, Nov. 14th

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. We plan to hold similar workshops once a month through the fall and winter.

When: 10:00 AM til mid afternoon, Sat. Nov. 14th
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.

WCGMC Christmas Party is Coming

December 11th – It is not too early to think about the club Christmas party. Mark the date on your calendar in ink and plan on joining us. More details next month, but rest assured there will be a mineral surprise for all who attend.

Editor's Note: Now that the summer field season is past and timely reviews of club field trips can not be regular features of the winter's newsletters, it is time for you all to help me out. During the past year several of you have helped. Ken St. John (twice), Stephen Mayer (twice), Ken Rowe, and, in this issue, Kathleen Cappon, have written interesting and informative contributions. This is a call for others to step forward over the winter and contribute. A fully written note is great, but I can help with that if you have the idea or maybe just a picture to get it started. Our newsletter is better when others contribute.

Mineral Musings
by Fred Haynes

Dolomite Gets No Respect

In mid-October, over 130 mineral collectors from several northeast states and Canada converged on Walworth Quarry for the annual fluorite hunt (see page 7). Every May, the same crowd treks to Penfield when The Dolomite Group opens that quarry to folks hoping to score a nice transparent-purple fluorite or maybe some dogtooth calcite. Closer to Buffalo the prized finds are dogtooth calcite, clear selenite, and, of course, small purple fluorites when clubs visit the Lockport Quarry.

Granted the fluorite and other less common vug filling minerals like sphalerite, celestine, and honey colored dogtooth calcite are nice finds and worthy of special attention. But, there is another fine crystalline mineral hiding in the vugs of the Lockport dolostone. Yes, I speak of the carbonate mineral, **dolomite,** or $CaMg(CO_3)_2$ Everyone shines their flashlight into the dark vugs of car-sized boulders hoping to see a flat transparent cubic cornered, multi-inch fluorite gleaming back at them. Absent that observation, collectors move on to the next vug, the next boulder, the next quarry face.

In the next few paragraphs, I am going to try to convince you to take a second look into the vug. Pause a few seconds to evaluate the white to pink dolomite crystals that you are categorically dismissing as unworthy of your collecting attention. Are not most of the vugs lined with clean shiny dolomite crystals? Is there a floater piece in the vug that can be easily removed that displays multiple tiers of brilliantly terminated rhombohedral dolomite? If yes, just why are these not worthy of extraction?

We will start with Walworth, the most recent location where many of us turned over and pounded on rocks. Most of the dolomite there is white. Crystals line the vugs and often vugs are so closely spaced that small dolostone remnants can be caught between vugs with both sides coated with dolomite crystals. The individual crystals are typically less than 1 cm in size, but can be a bit larger. The aesthetics of any given piece depend on the organization and display of the crystals atop the dolostone matrix, and, as always, on the eyes of the beholder.

Walworth dolomite: This is my favorite Walworth dolomite piece and it is currently displayed front and center in my New York mineral collection. Crystals surround the piece as the only connection to the matrix was at the base.

In my limited experiences (two visits), Penfield dolomites are typically smaller than those at Walworth, but they are just as brilliantly white and can coat and fill vugs completely. It is great when a mat of the small white dolomite crystals provide the base for one inch or larger fine dogtooth calcites, but they can be fine without any mineral cover also.

Penfield Quarry dolomite crystals are often smaller than the other locations, but they still can yield aesthetic pieces.

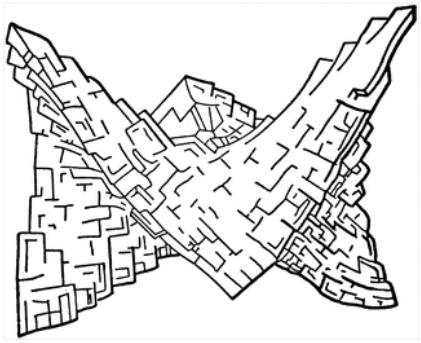
Here is another Penfield dolomite sample. This one is from the John Betts online museum. The piece is 6 cm across; the crystals are 3-6mm.

The dolomite at Lockport is easily distinguished from that of the other two quarries. It is noticeably pink. The pink color generally reflects minor iron substituting for magnesium position in the dolomite lattice. Dolomite is trigonal, and like calcite, has three cleavages, that form rhombohedrons.

Lockport Quarry: Three miniature specimens of pinkish dolomite from my collection. They may have taken a bit of an orange color in this picture taken with artificial light, but they are clearly pink.

This is a small cabinet piece from Lockport, about 4" square. The color is better represented in this outdoor picture.

In my observations, the Lockport dolomite is the best location of the three for observing curved or twisted rhomobohedral dolomite crystals. Dolomite crystals that are not perfectly rhomobohedral are often called saddle dolomite. They are characterized by curved crystal faces which impart almost a warped appearance. Although the origin is poorly understood, most saddle dolomites show Ca-enrichment towards the crystal edges. It has been theorized that rapid growth leads to the development of extra wedges of growth at crystal edges causing the curved appearance (Searl, 1989).



A diagrammatical view of saddle dolomite.

Most of the occurrences of dolomite in western New York (and there are many more than the three I mention here), are hosted by the Lockport Formation of Middle Silurian age (~420 million years). The unit averages 200 feet thick and outcrops in an east-west swath of some 200 miles from Niagara County in the west to Herkimer County in the east. The trend continues west into southern Canada and there are numerous Silurian dolostone quarries there as well.

The unit is very resistant and is a prominent ridge former in western New York. The Lockport dolostone forms the lip of Niagara Falls and the Upper Falls of the Genesee River in Rochester. It is this resistance and hardness that makes it useful in construction applications and as crushed stone for landfill and landscaping.

The original rocks formed in a tidal environment when New York was much closer to the equator. Periodic exposure of the limey muds and recently lithified limestone and dolostone permitted ground water to penetrate the upper intervals forming vugs and cavities by dissolution. When the rocks were later buried as deeply as three miles hot brines (150-170ºC) found their way to the vugs and precipitated the remarkable set of minerals we find today. As the host dolostone is predominately comprised of the mineral dolomite it is not surprising that dolomite also dominates the vug filling.

This vuggy boulder at Lockport is about 2 meters across. The large vug and all the smaller ones seemed to contain only dolomite and a small amount of selenite.

Much of the surface exposure and vug generation occurred near the end of Lockport deposition so the mineralized layers are generally restricted to the uppermost layers. Collectors are wise to ask where the operators have moved the upper faces back recently when they visit. The deeper levels provide great dolostone for industrial use, but carry little of interest to collectors.

OK, so have I convinced you to collect a little dolomite on your next quarry trip?

References:

Amos, F. The Rocks of Western New York, RAS online site

NYSM Webpage: Minerals of New York's Lockport Formation,

Searl, A., 1989, Saddle Dolomite: a new view of its nature and origin, Mineralogical Magazine, v. 53, p. 547-555.

MINERAL OF THE MONTH

By Fred Haynes

Dravite: A variety of tourmaline

Dravite is a tourmaline within the Alkali Subgroup 1. This means that the X-site in the complex formula below is predominantly occupied by sodium (Na). In the case of dravite the Y site is occupied by magnesium (Mg) and the Z site is aluminum (Al). The boron cyclosilicate mineral is always dark in color, ranging from chocolate brown to almost jet black. Occasionally, there is sufficient chromium in the Y and/or Z site to impart a dark green color. Dravite is most commonly found in metamorphosed limestones and in higher grade mafic schists.

Tourmaline: $X\ Y_3\ Z_6\ [Si_6O_{18}][BO_3]_3\ V_3\ W$

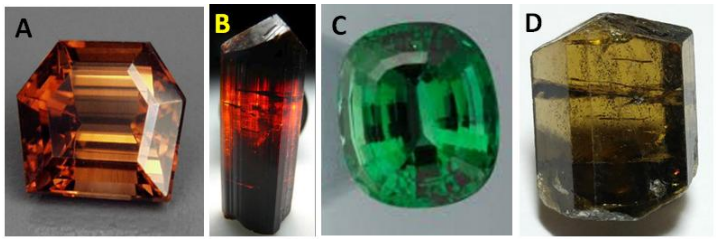
Dravite was discovered and named at a site along the Drava River in Carthinia in the late 19th century. At the time, Carthinia was a part of the Austro-Hungarian Empire. The region is now known as Dravograd, and is within the country of Slovenia. In March, 2000, Slovenia issued a postage stamp depicting dravite from Dravograd (see above).

Dravite from Dravograd, Slovenia. Longest crystal is 20 mm, set in muscovite mica.
Photo from John Betts online mineral museum

Another interesting occurrence of dravite is in Precambrian biotite schists near Yinnietharra Station, Western Australia. In the most active period of mining from 1968-1971, an estimated 12 tons of terminated somewhat stubby prisms with three-faced pyramidal termination faces were recovered. Although most crystals are free of matrix attachment, small feldspar laths or mica can be attached. Single and twinned crystals are available.

Yinnietharra dravite from the WCGMC collection.
See photo on page 1 also.

Although many dravites are too dark and contain too many inclusions to be cut and faceted, gem quality dravites do exist. In the 1960's both brown and green (chromium) dravites were recovered in metamorphosed limestones in northern and eastern Tanzania. Mica-schists in the Jajarkot District in Nepal have also yielded gem quality dravite tourmalines in association with kyanite.



Dravite gems: A. 4.14 carat, fancy cut, Tanzania B. uncut 15mm tall, Tanzania C. 11.47 carat chrome dravite, Landanai, Tanzania D. 12m tall, 1.4 gram uncut crystal from Jajarkot District, Nepal.

Although not of gem quality, New York collectors are familiar with dravite. Nothing, however, is simple about the composition of black magnesium-rich tourmalines from the Adirondack Lowlands. They are most certainly not end member dravites as some contain sufficient calcium in the X-site to be considered uvite. In fact many are strongly zoned and the same crystal may be dravite in some zones and uvite in others. Furthermore color is not useful in distinguishing the two dark tourmalines, nor apparently is locality.

Chamberlain and Robinson (2013) suggested that insomuch as much of the black tourmaline at the famous Bower Powers site in Pierrepont was

determined to fall on the dravite side of the solid solution series that it be labeled as dravite. However, many Powers specimens contain zones that are actually uvite (*Marian Lupulescu, pers. comm.*) and the NYSM prefers to label all Adirondack black tourmaline specimens as dravite-uvite unless, or until, they have been analyzed. As if that is not enough confusion for our favorite St. Lawrence County tourmalines, the conventional hydroxide anion (OH) occupying the W-site in either dravite or uvite can be dominated by fluorine (F). In those cases the mineral becomes fluor-dravite or fluor-uvite. Regardless of their composition, the black tourmalines of the Adirondack Lowlands are most certainly worth collecting.

References:

Back, M.E. 2014, Fleishman's Glossary of Mineral Species, Min. Rec. Inc., 420 p.

Chamberlain, S. C., and Robinson, G. W., 2013, The Collector's Guide to the Minerals of New York State, p. 61-67.

Lauf, R. J., 2011, Collector's Guide to the Tourmaline Group, Schiffer Earth Sci. Monograph Volume 10, 93 p.

Lupulescu, M., 2008, Tourmaline-Group Minerals from New York State, Rocks and Minerals, v. 83, 2002-2008.

Lacking an analysis, I have chosen to label the black tourmaline I have collected at Powers Farm as Dravite-Uvite.

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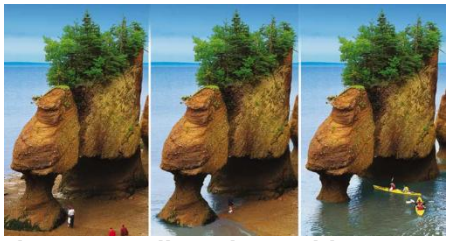
One clear autumn day in early October, four of us ventured to a farm north of Gouverneur where the owner claimed to have several hundred acres with interesting rock and one mine on his property. To an untrained eye this may have appeared to be only a marble boulder in the woods. But once a fresh surface was exposed it was found to contain small sky blue apatite, phlogopite and an unidentified black mineral, probably a pyroxene as it did not seem to show tourmaline terminations. Then it was time to go "under the hood" to check for UV fluorescence. Linda and Bill cover Ken and his black light while Fred photographs from atop a larger marble boulder. Unfortunately, this rock did not light up. We did find scapolite at the mine location on the property and will likely plan a return in the spring. A second new site was visited late in the day. Opportunity abounds in the Adirondack Lowlands.

A Trip to the Maritimes

By Kathleen Cappon

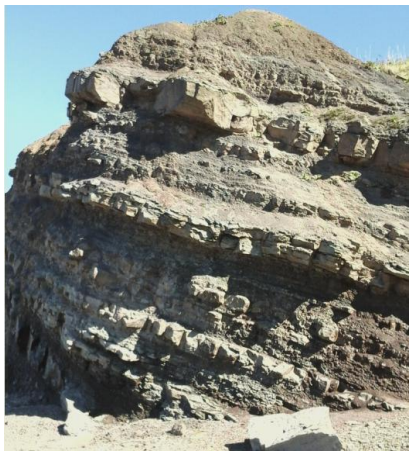
In September, my friend Sandy Moran and I visited Nova Scotia, Cape Breton and New Brunswick. Our intentions were to see the amazing 20 percent larger Bay of Fundy tides due to the timing of that month's super moon. Also, the local shellfish markets, the small fishing villages, and tasting all chowders along our entire route. Our other interests were to explore the beaches and hike the rocky coastlines.

We did visit the famous Hopewell Rocks in New Brunswick which look like islands when the 30 foot tides are in. When the tides are out you walk the ocean floor of the Bay of Fundy, and the rocks become huge looming towers comprised of hard cemented red sandstone conglomerate. The museum on the site presents an interesting background about the pre ice-age formation of the Fundy Basin.



The Hopewell Rocks as tide changes. Over millions of years of tidal action, the Hopewell rocks have been carved into incredible shapes! *Photo is from an internet travel site.*

There are many other areas around the coastal shores of the Maritimes that expose rock strata of geological interest for both the mineral and fossil enthusiast. One of the locations along the Nova Scotia side of the Bay of Fundy is the Joggins Fossil Cliffs. In 2008, this incredible set of exposed “Coal Age” sedimentary strata became the the 15th recognized World Heritage Site.



Joggins Cliffs in Nova Scotia
Photo by K. Cappon

There is a fantastic museum at the site which displays many of the local famous fossils taken from the cliffs. The fossils date back 314 million years during the Pennsylvanian coal age of earth history. Extreme tidal action here has exposed some of the best and most significant coal age fossils in the world.

Upright lycopod tree stump in Carboniferous rocks in Nova Scotia: (Figure 35 from Dawson’s 1868 treatise on Acadian Geology).

In 1842 early geologists, Charles Lyell and William Dawson discovered "carboniferous beds 1400 feet thick with ancient root bearing strata, one above the other, at no less than 68 different levels..." (p. 296 On the Origin of Species by Charles Darwin, 1859).

Ten years later in 1852, Lyell and Dawson made a discovery of tetrapod fossils entombed within an upright Lycopod tree. *Hylonomus lyelli* is the earliest known reptile in the history of life. In 2002 this famous reptile was named the provincial fossil of Nova Scotia.

Fossilized *Hylonomus lyelli*. These early tetrapods are ancestors of crocodiles.

In 1991, *Hylonomus lyelli* found his way onto a Canadian stamp.

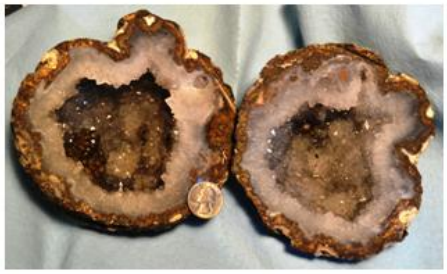
And for you mineral rock hounds, stilbite is the provincial mineral of Nova Scotia. Stilbite is a zeolite mineral that commonly grows within vugs in volcanic rocks.

This 3” across cluster of lustrous pink stilbite is from Harbourville, Nova Scotia. The pink is from tiny amounts of hematite. Photo is from the website of David Joyce Minerals.

October was a busy month for the Wayne County Gem and Mineral Club.

A few of the fluorites I happened upon to photograph at Walworth. None of them are mine! Photos by F. Haynes

We picked a club geode, sawed it, and then raffled it to a member present. Christine Van Neel was the lucky winner.



We were joined by the local Scouts at our monthly meeting on Friday October 9th. Members had brought specimens they considered unusual or special to them.

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