

ROCK TRAILS



VOLUME 60 ISSUE VII August 2022

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**Meetings are held the first Sunday of each month
at 2:00 PM, at**

201 W. Main St. Morenci, MI 49256

Cover Photo: StateLine Gem and Mineral Society members Henry Porter and Bill Schultz cracking geodes at the Fulton County Fair. Photo courtesy of member Linda Wielfaert.

Editor's Note: Beginning with the next newsletter, there will be a deadline for submission on the 20th of each month. Anything submitted after the 20th will appear in the following month's newsletter. Thank you for your cooperation.

The Two Greenstones of Lake Superior

by [Hollis D'Normand](#) Published in Lake superior Magazine



The polished Isle Royale Greenstones were first born in a gas bubble similar to the one encasing an unpolished version just above them.

It's the story of beauty and the basalt ... a story begun in fiery forges more than 2 billion years ago.

The two "greenstones" of Lake Superior share a name and a link to ancient lava flows.

But while Isle Royale Greenstone's rare qualities put a hefty price tag on the semi-precious gem, the value of the rock called Ely Greenstone measures mostly in its history.

One of the stones is used by a fortunate few in settings of gold and silver jewelry. The other has been sought by astronauts learning the story of the Earth itself.

(The beauty fetches about \$90 per gram; its distant basalt-based cousin weighs in at about a buck a pound.)

Each bears the name of the Lake Superior region where it's mostly found. Side by side, there's no mistaking one stone for the other.

Isle Royale Greenstone is actually the mineral "pumpellyite." Its light silky threads flowing throughout a varied green surface earned it a third name, "chlorastrolite," meaning "green star stone."

Ely Greenstone is definitely a rock, a metamorphic rock. It ranges from light to darker green. It comes not with stars, but often in the form of "pillows," blister bubbles of lava spewed in a line from a volcanic fissure into cooler waters during the Precambrian era.

The physical qualities of each have been translated by two Lake Superior artists who have romanced these stones in their work.

Robert Lynch, a schooled silversmith and self-taught gem setter, began his "romance" with Isle Royale Greenstone in 1982 when he and his wife, Nancy, bought Agate City in Two Harbors, Minnesota.

Robert appreciates the gemstone's rich green turtle-back pattern that lends itself beautifully to either silver or gold settings. Nancy appreciates that quality, too, and now sports a stone on her wedding band thanks to her husband's talents.

The gem-setter estimates the value of Isle Royale Greenstone at about \$40,000 a pound. That puts this Lake Superior gem well ahead of the better known agate, with a current value of about \$200 a pound. Out of its league by comparison is the diamond, selling for about \$2.27 million per pound.

Formed after hot lava flows settled and hardened about 1 billion years ago, this high-priced, variegated pebble evolved into its present state as an amygdale that filled a small gas bubble. Hot waters, derived from basaltic lava flows buried deep under current Lake

Superior, leached elements such as calcium, iron and silicate into the amygdule, accounting for its mosaic appearance.

Isle Royale Greenstone, the mineral, can be found in a belt of greenstone, the rock. Greenstone Ridge, one of the earth's largest and thickest lava flows, is up to 800 feet thick and extends deep under Lake Superior in a continuous flow that reappears 50 miles later on the Keweenaw Peninsula in Michigan.

In Isle Royale National Park, the gemstone that bears its name can be found encased in the basalt (hardened volcanic rock) on the island, or if weathered out of the basalt, can be found as pea-sized pebbles on the shore.

These pebbles come solely from Isle Royale and the Upper Peninsula of Michigan, particularly in the archipelago of the national park. This rare stone is best found along the beaches on Smithwick and Mott islands and along the south shore of Siskiwit Lake.

It's also best, and legally, left on those shores. Pocketing Michigan's state gemstone from Isle Royale or its surrounding waters will empty your pockets with a fine of up to \$5,000 and six months of jail time.

The mineral popularly called Isle Royale Greenstone was first described by C.T. Jackson and J.D. Whitney in 1847. A former Harvard professor, Charles H. Palche, named the mineral "pumpellyite" in honor of noted geologist, Raphael Pumpelly. In the 1920s, Pumpelly discovered and described the same mineral in the Keweenaw Peninsula. On March 30, 1973, Isle Royale Greenstone was officially named Michigan's state gemstone.

The stones are rarely found now in the Upper Peninsula, according to Robert Lynch. But in the beds of some Michigan roadways, he suspects, probably lie the crushed remains of expensive green gravel material.

This semi-precious stone is a regular in Robert's working area in the rear of the shop, where he creates rings, earrings, bracelets or any other jewelry. Usually the gems come from the customer's own collections of greenstone.

Before it became illegal to pick and remove greenstone from Isle Royale, many a fisherman or hiker was drawn to the attractive, green mineral with its creamy strands.

These "greenstones in the rough" sat in boxes and coffee cans for years, says Robert.

He cautions that the process of polishing a greenstone should be approached cautiously. Grinding too deeply into the rock can mean grinding away the outer layer that is

responsible for the milky delicate webbing that weaves itself gently upon the soft green pebble.

The gem-setter has also worked with Ely Greenstone, setting the gray-green rock into bracelets and pendants. In the cutting and polishing process, Robert observed its likeness to jade.

Another lake-region artist working with Ely Greenstone is doing something not possible with the small pebbles of Isle Royale Greenstone.

Michael Sinesio carved a tribute to the history of the Ely, Minnesota, area into a large slab of the stone named for the town.

With chisels, wire brushes, sandpaper and diamond grinding wheels, Michael, a local wood and stone carver and a chainsaw artist, coaxed voyageurs, wolves, birds, bear and people from a sizable chunk (about 9.5-by-8.5 feet) of schist from the greenstone formation that occupies a commanding spot along the left side of the road a mile west from town.

Organizers of the appropriately named project of “Schist Happens!” commissioned the artist to carve a bas relief tribute to Ely on the slab.

Michael, a resident of Ely since 1979, set up a temporary studio in an old Pioneer Mine building north of the town, using a small space heater and a sheet of plastic covering the large doorway to battle the cold as he worked through last winter. He sketched, carved, pondered and created forms and figures across the stone’s fragile and unpredictable surface.

Ely Greenstone is darker and harder than the stone found in many other belts. It’s a matter of mineral mix, says the artist, likening it to a banana bread using the same ingredients that tastes different from the ovens of different bakers.

Michael says this greenstone, similar to slate in that it fractures easily, is the most challenging medium with which he has worked. While one area of the stone could withstand a great deal of chiseling, another would be too fragile and pieces of the rock would flake away.

Much of greenstone is schist, or metamorphic rock with a foliated, or platey, structure. The stone’s unpredictable and flaky surface often made Michael’s work tedious and difficult.

Ely Greenstone began 2.7 billion years ago from seething flows of basaltic lava gushing from fiery volcanic fissures onto a cold sea floor. As hot lava met cool water, blister

bubbles left a trail of “pillows,” seen today in areas like the pillow rock outcropping designated as a Minnesota Historic Site near 12th Avenue in the northeast part of Ely and the roadcuts west of town.

Later, this deeply buried rock metamorphosed into its fine-grained, dark green state by “cooking” within the earth’s crust, explains Dr. John Green, a geology professor at the University of Minnesota-Duluth. High concentrations of the minerals chlorite, actinolite or epidote are responsible for the light to dark green color of greenstone.

Volcanic rock often has a green hue and greenstone outcroppings can be found wherever there has been a certain kind of volcanic activity.

In the Lake Superior basin, belts of such greenstone rock, usually surrounded by granite, are most often seen along the northern shore in Canada. The belt of Ely Greenstone has been estimated at 40 miles long by up to six miles wide and is a still visible legacy from the earth’s earliest development. Pillow formations can also be seen in roadcuts on U.S. Highway 2 east of Wakefield, Michigan, and U.S. Highway 41 about five miles west of Marquette, Michigan.

The outcroppings, part of the Canadian Shield, are so significant in the earth’s history that astronauts from the Apollo 15 and 16 missions came to the site for part of their geology training in 1970.

Michael admits that the greenstone made a hard partner in creation of his bas relief, but that it was inspiring to work with some of the oldest rock on the planet.

Still, unlike its gemstone cousin, Ely Greenstone is not known for its “delicate” beauty. But when regarding either Lake Superior’s beauty or its basalt, history will be in the eye of the beholder.

Bench Tips

Smart Solutions for Your Jewelry Making Problems

[Amazon.com/author/bradfordsmith](https://www.amazon.com/author/bradfordsmith)

DEBURRING A HOLE

When you drill a hole, there's always a burr produced on the underside of the metal. We all have our ways of removing them - typically by filing or sanding the area smooth. But doing it this way will put scratches on your piece that will have to be polished off.

A quick way to remove the burr is to grab a drill that's two or three times larger than your hole. Simply twist it in the hole to cut off the burr. I usually do this twisting by hand, but if you have many holes to do, it's easier on your fingers to put the drill into a holder like a pin vice.

CLEANING STEEL SHOT

Steel shot in a vibratory or rotary tumbler works great to burnish and shine your finished silver pieces. But a common problem is how keep the shot clean. Carbon steel shot can get rusty if exposed to the air, and even stainless steel shot can sometimes develop a blackish coating that's hard to remove.

My solution of choice to clean the shot is Classic Coke. Just pour an ounce or two over the shot and let the tumbler run for an hour or so. A bad case might require a second cleaning. Some folks like to let the bubbles in the Coke dissipate before using it so that gas pressure doesn't build up in the tumbler barrel. I've heard that it's the phosphoric acid in Coke that does the trick. While you're waiting for the shot to clean up, just settle back and enjoy the rest of the Coke.

AUGUST 2022

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
Stateline 7 GMS meet. and party	8 Copper Co.	9 Copper Co.	10 Copper Co.	11 Copper Co.	12 Copper Co.	13 Copper Co.
10:00	Rock Week	Rock Week	Rock Week	Rock Week	Rock Week	Rock Week
Bill Schultz's	Field trips	Field trips	Field trips	Field trips	Show	Show
2921 CR H	Pres@ccrmc. info	Pres@ccrmc. info	Pres@ccrmc. info	Pres@ccrmc. info	1-8 PM	1-8 PM
Wauseon						
14 Copper Co.	15	16	17	18	19	20 MGMS
Rock Week						SWAP
Field trips						9:30-6
Pres@ccrmc. info						506 5th St
						Mich. Ctr.
21	22	23	24	25	26	27
28	29	30	31			

SEPTEMBER 2022

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
						Tailgate
						Sale & Swap
						Portage
						MI
18	19	20	21	22	23	24
25	26	27	28	29	30	

Michigan Gem & Mineral Society 2nd Annual SWAP

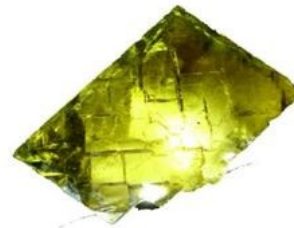
**August 20, 2022
9:30 AM - 6:00 PM
Admission - FREE**



**At the Park by
Center Lake
Boat Launch
506 5th St.
Michigan Ctr., MI**

***GEMS * ROCKS * MINERALS* FOSSILS *
* KIDS TABLE * RAFFLE * BEADS * JEWELRY***

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**Contact Sally at:
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517-522-3396

**Michigan Gem & Mineral Society is
a 501C3 non- profit**



11th Annual Tailgate Sale and Swap

Jewelry, Rocks, Minerals, Lapidary, Equipment,
Crafts and other nifty items.

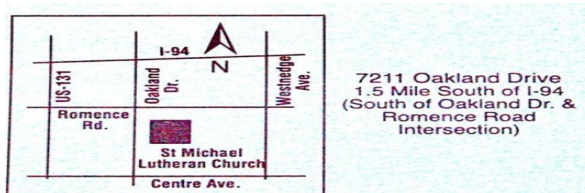
Saturday September 17, 2022 9:00 AM to 3:00 PM

Participants are invited to buy and sell anything & everything; rock-related items or not, if it sells, bring it!

Sellers should bring their own tables. KGMS will not require a booth cost this year but a donation to the Society would be appreciated; a KGMS representative will be present to take donations.

Buyers, plan on lots of bargain-priced items: specimens, crystals, slabs, rough, fossils, equipment, jewelry & more!

24 Sellers last year!



South of I-94.

Questions: Call Bruce Atherton (269) 251-3858 and leave message or email fireball9207@charter.net

Meetings are held on the first Sunday of each month at 2 PM, at 201 West Main St,
Morenci, MI 49256

