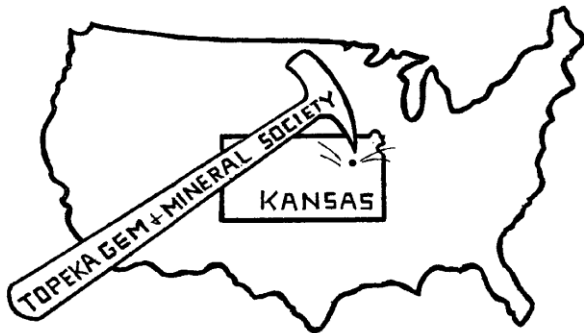


The Topeka Gem and Mineral Society, Inc.
 1934 SW 30th St. Topeka, KS 66611
 Rock2Plate@aol.com

THE GLACIAL DRIFTER



www.TopekaGMS.org or
 Facebook: Topeka Gem and Mineral Society Field Trips

The Topeka Gem & Mineral Society, Inc.
 Organized December 3, 1948

Member of Rocky Mountain Federation of
 Mineralogical Societies American Federation of
 Mineralogical Societies



The Glacial Drifter, Vol. 62, No. 12,
 Dec. 2019



The Purpose of the Topeka Gem & Mineral Society shall be exclusively educational and scientific: (1) to promote interest in geology and the lapidary arts; (2) to encourage the collection and display of rocks, gems, and minerals; (3) to encourage field trips and excursions of a geological, or lapidary nature; and (4) to encourage greater public interest and education in gems and minerals, cooperating with the established institutions in such matters.

Meetings: 4th Friday of each month, September to May, 7:30 pm, Stoffer Science Hall, Room 138, Washburn University. No meeting in December unless notified of a change. Picnic meetings are held, June, July and August.

Dues: Individual, \$15.00; Couple, \$20.00; Junior (under 18 years of age), \$5.00. Dues are collected in December for the following year. Send dues to: **Millie Mowry, Treasurer, 1934 SW 30th St, Topeka, KS 66611.**

www.TopekaGMS.org

2019 OFFICERS AND CHAIRS

President	Mike Cote	220-3272	Cab of the Month	Debra Frantz/Fred Zeferjohn	862-8876
1 st Vice Pres.	Dave Dillon	272-7804	Field Trip Coord.	Will Gilliland	286-0905
2 nd Vice Pres.	Cinda Kunkler	286-1790	Publicity	TGMS Board	
Secretary	Carolyn Brady	233-8305	Welcome/Registration	Harold Merrifield	633-9745
Treasurer	Millie Mowry	267-2849	Property	M. Cote/D. Dillon	220-3272
Directors	Brad Davenport	379-8700	AFMS Scholarship	Cinda Kunkler	286-1790
	Will Gilliland	286-0905	Editor/Exchange Editor	Millie Mowry	267-2849
	Chuck Curtis	286-1790	Show Chairman	Dave Dillon	272-7804
Historian	Open		Show Dealer Chairman	Dave Dillon	272-7804
Federation Rep	Harold Merrifield	633-9745	Show Secretary	Cinda Kunkler	286-1790
Corporation Agent	Millie Mowry	267-2849	Jr. Rockhound Leader	Jason Schulz	640-6617
Librarian	Millie Mowry	267-2849	Show Case Coordinator	Cinda Kunkler	286-1790
Web Master	Jason Schulz	640-6617			

Area Code for all numbers is (785).

EXCHANGE BULLETINS WELCOME

For exchange newsletters contact the club via mailing address listed above or email at rock2plate@aol.com .
Permission is granted to reprint articles only if proper credit is given to the author, Glacial Drifter and the date.

Words from Our Top Rock!

The year is over and so, I am passing the Presidents gavel on to the new President. I want everyone to know that I have enjoyed being the President and hope that you will work with Brad and make him comfortable in his new role. I am looking forward to springtime so that we can start lessons again.

Mike Cote`

Program for the Meeting on January 24th, 2020. This will be a silent auction, so clean out your excess rock And donate it to the club.

We may have a Jr. Rockhound give a quick talk. I do not have this scheduled just yet. I am open to suggestions for meeting ideas; please let me know if you have something you would like one of our meetings to cover!

Cinda Kunkler

We need your **BEST CHOICE UPC Labels** --
Bring them to the monthly meeting, and give
them to Cinda Kunkler.



Best Choice labels were submitted and we received a check for \$90.00! Keep saving them and bring to the next meeting.

AFMS Scholarship: The club donated to RMFMS for the AFMS Scholarship Foundation a total of \$500.05. This brings the total amount of giving by our club to \$15,283.60 or 15,100% which would be the equivalent of \$1/member for 151 years. Through donations from clubs such as ours, the AFMS is able to award \$48,000 in scholarships each year to graduate students in the Earth Sciences.

If you are interested in learning wire wrapping.....

I will start a class on Tuesday evenings at 6:30 p.m. at my house. I have limited space, so I need to know ahead of time if you want to sign up for the class. We will meet at my house on Tuesday nights until the Barn reopens for lessons, then we will move back out there.

Let me know a.s.a.p. so I can get the list of supplies to you that you will need. Call me at 267-2849 or email rock2plate@aol.com

TGMS Event Calendar

DEC. 2019			JAN. 2020		
1	S		1	W	
2	M		2	T	Jr Rockhounds TSCPL rm 101C 6:30 p.m. Wire wrap class at Millie's 1:30 p.m.
3	T		3	F	
4	W		4	S	
5	T		5	S	
6	F		6	M	
7	S		7	T	Wire Wrap Class at Millie's 6:30 p.m.
8	S		8	W	
9	M		9	T	Wire wrap class at Millie's 1:30 p.m.
10	T		10	F	Board Meeting @ Millie's 7 p.m.
11	W		11	S	
12	T		12	S	
13	F		13	M	
14	S		14	T	Wire Wrap Class at Millie's 6:30 p.m.
15	S		15	W	
16	M		16	T	Wire wrap class at Millie's 1:30 p.m.
17	T	NO LESSONS AT THE BARN	17	F	
18	W		18	S	
19	T	NO Wire Wrap Class @ Millie's	19	S	
20	F		20	M	
21	S		21	T	Wire Wrap Class at Millie's 6:30 p.m.
22	S		22	W	
23	M		23	T	Wire wrap class at Millie's 1:30 p.m.
24	T	CHRISTMAS EVE	24	F	General Mtg Stauffer rm 138 7:30 p.m.
25	W	CHRISTMAS DAY	25	S	
26	T		26	S	
27	F		27	M	
28	S		28	T	Wire Wrap Class at Millie's 6:30 p.m.
29	S		29	W	
30	M		30	T	Wire wrap class at Millie's 1:30 p.m.
31	T	NEW YEARS' EVE	31	F	

If you are interested in Wire Wrap Classes, contact Millie, 267-2849 or rock2plate@aol.com

LESSONS AT THE BARN ARE WEATHER PERMITTING – Watch for emails

IN JANUARY 2020, I WILL HOLD AN EVENING WIRE WRAP CLASS ON TUESDAY NIGHTS, IF THERE IS AN INTEREST. CALL ME AT 267-2849 MILLIE

Check out the calendar on our web site

www.TopekaGMS.org

JR ROCKHOUND Classes & Reminders

Here are reminders of the next few months of classes: Topeka Shawnee CO Public Library sign in starting at 6:00 pm and classes starting at 6:30pm. 1st Thursday of each month...



<https://www.facebook.com/TopekaGMSJuniorRockhounds>

To register for the Junior Rockhounds or any of the classes, email:

Jason Schulz at: Fleetcommander@att.net

- Jan, 2, 6 – 8:45 p.m. Marvin Auditorium, 101C, Earth In Space
- Feb. 6, 6 – 8:45 p.m. Marvin Auditorium, 101C, Earth Processes
- Mar. 5, 6-8:45 p.m., Marvin Auditorium, 101C, Gemstone Lore & Legend



Brad Davenport, taught the Minerals Class to some very eager students. The next month's class will be on Earth in Space, taught by Jason Schulz.

Reminder: If you want to earn the patches from the classes that you have attended you need to turn in your homework assignments.

TGMS Minutes of the November 22, 2019 Meeting

The meeting was called to order by President Mike Cote`. There were 32 members present and 9 guest.

The TGMS article in the Topeka Magazine should be in the December 10th, 2019 issue according to Brad Davenport.

The Treasurer's report was given by Millie Mowry and she stated that she was accepting Dues for 2020.

The minutes that were printed in the November edition of the Drifter for Sept and Oct, had errors that will need to be corrected, so they were not approved as printed.

Millie reported on the Show Committee that all contracts were out to the Dealers and we are waiting to hear back from them.

Field Trip: they will be on hold until the New Year.

Topeka Junior Rockhounds: the classes are planned up to 2021.

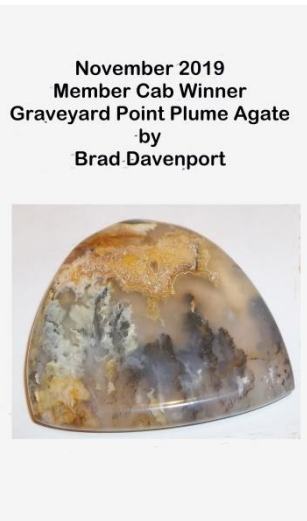
New Business: the election of Officers were held to fill new offices, all approved by those members voting.

No Old Business:

The meeting was adjourned for the program provided by Lindsay Gutierrez, on the paleo-valley fill at Echo Cliff west of Dover.

Cab of the Month Contest: Cabs: Graveyard Plume Agate by Brad Davenport; Jewelry: Indian Blanket Jasper pendant by Millie Mowry.

Carolyn Brady



“American Made: Leland Blues”
Rachele L. Best, Author
Chicago Rocks and Minerals Society
Rachele L. Best, Editor
Chicago, IL
2015 Adult Article - 1st Place

Purists may turn up their noses, but I’ll admit not every specimen in my rock collection was created by nature. The industrial processing of ore has created some unique by-products that are quite alluring. Slag is a glass-like by-product consisting of ash, impurities, bits of iron, and flux left over after a desired metal has been separated from an ore through smelting. The raw ore is heated within massive blast furnaces to the point of melting to separate it from the impurities. Because of the difference in density of the materials, the slag floats on top and can be drawn off before the purified metal is poured into ladles for ingot casting. When northern Michigan was a hub of industry supplying our nation’s cities with steel for buildings and railroads during the late 19th Century, circa 1870 – 1900, the Leland Lake Superior Iron Company of Leland, Michigan was operating an iron smelting plant on the shores of Lake Michigan. Tons of slag were produced by their operations that had to be disposed of, and this was done in the cheapest and easiest manner. It was dumped into Lake Michigan.

This slag by-product that was unceremoniously dumped into the lake more than a century ago is some of the most beautiful foundry glass that can be found. Now named Leland Bluestone, it varies in color like the sky varies in color throughout the day – all shades of blue, from light to dark, to shades of green, purple, and steel gray. The color is derived from a combination of factors that cannot be readily reproduced. High grade charcoal used to create the intense heat needed to reduce the ore to pig iron was made from beech and maple hardwoods of the region that are now long gone. This intense heat, a local limestone flux, and the impurities of the ore such as metal oxides, silicon dioxide, and various other compounds, produced the unique hues of Leland Blues.

Just south of Leland is the town of Frankfort which also had an iron foundry that produced slag, except the main color of Frankfort’s slag was green with shades of purple and gray. The Frankfort foundry buried and dumped their slag in Betsie Bay and it was also used along railroad tracks in the region as a stabilizer.

Now, more than a century later, Leland Blues and Frankfort Greens are considered a treasure on the shores of the Leelanau Peninsula, drawing rockhounds from across the country to seek out man-made stones. Who would’ve thought a Victorian-era industrial waste product would be so sought after by collectors and lapidary artisans?

Sources:

“Leland Blue, A Way of Life in Northern Michigan,” My North,

<https://mynorth.com/2014/08/leland-blue-a-way-of-life-in-northern-michigan/>

“From the Rubble, Polishing a New Gem in Frankfort,” The Betsie Current, <http://betsiecurrent.com/index.php/from-the-rubble/>

“Bluestone Bonanza,” Leelanau Enterprise,

<https://www.leelanaunews.com/> (search for Bluestone Bonanza - 1-month subscription required to read full article online)

AFMS 2015 Article Winners

Via: WGMS Rockhounder Dec. 2019



Photo: Rachele L. Best

Floating Copper

I often get a startled expression from people when I mention drift copper or float copper. They think: "Copper is dense - how can it float or drift? What is it floating or drifting on?" Drift refers to glacial drift, which is any sediment deposited as a direct or indirect result of glaciation. Copper nuggets carried by glaciers and melt water rivers is drift copper. Float is a geological term used to denote any material that has been carried by erosion away from its spot of formation. A slab of rock slides down a hill. It is now float. A glacier carries a rock a hundred miles and drops it as it melts. That rock is now both drift and float, whose source is "up glacier" somewhere. Thus, in our area, "drift copper" and "float copper" refer to the same thing.

Floating minerals leave trails a good prospector can patiently trace back to their source. For example, gold panners will pan their way upstream to the "Mother Lode". Examination of float diamonds and other kimberlite minerals has spurred exploration recently in Michigan and Canada. The Native Americans used this technique to first find the source of the Midwest copper deposits.

It's no mystery today where most Midwest drift copper originates. Native copper is abundant in the Upper Peninsula of Michigan in basaltic lava and interlayered sediments formed approximately a billion years ago. Much smaller deposits are known where these same rocks extend into Wisconsin and Minnesota. Freed from the rock by weathering, this copper can survive long transport by glaciers and rivers because of its tenacity and relatively low chemical reactivity. Float copper is found all states that have received glacial drift from the Lake Superior region. It is easily recognized by its bright green to black alteration crust (consisting of malachite, cuprite and other minerals), high density, malleability and brilliant copper color on a fresh surface.

In 1895, a Wisconsin geologist, Roland Salisbury, made a detailed study of float copper in Wisconsin. He states "specimens of 40 to 50 lbs, weight are not uncommon". I've found that nuggets that size are that not common either.

Here are a few of the more notable drift copper finds from Wisconsin, as reported by Salisbury and others.

ASHLAND COUNTY: Salisbury (1885) reports the find of a 100 lb copper boulder from Outer Island.

BAYFIELD COUNTY: The largest nugget of float copper reported from the Wisconsin is a boulder weighing 1,700 lbs. found in the bed of the Sioux River about 6 miles south of Lake Superior (Salisbury, 1885).

DANE COUNTY: A 30 lb. nugget of drift copper was found in a 20 foot deep well in Madison (Salisbury, 1885).

DODGE COUNTY: A nugget of float copper weighing 487 lbs. was found near Hustiford (Irving, 1882).

PIERCE COUNTY: An 81 lb. nugget of native copper was found in a farm field near Spring Valley. (Ted Van Asse, 1997, personal communication).

ROCK COUNTY: A 114 lb. nugget of drift copper was found at Newark (Salisbury, 1885).

SHAWANO COUNTY: A 970 lb. mass of drift copper was found in a gravel pit 2 miles south of Pella (Wisconsin Geological Survey files).

- Dr. Bill Cordua, University of Wisconsin-River Falls

References:

Irving, R.D. 1882, "Minerals of Wisconsin" Chapter II in Chamberlain, T.C. Geology of Wisconsin Survey of 1873-1879, Vol. I, p. 309-339. Salisbury, Rollin D., 1885, "Notes on the dispersion of drift copper", Wis. Acad. Sci. Arts and Letters, Vol. 6, p. 42-50

Source: WGMS Rockhouser Dec 2019



How do geologists date rocks? Radiometric dating!

Radioactive elements were incorporated into the Earth when the Solar System formed. All rocks and minerals contain tiny amounts of these radioactive elements. Radioactive elements are unstable; they breakdown spontaneously into atoms over time, a process known as radioactive decay. Radioactive decay occurs at a constant rate, specific to each radioactive isotope. Since the 1950s, geologists have used radioactive elements as natural "clocks" for determining numerical ages of certain types of rocks.

Radiometric clocks are "set" when each rock forms. "Forms" means the moment an igneous rock solidifies from magma, a sedimentary rock layer is deposited, or a rock heated by metamorphism cools off. It's this resetting process that gives us the ability to date rocks that formed at different times in earth history.

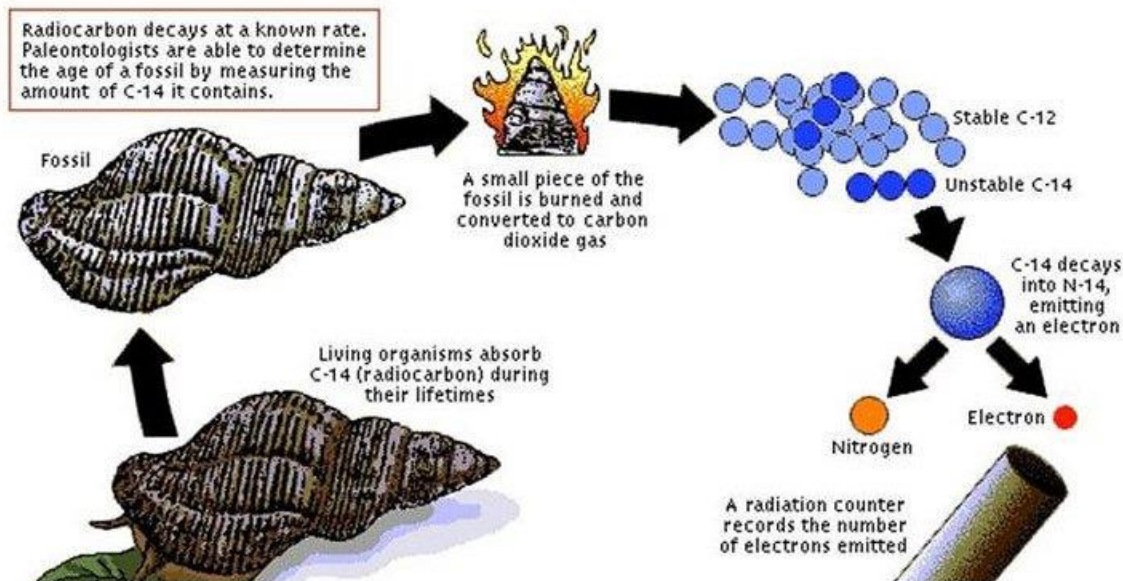
A commonly used radiometric dating technique relies on the breakdown of potassium (^{40}K) to argon (^{40}Ar). In igneous rocks, the potassium-argon "clock" is set the moment the rock first crystallizes from magma. Precise measurements of the amount of ^{40}K relative to ^{40}Ar in an igneous rock can tell us the amount of time that has passed since the rock crystallized. If an igneous or other rock is metamorphosed, its radiometric clock is reset, and potassium-argon measurements can be used to tell the number of years that has passed since metamorphism.

Carbon-14 is a method used for young (less than 50,000 year old) sedimentary rocks. This method relies on the uptake of a naturally occurring radioactive isotope of carbon, carbon-14 by all living things. When living things die, they stop taking in carbon-14, and the radioactive clock is "set"! Any dead material incorporated with sedimentary deposits is a possible candidate for carbon-14 dating.

Radiometric dating has been used to determine the ages of the Earth, Moon, meteorites, ages of fossils, including early man, timing of glaciations, ages of mineral deposits, recurrence rates of earthquakes, and volcanic eruptions, the history of reversals of Earth's magnetic field, and many of other geological events and processes.

Via *The Rockhound* 9/11; via *the Rolling Rock* Dec 2019

Picture from worldfossilsociety.org/2018/03/wfs-factsdating-fossils/



Radioactive Dating

Outline the method for dating rocks and fossils using radioisotopes, with reference to ^{14}C and ^{40}K .