

THE GEOLOGICAL SOCIETY OF MINNESOTA

News

*Volunteer
opportunities,
field trips,
lectures, and
public service,
since 1938*

From the President's Desk...

I'm so glad winter is over, although I had the good fortune of missing the very worst of it: I left for 3.5 weeks in the New Zealand summer on January 27, hours before our winter started in earnest this year. I definitely preferred reading about it from afar than experiencing it. If you get a chance to visit New Zealand, take it. It is a wonderfully diverse, beautiful, and adventuresome place, full of dramatic geology and unique creatures.

Fortunately, this year we did not postpone any lectures, a sharp contrast to the three we postponed for weather the previous year. For 14 lectures in 2018-2019 (excluding the banquet, which has not occurred as I write this), we had a total attendance of 1256 persons, for an average attendance of 90. This is back to near average for the past few years, after a significant drop in 2017-2018, likely due to the postponements that year. We had especially good turnouts of 113 for *Tectonics versus Sea-Level Change in the 21st Century*, 112 for *Caves of Minnesota*, and 110 for *Meteorites: Hard Evidence in the Mystery of our Cosmic History*. Over the 14 lectures, 77 persons identified themselves as attending for the first time. This shows we are making our presence known to non-members. The most common reasons given by first-timers are recommendations by friends & relatives, visiting our booth at the State Fair, and finding us online. Thanks to all of you who are volunteering at this year's State Fair to reach out to potential new members. (**Dan Japuntich** still has slots to fill.) And thanks to those who drag J their friends to a lecture.

The 2019-2020 lecture program will start with the **Fall Banquet** at U Garden on **Monday, September 16** and continue every other Monday until early December, before the year-end break and resumption in late January. **Steve Erickson** has already put together most of the program, as many of you heard at the April 22 lecture. The full schedule will appear in the August Newsletter, and will be available on our web site earlier. If you have an idea for a lecture or lab, or know of a possible presenter, contact Steve with the information. BTW, there is more about Steve elsewhere in the issue.

Once again, our Board has decided to give back to the geological and education community. In February, we made a grant to the **Institute on Lake Superior Geology Student Travel Fund**. Many of you were at the lecture when I presented our grant check to Mark Jirsa, treasurer of ILSG. This fund financially helps college geology students attend ILSG, where many of them present their research findings to a large gathering of professional geologists for the first time – a great learning experience. Many of them also prepare sophisticated posters describing their research.



GSM President, Dave Wilhelm

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*from the GSM archives:
Berning's Mill— Crow River,
Aug. 1940 (Cretaceous gravel)*



Summer is travel time in Minnesota. If your summer plans include travel in Minnesota, don't forget about our array of over 70 information markers describing interesting geology throughout the state of Minnesota. To find the markers in the areas in which you will travel, follow the link "**Minnesota Geology Tour**" on the home page of the GSM web site.

Rebecca Galkiewicz and Alan Smith have developed a great tool for finding our markers.

May your summer be a pleasant one as you enjoy our great Mother Earth.

Dave Wilhelm

GSM

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- Dave Kelso, Secretary

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Membership: Joanie Furlong

Field Trip Coordinator: David Wilhelm

GSM Outreach: Joel Renner and Theresa Tweet

Geological Markers: Rebecca Galkiewicz

Lecture Recording: Joe Wright

Web Site: gsmn.org

The Geological Society of Minnesota is a 501(c)3 nonprofit organization. The purpose of this newsletter is to inform members and friends of activities of interest to the Geological Society of Minnesota.

Please note the GSM change of address: Send all GSM membership dues, change of address cards, and renewals to: Joanie Furlong, GSM Membership Chair, P.O. Box 141065, Minneapolis, MN 55414-6065; Membership dues are: \$10 Full-time students; \$20 Individuals; \$30 Families

GSM News is published four times a Year during the months of February, May, August and November. Deadline for article submission is the first of the month, before the date of publication. Newsletter contributions welcomed.

Newsletter contributions welcomed

Of interest to our GSM enthusiasts: While out and about enjoying your vacation time – when you visit a site that you find interesting, please consider sharing your experiences with us by writing up a few words and sending it to Theresa Tweet at phoenix8185@gmail.com. Thank you in advance!

New GSM Members!

- Sherry Kutter, Grey Eagle
- Margaret Wingingstad, St Paul
- Alice & Tom Ressler, St Paul
- Katherine Elke, LeSueur

GSM Board Membership

The GSM Board consists of members who have a special interest in advancing the goals of our society, including lectures, field trips, and community outreach. The Board currently has nine members. Our bylaws limit the terms of Board members to four years, to encourage a turnover of perspectives and ideas. The Board typically meets quarterly, on the second Thursdays of February, May, August, and November, or a different date if conflicts arise. We typically meet from 7 to 9 PM at the Minnesota Geological Survey at 2609 W Territorial Rd, St. Paul MN 55114.

Board meetings are open to all members of GSM. So, whether you are a new member of GSM or have been a member for many years, if Board membership is something that might interest you, or you are just curious to see what our Board does and how it works, we encourage you to attend a meeting. And, if you have a topic you would like the Board to consider, please contact Theresa Tweet at phoenix8185@gmail.com.

Hot off the Press!

For most of my time here with the Geological Society of Minnesota, I have seen our Lecture Coordinator, Steve Erickson, as a dedicated volunteer, a hard worker, and the Go-To-Guy when you want something done, and done right. By far, Steve's biggest contribution to GSM has been

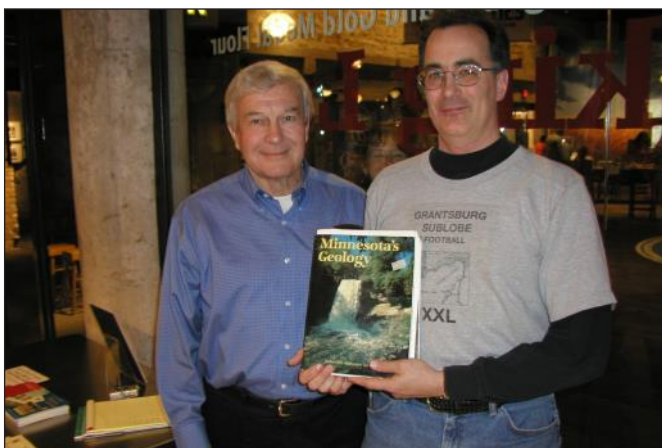
developing our outstanding lecture schedule each year, something he has been doing since 2007. Over the past dozen years, Steve has put together an extensive list of geology and Earth science experts across academia and industry, from which he always develops a diverse and interesting slate of lectures and labs. Just recently, I received an email stating that Steve, as an employee of 3M, had applied for and received a matching grant payment for \$500.00 from the 3M Foundation. The grant is given on behalf of those employees who volunteer at least 50 hours to a qualifying organization, and Steve's efforts putting together the GSM lecture schedule certainly exceeds that. The 3M Volunteer Match grant can be used for the GSM's general operations costs such as the State Fair fees, insurance, office supplies and the like. When you get the chance, please make it a point to thank Steve for his continued dedication to our organization - thank you Steve, this is terrific news!



Steve Erickson at work for GSM

T. Tweet

**Member Spotlight;
Patrick Pfundstein**



With Dr. Ojakangas at the Mill City Museum

1. How long have you been a GSM member? Long

interested (I probably picked up a dozen State Fair flyers), a job change in 2015 freed up time, and I finally took the plunge that year; so 4+ years as a member now.

2. How did you get interested in geology? I'm a history person by inclination (and some training), and honestly, pre-1987 I would have rolled my eyes at the mere thought of geology. But then the Lower St Anthony Falls Hydro plant fell into the Mississippi, and there was a pretty cool article in the Pioneer Press about how the same process that undercut the plant was responsible for St Anthony Falls moving upstream from the Fort Snelling area.

I had to know more! So I found Bray's 'Billions of Years in Minnesota', and that was okay, but I wanted more, so I bought a copy of Ojakangas and Matsch's 'Minnesota's Geology' and that book's blend of accessibility/technical detail was just the ticket to light my interest.

I got a chance to meet Richard Ojakangas at my history job years later (his wife Beatrice was making a Mill City Museum Baking Lab appearance to promote her latest cookbook, and Dick was hauling support equipment), and beyond cracking him up that I considered HIM famous (and was wearing a t-shirt bearing a graphic stolen from his book), I got to tell him that before I found his book, I pretty much thought geology was about rocks. Then I realized it was about ROCKS!!!! And those rocks were the primary sources (as we in the history field would say) of Earth History!

He laughed, and said he knew what I meant. He'd been a business major until he took geology as his 'science with a lab', and after that he was hooked!

Ever since, it has been a learning experience; as Dr. Renton (in the Great Course on Geology I donated to the GSM library) says, once you learn geology, you never look at the world in the same way again! (I laugh whenever I catch myself muttering 'angle of repose' or 'frost heave' on neighborhood walks.)

3. What do you dig about the GSM? I love learning new things, and GSM is such a great gateway to knowledge. The talks are varied, and so deeply interesting; some of that I see coming, but also there are those talks that just blow you away by surprise (which is why I try not to miss unless there is no option). Last year's talk on Soil ('where rocks go to die') was one of those I marked early, but even with high expectations was totally wowed, and that led me to sign up not just for the Nobel Conference on Soil last October, but for the summer pre-tour of the farms in the area, and all of the cultural events around the conference. It was one of the Nerd High Points of my nerdy life, and without GSM, I wouldn't have experienced any of it.

T. Tweet

Notes from the Past

The following appeared in the Summer 2009 edition of GSM News

Doing The North Shore In Style

The North Shore of Lake Superior is famous for its scenic vistas and beautiful waterfalls. It also reveals some of Minnesota's most illustrative volcanic outcrops. Walking us through these geologic wonders on our first field trip this year, May 19-21, was Professor Richard Ojakangas, now retired from the University of Minnesota, Duluth. Few know the Shore as well as Dr. Ojakangas, who has been a resident of the Duluth area with his famous wife, Beatrice (author of numerous cookbooks) for many years.

For most of the fifty-five GSMers partaking, the entire trip was aboard a comfortable and deluxe Voigt bus. On Friday afternoon, we rode from the Twin Cities to Duluth – stayed overnight at Canal Park Inn near the lift bridge – continued up the Shore on Saturday to Grand Portage – stayed at Grand Portage Casino Hotel – and returned to the Twin Cities on Sunday. Along the Shore, we enjoyed entertaining narration by Dr. Ojakangas, about seventeen stops of geological and/or historical importance, and cool and sunny weather (except for a short sprinkle on Saturday morning).

As always, the spirited comradery aboard the bus was, alone, almost worth the cost of the trip. Many thanks to Bill Robbins for organizing this three-day extravaganza. So what were some of the fascinating geologic features that we witnessed? Lava flows with ropy tops, pillow basalt, columnar joints, pipe amygdules, potholes, clastic dikes, diabase intrusions (sills and dikes), thomsonites, and agates – to name a few.

On a sad note: at the very last stop of our return trip, after trekking over many irregular rocky surfaces that day, our beloved Dr. Ojakangas stepped on a loose and treacherous rock and fell – hurting an attachment near his knee. At that point, we were just SW of Split Rock Lighthouse, so the bus drove him directly to St. Mary's hospital in Duluth. Our bus ride to the Twin Cities was more somber than usual, as we all wished the best for him.

UPDATE: Bill Robbins reports that Dr. Ojakangas had surgery the next day to repair his knee, he is getting around on crutches, and he had no significant pain. Whew!

Doug Zbikowski

2019 State Fair!

Please join us to volunteer at our GSM State Fair Booth this year. An important source of funding for

GSM Lectures comes from new membership generated from our State Fair Booth.

State Fair dates are **Thursday, August 22 to Labor Day, September 2**. We need 2 people for each of the 3 four-hour shifts per day. **Shift times are 9 AM-1 PM, 1 PM-5 PM and 5 PM-9 PM in the Education Building**. GSM does not pay for Fair entrance fee.

Volunteers hand out our 2019-2020 Lecture Series and Geological Markers handouts and chat about our Lectures, our Field Trips, and our "MN Rocks".

Instructions will be provided. Please email your preferred days to Dan Japuntich at danjap7@gmail.com.

We are in our 81th Year and are very proud to be **Supporting and Promoting Public Interest in the Geological Sciences** since 1938.

Student Outreach

For several years, the GSM has partnered with the geology lab at Macalester College to bring hands-on learning to the Metro area. Undergrads share their enthusiasm, geology skills, and rock and mineral samples with elementary and middle school students, and scouting organization members. Phoebe Morris and Michael Murphy were invited to help a group of incoming Cub Scouts obtain their Geology merit badges. The scout leader was so pleased with this hands-on learning experience that he captured it in pictures.

T. Tweet





Geology Merit badge



Fossil Lab – 2019

The Geological Society of Minnesota had another terrific hands-on lab at Macalester College on February 9th. Laboratory Supervisor and presenter Jeff Thole introduced “Identifying Minnesota Fossils.” Jeff guided us through the process of identifying the environment, and explained a bit



Dinosaur bones and a mammal skull

about deposition, energy, and the importance of water—conditions that can record past ecosystems. He also described some specific details about the terrestrial and marine life (the plants and animals) of the time.



Jeff Thole lectures on Minnesota fossils

Minnesota hasn’t been a depositional basin for a long time but does have ancient Paleozoic and rare Mesozoic rock exposures. Glacial deposits from as far back as two million years also cover much of our state. Jeff also brought up the web link; <https://paleobiodb.org/#/> for those of us who would like to learn more about the major fossil groups which are a



Fossils for everyone

reflection of the environment in which they lived, and the fossils that are an important piece of a

land’s history. Attendees and members examined the large variety of fossil examples Jeff had set up in two different rooms including brachiopods, bivalves, corals, and ammonites. GSM member Roger Benepe also added pieces from his own collection to the mix, including his trilobites, crinoid stem and his prized possession, a Protoceratops egg shell. It was a large, diverse, and interesting display.



Happy fossil enthusiasts

Special thanks to Jeff for providing the Macalester

*Trilobites
- a fossil
favorite*



Two attendees examine some fossils

location for this event, and for his expertise, enthusiasm, and love of fossils. Thank you also to Macalester students Michael

Murphy and Sintra Reves-Sohn for adding their skills and knowledge to the occasion. Lastly, thank you to Roger Benepe for his outstanding fossils, and, of course, Steve Erickson, who sets up our lecture and our lab schedule; without him, none of this would be possible.

T. Tweet

Markers!

Learn more about Minnesota's fascinating geological history by visiting the GSM's markers and taking photos.

Sure, you can see the geology markers 365 days a year. But isn't it more fun in warm weather? Take advantage of the next 5 months and check off some markers on your "life list!"

There are many geological markers scattered around the state, close to your home, and nearer to the places you want to visit. Go to the GSM web site found at <http://www.gsmn.org/> and click on "Minnesota Geology Tour" and you will arrive at a Minnesota State map with over 60 markers red-flagged. From the drop-down menu, select the name of the region you are interested in visiting, and then click on "Apply". A map will appear, showing you all the markers that are found in that region. Click again on the marker you want to see, and you will get driving directions and GPS coordinates.

Any comments or questions? Please talk with Marker Committee members Becky Galkiewicz, Dick

Bottenberg, Dan Japuntich, Kate Clover, Lee Kaphingst, and Alan Smith.

The following text and photos are taken from the GSM brochure distributed at the 2018 State Fair:

Are you a curious person, a life-long learner, and are you interested in history, rocks, minerals and earth science?

If so, the Minnesota Geology Marker Tour is sure to intrigue you!

You can visit the markers as a geo-caching game where the reward is finding and reading the markers, observing the landscape, taking a photo, and understanding the geological significance of the place. To find markers that you would like to visit, please go to the Geological Society of Minnesota web site (<http://www.gsmn.org>).

Click on the Minnesota Geology Marker Tour to get a map of the marker locations and information on each one - driving directions, GPS coordinates, a Google map, and scientific information.

Look for other markers along the way and near the marker you plan to visit.

How many have you visited?

Geological Society of Minnesota, Minneapolis, MN www.gsmn.org

Minnesota's Geology Markers

You can discover Minnesota's fascinating geological history by visiting 60-plus geology markers, placed around the state by the Geological Society of Minnesota and its partners since 1949.



You will learn about and observe the evidence for 3 billion years of Minnesota history, including a rift valley, volcanoes, agates, inland seas, glaciers, rivers, caves and sinkholes, iron mining and more.

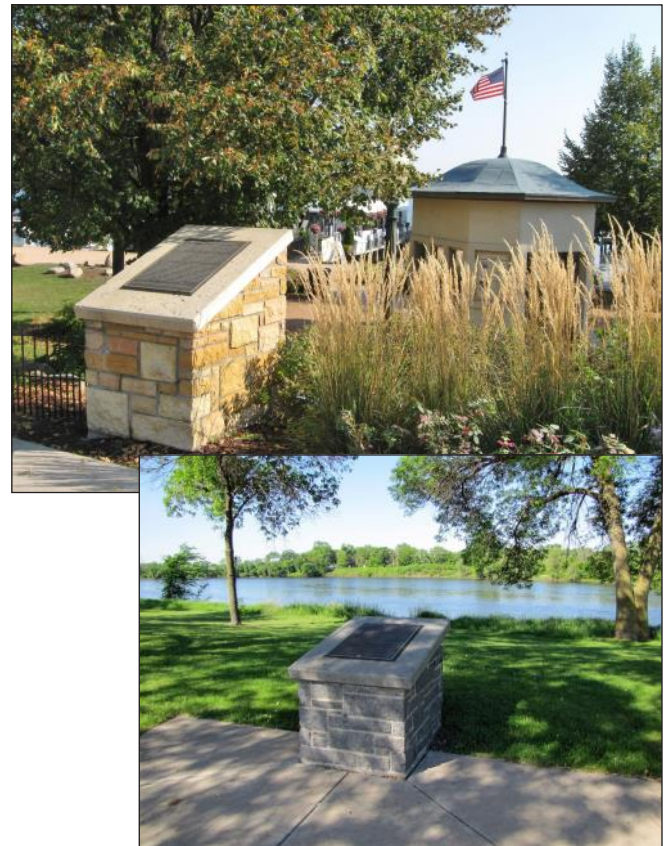
Please check the map in this brochure to see where the markers are located.

You can read about these markers and more in the Minnesota Historical Society's book 'Minnesota History along the Highways: A Guide to Historic Markers and Sites', available from the Society's press.

Along the way, you can visit additional geological sites, such as the Agate Center in Moose Lake, Jay Cooke State Park Visitor's Center, the Two Rivers monument across from Fort Snelling, or the Winchell

Boulder at the Franklin Bridge in Minneapolis.
 There's a lot to see in Minnesota - take your time and enjoy the adventure!

Most of the markers are plaques at scenic locations along roads or in parks.



GSM Tours and Fields Trips

After a very busy field trip season in 2018, I am a bit embarrassed that our schedule, at least so far, is a bit thin this year. Besides what is described below, I am hoping to put together a tour or two of facilities in the Twin Cities metro area, as we did last year with the St. Paul Water Works. But I am looking for ideas beyond that, perhaps a day trip in the metro area, or a weekend trip not too distant. If you have any suggestions, contact Dave Wilhelm at dewilhelm53@msn.com. With your input, we can develop the trips that interest you.

Dave Peters and Randy Strobel are organizing a "Sand and Sandstone" three-day field trip on **Saturday, Sept 7 through Monday, Sept 9** to examine sand and sandstone formations of east central Minnesota and northwestern Wisconsin. The

locations are within 3 hours of the Twin Cities. The start and end times of the trip will be set so that participants can travel from the Twin Cities Saturday morning and return Monday evening. Participants can join for only selected days if that fits their schedules better. The trip will be priced to cover entrance fees and honoraria for the leaders. GSM members have already been contacted to determine interest. If you might be interested and have not already signed up, contact Dave Wilhelm, as further details will be sent only to those who express interest.

Day 1 (afternoon): Led by GSM's Randy Strobel in the **Sandstone, MN** area. First, we will visit a historic sandstone quarry at Robinson Park on the Kettle River. We will then drive 5 miles to Banning State Park, where we will hike the Quarry Loop, Hells Gate, and Wolf Creek Falls trails (about 3.5 miles total), where we will observe a large historic sandstone quarry.

Day 2: Led by Tom Fitz of Northland College in Ashland, WI. We will observe **Amnicon Falls** near Lake Superior and the **Namekagon Barrens Wildlife Area** near Minong, WI. This day will feature an examination of evidence of the 1.1-billion-year-old Midcontinent Rift, subsequent sandstone formation in the Lake Superior basin and then the vast belt of outwash sands left across northwestern Wisconsin by recent glaciation.

Day 3 (morning): Led by Lauren Finch at **Crex Meadows Wildlife Area** near Grantsburg, WI. This day will feature an examination of the human history, disturbance, reclamation and management of that portion of the northwestern Wisconsin sands.

Randy Strobel has tentative plans for a field trip to the **Driftless Area** in the vicinity of the Minnesota, Wisconsin, and Iowa juncture. Dates have not yet been set, but Randy is looking at early October. GSM members will be informed as this field trip develops.

Dave Wilhelm will organize a tour of the **St. Anthony Falls Laboratory** and its varied experiments in late fall 2019, assuming sufficient interest. (A tour planned for April was cancelled, due to insufficient attendees.) See reports of previous tours in the Spring 2015 and May 2017 Newsletters.

Dave Wilhelm

Lecture Schedule Preview!

September 30 Ben Sheets, PhD, Senior Geologist, Barr Engineering "Introduction to Alberta Oil Sands Mine Tailings: Management, Regulation, and Current Research"

October 14 Terry Smith PhD. 3M, "What causes color in minerals and why it is important".

October 28 Alex Hastings SMM "Reptilian Giants of South America after the End Cretaceous Mass Extinction"

November 11 Kevin Thesen St.Thomas "Natural Archives From Shallow Lakes, Wetlands, and Springs of the Great Basin Show Evidence of Extended Periods of Drought Over the Past 6000 Years."



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