

LIBRARY

POST
Newsletter

GSM:

What An Experience!!

I've learned a lot this year as President of the GSM, not the least of which was how to keep a Board meeting moving. Although I scanned Robert's Rules of Parliamentary Procedure, it seemed quite complex, so I gathered what information my "rocky" mind could contain and muddled through.

I would like to say a special thank you to the GSM members who served with me. Without their assistance and commitment to the Society, I would have been lost. I especially want to thank Dick Uthe for bringing muffins to each Board meeting and to Dwight Robinson who had the answers when I wasn't quite sure what a proper procedure was.

Thanks also to all the Committee members whose services have made every event a success -- the field trips, the fair booth, the annual meeting, the lecture series, the treats at lectures, the mini-tour, the continuing membership drive, the newsletter -- all of which make our Society vital and a wonderful experience.

Since I've never been one to find standing in front of a lecture hall full of people a calming experience, I also must thank members for their smiles and words of encouragement.

Being a member of GSM has certainly been an exciting experience. I'm getting an education at minimal cost -- and it's fun! Having picked up pebbles and stones for their beauty since childhood, I could not have dreamed I would learn so much about where they came from, how they were formed, their mineral composition and their magnificent formations.

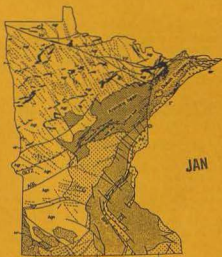
I learned something else (which I find amusing), i.e. Thomson (as in formation) is not spelled with a "p" but pterobranch (ter-o-brank -- as in little sea creature) is!

And Marge Gangle taught me how to find agates along the highways!

I've descended into deep, dark caves and climbed beautiful, sunshine splashed hills.

I've gathered pounds of rock samples and a few small fossils.

My friend, Barb Gudmundson, once said to me, "Judy, you have rocks in your head." She was right, but that's not the only place they are. There are rocks in my



JAN 5 1994

GEOLOGICAL SOCIETY OF MINNESOTA

NEWS

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living room, my dining room, my kitchen, my office (home and at work), my garage, my pockets and everywhere you look in my yard. As I look out the window at the little snow covered mounds in the garden, I wonder if my plot of earth is going to sink out of sight with the weight of it all. I even went so far this year as to give a beautiful rock to each of my best friends as a Holiday gift

I don't remember -- was there life before GSM?

Judy Hamilton, President

Annual Meeting: Feeding Frenzy A Success

Approximately 70 members ate food and "chewed the fat" prior to the 1993 Annual Meeting September 27. The "feeding frenzy" again took place at the Old Country Buffet in Maplewood.

One thing is certain about the GSM crowd. We love rocks, food and conversation.

Membership chairperson, Fran Corcoran, reported a total of 191 members for fiscal year 1993 and began recruiting and collecting renewal memberships for fiscal year 1994.

Fran, also chair of the Fair Committee, noted that 72 volunteers are needed to staff the State Fair Booth. We had only 69 this year meaning a few people worked double shifts.

Dick Uthe, Program/Lecture chairperson reviewed the 93/94 Lecture Series -- National Parks: Jewels in the Landscape -- and noted that there will be three labs this season.

Dorothy Kuether (who since the meeting has moved to Arizona) presented Dick Uthe with a rock-studded cake platter -- a garage sale treasure -- for all his years of dedicated service.

Nominations were read and the Board unanimously elected for 1994. New Board members are Doug Zbikowski, Susan McGuire, and Marty Collier.

Continuing with second two-year terms are Judy Hamilton, Conrad Nelson, and Galen

O'Connor. Tom Casey and Ed Huppler will complete their first term and Tom Lonsky will complete his 2nd term in 1994.

Outgoing Board members are Dee Schmalz, who completes her second two-year term, Dwight Robinson who has opted not to run for a second two-year term, and Eva Selander who also opted not to continue the second year of her first term.

Dick Uthe gave an overview of the upcoming two-week field trip planned for July 26 - August 3, 1994. We're goin' West -- to the land of the great floods -- Missoula, Montana and environs.

Judy Hamilton showed a few slides of the 1993 field trips while Dick Uthe assisted with narration. Dwight Robinson then completed the evening with a fascinating slide show presentation of his summer dinosaur hunting "expedition" in Montana and Wyoming.

Respectfully submitted,
Judy Hamilton, President

Officers Elected at October Board Meeting

The Board met October 27 to elect officers for terms commencing January 1, 1994. They are: President, Doug Zbikowski; Vice-President, Tom Casey; Treasurer, Ed Huppler; and Secretary, Judy Hamilton. (See: Introducing Our New Officers).

Fran Corcoran noted that she is resigning as chairperson of the Fair Exhibit Committee. That means we have a leader position open folks!! Fran said she would be willing to train someone for this position. The job requires a commitment in the fall prior to the Minnesota State Fair.

Fran will continue as Membership Chairperson. She reports that there are 150 members as of this printing. If you have not renewed your membership, please send your dues to Fran today. Mail to:

4105 - 41st Ave. S.,
Mpls., MN 55406.

Your membership expiration date is shown on the address label on the front of this issue. RENEW NOW!!

Judy Hamilton resigned as chairperson of the Trip Committee. (Galen O'Connor

volunteered for this position at the December Board Meeting.)

Since Dorothy Kuether has moved out of state, the position of Public Information chairperson was open. (Susan McGuire volunteered to take this position at the October meeting).

Doug Zbikowski presented an interesting subject to the Board. He suggested that we consider setting up a Geological Video Library. (See: GSM Video Library by Doug Zbikowski elsewhere in this issue).

Respectfully submitted,
Judy Hamilton, President

Introducing Our New Officers

Following is a mini-introduction of the new officers-elect for 1994:

Doug Zbikowski, President: Doug graduated from the U of M with a BS in mechanical engineering. Most of his career has involved designing and manufacturing fluid handling valves, regulators, and sometimes control systems. His wife, Mary and eight month old son, Conrad, are also active GSM members. Doug and Mary were introduced to Geology two years ago when they took a U of M extension course entitled "Minnesota Geology". Doug was intrigued as an entirely new world opened to him and pursued the subject with a passion. He is presently completing a paper entitled "A Continental Crust Fracture Initiation Pattern and Hypothetical Mechanism." Says Doug, "It's a rather revolutionary new look at the Mid-continent Rift System and continental fracture, in general, from a mechanical engineers perspective." A preliminary draft has been read by several geology professionals and it will soon be available to interested GSM members.

Tom Casey, Vice-President: Tom is self-employed in the practice of law. He has been a member of GSM for about 5 years. His interest in natural history has taken him to the continents of Africa, New Zealand, Australia, So. American and Europe. He has been following the problems of "Sue" (the dinosaur fossil) found on Indian land in No. Dakota. Tom is also a part time musician. He plays the accordion and piano.

Ed Huppler, Treasurer: Dr Huppler, a retired surgeon, and his wife Sylvia are no strangers to GSM. They attended a lecture in 1981 after seeing a program schedule at the Public Library. They attended a field trip to Duluth that summer during some rather cold and rainy weather. Ed recalls thinking, "These people don't know enough to come in out of the rain." He will be serving the second half of his first term but previously served as Treasurer for two terms.

Judy Hamilton, Secretary: Judy has "rocks in her head" as previously noted (See GSM: What An Experience!). She has been a member of the Society for nearly four years and keeps her homestead anchored against tornadoes and windstorms with several pounds of collected rocks. She is employed by a Mpls. law firm but hopes she will someday write a novel.

Memories Linger: '93 Summer Field Trips

June 19 & 20: Alexandria Moraine

Leader: Jim Cotter, U of M, Morris

Two days of rain soaked 21 undaunted members as they trekked through this beautiful Minnesota terrain. They climbed eskers, created during the glacial period, and viewed breathtaking valleys and lakes. Some folks slogged into a bog where bones of four juvenile bison have been found. At the Lake Minnewaska overlook, they viewed and discussed the area where 100 feet of sediment was deposited ahead of the glacier. Prof. Cotter explained that the glacier reached about 3,000 ft. at this spot.

July 17: Hudson/River Falls, Wisc. - Eastern End of the Mid Continent Rift

Leader: Mike Middleton

Thirty-eight members explored the stratigraphy and tectonics of Western Wisconsin. They reviewed Ordovician stratigraphy exposed in that area, and stopped at roadcuts and quarries where Cambrian formations have been uplifted and exposed by faulting along the Midcontinent Rift. They viewed Prairie Du Chien formations from the Glen Park swinging bridge in River Falls and did fossil hunting at Cudd's Quarry.

August 21 & 22: Northern Wisconsin - Gogebic District

Leader: Gene & Sally LaBerge

Wonderful! Twenty-nine field trippers explored the Ironwood Formation, looked at several kinds of volcanic rock, and examined the None Such Formation (shale) at the Presque Isle River. This formation is underlain by several thousand feet of Copper Harbor conglomerate and overlain by thousands of feet of Freda sandstone. Since the weather was reasonably clear (there were sprinkles of rain) they visited Mt. Whiteley, which is the highest point on the Gogebic Range.

September 18: Thomson Formation

Leader: G. B. Morey, Geological Survey

This trip examined some structural and metamorphic relationships in Early Proterozoic metasedimentary rocks of east-central Minnesota. Also examined were outcrops of once-deformed and twice-deformed rocks between Carlton and Denham, Minnesota. About 25 people attended the trip.

A special thanks to the trip committee -- Eva Selander, Don Swensrud, Galen O'Connor, Judy Hamilton, Conrad Nelson and Dee Schmalz for a job well done.

GSM Video Library

by Doug Zbikowski

An exciting new idea was proposed at the October 27 Board meeting -- a video lending library of geological tapes available to the membership. A temporary committee, to be chaired by Doug Zbikowski, will investigate the question.

The availability of geological video tapes (VHS format) has already been researched somewhat, with currently over 16 separate sources identified and contacted. Tapes range in price from \$19 to \$250 each, with over a hundred tapes available for under \$100. The average cost is probably about \$79.

With a little diplomatic persuasion, some tapes will be available to our non-profit society for free. These may be loaned from the Bureau of Mines, or may be

donations from mining or petroleum companies. Amoco has already contributed six free tapes that we selected from their list of about a dozen they recently started producing for internal corporate education. We plan to contact Shell and others with similar requests. Obviously, tapes used by mining or petroleum interests may have a slightly biased perception of the subject material. However, the amount of geological knowledge and the importance of its interpretation in mining and petroleum exploration and recovery is considerable. Also, the serious (financially motivated) application of that analysis and the specifically developed technologies can be fascinating to observe.

The technical treatment of the subjects, from all the sources contacted, varies from entry level to geological specialist. Thus, it will be important to note this rating for each tape on any future library listing, to help the borrower decide on a tape's suitability.

The details of how the library would operate will be worked out in future meetings of the committee and Board. To help in that determination, it is necessary to poll the membership to establish: 1) general interest in the library idea, 2) availability of VCR machines, 3) specific geological topics of interest, 4) acceptability of user fees, 5) potential for private donations, 6) volunteer librarians, 7) general policy suggestions.

To this end, included with this newsletter is a questionnaire that we wish you to fill out, fold, secure, and mail.

The results of this survey will be reported in the next issue of the GSM newsletter. Future articles will update you on the progress and development of the library.

A video lending library is an extremely exciting and valuable development for GSM, and the potential educational benefits of starting this program could eventually extend far beyond the scope described, and could include the Society taping our excellent field trips, lectures, or mini-tours, to be available for the membership and local schools.

GSM MEDIA LIBRARY SURVEY

NAME(optional) _____ DATE _____

In order to best serve the concerns of our membership in our goal to support and promote interest in the study of geology, we need your help in answering the following questions.

1. How receptive are you to the proposed GSM media library?

- very positive
- positive
- don't care
- negative
- very negative

2. Does your household include a:

- VHS format VCR machine?
- audio cassette tape player?
- slide projector?
- computer with hard drive?
- computer with CD ROM?

3. Please rank by number all the topics of geological or geophysical interest to you. (1= most important)

- ___ rock and mineral types
- ___ laboratory techniques (thin sectioning, sample identification, dating methods, etc.)
- ___ depositional processes of sedimentary rocks
- ___ fossils
- ___ stratigraphy (the science of the position and sequence of rock strata)
- ___ seismic reflection surveying
- ___ mineral mining and processing
- ___ oil and gas exploration and recovery
- ___ earthquakes
- ___ volcanoes
- ___ meteor impacts
- ___ Minnesota related (likely field trip topics)
- ___ Rocky Mountains (pre-trip background education)
- ___ tectonics (major structural or deformational features)
- ___ plate tectonics (continental rifting and movement, subduction zones, sea floor spreading, etc.)
- ___ environmental issues (mining tailings, waste disposal, aquifer contamination)
- ___ other _____

4. What do you feel is an acceptable video rental fee for a two week period?

- \$ 2.00
- \$ 1.50
- \$ 1.00
- \$.50
- other

5. Do you feel a lower fee should be allowed for lower-income persons, retired or unemployed persons, etc.?
- yes (specify amount _____)
 - maybe
 - no
6. What do you feel is an appropriate late penalty?
- \$ 2.00/week
 - \$ 1.00/week
 - no penalty
7. Would a \$35.00 refundable deposit be acceptable to you for borrowing privileges?
- yes
 - no (why not? _____)
8. Would you be interested in donating a tape or part thereof, to help develop the library? (Christmas gift, memorial, etc.)
- yes
 - maybe later
 - no
9. Would a matching contribution by the Society increase your generosity?
- yes
 - maybe
 - no
10. Would you be interested in volunteering for a one-year term as a GSM librarian? Note: Librarians enjoy unlimited free borrowing during tenure.
- yes
 - maybe later
 - no
11. Do you have any procedural or policy suggestions, or ideas borrowed from another lending library?
- _____
- _____
- _____
12. Would you be interested in volunteering for a future GSM production film team?
- writer
 - production planner/editor
 - camera person
 - narrator
 - makeup
 - no thanks

Thank you very much for your help. Please mail your response to:

Doug Zbikowski
7833 Able St. N.E.
Spring Lake Park, MN 55432

Telltale Tail

by Dwight Robinson

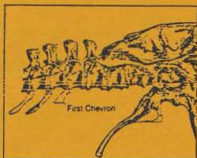
By all accounts, Peter Larson, President of the Black Hills Institute for Geological Research, has had a bad year. It was Larson and his crew that unearthed the remains of a massive *Tyrannosaurus rex* dubbed "Sue" after its discoverer in South Dakota. He now faces 37 federal charges that total 353 years in a federal pen and \$13.35 million in fines! The charges include illegal fossil collecting, money laundering, falsifying customs documents and obstructing justice.

Despite all this or maybe because of it, Larson has taken time to ponder whether his "Sue" is really a Sue or a "Sam." "Sexing fossil skeletons has long been a thorny problem for paleontologists," according to a recent article in *Science* (Vol. 262, 11/5/93, page 846). Small wonder. But Larson may just have this tiger by the tail -- under the tail to be precise.

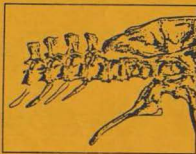
Larson compared 14 *T. rex* skeletons with a living relative group that shares several anatomical features with dinosaurs, namely crocodiles. Male crocs, like many living reptiles have a retractable penis-like sex organ, that's anchored by muscles to the tail. These muscles attach to a spine called a "chevron." Chevrons extend like blades under the tail vertebrae behind the hip bones. The first chevron is the one in question.

Larson found these chevrons in all the modern male crocodiles he dissected. The *T. rex* skeletons were similar. They either had a chevron on a vertebra just behind the pelvis or there was a shortened, flatter chevron located on the next vertebra farther down the tail. He asked Philip Currie of the Royal Tyrrell Museum to examine his collection of troodontids, close relatives of *T. rex*, and the pattern held. Also, the males were consistently smaller. Larson speculates that the shorter, more distant, female chevron may have allowed more room for eggs to pass.

Sue's size may be the truest sign of gender. Still, what if Sue had tested more male than female? Larson quips, "we simply would have had a boy named Sue."



Feminine traits. A female dinosaur's first chevron seems shorter than a male's, and farther away from the pelvis.



Telling tail. The first chevron under the tail of a male *T. rex* may be longer than female's chevron.

Ask GSM

GSMer's inquiring minds just want to know. How about a new feature in the newsletter where you pose the question and we print the answer. With all those knowledgeable experts "out there" surely we could find one or more who would take a few moments to respond. Let us know what you think. Write to:

Dwight Robinson
311 Pleasant Ave. #306
St. Paul, MN 55102

MINNESOTA FIELDRIDE

Refrain 1

Just hear those rock picks clinking, and rink-tink-tinkling, too.
Come on it's lovely weather for a field trip together with you.
Outside the rain is falling and friends are calling "Yoo-Hoo".
Come on it's lovely weather for a field trip together with you.

Verse 1

In the car, in the car, in the car, let's go; up to the North Shore
To look at pillow lavas and much more.
In the car, by your feet, or canoe, caravan! Rock lens in your hand.
We're riding along with a guide to a folded and deformed land.

Refrain 2

Our granites are pink and red, and full of iron ore are we.
Sink holes and caves together make some real neat sights to see.
Let's climb that hill before us and see an esker or two;
Come on it's lovely weather for a field trip together with you.

Verse 2

There's a perfect quarry in the field of Farmer Grey,
It'll be the perfect ending of a perfect day.
We'll be finding those fossils that we love in just a single stop,
At the bottom there's limestone; sandstone at the top.

Verse 3

There's a happy feeling nothing in the world can buy.
When you find stromatolites in a bed from years gone by.
It's all explained in a geology book by Ojakangas and Matsch.
These wonderful rocks are the rocks that'll go in our garden patch.

Repeat Refrain 1.

(Adapted by Jan Mitchell)



Troodon, the "Cretaceous coyote." This small, relatively brainy family of dinosaurs had opposable digits ("thumb" and two fingers), and big eyes with overlapping (3D) vision. They were fast, agile and their remains around *Maiasaur* nests in Montana suggest an appetite for hadrosaur eggs, babies and other such morsels.

WANDER HINTERLANDS

Under the ground lies a miner's delight,
Heavenly diamonds in kimberlite pipes,
The rigs are a diggin' in spite of the
cost and the bother.

Lesser rocks weather, crack and decline,
So will a diamond if not mined in time,
Finding and grinding we're saving these gems
from the weather.

REFRAINS

Drill bits sing, rock's resisting,
In the holes, nitro's glistening,
A bright burst of light,
We're blasting tonight,
Wanderin' far and wide in Hinterlands!

Gone away is the bluebird,
By the way, nary a bird's heard,
They've all hit the road,
As we blast and explode,
Wanderin' far and wide in Hinterland!

1. In the Boonies, we can carve a roadway,
Then come in and lay some asphalt down,
What was once remote now sports a freeway,
Day and night the trucks now shake the ground.

Later on, we'll conspire,
How to pile tailings higher,
To mine underpaid,
The claim that we made,
Wanderin' far and wide in Hinterlands!

2. In the Boonies, land belongs to no man,
Gems and metals waiting underground,
We'll crack rocks and hope to strike it rich man,
Until we're sure no treasure's to be found.

Drill and blast for a livin',
Dust up nose, ain't so thrillin',
We hope our big day's,
Not too far away,
Wanderin' far and wide in Hinterlands!

Reprinted from *The Complex Scholar*
Noncredit courses from Continuing Education and Extension University of Minnesota

**Drifting Continents/Expanding Oceans:
An Introduction to the Dynamic Earth**

Although geology is truly an "ancient" science, our understanding of the forces and processes that have shaped the earth over its 4.5 billion year history is a recent revelation. Learn about milestones in geologic thought which ultimately led to the breakthrough theory of plate tectonics just 30 years ago, and how this unifying theory explains the ever-changing landscape of the earth's surface and the diversity of life that inhabits it. Learn why the Himalayas are the highest mountains in the world, why the Pacific Ocean is surrounded by volcanoes called the ring of fire, and why California is so prone to earthquakes and Minnesota is not. (Limited to 30)

Day:	Thursday	Location:	MN Geological Survey
Time:	6:30-8:30 p.m.		2642 University Ave.
Date:	Jan 13 - 27, 1994		St. Paul
Tuition:	\$42 (age 62 - \$37.80)	Instructor:	Jim Miller
	No late fee through Jan.6		

About the Instructor:

Jim Miller received his Ph.D. from the University of Minnesota and is a senior geologist at the Minnesota Geological Survey. He specializes in the billion-year-old geology of the Lake Superior region.

Look for more exciting new features in upcoming issues of your newsletter.

The purpose of this newsletter is to inform members and friends of the activities of the Geological Society of Minnesota. NEWS is published four times a year - Feb. 15, May 15, Aug. 15, Nov. 15. Deadline for article submission is the 1st day of the month of publication.

Officers: Judy Hamilton, Pres. Dwight Robinson, Secy. Directors: Tom Casey Der Schmalz NEWS Editors: Dwight Robinson
Conrad Nelson, V. Pres. Ed Hopper, Treas. Tom Lonky Eva Selander Judy Hamilton
Galen O'Connor

Membership Chair and Information: Fran Cortonas 724-2101

Judy Hamilton
1439 Sargent Avenue
St. Paul, MN 55105

First Class

PLEASE FORWARD

Geological Survey of Minnesota
2642 University Ave.
St. Paul, MN 55104

This season's color: Galaxy Gold

