



THE MINERAL VEIN

THE MINERAL SOCIETY OF MANITOBA NEWSLETTER

March 2007

The Mineral Society of Manitoba
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Society News

Dues are \$10/year (\$15 for families) and are payable at the October meeting or by mail during October.

Meetings are held on the first Wednesday of each month from September to May inclusive at the Manitoba Museum in room P47 on the Planetarium level.

They begin at 7:30 PM and feature announcements, an invited speaker and a draw. Members are encouraged to bring along any new, interesting specimens or specimens appropriate to the speaker's topic.

Field trips take place from May to September to interesting sites in Manitoba, neighboring provinces and states.

CLUB MEETINGS

Wednesday, April 4, 2007

Sean Robson, Paleontologist will be our speaker

Sean Robson has a Ph.D. in Geological Sciences from the University of Saskatchewan. His research involves the taxonomy, biostratigraphy

and palaeoecology of Cambrian and Ordovician brachiopods. His most recently completed research project was an extensive study of the brachiopods of the late Middle Cambrian Deadwood Formation, which extends throughout Alberta, Saskatchewan, Manitoba, the Dakotas, and Montana.

His talk is entitled "**A smashing success: earliest evidence of durophagous predators.**"

Evidence of lower Palaeozoic predation is scarce, particularly in Cambrian fossils. A recent study of linguliformean (phosphatic shelled) brachiopods from the Deadwood Formation has revealed an uncommonly high level of predation, including signs that various different predators were attacking brachiopods, including the earliest known durophages (smashing predators), whose appearance may have sparked a biological arms race that resulted in a dramatic revolution in marine shell structure.



Wednesday, May 2, 2007
Speaker: **Martin Lewadny**

Possibly accompanied by
Tony Smith

Subject to be determined

Last March 7 meeting

Jim Bamburak Industrial Minerals Geologist Manitoba Geological Survey gave a presentation on the Gypsumville area. This gave us some background for a possible field trip. He also present an alternative explanation on the crater at Lake St. Martin



He has very kindly presented us with a printed copy of his presentation. It is offered here in its entirety.

Summary of “Lake St. Martin Structure” presented to Manitoba Mineral Society on March 7, 2007

Definitions (American Geological Institute “Glossary of Geology”, 1974)

Crypto-explosion Crater – non-genetic, descriptive term designating a roughly circular structure formed by the sudden, explosive release of energy and exhibiting intense, often localized deformation with no obvious relation to volcanic or tectonic activity.

Astrobleme – an ancient erosional scar on the Earth’s surface, produced by the impact of a cosmic body, and usually characterized by a circular outline and highly disturbed rocks showing evidence of intense shock.

Diatreme – a breccia-filled volcanic pipe that was formed by a gaseous explosion.

Classification – Simple vs Complex Craters (Robertson and Grieve, 1980?)

Simple Crater (e.g. Barringer Crater, Arizona)

4 to 5 km in diameter.,

Bowl-shaped depression.

Upraised rim.

Visible (e.g. New Quebec, Quebec), or

Sometimes eroded, leaving: Anomalous circular lake (e.g. Meen Lake, Nunavut), or Circular island-rimmed area in a larger irregular lake (e.g. Nose Lake, NWT).

Complex Crater (e.g. Tycho Crater, Moon)

Diameter > 5 km.

Central uplift or peak.

Smaller-sized craters.

Visible central peak (e.g. Lake Mistastin, Quebec), or Central peak is subdued or submerged (e.g. Deep Bay, Saskatchewan).

Larger-sized craters.

Central uplift usually forms larger portion of structure, rim is downfaulted in peripheral trough (e.g. Manicouagan, Quebec).

If deeply eroded:

Lakes with central island (e.g. Fraser Lake, Quebec), or Arcuate lakes or valleys surrounding a central mound (e.g. Pipmaucan Res., Quebec).

Lake St. Martin Structure (McCabe and Bannatyne, 1970 and Bannatyne and McCabe, 1984)

Near the eastern edge of the Western Canada Sedimentary Basin.

Centrally located in Manitoba’s Interlake area.

In the immediate vicinity of Gypsumville, Manitoba.

Straddling the northern shoreline of Lake St. Martin.

Along the Fairford and Dauphin rivers.

N 51°47’, W 98°32’.

Numerous coreholes have been drilled into the Lake St. Martin Structure, indicating:

Complex crater.

40 km in diameter.

Age: 219 ± 32 Ma (Kohn et al., 1995).

Geological Setting

Within the outcrop belt of Silurian Interlake Group dolomite (S).

Rimmed by structurally disturbed Ordovician Red River (ORR), Stony Mountain (OSM) and Stonewall formation (OS) and Silurian Interlake Group.

Core of possible Jurassic Amaranth gypsum (J), partially surrounded and underlain by remobilized Permian Lake St. Martin Complex (P) and Precambrian granite (PC).

Geophysical Characteristics

Geological Components

Disruption limit – possibly the original crater limit in Silurian Interlake Group dolomite, prior to erosion.

Crater rim – uplifted, undeformed Precambrian basement granite, granitic gneiss and amphibolite.

Exposed in outcrop on east side of Lake St. Martin Structure, east of PR513.

Central uplift – shocked granite.

Exposed in outcrop in centre of Lake St. Martin Structure, north of PR513.

Present in corehole LSM-4:

53' depth = shock-metamorphosed granitic gneiss intruded by thin pseudotachylyte veinlets.

122' depth = pegmatite cut by pseudotachylyte vein.

Crater fill – St. Martin Series, which includes trachyandesite meltrock, granitic breccia, polymict breccia and Paleozoic carbonate breccia.

Present in corehole LSM-3:

44' and 285' depth = massive trachyandesite meltrock containing abundant fine to coarse granitic inclusions.

189' depth = fallback breccia underlying Jurassic Amaranth red shale.

223' depth = fallback polymict breccia with blobs of reddish, vesicular aphanitic meltrock and buff carbonate.

Present in Bralorne Gypsumville 8-20-32-8W well:

433' depth = polymict breccia = granitic, argillaceous and igneous fragments in finely fragmental matrix.

Present in corehole LSM-1:

260' depth = complexly brecciated carbonate rock.

Thin sections of crater fill meltrock show the following:

Feldspar (clear) and quartz fragments with several sets of planar features.

Fragments of melted rock in fallback breccia; note planar features.

Shock-metamorphosed, partially melted inclusions of granite.

Glassy to partly devitrified fragments with skeletal crystals.

Post-crater red beds (conglomerate, sandstone and siltstone) and evaporites (gypsum and anhydrite).

Gypsum exposed in former quarry on west side of Lake St. Martin Structure, north of PR513.

Jurassic Amaranth red shale present in LSM-3, 189' depth.

Glacial till, and possibly Cretaceous sediment.

Other crypto-explosion craters in Manitoba and vicinity

Manitoba High Rock Lake Structure (McCabe, 1981)

- Probable impact site
- NTS 62P5
- 51°28', 97°41'
- 3 km diameter
- Age: ~435±10 Ma (Kohn et al., 1995)
- Poorly defined surface expression
- Coincident small magnetic low.

A "little sister" to Lake St. Martin?

- West Hawk Lake (Short, 1970)
- Confirmed impact site
- NTS 52E
- 49°46', 95°11'

- 3 km diameter, 111 m deep
- Age: 100±50 Ma
- Generally rounded lake Poplar Bay, Lac du Bonnet (Trueman, 1976)

Probable impact site

- NTS 52L
- 50°22'9", 95°47'0"
- 3 km diameter, 21 m deep
- Age: unknown
- Generally rounded bay

Charron Lake (Robertson and Grieve, 1980?)

- Possible impact site (most likely)
- NTS 53D
- 52°44'33", 95°15'01"
- 5 km diameter
- Circular Lake

Cantin Lake (Robertson and Grieve, 1980?)

- Possible impact site
- NTS 53E
- 53°27', 95°10'
- 5 km diameter
- Generally circular lake

Hartney (Anderson, 1980)

- Probable impact site
- NTS 62F
- 49°24', 100°40'
- 6 km diameter
- Buried depression underlain by brecciated carbonates

Shoulderblade Island, South Moose Lake (Bezys and Bamburak, 1994)

- Possible impact site
- NTS 63F16
- 100°02'30", 53°48'00"
- 2 km diameter
- Rounded island with central round lake

Charron Lake (Robertson and Grieve, 1980?)

- Possible impact site (most likely)
- NTS 53D
- 52°44'33", 95°15'01"
- 5 km diameter
- Circular Lake

Cantin Lake (Robertson and Grieve, 1980?)

- Possible impact site
- NTS 53E
- 53°27', 95°10'
- 5 km diameter
- Generally circular lake

Hartney (Anderson, 1980)

- Probable impact site
- NTS 62F
- 49°24', 100°40'
- 6 km diameter
- Buried depression underlain by brecciated carbonates
- Rounded island with central round lake
- Carbonate breccia dominates most of island's northern and eastern shoreline outcrops.
- Minor outcrops (containing jasper fossils) are present along the western shoreline of the inner lake, which is clear and appears to be deep.
- Abundant pavement outcrops are present in the interior of island, striking parallel to the shoreline and dipping approximately 8-10° towards the center of the island.
- Breccia constituents consist predominantly of fine to medium-grained, grey to buff dolomite lithic fragments, re-cemented by dolomitic micrite containing scattered flakes of biotite and possible Winnipeg Formation quartz sand grains.

Ontario

McIntosh Bay, Northern Ontario (Robertson and Grieve, 1980?)

- Possible impact site (most likely)
- NTS 53D
- 52°35', 94°05'
- 5 km diameter
- Circular, island-rimmed lake

Saskatchewan (See:

<http://www.ir.gov.sk.ca/Default.aspx?DN=3728,3569,3539,3538,3385,2936,Documents>)

- Carswell

- Gow Lake
- Deep Bay
- Maple Creek

Meteorite Impact or Basement Hot spot?

Northwest to southeast alignment of structures, shown on "Location of Crypto-explosion Craters in North America" from <http://www.unb.ca/passc/ImpactDatabase/NorthAmerica.html> (including the Lake St. Martin Structure) is suggestive of the path of a possible Mesozoic hotspot, similar to those depicted by Morgan (1983) and Heaman et al. (2003).

Economic Geology

Gypsum and gypsum wallboard production.

Gypsumville (1901 to 1990). Wallace and Greer (1927) reviewed the early development of the Gypsumville deposits. And Bannatyne and Watson (1982) described the more recent history of the Lake St. Martin gypsum and anhydrite deposits.

Aggregate production.

Limited amounts of aggregate have been produced from gravel pits in the Lake St. Martin area. Groom (2006) produced a map that shows the location of gravel pits in the Rural Municipality of Grahamdale.

Base metal potential.

According to McCabe and Bannatyne (1970), native copper has been reported from the Lake St. Martin Crater structure over the years.

Trace element analysis of Lake St. Martin Series carbonate breccia core samples from LSM-1 have indicated that copper is anomalous (up to 710 ppm, according to Gale and Conley, 2000).

Acknowledgements and references are not included here. It would require another full page.

2007 Field Trips

Jacques Bourgeois (Field Trip Coordinator, Rock and Mineral Club & Mineral Society of Manitoba), Brian Bilcowski (Program Coordinator, Rock and Mineral Club) and Jack Bauer (President, Mineral Society of Manitoba) have combined their resources to organize an exciting season of trips to popular collecting localities. Other clubs have been invited and are welcome on our field trips. However, if we reach our maximum numbers, priority will go to MSM and WRMC paid up members. On fieldtrips requesting registration, please do so early and avoid disappointment. For various reasons beyond our control, but most likely regarding weather, we found it necessary to post pone or cancel a particular trip, so please keep in touch.

1. University of Manitoba, Winnipeg, February 24,

This was an excellent tour performed mainly by the museum's curator, Dr. Anton Chakhmouradian.

2. Gold in Bisset area, - April 28

Here the gold is associated with quartz veins. With a little luck, and a good quality metal detector, the possibility of finding VG is good. I will confirm this trip, after a pre-trip to determine accessibility. Eye protection will be necessary for this trip and bring a lunch.

Please register with Jack Bauer 632-6934. ...Departure is 7AM from??

3. Gypsumville Quarries, Gypsumville, Manitoba - June 23

This trip will be co-led by James Bamburak from the Manitoba Geological Survey. This trip will involve a number of stops in the crater area. We would like to keep the vehicles to a minimum. We are considering renting a 15 pass. Van/bus. If ten people would be interested in sharing expenses and driving duties on the return trip. Two or three vans or suvs will then compliment our mobile group nicely.

Please register w/ Jack Bauer 632-6934..departure is 7AM from ??

4. Thunder Bay, Ontario – June 29 to July 2nd, 2007 - TBD

Departure from Winnipeg; is scheduled for Friday, at your convenience, June 29, 2006.

Meet Brian at 9AM, Saturday, at the Terry Fox Look Out, East side of Thunder Bay, for two days of collecting fun. He will then provide you with the weekend itinerary, including a barbeque for only \$12.50 per person.

Call the Old Country Motel for reservations @ 1-800-454-7658. Book early and avoid disappointment. The July long weekend will be busy. This trip will surely satisfy the Amethyst collector in you.

This is Hard rock country, so please bring adequate eye protection.

For more information, contact Brian Bilcowski 233-1270

5. Tanco Mine, Bernic Lake, Manitoba –July 14

Departure to Tanco, is from the Forks, at 8:30 am. For many years, the Tanco Mine trip has been a favourite from Winnipeg's rock hounds. In recent years, the picking has been somewhat less than fruitful, since Tanco has not brought any new material, to the surface. After discussing with the chief geologist, I decided to try to go again this year, with hopes, that new material will be brought up to the surface. This summer, when the machinery comes to the surface for maintenance, they will try to bring some new material to the surface. The Bernic Lake deposit is one of the largest rare element bearing deposits in the world and contains two thirds of the worlds known reserves of pollucite. Black tourmaline, beryl, spodumene, lepidolite and feldspar are also abundant at this mine.

For more information, contact Jacques Bourgeois at 467-3282.

6. Snow Lake, Manitoba – August 4 to 7th.

This trip we will explore the Anderson lake shoreline for Garnets, Staurolite and Kyanite crystals. We will also

explore the Wekusko Kimberlitic (?) zone. Our stay will be at the Blue Nose, in Snow Lake, unless otherwise requested. A pre-trip and member enthusiasm will determine if this trip is a go.

Contact Jack Bauer 632-6934 for more information.
Departure will be 7AM, from ??

7. Morden, Manitoba – August 11

Departures are from the Forks Travel Centre at 8:00 a.m. or meet at the Canadian Fossils Discovery Centre at 9:30 a.m. A \$5 fee will cover a guided tour of the museum and the dig.

Take a trip back in time as we explore the ancient seabed of the Cretaceous that once covered Manitoba in search of mosasaur and plesiosaur fossils. The area around Morden is also rich in other minerals such as jarosite and selenite.

For more information, contact Jacques Bourgeois at 467-3282.

8. Wilson River, Manitoba, - September 1

Departure is from Salisbury House in Headingley (Perimeter Hwy) at 7.00 a.m.

I would suggest we double up, for approximately 3.5 hours drive, north to Dauphin, to save gas expenses. This trip is weather sensitive; high water levels will be bad; low water levels will be good for collecting. This small river starts in the Duck Mountains, and flows East, North of Dauphin and then draining into Dauphin Lake. In its travels Eastward, it exposes the northern edge, of the Ashville and Favel Formations. Here we will explore for Cretaceous fossils. We will look for Inuceras shells, fish fragments (teeth or scales), Plesiosaur and Mosasaur (teeth or vertebra). Down stream, we will visit the exposed contact of the Ashville and Favel Formations. *For more information, call Jack Bauer at 632-6934*

9. Stony Mountain, Manitoba – September 15 and 16

Departure is from the Forks Travel Centre at 8:00 a.m. or meet at the Stony Mountain quarry for 9:00 a.m. Explore the quarries of Stony Mountain, consisting of limestone and dolostone formed during the late Ordovician period. Many fossils abound, including brachiopods, corals (horn and honeycomb), cephalopods, and molluscs. Those with a keen eye, although not as common, can also find trilobites/pieces. This field trip coincides with the Oak Hammock Marsh annual Archaeology, Rocks and Mineral Show and is a morning trip only, in order to allow participants to take in the mineral displays and rock auctions at the show in the afternoon. *For more information, contact Jacques Bourgeois at 467-3282.*

General Information about Field Trips

If weather conditions become unfavourable, contact Fieldtrip Coordinator

- Keep in touch, in case of unexpected changes
- Register in advance, for the field trips that request it. Contact the field trip coordinator for more information or if your plans unexpectedly change.
- Some field trips have limited spots available.
- Be prepared to sign a liability waiver

When attending a field trip:

- Protect yourself; wear safety glasses and safety boot
- In Hard Rock country, pieces of rock can fly and hit you in the eye, when struck with a heavy hammer.

Things to bring with you:

- Lunch and drinking water
- Bug repellent and sunscreen
- Hammers and chisels
- Safety glasses, safety boots
- Field lens or magnifying glass
- Collecting bags and news paper/towels to protect your find
- Notebook (to record locations and geological notes)
- Camera, film, and your sense of adventure

Have Fun, be Safe and Good Luck on our 2007 Fieldtrip season.

DISPLAY CASES AVAILABLE

Dimensions: 4' wide by 3' high by 6" deep, with 5 angled wooden shelves

These are wall mounted plywood cases, with the glass fronts, screwed on as opposed to being hinged 3 available, for a cash donation of \$20.00 per case to the Mineral Society of Manitoba. are..

These cases can be made at the next meeting. If more than 3 people want these, names will be drawn by lot.

MINERAL SOCIETY OF MANITOBA INSURANCE

Here is a brief summary of our basic insurance coverage and history, that all may better understand the benefits available to Mineral Society Members.

Before, the new millennium, we did not have the peace of mind, insurance coverage can bring for members and executives. This changed when the Mineral Society joined up with Energy and Mines, when they host their promotional events. This mutual support brings in much needed revenue, offers exposure opportunities, as well as covers our insurance premiums, which is approximately \$500.00 annually. This gives us basic \$1,000,000.00 liability coverage. We may want to consider increasing this to \$2,000,000.00 in the future, to cover inflation. The coverage extends to: The Forks, Convention Center, Oak Hammock, The Manitoba Museum, U of M and on our fieldtrips etc. We have coverage when visiting rock quarries and mine sites. My understanding is, as Richard from "Dowling Insurance" explained, we have coverage wherever our fieldtrips may take us. This insurance policy is standard and basic and will work with any other coverage we may have, privately or by employer.

Please keep these mutual benefits in mind, when we ask for membership support through volunteerism, that The Mineral Society of Manitoba may fulfill its obligations.

IMPORTANT NOTICES

Yvonne is contact person for Mining Week volunteers at the Forks, May 23 & 24. Set up time 2:00 pm, Wednesday, Thursday 9:30 – 4:00

There is a work bee in preparing specimens for Mining Week on April 21. Jacque Bourgeois kindly offered his garage as a place for the work bee. The work bee is one week before the Bisset trip. More info at the April 4 meeting.