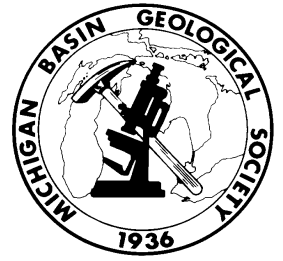




# ON THE ROCKS



**A Newsletter of the Michigan Basin Geological Society**  
2007-2008 Number 8 [www.mbgs.org](http://www.mbgs.org) April 2008

## EVENTS

**April 9, 2008:** MBGS Annual BBQ meeting will be at Western Michigan University in the Michigan Geological Repository for Research and Education Building, Kalamazoo, Michigan. The speaker is **Dr. Brian Hampton** from Michigan State University presenting “**Applying detrital zircon geochronology to constrain the timing of arc accretion, exhumation, and sedimentary basin development in the North American Cordillera, south-central Alaska**”. See talk details and location information below. Dinner at 6:15pm; speaker at 7:00pm; cost \$25.00.

### **Upcoming field trips:**

**Exciting field trips are currently being planned for 2008 and 2009. Pack your rock hammers and plan on joining us. Every participant must be a member of the Society. A membership application is included for your convenience. Details of the April, May and August 2008 trips are included in this newsletter.**

***Detroit Salt Mine Tour, Detroit, MI, April 26, 2008 – Back by popular demand!***  
**Two Tours – 8:00am and 11am.**  
**Registration information included in newsletter.**

***Niagara Gorge, Niagara Falls, NY, May 2-4, 2008 – Itinerary Included in Newsletter***  
**Friday:** Buffalo Geological Society’s Annual Banquet  
**Saturday:** Hike into gorge and view power plant road cut to discuss Niagaran Stratigraphy  
**Sunday:** Hike into 18 Mile Creek to review Devonian stratigraphy

***Southern Indiana Karst Stratigraphy and Spelunking* in August 9-10, 2008 - **Itinerary Included in Newsletter****

**Saturday:** Spelunk caves in Bedford, IN area with Eastern Indiana Grotto guides.  
**Sunday:** Return trip visits outcrops to discuss stratigraphy and karst features.

***Copper Country, Houghton, MI* in September 2008**

4 day trip to include mine tours, rock collecting, mineral museum tour and evening lectures. Leaders and lecturers to include Bill Haller, Dr. Bill Rose and Dr. Larry Lankton.

## **2007-2008 MBGS Officers**

**The Executive Committee meeting minutes are available on our website at [www.mbgs.org](http://www.mbgs.org)**

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## **MEETING CANCELLATION POLICY**

Monthly meetings will be automatically cancelled whenever the National Weather Service issues a "Storm Warning" for the Lansing area. If driving conditions are poor but a "Warning" has not been issued please contact any member of the Executive Committee for the status of the meeting.

## **MICHIGAN BASIN GEOLOGICAL SOCIETY PUBLICATIONS**

**Historical CD #1: Nine out-of-print publications from 1949 through 1965 and 1998, 2000, \$15**

**Historical CD #2: Four out-of-print publications from 1947, 1959, 1983 and 1991, 2001, \$15**

**Historical CD #3: Six out-of-print publications from 1948, 1952, 1990 - 1995, 2001, \$15**

**Historical CD #4: Six out-of-print publications from 1957, 1958, 1961, 1967, 1968 and 1970, 2004, \$15**

**Historical CD #5: Five out-of-print publications from 1971, 1989, 2001, and Oil & Gas Fields Vol. 1 & 2, 1969 & 1992, 2006, \$50**

**(NEW) Historical CD #6: Six out-of-print publications from 1946, 1953, 1963, 1966, 1978 & 1987 plus the Richfield Challenge, 1952 & Tom Knapp's MS Thesis, 2007 \$15.**

**\*\*Special Price\*\* - Historical CDs 1 - 6 \$85**

**NE Lower Peninsula Geological Field Conf., 2004, T. Black, M. Wollensak, On CD \$10**

**Stratigraphic Lexicon for Michigan, 2001, prepared by MBGS and published by DEQ, \$4**

**(NEW) Robert E. Mosher Geological Studies**  
A lifetime of geological research on Silurian Rocks with John T. Sanford. The disks are organized chronologically and include field work in North America and Europe. 2007, 2 CDs \$35.

Price Includes postage, handling and any applicable sales tax. Orders for publications should be prepaid in U.S. Funds and addressed to:  
MBGS - Publications, P O Box 18074, Lansing MI 48901-8074

# MBGS Meeting Wednesday, April 9, 2008

Location: WMU, MGRRE Building  
**BBQ Dinner at 6:15pm - Cost \$25.00**  
The talk will begin at **7:00 PM**

**"Applying detrital zircon geochronology to constrain the timing of arc accretion, exhumation, and sedimentary basin development in the North American Cordillera, south-central Alaska"**

**By: Dr. Brian A. Hampton  
Michigan State University**

Reservations and Information Contact:

Thomas Godbold

P.O. Box 30256

Lansing, MI 48909-7756

Ph: Bus Ph: 517-241-1545, Fax 517-241-1595

E-mail:godboldt@michigan.gov

## **Michigan Geological Repository for Research and Education**

Map and Directions to 5272 W. Michigan Avenue, Kalamazoo, MI 49006--(269) 387-8633



### **From the Kalamazoo Airport:**

Exit the airport and turn right onto Portage Road. Go 0.2 miles to I-94

Take I-94 West toward Chicago—go 3.9 miles

Take Exit #74B/US-131 North to I-94-BUS East toward Grand Rapids—go 2.1 miles

I-94-BUS East becomes US-131 North—go 0.4 miles

Take exit #36B onto Stadium Drive toward Oshtemo—go 0.5 miles

Turn right on S. 11<sup>th</sup> Street—go 0.1 miles

Turn right on W. Michigan Avenue—go 0.3 miles and arrive at 5272 W. Michigan.

Our driveway is the first one just past the US131 overpass on the left, through the fence gates. Our building is the largest one in this fenced area.

### **From the South or North**

From US 131, take exit #36B/Stadium Drive onto Stadium Drive—go 0.4 miles. Turn right on S. 11<sup>th</sup> Street—go 0.1 miles. Turn right on W. Michigan Avenue—go 0.3 miles and arrive at 5272 W. Michigan Avenue. Our driveway is the first one just past the US131 overpass on the left, through the fence gates. Our building is the largest one in this fenced area.

### **From the East or West**

From I-94, exit onto US 131 North—go about 2.5 miles and take exit #36B onto Stadium Drive toward Oshtemo—go 0.5 miles

Turn right on S. 11<sup>th</sup> Street—go 0.1 miles

Turn right on W. Michigan Avenue—go 0.3 miles and arrive at 5272 W. Michigan.

Our driveway is the first one just past the US131 overpass on the left, through the fence gates. Our building is the largest one in this fenced area.

### **From Rood Hall, Western Michigan University**

Drive west on W. Michigan about 2 miles to S. Drake Road

Turn left on S. Drake Road—go 0.2 miles

Turn right on W Michigan Avenue—to 0.3 miles and arrive at 5272 W. Michigan.

Our driveway is the last one before the US 131 overpass on the right, through the fence gates. Our building is the largest one in this fenced area.

### **ABSTRACT**

The detrital record of Mesozoic island arc accretion along the North American Cordillera is preserved in a discontinuous belt of clastic marine strata that are exposed inboard of the Wrangellia island arc from southwestern Alaska to Washington State. In southern Alaska, synorogenic deposits of the Upper Jurassic–Cretaceous Kahiltna assemblage contain the stratigraphic record of Wrangellia island arc accretion. U-Pb detrital zircon ages combined with detailed stratigraphic constraint from the Kahiltna assemblage reveal a distinct temporal and spatial trend in regional exhumation and basin-fill evolution during Jurassic–Cretaceous time. LA-ICPMS analysis of 8 samples, representing a total of 714 detrital zircon grains, from a >250-km-long transect of the Kahiltna basin reveal a U-Pb age distribution of primarily Mesozoic age grains (74%) with less abundant Paleozoic (11%), and Precambrian (15%) age grains. Preexisting biostratigraphic constraint from the Kahiltna basin together with a minimum crystallization age (maximum depositional age) from each of the 8 samples allows for the study of upsection changes in provenance within the Kahiltna assemblage, which, ultimately reflect a distinct pattern of exhumation and erosion along the margins of the basin during island arc accretion. A comparison of detrital zircon age distribution through time in the Kahiltna assemblage reveals three distinct stages of exhumation and basin development that include: (1) An initial Late Jurassic (latest Oxfordian) stage during which detrital zircon grains were derived solely from Late Triassic–Late Jurassic igneous sources of the oceanic Wrangellia composite terrane (Mz-100%–Pz-0%–Pc-0%), (2) an Early Cretaceous (Barremian–Aptian) stage during which detritus was derived primarily from Precambrian, Devonian–Mississippian, and Late Triassic–Jurassic source areas of the continental margin, as well as Late Triassic–Cretaceous arc sources of the oceanic Wrangellia composite terrane (Mz-76%–Pz-12%–Pc-12%); and, (3) an Early Cretaceous (Albian) stage that is represented by zircon age populations that reflect a large component of Precambrian and Ordovician–Silurian sources of the continental margin, as well as Cretaceous sources of the Wrangellia composite terrane (Mz-19%–Pz-22%–Pc-59%). Provenance trends in detrital zircon populations from the Kahiltna assemblage parallel detrital zircon populations from along-strike, age-equivalent strata of the Gravina belt in southeastern Alaska. A comparison of detrital zircon age distribution through time reveals that both sedimentary units record the initial exhumation of the Wrangellia composite terrane and subsequent erosion of continental margin sources. The Gravina belt, however, first records continental margin detritus by Late Jurassic (Oxfordian) time, whereas, the Kahiltna assemblage does not have any occurrence of continental margin detritus until Early Cretaceous (Barremian–Aptian) time. This along-strike difference in the timing of introduction of continental detritus is consistent with a model favoring northward progression of exhumation, erosion, and deposition in a series of syncollisional basins during oblique collision of the oceanic Wrangellia composite terrane to the Cordilleran continental margin during Late Jurassic–Early Cretaceous time.

### **Biography of Brian A. Hampton**

Personal: -Born in Moscow, ID; Raised in Yakima, WA

-Married – no children

Research Interests: -Sedimentology, Tectonics, Basin Analysis, Petroleum Geology

-Research field areas include the central Andes (Bolivia) and North American Cordillera (Alaska)

Education: -B.S. degree from Pacific Lutheran University (Tacoma, WA)-1997

-M.S. degree from Louisiana State University (Baton Rouge, LA)-2002

-PhD. Degree from Purdue University (West Lafayette, IN)-2006

Employment History:-Currently Assistant Professor (sedimentology/tectonics) at Michigan State University

-Started at MSU in January 2007

-Geology Intern at Chevron Inc. – Houston, TX (2005), British Petroleum – Anchorage, AK (2001), and

Conoco-Philips – Houston, TX (1999)

-Geologic Consultant for Weyhaeuser Co. Federal Way, WA (1997-1998)

**MICHIGAN BASIN GEOLOGICAL SOCIETY FIELD TRIP**  
**DETROIT SALT COMPANY MINE**  
**26 April 2008**

**WHERE:** Detroit Salt Company, 12841 Sanders Street, Detroit, MI 48217

**WHEN:** Saturday, 26 April 2008, two shifts - 8am & 11am.

**COST:** None

**DRESS:** The mine is 59°F so a light coat, jeans or field attire, and boots are required.

**EQUIPMENT:** Bring a sample bag along for salt specimens. Hard hats, a mine belt, and a mine light will be provided by the Detroit Salt Company.

**PHOTOGRAPHY:** Still photos for personal use only. No video cameras & no "publishing" on the internet please.

Please stay in the parking area before & after your shift. Please DO NOT wander around the property.

**AGE LIMIT:** 18 and above.

**PARTICIPANT LIMIT:** Twelve for each tour and **MBGS MEMBERS ONLY!** (Our insurance carrier requires field trip attendees to be MBGS members.) Go to [www.mbgslorg/membershipapp.html](http://www.mbgslorg/membershipapp.html) for a membership application and use me as a sponsor if you don't have one. **Please send the membership application with the \$25.00 dues attached.**

**REGISTRATION DEADLINE:** Thursday 24 April 2008.

**LUNCH:** After the last tour we will all descend on Vince's for a superb Italian meal as recommended by our tour leader, Emanuel Z. Manos.

**DETROIT SALT COMPANY MINE TOUR**

**NAME:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

**E-MAIL ADDRESS:** \_\_\_\_\_

**TX#:** \_\_\_\_\_ **FAX#:** \_\_\_\_\_

**MBGS MEMBER:** Yes\_\_ No\_\_ **SHIFT PREFERENCE (1<sup>st</sup> come, 1<sup>st</sup> served) 8am\_\_ 11am\_\_**

**PLEASE MAIL, FAX, OR E-MAIL THIS FORM TO: Len Espinosa, MBGS, 2331 Hulett Rd, Okemos, MI 48864-2513; TX# 517-349-1917, E-mail [espinosl@sbqglobal.net](mailto:espinosl@sbqglobal.net)**

# A GEOLOGICAL FIELD EXCURSION

Sponsored by  
Michigan Basin Geological Society  
And Buffalo Geological Society

## GEOLOGY OF THE NIAGARA GORGE AND EASTERN LAKE ERIE SHORELINE

Where: Holiday Inn, Buffalo-Amherst, 1881 Niagara Falls Blvd., Amherst NY. A block of rooms has been set aside for the MBGS through to 4/7/08. Call 1-716-691-8181 to make your own reservation.

When: **Friday, May 2<sup>nd</sup>, Saturday May 3<sup>rd</sup> and Sunday May 4<sup>th</sup>.**

Who can participate: Open to all interested. Membership of the MBGS is required for insurance purposes. An application for membership to the MBGS is attached. Send application with registration form and fees. An officer of the MBGS will be your sponsor.

Cost: \$20 per person. This cost includes written materials and Saturday lunch and beverages.

Recommendations: Leather hiking boots or lightweight hikers providing ankle support is recommended. Rain gear is suggested if inclement weather.

Participation Limit: A limit of 40 participants will be imposed. Email Mark at [wollensak@voyager.net](mailto:wollensak@voyager.net) to guarantee your place on the registration list.

Registration Deadline: Registrations will no longer be accepted after Friday, April 17<sup>th</sup>.

Trip Leaders: Dr. Gordon Baird, SUNY @ Fredonia and Dr. Carlton Brett, University of Cincinnati have agreed to lead the trip into the field. Biography on the leaders is attached.

Friday Evening Banquet and Lecture: The Buffalo Geological Society's Annual Banquet takes place on Friday, May 2<sup>nd</sup> at the Holiday Inn Buffalo-Amherst. The participants have been invited to join their function. Attached is the banquet registration form and lecture announcement.

Saturday Evening Lecture: Dr. Marcus Bursik, University at Buffalo @ SUNY, will talk on the "Geomorphology and Hydraulics of Niagara Falls". A biography and abstract are attached.

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### GEOLOGY OF THE NIAGARA GORGE AND EASTERN LAKE ERIE SHORELINE FIELD EXCURSION

NAME: \_\_\_\_\_ EMAIL: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

ZIP: \_\_\_\_\_

Payment of \$20 per person can be made at the April MBGS Meeting or by mail. Make checks payable to MBGS in US funds. Mail to:

**MBGS Niagara, P.O. Box 18074, Lansing, MI 48901-8074**

# GEOLOGY OF THE NIAGARA GORGE AND EASTERN LAKE ERIE SHORELINE GEOLOGICAL FIELD EXCURSION

## ITINERARY

Friday Evening: Join the Buffalo Geological Society in their Annual Banquet at the Holiday Inn – Buffalo/Amherst. Following the dinner will be a lecture by Dr. Richard J. Batt, Buffalo State College, will give a lecture on “Fire Mountains, Flowing Ice, and Catastrophic Floods: a wander through the Pacific Northwest”. Banquet information, registration form and talk description are attached.

Saturday Morning - Niagara Gorge: The trip will start at the Earl W. Brydges Art Park where trails enter the Niagara River gorge. Dr. Gordon Baird, SUNY @ Fredonia and Dr. Carlton Brett, University of Cincinnati, will lead the trip and discussion. The section to be viewed is the Clinton and Medina Groups of Silurian Age consisting primarily of sandstone, shale and marine limestone. Lunch will be provided at the park for the participants. A biography of Dr. Baird and Dr. Brett is attached.

Saturday Afternoon: The trip will travel from Art Park east along the Niagara escarpment to a road cut near the City of Lockport. Here we will review and discuss a bioherm/reef in the Silurian-age Lockport Limestone with Dr. Baird and Dr. Brett. Additional stops may be included.

Saturday Evening Lecture: A lecture will be given by Dr. Markus Bursik, SUNY @ Buffalo, on “Geomorphology and Hydraulics of Niagara Falls”. The talk location will be announced at a later date. A lecture abstract and biography is attached.

Sunday - 18 Mile Creek: The attendees will pack up and travel along the shoreline of Lake Erie just west of the town of Hamburg at the mouth of 18 Mile Creek, approximately a 40 minute drive. Here the outcrops offer a view of the Middle and Upper Devonian section along the shores of western Lake Erie (Moscow and Ludlowville Formations). The soft shales are known for being highly fossiliferous containing trilobites, gastropods, corals, crinoids, brachiopods, pelecypods and cephalopods. Dr. Baird and Dr. Brett will provide descriptions and discussion. Additional stops may be included.

**BUFFALO GEOLOGICAL SOCIETY  
ANNUAL BANQUET**

FRIDAY, MAY 2, 2008

THE HOLIDAY INN, 1881 NIAGARA FALLS BLVD.  
AMHERST (BUFFALO), NEW YORK

Cost: \$20.00 PER PERSON

6:30 PM CASH BAR

7:00PM DINNER

Mark your calendars now for an enjoyable evening of good food with good friends at the BGS Annual Banquet and installation of officers.

The cost of the banquet is \$20.00 per person. Reservations and payment must be made no later than April 18, 2008

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Payment can be made at any regular meeting or by check. Make checks payable to:

*Buffalo Geological Society*

Mail payment and form to: *Judy A. Russell, 719 Edgewater Drive, Amherst, New York 14228*

Please plan on bringing items to donate for use as door prizes at the banquet. Thank you.

PLEASE NOTE: Payment must be made in advance, as we have to guarantee the number that will be attending.

\*\*\*\*\*

Speaker will be Dr. Rick Batt, who will present:

**"Fire Mountains, Flowing Ice, and Catastrophic Floods:  
a wander through the Pacific Northwest"**

Join us as Dr. Rick Batt shows us some of the scenery and geology of the Pacific Northwest. Last summer Rick and Robin made a 10,500 mile road-trip to explore a part of the US known for its magnificent scenery and complex geology. After visiting national parks in North Dakota, Montana, and Wyoming on the way out west, they explored parts of Idaho, Washington, Oregon, and northern California before returning home through the Black Hills and Badlands of South Dakota. Highlights of interest include the effects of glaciers, evidence for giant catastrophic floods in the Channeled Scablands and southern Idaho, a visit to the deepest canyon in the United States, and of course some of the several active volcanoes of the Cascade Range, including Mt. St. Helens that erupted in 1980 and is still active today.

**SATURDAY EVENING LECTURE  
MAY 3, 2008**

**Michigan Basin Geological Society  
And  
Buffalo Geological Society**

**“Geomorphology and Hydraulics of Niagara Falls”**

Presented by:  
**Dr. Marcus Bursik,**  
Department of Geology,  
University at Buffalo SUNY

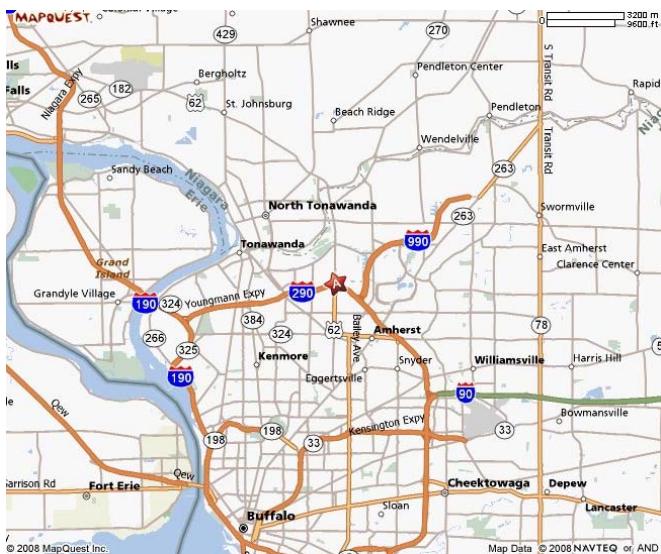
Talk Description:

We will examine the Quaternary geomorphology of Niagara Falls and the Niagara River, as well as discuss the modern fluvial hydraulics. We will investigate evidence for older features of the river and paleorivers, including the Welland River and Lake Tonawanda, Devil's Hole, the Whirlpool and buried St. David's Gorge. The implications of Niagara Glen for knickpoint recession will also be covered, as well as the 'unknown' Niagara gorge between Lewiston and Fort Niagara. We will also discuss features related to the hydraulics and aerodynamics of the waterfall plume and mist plume, as well as the Whirlpool and Whirlpool Rapids.

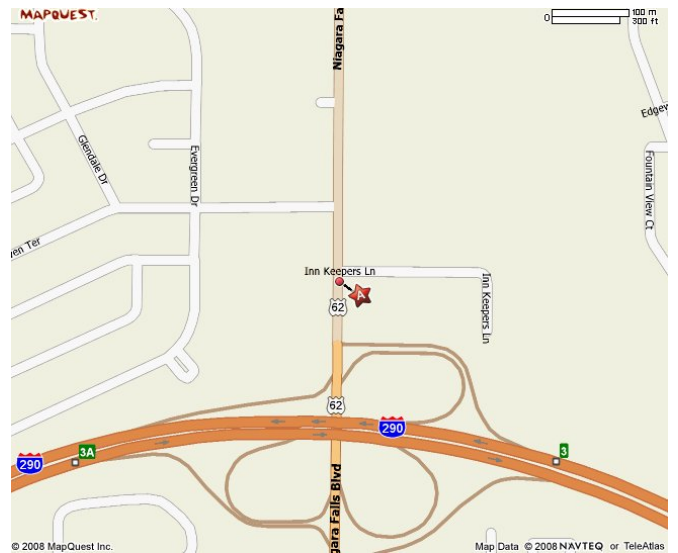
Location and time to be announced at a later date.

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**MAP TO HOLIDAY INN – BUFFALO/AMHERST, NEW YORK**



EXIT 3  
NORTH  
OFF I-290  
(YOUNGMAN  
AND  
MEMORIAL  
Hwy)  
Holiday Inn  
– Buffalo  
Amherst,  
1881  
Niagara  
Falls Blvd.



A GEOLOGICAL FIELD EXCURSION  
Sponsored by  
Michigan Basin Geological Society  
SOUTH CENTRAL INDIANA SPELUNKING AND  
GEOLOGY OF THE SALEM LIMESTONE,  
BLOOMINGTON, INDIANA

Where: A block of rooms will be reserved at a hotel in Bedford, Indiana.

When: Saturday, August 9<sup>th</sup> and Sunday, August 10<sup>th</sup>, 2008

Who can participate: Membership of the MBGS *is required* to participate in the excursion.

Cost: To be determined.

Recommendations: Spelunking involves physical activity such as walking through ankle deep water, crawling and getting muddy. The cave(s) to be explored are primarily walking caves and not commercial caves. A helmet and headlamp are provided. Clothing such as coveralls, leather gloves, old tennis shoes or boots and knee pads are highly recommended. Claustrophobic participants are cautioned.

Participation Limit: A limit of 40 participants will be imposed. To pre-register, email Mark at [wollensak@voyager.net](mailto:wollensak@voyager.net) and request to be added to the pre-registration list.

Registration Deadline: Registrations will no longer be accepted after Friday, July 18<sup>th</sup>.

What is Provided: To be determined. Expect the registration fee to include written materials (geological background and road log) at a minimum.

Your Responsibilities: Costs for room Saturday night, transportation (we will assist in arranging carpooling), all meals during the trip.

Trip Leaders: Brian Leavell and several experienced members of the Eastern Indiana Grotto have offered to lead our participants into Donohoe Cave on Saturday, August 9<sup>th</sup>. Additional information and registration form will be provided in the May newsletter.

Saturday - Donohoe Cave: The trip will depart Lansing at a specified meeting place early on Saturday morning. The drive to Bedford, Indiana is approximately 6 hours. The caravan will meet in Bedford for lunch and to meet with the Eastern Indiana Grotto for equipment and instruction. Donohoe Cave was carved within the Ste. Genevieve Limestone and St. Louis Limestone, Blue River Group, Mississippian Period. This cave was chosen for both it's ease of passage and quality of cave formations. The round trip cave tour takes approximately 2-3 hours depending on the group size. Additional caves may be organized if time and interest allows.

Sunday - Bloomington Area Limestone: Todd Thompson, with the assistance of Brian Keith and John Rupp, of the Indiana Geological Survey, have agreed to spend the Sunday morning to present to the participants the Mississippian Salem Limestone section on the north side of Bloomington, Indiana. We will visit a quarry overlook for discussion. Roadcuts and outcrops will also be visited and discussed in greater detail.