



October, 2003
Volume 29
Number 3

THE PRESIDENT'S MESSAGE

There has been a lot going on within GSM over these past few months.

Summer Field Trip - The GSM-GSNH joint summer field trip to the Mt. Washington region was a tremendous success by all accounts. I am very grateful to Woody Thompson (MGS) and Lee Wilder (President, GSNH) for organizing it all, and to Brian Fowler (North American Reserve), Dyk Eusden (Bates College), Thom Davis (Bentley College), Tim Allen (Keene State College), Woody Thompson (Maine Geological Survey) and Dick Boisvert (NH State Archaeologist) for their various presentations and field trips. I received an e-mail from Lee Wilder yesterday expressing interest in hosting another joint summer field trip in 2004 – perhaps somewhere in the Acadian region this time. Stay tuned!

GSM Short Course – The short course on Maine Geology was held on October 15 at Bates College and was very well attended with at least 150 people (speakers included). The course filled up nearly a week before it was held, and we found ourselves in the unfortunate position of having to turn away at least twenty to thirty additional people. The course was well received, and we have had several requests to offer it again in the near future. Many thanks to Liz Champeon (Treasurer) for her role in the registration process, to Gene Clough of the Bates Geology Department for all his technical assistance, to Walter Anderson for moderating, and, of course to all of the speakers, Bob Marvinney (MGS), Steve Pollock (USM), Dave Gibson (UMF), Doug Reusch (UMF), Chris Gerbi (UM), Rachel Beane (Bowdoin), Tom Weddle (MGS), Joe Kelley (UM), Julia Daly (UMF), Alice Kelley (UM), Dan Belknap (UM), Steve Dickson (MGS) and Liz Champeon (S. W. Cole) for their wonderful presentations. We will be posting written summaries of the talks on the GSM website in the near future.

Fall Meeting – This fall's meeting will take place on November 4th at the Elk's Lodge on Civic Center Drive in Augusta. It will start at 1:00 with a special consultant's symposium to kick it off (see announcement later in Newsletter).

Checklist of Equipment – In a continuing effort to increase the level of interdisciplinary awareness and involvement, I'd like to start pulling together

information on the various types of equipment and instruments that we all have tucked away at our respective institutions. The aim of this venture is three-fold: (1) to provide us all with a general awareness of what types of scientific instruments and equipment exist in Maine; (2) to educate the geological community on the new technologies within each of our given fields, the types of questions being asked and how they are being addressed; and (3) to provide opportunities for possible resource sharing and to initiate larger-scale, interdisciplinary, collaborations. The final aim is a tall order to be sure, but as the saying goes, every journey starts with a single step. That first step here is to begin collecting the data.

Bev Johnson (Bates College) has written an article for this Newsletter on the isotope facility at Bates, its capabilities and current research being conducted with it (please see p. 5). I'll be requesting similar articles from others over the next year, as well as pulling together a more comprehensive database of the information. Ultimately, I would like to post the information on the GSM website so that it is accessible by all. So, pull out those NSF proposals or purchase justification forms, and think about cobbling together a quick article on a particular piece for an upcoming Newsletter. What better way to fulfill the dissemination of information requirement of those NSF awards?

Lisa Churchill-Dickson, President (2002-present)
paleo@gwi.net

THE EDITOR'S MESSAGE:

We are looking for submissions from members, from student geology clubs, and news about Maine geology. We publish member news, opinions, and results of scientific studies, along with the standard reports on Society activities. Gain your 15 minutes of fame by being published in our Newsletter!

Dan Belknap, Newsletter Editor (1998-present)
<belknap@maine.edu>

GSM WEBSITE

www.gsmmaine.org

The GSM website contains copies of present and archived Newsletters, a calendar of events, other items of interest to the Society, including a draft of our new Bylaws to be ratified at the Fall meeting. There are

many important links to geology items in Maine and elsewhere.

Webmaster, UMF < megan.macdonald@maine.edu >
(please cc: Dave Gibson - dgibson@maine.edu)



UPCOMING FALL MEETING

Tuesday, November 4th

Elks Lodge, Civic Center Drive, Augusta

Liz Champeon and Lisa Churchill-Dickson have put together a fall meeting that will emphasize the work of the consulting sector. A midweek date was chosen to better accommodate many of the consultants who find Fridays a difficult time to attend. Unfortunately, Tuesday (Election Day) was the only day available, so make sure to cast your votes early that day! Please let Liz Champeon know as soon as possible if you will be there for dinner, so that she can arrange for the numbers for the meal at the Elks Club. Price for a dinner of ham, lasagna, turkey, pasta and salad is \$10 from individuals. The cost of the hall and the remaining 1/3 of the meal cost is being subsidized by GSM.

The format of the meeting is slightly different from those of the past, and includes a half-day of formal presentations followed by the usual business meeting, social hour, dinner and keynote address. Some groups will also be asked to set up poster presentations illustrating some recent projects.

The slate of speakers and subjects is listed below.

Consultant's Symposium

- 1:00 – 1:30 **Steve Kelley** – TBA (The Business Aspects of Consulting)
- 1:30 – 2:00 **Liz Champeon** - Model for Application of Wastewater as Snow
- 2:00 – 2:30 **Dave Andrews** - Dam Removal
- 2:30 – 2:45 **BREAK**
- 2:45 – 3:15 **Jim Hillier** - Bathymetric Studies of Lakes
- 3:15 – 3:45 **Allen Gontz** – Marine Geophysics
- 3:45 – 4:15 **Rudy Rawcliffe** - Geothermal Projects
- 4:15 – 4:30 **BREAK**
- 4:30 – 5:00 Business Meeting (vote on revised Bylaws)
- 5:00 - 6:00 Social
- 6:00 - 7:00 Dinner
- 7:00 - 8:00 Keynote Address: **Alice Kelley** – Geoaerchaeology

GSM SHORT COURSE

The Geology of Maine

The GSM Short Course was held October 15, 2003 at Bates College. The day was a great success despite the strong rainstorm that blew through, rattling the windows throughout the morning talks. Also, unfortunately, due to the last-minute change in venue, the site was not handicapped-accessible – we apologize for this oversight. Registration was 134, plus 15 presenters, a cross-section of students, professionals, teachers, and lay people, including many registering for Continuing Education Credits. President Lisa Churchill-Dickson and Treasurer Liz Champeon gave us a well-organized short course. Gene Clough of Bates gave critical assistance during the set-up. Walter Anderson presided masterfully over the presentations, never allowing the schedule to slip more than a few minutes. Faculty, students, Maine Geological Survey, and consulting professionals gave broad representation in lectures on the geology of Maine. The presenters and topics were:

Moderator: Mr. Walter Anderson, Retired State Geologist

Part I – The Paleozoic and Mesozoic of Maine:

- Dr. Robert Marvinney (MGS): overview;
- Dr. Stephen Pollock (USM): Ordovician Through Devonian Paleogeography, Tectonic Setting, Volcanism and Sedimentary Environments, Northern Maine;
- Dr. David Gibson (UMF): The Coastal Magmatic Province;
- Dr. Douglas Reusch (UMF): The Odyssey of Maine's Bedrock;
- Mr. Christopher Gerbi (UM) Origin and Evolution of Maine's Mountains;
- Dr. Rachel Beane (Bowdoin): The History of Metamorphism in Maine;
- Ms. Lisa Churchill-Dickson (GSM): Maine's Fossil Record.

Part II – The Cenozoic of Maine:

- Dr. Thomas Weddle (MGS): overview;
- Dr. Joseph Kelley (UM): Overview of the Geomorphology of Maine;
- Dr. Julia Daly (UMF): Glacial History of Maine;
- Ms. Alice Kelley (UM): Geoaerchaeology: Investigating the Link Between People and Landscapes in Maine;
- Dr. Daniel Belknap (UM): Sea-level Change in Maine;
- Dr. Stephen Dickson (MGS): Coastal Geology;
- Ms. Elizabeth Champeon (S. W. Cole): The Science of Geology as a basis for Modern Life...or Don't Mess with Mother Nature.

Most talks were pitched at the level of interested lay people, beginning students, and professionals not specializing in particular fields. The broad range

provided an educational experience for everyone. Comments after the short course were highly favorable, with requests to repeat it, perhaps even with the same presenters. GSM has a history of great success with these short courses, benefiting the community and raising funds for the Society's operations. (The funds listed in the Treasurer's report on p. 4 are only those prepaid, as of 9/30. The final total will be higher). The work involved and the level of demand probably militates against an annual presentation, at least on the same topic, but there is clearly an audience for this type of course. As discussed at previous meetings, this is also a mechanism to stimulate work toward our planned Geology of Maine book.

THE STATE GEOLOGIST'S MESSAGE

Geology at the State House

How often have you been out in the field looking at an outcrop when a passerby asks you if you are looking for gold? This happened to me just recently as I was examining the excellent new exposures along the access road for the third bridge in Augusta. Questions like this underscore the public's very poor understanding of the many facets of geology and the contributions geologists make to society. Geologists are viewed more as rock hounds than as scientists that are doing significant work. We know that this impression is far from accurate.

This narrow impression of geology as a profession extends to our elected officials in the State House as well. With the exception of the 13 Legislators on the Natural Resources Committee, most of the 151 members of the House and 35 members of the Senate probably have little knowledge of our profession. Yet every session our representatives vote on issues that have some geological connection. Last session the Legislature voted on bills concerned with rules for development on coastal dune systems, for reporting depths of water wells, and the use and proper disposal of arsenic-treated materials. All of these issues have clear connections to geology. Legislators could use more background on the nature of geology and the value of geological investigations to issues that affect society.

An excellent option for exposing more Legislators to our profession is through a "Geology Day" at the State House. Many other professions have their days in the Hall of Flags, too – "Marine Resources Day", "Dental Hygienists," and the list goes on. I propose to organize such a day during the next legislative session, perhaps sometime in February or March. But to make this successful, I need your help. These events usually involve a

number of exhibits staffed by individuals who are knowledgeable about particular areas of geology. We need good representation from the geological professions to make this event a success. I hope I can call on all of you for support.

Robert G. Marvinney, Maine State Geologist:
<Robert.G.Marvinney@state.me.us>

GSM MEMBER NEWS

Lois Ongley (Oak Hill High School) traveled to Grenoble, France, in May to present a talk entitled "Concentrations of Heavy Metals in Soil, Zimapan, Mexico" at the XII International Conference on Heavy Metals in the Environment.

Joe Kelley (University of Maine) was offered a 3-month sabbatical fellowship for next year at Ulster University in Northern Ireland, which he intended to take next summer.

Cliff Lippitt was recently hired by S.W. Cole and will be working in Bangor office. **Matt Taylor** has returned from California and is now working in S.W. Cole's Summersworth, NH office. **Erika Jones** (recent UMF graduate) is now working in Cole's Gray office.

Walter Anderson is continuing to teach the introductory geology course at USM. Walter says that **Doug Reusch** (UMF) has almost finished the Bedrock Geology Poster for Maine (Walter did the Glacial Geology poster) for Poland Spring Bottling Company. Stay tuned for release date.

Please send member news to:

Carolyn Lepage, Member News Correspondent
(1996-present) <clepagegeo@aol.com> or
PO Box 1195, Auburn, ME 04211-1195 or
Fax: (207)-777-1370 ; Phone: (207)-777-1049

GSM SUMMER FIELD TRIP: Mount Washington and Gorham NH Area White Mountains July 25 - 27, 2003

The GSM and the Geological Society of New Hampshire (GSNH) held a joint summer geology field trip in the White Mountains.

On arrival Friday evening, 7/25, Brian Fowler (North American Reserve) gave a talk on the (now missing) Old Man of the Mountain, at the Visitor Center, Dolly Copp Campground.

[Note: to those who haven't seen the news, the Old Man of the Mountain fell off the face of

Franconia Notch on Saturday, May 5, 2003. <http://www.mutha.com/oldmanmt.html> All summer there have been debates about rebuilding (!), replacement with a fiberglass mold (!), laser holograms, etc. The most recent proposal is for a visitor center with a view telescope that shows both present and archived images at the site.]

Saturday, 7/26, the group traveled up the Mt. Washington Auto Road. Dyk Eusden (Bates College), Brian Fowler and Thom Davis (Bentley College) led a (visibility challenged) exploration of the summit geology, a tour of the Mt. Washington Observatory and Museum, and during descent, examination of bedrock, glacial, and periglacial geology. In the afternoon Tim Allen (Keene State College) and Brian Fowler led bedrock and glacial stops along Rte. 16. The day was capped off by a catered barbecued chicken and steak cook-out at the covered picnic pavilion at Dolly Copp Campground.

Sunday, 7/27, Woody Thompson (Maine Geological Survey) led the group to bedrock and glacial stops along the Androscoggin valley in Shelburne. After lunch, Dick Boisvert, NH State Archaeologist presented the Mt. Jasper Paleo-Indian site.

GSM SECRETARY'S REPORT

The summer field trip had close to 70 participants. Summer was in full swing in the valleys at the end of July. However, the story on top of Mt. Washington was completely different, and what an enlightening experience it was. There was no visibility at the summit. We found the Observatory from the parking lot only by staying in line and not losing sight of the person in front of us.

Once inside, the Museum offered an interesting history of the original hotel and its demise, the Cog Railway, how the Observatory came about; and including, but not limited to, a display of over 100 plants that "survive" in the alpine environment.

Outside on the observation deck the group had a thoroughly enlightening experience. Again, the visibility was such that one could not see from one end of the deck to the other - we almost lost some trip participants who became disoriented in the clouds. The other memorable lesson was the true meaning of wind-chill. The thermometer reading was a balmy 37 degrees F, with winds gusting to 49 mph. We now have a frame of reference for our winter forecasts from atop Mt. Washington.

The wind persisted fiercely through the lunch stop part way down the mountain, but it was summer again when we reached the gate at the bottom. I would say a good time was had by all.

The only order of business discussed during the summer field trip was the vacancies of Secretary and Treasurer for GSM. **Sean Dougherty**, Geotech.II at

the MDEP, and **Rob Peale**, Senior Geologist at the MDEP, have both agreed to have their names placed in nomination for the Secretary and Treasurer positions, respectively. Anyone wishing to nominate someone for either of these offices, please notify the Nominating Committee (**Tom Weddle**, Chair), or nominate your candidate from the floor at the fall meeting.

Respectfully submitted,
Patricia O. Seaward, Secretary (1999 – Present)
<Patricia.O.Seaward@state.me.us>

GSM TREASURER'S REPORT

After extensive weeding of the list of members with unpaid dues, the Society currently has 313 members: They are distributed as follows:

Associates:	24
Institutions:	12
Regular:	231
Students:	46

Prev. Balance on Hand: 06/30/03 \$ **9,104.91**

Anderson Fund (Total)	\$ 5,094.79
Education Fund (Total)	\$ 872.70
Checking Account (other)	\$ 5567.26

Receipts

Dues, interest, etc.	\$ 726.00
Cash collected Nov. 2002 meeting	\$ 260.00
Anderson fund	\$ 13.00
Short Course Registration	\$ 1,735.00
Publications	\$ 20.00
Receipts Subtotal	<u>\$ 2994.00</u>

Expenses

Printing, mailing, stamps	\$ 564.16
Expenses Subtotal	<u>\$ 564.16</u>

Balance on Hand 09/30/03 \$ **11,534.75**

Respectfully submitted,
Elizabeth A. Champeon, C.G., Treasurer (1998-present) <Lchampeon@aol.com>

GEOLOGY DEPARTMENTS' NEWS

Stable Isotope Ratio Mass Spectrometry at Bates College

Bates College has recently purchased a continuous-flow stable isotope ratio mass spectrometer (IRMS) from research money awarded by the Maine Technology Institute (proposal funded 12/02). This instrument is housed in the Department of Geology's Environmental Geochemistry laboratory and is

dedicated solely to the isotopic analysis of bulk organic material (e.g., soils, sediments, plants, proteins, etc.) and specific organic compounds (e.g., lipids and amino acids). Isotopic analysis of modern and ancient organic matter allows for study of the interconnections between geochemistry and biology and sheds light on the biogeochemical cycling of carbon, nitrogen and sulfur in modern and ancient settings.

The IRMS at Bates is a Thermo Finnigan Delta Plus Advantage connected to a Costech elemental analyzer (EA), and a Trace gas chromatograph (GC) via combustion (C) interfaces, hereafter referred to as the EA/GC-C-IRMS. The EA-C-IRMS allows for the stable carbon, nitrogen and sulfur isotopic compositions to be determined for bulk organic matter. The GC-C-IRMS allows for the stable carbon and nitrogen isotopic determinations of specific organic compounds.

The current primary research projects of Johnson and colleagues (i.e., faculty and students) entail the acquisition of long-term records of terrestrial carbon cycling in a variety of settings. Long records of terrestrial carbon cycling contribute to our understanding of natural fluctuations in the biosphere and provide a baseline for evaluating human impact on the global carbon cycle. These and some of the other research projects currently underway are summarized below.

- (1) Reconstruction of late Pleistocene shifts in relative C3 and C4 plant biomass in northern Australia by compound-specific isotopic analyses of higher plant lipid biomarkers extracted from marine and terrestrial cores.
- (2) Reconstruction of late Pleistocene shifts in terrestrial carbon cycling in NE Siberia and coastal Maine by compound-specific isotopic analyses of higher plant and algal biomarkers extracted from sediment cores.
- (3) Paleodietary reconstructions of extinct animals that once lived in coastal Maine using isotopic analysis of collagen and cholesterol extracted from fossil bones.
- (4) Food web determinations in modern organisms inhabiting Maine salt marshes and the near-shore Arctic Ocean using isotopic analysis of animal tissues.

The organic stable isotope facility at Bates is state-of-the art, and available for use. Interested researchers are strongly encouraged to contact Professor Beverly Johnson at Bates College

(bjohnso3@bates.edu) for possible future collaborations.

Beverly Johnson
Assistant Professor
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Figure 1 - "Pop-up" – Granite Hill, Farmington, ME. Reverse fault, 2 cm throw, up to the N, off-setting glacial striations. GSM Fall Meeting field trip stop 1, 11/07/02.
44° 40.181'N 70° 07.952'W

Photo by: D.F. Belknap.

See also: Maine Geological Survey "Site of the Month:" <http://www.state.me.us/doc/nrimc/mgs/sites-2002/aug02.htm>



"To proceed then to the Effects of Earthquakes, we find in Histories Four Sorts or *Genius's* to have been performed by them.

The first is the raising of the superficial Parts of the Earth above their former Level: and under this Head there are Four Species. The 1st is the raising of a considerable Part of a Country, which before lay level with the Sea, and making it lye many Feet, nay, sometimes many Fathoms above its former height."

Robert Hooke (1635-1703) – *That Earthquakes Change the Level of Strata* – From: The Posthumous Works of Dr. Robert Hooke, London, 1705. [Kirtley F. Mather and Shirley L. Mason, eds., *A Source Book in Geology, 1400-1900*. Harvard University Press, Cambridge, MA, 1967, p. 28.]

MEMBERSHIP DUES STATEMENT

The GEOLOGICAL SOCIETY OF MAINE, INC. (often referred to as **GSM**) is a non-profit corporation established as an educational Society to advance the professional improvement of its members; to inform its members and others of current and planned geological programs in Maine; to encourage continuing social contact and dialog among geologists working in Maine; and to further public awareness and understanding of the geology of the State of Maine; and of the modern geological processes which affect the Maine landscape and the human environment.

The Society holds three meetings each year, in the late fall (Annual Meeting), early spring, and mid-summer (usually field trips). A newsletter, *The Maine Geologist*, is published for all members three times a year. The Society year runs from August 1 to July 31. Annual dues and gift or fund contributions to the Society are tax deductible. There are three classes of memberships:

\$12.00 REGULAR MEMBER	Graduate geologists, or equivalent, with one year of practice in geology, or with an advanced degree.	NOTE NEW FEE SCHEDULE AS OF August 1, 2003
\$12.00 INSTITUTIONAL MEMBER	Libraries, societies, agencies, businesses with interests in or practicing geology and related disciplines.	
\$10.00 ASSOCIATE MEMBER	Any person or organization desirous of association with the Society.	
\$ 5.00 STUDENT MEMBER	Persons currently enrolled as college or university students.	

THE GEOLOGICAL SOCIETY OF MAINE ANNUAL RENEWAL / APPLICATION FOR MEMBERSHIP

Regular Member	\$12.00	\$ _____	Name _____	Make checks payable to: Geological Society of Maine Elizabeth Champeon, Treasurer S.W. Cole Engineering, Inc. 37 Liberty Drive Bangor, ME 04401
Institutional Members	\$12.00	\$ _____		
Associate Member	\$10.00	\$ _____	Address _____	
Student Member	\$ 5.00	\$ _____		
Contributions to GSM		\$ _____	_____	
(please write gift or fund on check)				
TOTAL ENCLOSED		\$ _____	_____	

(GSM funds include the Walter Anderson Fund, the Education Fund, and discretionary gifts as noted by contributor)

2003/2004 SOCIETY YEAR BEGINS AUGUST 1 - PLEASE SEND DUES TO TREASURER

THE GEOLOGICAL SOCIETY OF MAINE
c/o Daniel F. Belknap, Newsletter Editor
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THE MAINE GEOLOGIST is the Newsletter of the Geological Society of Maine, published three times a year, in mid-winter, summer, and early fall, for members and associates.

Return Service Requested

Correspondence about membership in the Society should be mailed to:

Items for inclusion in the newsletter may be directed to:
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|-------------------|-------------------------|
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