



February, 2006
Volume 32
Number 1

THE PRESIDENT'S MESSAGE

I want to thank Poland Spring and Tom Brennan for hosting the Geological Society of Maine Fall Meeting at the golf course clubhouse last October. The meeting was organized by GSM Vice-President Cliff Lippitt who planned the mini-symposium with an afternoon roster of some of Maine's best consulting geologists: Mark Dubois, Peter Garrett, John Tewhey, Liz Champeon, and Dave Andrews presented different aspects of a theme on practical applications of geologic studies in industry. The topics varied from hydrogeological exploration for water supplies, ground water sustainability, lessons learned from site exploration and Superfund clean-up, to geothermal systems investigation and design.

The session was followed by a brief business meeting in which it was noted that Newsletter Editor Dan Belknap will be on a sabbatical leave soon and GSM will have to have a substitute editor for the duration of his leave; Dan is working on finding a person willing to take on the task. Also, Secretary Sean Dougherty has informed the society officers that he has decided he cannot continue in the secretary position, and the nominating committee is seeking a replacement. We thank Sean for his excellent reporting of the minutes of the past meetings and wish him well in the future.

After a sumptuous meal provided by the kitchen staff of the Poland Spring Inn, evening speaker Jennifer Shosa from Colby College took us on a tour investigating fluid flow through mid-oceanic ridges and ridge flanks of the East Pacific Rise. In 2004 she went down to the axial summit ridge to take a look at the sulfide chimneys, also known as black smokers and which are manifestations of the discharge zones of seafloor hydrothermal systems. The presentation was complete with video from the submersible Alvin dive, as well as samples of basalt from the ocean floor and shells of tube worms found

near the black smokers. Thanks go to all the speakers for helping make the fall meeting a success.

I want to finish this message with a strong pitch to the membership to attend the 2006 Spring Meeting, which will be hosted by the University of Maine at Presque Isle (details are to be found on page 2 of this newsletter and on the GSM website <<http://www.gsmmaine.org/>>). Kevin McCartney has organized an outstanding program and has planned some special events to make it a memorable meeting. Our Canadian colleagues also have been invited so please make sure you get yourself north. I urge professionals and students to attend; show up and enjoy the hospitality of Aroostook County.

Tom Weddle, President (2004-2006)

<Thomas.K.Weddle@maine.gov>

THE EDITOR'S MESSAGE:

Please send any items from individuals, schools or organizations for inclusion in the Newsletter to my e-mail address. Remember that **the date on your mailing address refers to when your current dues run out**. Please help the Society by paying up to date or beyond, and most especially, making good on any arrears. I will be on sabbatical from July 1, 2006 for one year. We are looking for a one-year replacement (or longer if you are so inclined).

Thanks.

Dan Belknap, Newsletter Editor (1998 - present)
<belknap@maine.edu> (207) 581-2159, FAX: -2202

GSM WEBSITE: www.gsmmaine.org

The GSM website contains copies of present and archived Newsletters, a calendar of events, and other items of interest to the Society, including the updated Bylaws. There are many important links to geology items in Maine and elsewhere. There is a page on Maine geology and the Photo of the Month. Let us know what you think.

Webmaster, Mike Lerley mike@rentageekme.com

Geological Society of Maine
Spring Meeting,
Banquet and Field Trip

April 7th and 8th, 2006

University of Maine at Presque Isle
Northern Maine Museum of Science
181 Main St

Presque Isle, ME 04769

(heavy snow date April 21st - 22nd)

For details, see the website:

<http://www.umpi.maine.edu/~mccartnk/gsm05.htm>

April 7

12:30-2:00 Registration
Folsom Hall/Museum entrance
2:00-3:30 Posters and company exhibits
Folsom Hall 2nd 3rd floors
3:30-3:45 break
3:45-5:30 Talks, Folsom 305 "fishbowl"
5:30-6:00 Business Meeting, "fishbowl"
6:00-6:30 Social, tent set-up. Weiden Gym
6:30-7:30 Dinner, Campus Center (CC)
7:30-8:30 Keynote Address, CC
8:30- Entertainment, CC

April 8

7:00-8:00 tent take-down, motel check out
8:00-9:00 breakfast
9:00-9:15 meet at assembly area
9:15- on the road again

UMPI is hosting the coming Geological Society of Maine Spring meeting, for the first time ever. We understand that this is a long distance for our southern colleagues, so we are adding some innovations to make this meeting worthy of the drive.

To begin, this will be a two-day event, April 7-8, with the usual meeting on Friday and a field trip returning south on Saturday. Indoor camping will be available in the Weiden gymnasium; there are also at least two motels within walking distance. There will not be any registration costs beyond the dinner, which will cost about \$12; the cost for breakfast the next morning will be about \$5. There are plans for entertainment after the banquet and keynote address.

This year we are also inviting all the environmental/geology industries/organizations in Maine and adjacent areas to participate, and each have a display about their business, at tables that would be interspersed among the student poster sessions. This would be a good opportunity to provide interaction between students and potential employers, and for each to advertise themselves to the other.

The environmental science and geology programs at all the schools in Maine, plus UNB and U. Laval have been invited to this meeting. The host campus

wishes the opportunity to attend this science professional meeting be extended to its colleague small campuses at Machias and Fort Kent, which do not have a geology program. These campuses have been invited to submit abstracts on non-geology science research done by students; this offer has also been extended to the College of the Atlantic and Maine Maritime.

For more information about this meeting please consult our web page at:

<http://www.umpi.maine.edu/~mccartnk/gsm06.htm>.

When reaching the interstate turnoff onto Route 1, be sure to stop at the Houlton Information Center, just north of I-95, and pick up a brochure for the Maine Solar System Model. A 1:93,000,000 scale model of the planet Pluto and its moon Charon is located at this information center, with the rest of the planets laid out at the same scale over the 40-mile distance between here and the Northern Maine Museum of Science. This is the largest such model in the world and was build as a collaborative effort by twelve schools in this region.

We look forward to seeing you in northern Maine.

Kevin McCartney

[<mccartnk@polaris.umpi.maine.edu>](mailto:mccartnk@polaris.umpi.maine.edu)

STUDENT PARTICIPANTS: Please submit your abstracts BY E-MAIL using some filename slightly more clever than "Abstract" to:

Daniel F. Belknap
Dept. Geological Sciences
University of Maine
Orono, ME 04469-5790 [<belknap@maine.edu>](mailto:belknap@maine.edu)

Please be sure to designate **poster** or **talk**. Abstracts will be compiled and handed out as a Program and Abstracts supplement to the newsletter at the meeting.

FORMAT:

[**Poster** or **Oral** presentation]

DETAILED AND EXPLICIT TITLE, ALL CAPS

LAST NAME, First Name, Department, College,
Address, [<email.address>](mailto:email.address)

Text of abstract describing the work succinctly, avoiding the form: "it will be shown that" and other fluff phrases. Please limit the abstract to 300 words, using GSA style.

DIRECTIONS: Heading North on I-95, to exit 302 in Houlton, exit N to Presque Isle/Mars Hill.

Continue N 26.6 mi. to left onto Benjamin St./US 1.

Continue N 13.7 mi. to 181 Main St., UMPI on left.

Folsom Hall is second building on the left, large parking lot is on the right.

<http://www.umpi.maine.edu/~mccartnk/gsm05.htm>

THE STATE GEOLOGIST'S MESSAGE

Bio-fuels to replace Fossil Fuels?

I recently attended a presentation by proponents of technologies that would convert forest biomass resources into fuels and products for any number of uses. The concept is to process "underutilized forest feedstocks and residues" through various pyrolysis and gasification steps to produce a variety of products, chief among them bio-oils that could offset Maine's thirst for heating oil. With the proper investment over the next 20 years, the proponents suggest, as much as 50% of Maine's heating oil demand could be met with these forest-derived products, thus contributing significantly to energy independence for Maine. Elsewhere in the news there has been considerable discussion of bio-diesel and ethanol as "green" and "renewable" energy sources that can contribute significantly to our nation's energy independence.

Certainly energy independence is worthwhile goal, but one that needs careful scrutiny to ensure that the proclaimed benefits are realized. In this arena there is currently a young but intense debate over the energy balance of producing these bio-fuels. If the energy put into processing wood chips to produce a unit of bio-oil, for example, is greater than the energy that can be derived from that same unit of bio-oil, then the endeavor will be counter to the goal of contributing to energy independence, and probably should not be considered "green" or "renewable" either. The fossil-fuel intensity of large agribusiness is all around us, and if large quantities of corn are to be processed into ethanol, then we had better be sure there is an energy benefit in so doing, lest the result be a greater consumption of fossil fuels, but in an offset location (the heartland of America, rather than in our gasoline tanks).

As it turns out, determining the energy balance of bio-fuel processing is both complicated and sensitive to input assumptions and boundary conditions. A recent report in *Science* (Farrell and others, 2006) reviews many past analyses of this energy balance and summarizes the key issues involved. Clearly the fuel used for farm machinery, largely fossil-fuel-based fertilizers and pesticides, and fuels used for transportation are all part of the

energy put into the process. But should the analysis also include the energy cost of manufacturing farm equipment? And how should the analysis address the energy value of processing byproducts (which may or may not be used)? Complicated questions with complicated answers, and although the jury is still out on this issue, the *Science* report provides a glimmer of hope that bio-fuels can contribute in some way to our energy future.

And there are some contributions that are positive or that hold some real potential, such as bio-diesel made from waste oil. Getting more energy from stuff that was going to be thrown out is positive. It may also be possible to "co-generate" bio-fuels from forest biomass using the waste heat from a paper mill or biomass electric plant. These are options worth investigating, but proponents must be careful not to oversell the benefits in terms of energy independence. Unfortunately, the general public holds the misperception that a gallon of bio-fuel offsets a gallon of imported oil. While this clearly is not the case, the contribution of bio-fuels to energy independence all depends on how you do the math.

Farrell, A.E., Plevin, R.J., Turner, B.T., Jones, A.D., O'Hare, M., and Kammen, D.M., 2006, Ethanol can contribute to energy and environmental goals: *Science*, v. 311, p. 506-508.

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

GSM MEMBER NEWS

Marc Cenci has formed his own company, Marc Cenci Geologic, Inc. The company is located in Portland and has been in business since August 2004. For all the people sweating the ASBOG exam, Marc recommends the review materials available from www.regreview.com.

Liz Champeon (S.W. Cole, Inc.) served as moderator of the Geothermal Interest Group Session at the National Ground Water Association meeting in Atlanta in November.

Mel Dickenson has joined Bob Gerber as a full-time employee at Stratex, LLC.

Dave Kendall's guidebook "Glaciers and Granite, a Guide to Maine's Landscape and Geology" is back in print, published by North Country Press in Unity.

It is available in many Maine bookstores.

Tom Eastler (UMaine Farmington) has been named head coach of the 2006 USA World Cup Racewalk Team by the national office of USA Track and Field. He will lead a contingent of 25 athletes to La Coruna, Spain, for the May 2006 World Cup competition. Tom is also involved in the Maine Racewalkers Club, which is active in educating people around the country about racewalking.

Andy Tolman (Dept. of Human Services) writes that he has survived his year as ASBOG (Association of State Boards of Geologists) president, finishing up by hosting the national meeting in Portland. In continuing his stage career, he is now in rehearsal for "Into the Woods" as the Steward, a nasty and conniving bureaucrat.

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



NEIGC 2006

The **New England Intercollegiate Geological Conference (NEIGC)** will be hosted by the University of Maine at Farmington, September 29th to October 1st, 2006. We will be based at the lodge at the Saddleback ski resort just outside Rangeley. The meeting will follow the usual format with field trips on each of the three days, reception on the Friday evening and banquet Saturday night. This will be a very special NEIGC as we will be honoring **Professor Charlie Guidotti** and his work in western Maine.

If you are interested in organizing a field trip please contact one of us at UMF as soon as possible. Information updates will be posted on the NEIGC website <<http://neigc.org/NEIGC>>.

- David Gibson (dgibson@maine.edu),
- Julia Daly (dalyj@maine.edu),
- Doug Reusch (resusch@maine.edu),
- Tom Eastler (eastler@maine.edu)



GSM SECRETARY'S REPORT

Geological Society of Maine Fall Annual Meeting

October 28, 2005
Poland Spring Inn
Poland Spring, Maine

Mini-Symposium – Regulating Maine's Resources

- 2:00 – Mark Dubois (Poland Spring): Big Basin, Big Water: Searching Maine's Glacial Lake Basins for Springs in Northwestern Maine.
- 2:30 – Peter Garrett (Emery & Garrett): Sustainability of Water Supplies.
- 3:00 – John Tewhey (Tewhey Associates): Geology and Lessons Learned from Site Exploration.
- 3:30 – Elizabeth A. L. Champeon (S. W. Cole Engineering, Inc.): Applicability of Geological Investigations to Design of Geothermal Systems.
- 4:00 – David Andrews (URS): Geology and Superfund Site Clean-up in New England.

Tom Weddle called the Annual Meeting to order at 4:40 p.m.

Spring Meeting: The Spring 2006 meeting will be hosted by the University of Maine at Presque Isle (UMPI). Tom was waiting to receive more detailed information from Kevin McCartney of UMPI [editor: see announcement above]. Possible dates at the time of the meeting were the first weekend in April or the next-to-last weekend in April. The two-day meeting will be scheduled to begin at 2:00 on the Friday, with overnight accommodations available on the University campus. Due to a schedule conflict Bates College students will not be able to attend. The academic community was asked to strongly encourage students to attend the meeting and make presentations. Please watch the GSM website for upcoming information.

GSM Secretary: It was announced that GSM Secretary, Sean Dougherty, would be stepping down after approximately 2 years in the position. Anyone interested in filling the position should

contact Tom Weddle. Nominations will be held at a later date if necessary.

GSM Newsletter Editor: Newsletter Editor, Dan Belknap, will be on sabbatical for one year starting June 2006. GSM is looking for someone to fill in as Newsletter Editor while Dan is away. Anyone interested in volunteering should contact Tom Weddle.

Membership Dues: A recurring topic of discussion at meetings has been over-due membership dues, so here it is again. DUES NEED TO BE PAID. There are approximately 300 members on the books, and only about one third of those are current in paying their membership dues. Please remember to pay your dues.

Geophysical/Hydrophysical Course: Rob Peale, GSM Treasurer and of the Maine DEP, asked if there is any interest, within the consulting community, in a short (2-day) course covering new developments in geophysical/hydrophysical testing methods. There would likely be a fee to attend the course.

2005 Summer Field Trip: Despite fairly low attendance, the 2005 Summer Field Trip was a complete success. The Field Trip was held in the Shin Pond area, in honor of Bob Newman. Bob was able to attend the weekend long event. Thanks to Walter Anderson for all his help in arranging the trip.

2006 Summer Field Trip: At the time of the meeting no decisions had been made regarding the 2006 Summer Field Trip. The University of Maine at Farmington will be hosting the next NEIGC meeting. This could be a possible trial run for the Summer Field Trip.

Meeting adjourned at 4:50

5:00 Social Hour

6:00 Dinner complements of Poland Spring

Evening Speaker:

Jennifer D. Shosa (Colby College)

“ALVIN Dive 3986: Investigating Fluid Flow Through Mid-Ocean Ridges and Ridge Flanks.”

Jennifer Shosa, of Colby College, spoke on her experience diving to the floor of the ocean in the ALVIN exploration submarine. Jennifer noticed that while a great deal of work has been done studying conditions and processes in the high temperature environments present at mid-ocean ridge axes, very little study has been done looking at the ridge flanks. Due to relative surface area, overall processes occurring on the seafloor have more to do with the ridge flanks than the ridge axis. Historically, study of the seafloor has been done by geophysicists and geochemists rather than hydrogeologists. Due to the fact that the oceans cover approximately 70% of the earth, hydrogeologists should be taking more of an interest in seafloor flow processes. Jennifer decided to take a look at the chemical signature and characteristics of flow coming from the ridge flanks. To begin she built a lab model to attempt to recreate conditions at the seafloor ridge flanks. Using crushed basalt she looked at changes in composition at various temperature and pressure conditions. She then developed a numerical model to attempt predict conditions observed in the lab testing. While performing this work Jennifer got the opportunity to get a close look at a seafloor mid-ocean ridge via the ALVIN submarine. ALVIN is approximately 7 meters long, 4 meters high and will hold two passengers and an operator. The trip to the seafloor was about 9 hours total, of which 1.5 hours was spent getting down and 1.5 hours spent getting back to the surface. Jennifer showed some fantastic photos that she took of various features on the seafloor, including sea life and black smokers. Thank you Jennifer for a very thought provoking talk and spectacular photos.

Respectfully submitted,

Sean R. Dougherty, Secretary (2004 - 2005)

<sean.dougherty@maine.gov>

GSM TREASURER'S REPORT

After a culling inactive members from the rolls, and an increase in the paid-up membership, the Society currently has 320 members, distributed as follows:

Students:	40
Associates:	31
Regular:	242
Institutional:	7
TOTAL:	320

Total Paid Up 168 (52,5 %)

Previous Balance: Funds as of October 4, 2005

Anderson Fund Savings	\$ 510.01
Anderson Fund CD	\$ 5,128.94
Education Fund Savings	\$ 898.01
General Fund Savings	\$ 9,208.23
General Fund Checking	\$ 0.00
Total Funds	<u>\$ 15,745.19</u>

Receipts 10/5/05-02/14/06

Dues	\$ 1,143.00
Dividends	\$ 113.17
Anderson Fund Donations	\$ 13.00
Publication Sales	\$ 0.00

Receipts Subtotal **\$ 1,269.17**

Expenses 10/22/04-02/09/05

Newsletters	\$ 756.60
Honoraria	\$ 150.00
Refunds	\$ 58.00

Expenses Subtotal **\$ 973.60**

Funds as of February 14, 2006

Anderson Fund Savings	\$ 535.68
Anderson Fund CD	\$ 5,187.48
Education Fund Savings	\$ 901.80
General Fund Savings	\$ 9,415.80
General Fund Checking	\$ 0.00
Total Funds	<u>\$ 16,040.46</u>

Net gain or loss: **\$ 295.57**

Respectfully submitted,
Rob N. Peale, Treasurer (2004 -)
Rob.N.Peale@maine.gov

25 Years Ago: April 1981

GSM Newsletter, by Art Hussey:
"Be With It in Maine Geology: be a regular Maine Geologist reader. But that's only part of the good part. Maybe the best part is in the opportunity the

newsletter offers as a ready willing EAGER outlet for your creative needs. Pertinent poems, noteworthy news, caustic cartoons, technical tales from the field and lab, all are welcome candidates for publication in the Maine Geologist." Still true today, but nobody expresses it quite like Art. – The Editor.

NEWS FROM THE COLLEGES AND UNIVERSITIES

COLBY COLLEGE :

This past year, Rob Selover (Colby '04) co-authored two papers based on his junior and senior-year independent study projects. Working in the Trout Valley Formation exposed in Baxter State Park, Rob along with co-authors Bob Nelson and Bob Gastaldo, described the first macroinvertebrate assemblage from these rocks, once believed to be barren of a shelly fauna. The fossil assemblage is dominated by bivalves and gastropods, along with a juvenile eurypterid, and is preserved in estuarine deposits. This unusual depositional setting provides evidence for mid-Paleozoic ecological partitioning of the marine realm. The paper was published in PALAIOS (v. 20, p. 192-197) and supported by NSF EAR 0087433). Work done in the Karoo Basin of South Africa, supported by NSF EAR 0417317, focused on reportedly fluvio-deltaic deposits of an outcrop exposure in KwaZulu Natal Province. A detailed sedimentological study revealed that these previously interpreted shallow-lacustrine deposits actually are deep-lake turbidites, requiring a change in the paleogeographic interpretation of this part of the Karoo Basin just after full deglaciation. The paper was published in the Journal of South African Geology (v. 108, no. 3, p. 429-438).

Students in the CBB Study Abroad program run by Bob Gastaldo in Cape Town, South Africa, during Spring Semester, presented the results of their research on the nature of Early Triassic fluvial deposits at the national GSA meetings in Salt Lake City. Two seniors - Dan Pace '06 and Marcy Rolerson '06 - are completing manuscripts on aspects of this class project.

Hydrologic studies in the Belgrade Lakes watershed continue under the supervision of Jen Shosa, with two Honors Theses undertaken this year by Katie Curtis '06 and Chris Russoniello '06. Katie's project focuses on the development of a numerical model of the Belgrade Lakes Watershed, while Chris is modeling the seasonal groundwater flux through the Serpentine Bog, Smithfield, Maine. Both students spent summer 2005 in the field, installing monitoring wells and instrumentation, and recording data.

Regards, Bob

"Robert A. Gastaldo" ragastal@colby.edu



Pelecypod mold or clast impressions (rounded features on right side of rock fragment)?



Bob Neuman attracts a crowd.



Photos from the summer field trip: honoring Bob Neuman

Bill Forbes speaking at the GSM banquet honoring Bob Neuman.

Presentation – Bob Neuman receiving his plaque from GSM President Tom Weddle



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.	PLEASE 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 Rob Peale, Treasurer Maine Dept. Environmental Protection, State House Station 17 Augusta, ME 04333-0017
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		\$ _____		

Email Address _____

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

2005/2006 SOCIETY YEAR BEGINS AUGUST 1 - PLEASE SEND DUES TO TREASURER.

The DATE on your mailing address refers to PAID UP DUES DATE

THE GEOLOGICAL SOCIETY OF MAINE

c/o Daniel F. Belknap, Newsletter Editor
Department of Earth Sciences
111 Bryand Global Sciences Center
University of Maine
Orono, ME 04469-5790 <belknap@maine.edu>



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, **publications** and **dues** should be mailed to:
Rob Peale, Department of Environmental Protection
State House Station 17, Augusta, ME 04333-0017 <rob.n.peale@maine.gov>

Items for inclusion in the **Newsletter** may be directed to:
Daniel F. Belknap, Dept. Earth Sciences, University of Maine,
Orono, ME 04469-5790 <belknap@maine.edu>

- | | | |
|-------------------|---------------------------------|--------------------------------------|
| President | Tom Weddle, | Maine Geological Survey |
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| Secretary | Sean Dougherty, | Maine Dept. Environmental Protection |
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| | Lisa Churchill-Dickson (05-09), | Registered Professional Geologist |