

Spring 2015 Volume 41 Number 1

Geological Society of Maine
Spring Meeting
1:00 pm
Friday, April 10th, 2015
Colby College, Waterville, Maine

- > Student Presentations
- Walter Andersen Award
- ➤ **Keynote Speaker:** Dr. Geneviève Robert. Department of Geology, Bates College

Viscosity of Volatile-bearing Silicate Melts"

➤ GSM Business Meeting & Social Hour

Check the GSM website for updates: http://www.gsmmaine.org/

Please join us at the annual Spring Meeting of the Geological Society of Maine which will be held at Colby College in Waterville, Maine on Friday April Following our 35-year tradition, this 10, 2015. meeting will involve student presentations and posters in the afternoon, followed by a keynote speaker. This year our keynote speaker is Dr. Geneviève Robert. Dr. Robert, an assistant professor at Bates College, is an experimental volcanologist. The topic of her talk is the Viscosity of Volatile-bearing Silicate Melts. Dr. Robert received her Ph.D. in Geology from the University of Missouri Columbia in 2014. She studies the physical and chemical properties of volcanic materials and how they influence the eruptive behavior of volcanoes. She measures the viscosity of lava she creates in the lab by melting rocks collected from both active and ancient volcanoes. Her teaching interests include mineralogy, igneous and metamorphic volcanology, petrology, planetary geology, and magmatic ore deposits.

Call for Abstracts

Deadline May 1, 2015

2nd Symposium on the Presumpscot Formation

Advances in Geotechnical, Geologic, and Construction Practice

October 28, 2015 in Portland, Maine

Topics of interest:

Site and Deposit Characterization

- Geologic history and features
- Composition, characteristics, and/or engineering parameters
- Spatially commonality or variability
- Use of modern geotechnical or geophysical tools (e.g., CPT, Lidar/Ladar)
- Geohazards
- Offshore, coastal, and/or inland features and processes

Construction Techniques and Challenges

- Modern construction solutions
- Challenges and Solutions

Design and Long-term Performance

- Case histories and Observational methods
- Pre- and post-construction performance predictions
- Settlement
- Slope stability
- Seismic design
- Foundations
- Ground modification and lightweight fill
- Uncertainty and Risk assessment
- LRFD implementation

For more info, contact: Melissa Landon of UMaine: melissa.L.maynard[at]maine.edu or Charlie Nickerson of R.W. Gillespie & Assoc.: cnickerson[at]rwg-a.com



Northeast Friends of the Pleistocene 2015 June 5-7, 2015

Glacial Lake Hitchcock and the Sea"

See http://www2.newpaltz.edu/fop/

The 78th Annual Reunion of the Friends of the Pleistocene will be head-quartered in Rocky Hill, Connecticut at Dinosaur State Park. The meeting is co-sponsored by the Geological Society of Connecticut and the Connecticut Geological and Natural History Survey.

The fieldtrip "Glacial Lake Hitchcock and the Sea" will be led by Janet Stone, Jack Ridge, Ralph Lewis, and Mary DiGiacomo-Cohen. The 2015 gathering will be held in Connecticut for the first time since 1935 when Richard Foster Flint hosted the 2nd annual FOP fieldtrip at New Haven, and stops included the Hartford Clay of Glacial Lake Hitchcock (at that time unnamed). Eighty years later, there is more to tell about Lake Hitchcock in Connecticut, thanks to geologists like Richard Lougee, who understood early on why this lake existed, and in 1935 he gave it the name of Glacial Lake Hitchcock, and Ernst Antevs, who in the 1920's gave us the powerful chronologic tool of varve correlation. In recent years, the compilation of many detailed on-land studies and high-resolution offshore mapping (Stone and others, 2005), and recent calibration of the North American Varve Chronology (Ridge, J.C., 2014) have provided many new insights.

The fieldtrip will demonstrate the evidence for the close connection of Lake Hitchcock levels with the position of sea level in Long Island Sound via the lower Connecticut River valley, and explain important offshore features like a -40-m marine delta, and the altitudes of the Race spillway cut through the Harbor Hill moraine and Block Channel spillway cut

through the terminal moraine. The history of lake levels and knowledge of eustatic sea levels provided by the Barbados sea level curve (Bard and others, 1991) has implications for the magnitude of glacio-isostatic depression and the timing of rebound. We will also review recent refinements to the timing of ice retreat through the region as a result of recent coring of varves and the newly calibrated North American Varve Chronology.

GSM Summer Field Trip

Isle au Haut, July 25 & 26

This year's GSM Summer Field Trip will be on Isle au Haut on July 25 and 26th, 2015. The program will include a surficial trip led by Bob Gerber and a bedrock trip led by Marshall Chapman. See the 2015 GSM Field Trip info on the GSM website for trip details. After the Saturday field trip we will have a social hour on the island before the boat leaves for Stonington. There will also be a cookout at the Old Quarry Campground in Stonington for people staying on the mainland Saturday night.



The logistics of getting to the island, finding a place to stay and summer rates can be challenging. Consequently GSM has agreed to pay for water taxi transport from Stonington to the island for people attending for both days and will also subsidize the cost of camping at the Old Quarry Campground in Stonington where we have reserved a group camping site. If you are interested in attending you must register in advance. Send an email to Bruce Hunter bruce.e.hunter@gmail.com by May 31, 2015. This is a firm deadline because we must make arrangements in advance with the campground owner, water taxi owners and owners of cars on the island to transport members to the field trip sites.

THE STATE GEOLOGIST'S MESSAGE LEGISLATIVE REVIEW

By Robert G. Marvinney, State Geologist

The Legislative session is in full swing, and several geologically related issues are figuring prominently in deliberations.

Mining regulations. Legislative Document (LD) 146 resubmitted for approval by the Legislature are the same mining rules rejected by the previous Legislature. Prior to the public hearing on this bill, the Legislature's Environment and Natural Resources Committee invited me to provide an overview on metallic mineral deposits in our state and components of a typical mine. Scott Johnson and Andy Reeve of U Maine also provided an overview of groundwater and modeling. Both of these presentations were well received by members of the committee.

At the day-long public hearing on February 25, the Committee took testimony from numerous individuals and organizations opposed to these revised rules, many citing likely environmental consequences of mining Bald Mountain, and others citing the on-going, expensive clean-ups at the Callahan and Kerramerican mines. Supporters of the revised rules noted that they are intended to apply statewide, not just to Bald Mountain, and that problems at legacy mines like Callahan and Kerramerican provide little guidance for future mines. A subsequent hearing on LD 750, a slightly different tack on the mining issue, generated similar testimony. Both of these bills will be the subject of lengthy work sessions by the committee during the weeks of April 6 and April 13.

Several bills address sea-level rise. LD 408 would encourage coastal communities to consider sea-level rise in their comprehensive plans. At the public hearing, I presented factual information on sealevel rise to the committee. Although all who testified spoke in support, the Committee subsequently voted Ought Not To Pass, split along party lines. There will be more opportunities to discuss this issue during public hearings on LD 795, An Act To Encourage Prudent Development along the Coast or in a Flood Zone by Considering Predictions

for Sea Level Rise, and LD 426, An Act To Authorize a General Fund Bond Issue To Address Sea Level Rise. Several other bills address ocean acidification.

Once again under scrutiny is the extraction of water for bottling. LD 169 would impose a 1-cent per gallon excise tax on groundwater pumped for bottling, with conditions that would limit this new tax to one Maine company. One legislator and one proponent spoke in favor of this bill, while several legislators and many others spoke in opposition. I spoke in opposition, noting the renewable nature of Maine's groundwater and the maze of regulations which ensure that groundwater pumping is done in a sustainable manner.

Here's an interesting bill, LD 1116, An Act To Authorize the Development of Thorium Energy. In spite of Maine's ban on mining thorium, this bill would allow thorium refining and/or a liquid fluoride thorium reactor, which would be considered a renewable energy source.

Robert G. Marvinney, Maine State Geologist: Robert.G.Marvinney@maine.gov

Legislative Update

The Maine Legislature's Environmental and Natural Resources Committee is still grinding through the metallic mining bills LD 146 and LD 750. LD 146 Resolve, Regarding Legislative Review of Chapter 200: Metallic Mineral Exploration, Advanced Exploration and Mining, a Major Substantive Rule of the Department of Environmental Protection I still alive. LD 750 is essentially a 2 year moratorium, on metallic mining in Maine. Work sessions are scheduled on these bills for April 9, 13 and 16 at the Cross Building in Augusta. You can listen to the work sessions online at: http://legislature.maine.gov/

Several sea level bills are making their way through the committees. A public hearing on LD 795 An Act to Encourage Prudent Development along the Coast or in a Flood Zone by Considering Predictions for Sea Level Rise is scheduled for April 15.

PROFILES OF MAINES COLLEGES AND UNIVERSITIES

This column is the third in a series highlighting the many Maine's colleges and universities that offer undergraduate and graduate programs in Geology and/or Earth Sciences. In the last decade there have been a lot of changes in geologic education in Maine at post-secondary level including curriculum, research emphasis and faculty. The aim of this column is acquaint you with each of our Maine academic institutions offering geoscience programs.

Colby College
Department of Geology
5800 Mayflower Hill
Waterville, Maine 04901
http://www.colby.edu/geologydept/

Colby College is a private, independent 4-year liberal arts college located on a 700-acre campus Waterville, Maine. Founded in 1813 Colby has a current enrollment of about 1820 students. In 2013 Colby became the one of the first colleges in the country to achieve net zero carbon emissions. This laudable feat was accomplished by conversion of the #6 fuel plant to mostly wood chip biomass, numerous energy efficiency initiatives, purchasing electricity from sustainable sources and the purchase of carbon offsets.

Location and Facilities

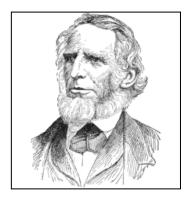


Colby's Geology Department is housed in the Seeley G. Mudd Building occupying all of the main floor of the building and a portion of the ground-level. New lab and office space is slated to be renovated for Departmental use on the 4th floor of the building. The Department houses considerable research

equipment the campus Scanning Electron Microscope as well as a powder X-ray diffractometer. Additional analytical equipment (e.g., gas chromatographs, mass spectrometers, C-H-N analyzer, etc.) is shared with the Department of Chemistry, located immediately adjacent to Geology in a connected building. Faculty member Tasha Dunn recently acquired a new X-ray fluorescence spectrometer for use in her research program. All specialized equipment in the Department is routinely used by students in research.

History

According to Colby's website the Geology Department is the fourth-oldest in nation. The Department began with the hiring, in 1833, of Ezekial Holmes, as Professor of Chemistry, Mineralogy, Botany and Natural History. Holmes,



who graduated from Brown in the Class of 1820, is credited with finding some of the first tourmalines in the Maine pegmatite district while still a student. He was a coauthor (with C. H. Hitchcock) of the first geologic survey of Maine. His successor, Justin R. Loomis, was author of "The Elements of Geology: Adapted to the Use", published in 1852; he left Colby (then Waterville College) to become president of the University of Lewisburg (now Bucknell) in 1854.

Elbert Little, a later faculty member, published one of the first papers on the Pleistocene geology of the Waterville area, which appeared in the GSA Bulletin in 1917. Richard Lougee was Chair from 1937-47; Woody Thompson has been doing yeoman service in verifying that many of the things Lougee mapped and described in the glacial geology of Maine and New Hampshire was 100% accurate, though he was unable to get any of it published during his lifetime because his "active retreating ice" model conflicted with the "known" fact that all glacial features of New England were the products of deadice terrain - the view held by Richard Flint and Kirk Bryan. Donaldson Koons assumed the Chairmanship of the Department in 1947, and continued until he retired in 1982. He was also Maine's first Commissioner of Conservation.

In the 180 years since its founding, the Department has only had 14 Chairs. Longevity has been the norm rather than the exception, although a few Chairs have served terms of less than 5 years.

Academic Programs

Currently Colby has 31 declared geology majors in the Department, and 13 students with declared minors.



The Department offers two majors tracks, Geology and Geosciences. All majors complete physical and historical geology, as well as sophomore-level courses in structural geology, mineralogy, sedimentation and stratigraphy, and geomorphology. At least one semester of calculus and one semester of chemistry are mandatory, as is either a second semester of chemistry or a full year in either physics or biology. A second semester of either calculus or calculus-based statistics is also required; additional ancillary sciences are strongly encouraged. Beyond these basic requirements, majors programs can be individually structured to meet the needs and desires of individual students.

Advanced majors electives vary from year to year, and have included igneous and metamorphic petrology, geochemistry, glacial and Quaternary geology, paleontology, Quaternary paleoecology, plate tectonics and mountain belts. The Department has also just launched a new 300-level writing course, which will vary on topic from year to year, but whose focus is not only on critical reading and study on an advanced topic of the instructor's choosing, but on development of professional-level writing skills among our majors. In departmental major requirements, this writing-intensive course is replacing one for individual student research.

The Department runs a regular Friday-afternoon seminar series which this year is attracting ~50 attendees for each speaker, including geology majors and minors and other interested students, faculty, as well as local alumni and retirees. The seminar regularly spans the range of geologic topics over the course of the year, including speakers covering any subdiscipline from mantle geophysics to geoarcheology.

Like many other geology programs, the Department has found itself pressed hard between a desire to prepare students as well as possible for careers and top-flight graduate programs, and administrative pressure to reduce major requirements. Several Environmental Studies majors (with a science concentration and geology focus) in recent years have also conducted independent research in geology.

Regular JanPlan offerings in recent years have included non-majors courses in *Geology of the National Parks* and *Introduction to Volcanoes and Volcanology*, as well as majors courses in hydrogeology, marine geology, and the geology of Bermuda. Bob Gastaldo regularly takes 1-3 students with him in January to conduct field work in the Karoo Basin of South Africa.

Faculty

Bob Nelson is the senior member of the Department, having replaced Donaldson Koons when he retired in 1982; Bob came from 10 years with the USGS and was Department Chair from 1990-1999. . Bob Gastaldo joined the faculty in 1999 as Whipple-Coddington Professor of Geology and Chair, coming from a former position as Alumni Professor of Geology at Auburn University. Bill Sullivan was a new Ph.D. who joined the Department in 2007 and was tenured and promoted to Associate Professor in 2013; he will assume Chairmanship of the Department in the fall of 2015. Tasha Dunn is the most recent addition to the faculty, having joined the Mayflower Hill team in the spring of 2014 as Clare Booth Luce Assistant Professor of Geology, coming from a faculty position at Illinois State University. In addition, Bruce Rueger joined the Department in 1984. and has been Acting Assistant Professor since 2003. Besides introductory labs, he has taught multiple introductory and majors courses in the

Department, including the Geology of Bermuda program in January.

Research



Bob Gastaldo has been working with students in the Karoo Basin of South Africa for the past decade. Bill Sullivan's research interests are in plastic and ductile deformation of the lower crust, and has been working most recently with students on the deformational fabrics and styles of the Kellyland Fault Zone portion of the Norumbega Fault System. Tasha Dunn's research interests are in meteorites and igneous petrology; she's just getting her new program underway at Colby. Bob Nelson has been working most recently with students on the paleoenvironments of the Turner Farm archeological site on North Haven Island off the Maine coast. Bruce Rueger has supervised some student work at Turner Farm, but maintains research interests in the Belgrade Lakes watershed sedimentology and in Bermuda. He's also directed several student research projects in utilization of Google Earth in geoscience education.

In addition to these interests, which invariably also have involved student research projects, numerous students have undertaken their own research outside of areas of particular faculty expertise. Sarabeth George '15, for example, spent a semester at the Bigelow Marine Laboratory in Boothbay, and has been subsequently pursuing research in marine biogeochemistry. Colby regularly takes students presenters to the national and NE GSA meetings. Seven Colby students presented research at the national meeting in Vancouver and two presented at the recent 2015 NE GSA held at Bretton Woods New Hampshire.

-Written by Bob Nelson and edited by Carol White

GEOLOGICAL SOCIETY OF MAINE TREASURER'S REPORT

Fiscal Year 2013 August 1, 2013 to July 31, 2014

Income	
Dues	\$4,475.00
Interest – General Account	\$29.51
Donations for Anderson Fund	\$355.00
Interest – Anderson Fund	\$87.22
Meetings	
Summer Field Trip 2014	\$1470.00
Other Income	
Copyright Royalties	\$178.50
Subtotal	\$6,595.23
Expenses	
Newsletters	\$521.55
Annual Corporate Report, 2013 &	\$70.00
2014	
Meeting Expenses	
Fall 2013	\$1,100.33
Spring 2014	\$667.00
Summer Field Trip 2014	\$2147.66
Scholarship Awards	
UMPI Geology field trip	\$1,000.00
Grant to Pattie Millette (NEGSA	\$50.00
expenses)	
Transfer to Anderson Fund ¹ .	\$2,590.00
Web site	\$200.20
Miscellaneous (10% of above)	\$10.50
Subtotal	\$8,357.24
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Net Loss	(1,762.01)

Asset Summary – July 31, 2014

rissee Summary Guly C1, 2011	
Account	7/31/2014
General Fund	\$9.938.22
Anderson Fund	\$16,084.93
Total	\$26,023.15

Transfer to the Anderson Fund is to build an endowment from which to fund Scholarships. Annual dues will be used to supplement the income from the Anderson fund to provide funding for scholarships until the income from the fund is big enough to provide annual funding of up to \$1,000.

Respectfully submitted,

Bruce E. Hunter (Treasurer, 2014) November 11, 2014

UPCOMING MEETINGS OF INTEREST

SPRING 2015

GSM Annual Spring Meeting

Wednesday April 10, 2015 at 1:00 pm Colby College, Maine

Student oral and poster presentations

Keynote Speaker: Geneviève Robert. Department of Geology, Bates College

Viscosity of Volatile-bearing Silicate Melts

Business Meeting and Social Hour http://www.gsmmaine.org

IAT Maine Chapter Annual Meeting

May 14 – May 16, 2014 Shin Pond Village, 1489 Shin Pond Road Mt. Chase, ME 04765

A few highlights:

- Pioneers in Appalachian Geology Walter Anderson
- GeoHeritage & Trails of Sugarloaf-Mt. Chase -Bob Marvinney & Earl Raymond
- LIDAR: Applications in Geology and Beyond -**Bob Marvinney**
- Fieldtrip to Sugarloaf Mountain Fossil Locality-**Bob Marvinney**

http://www.internationalatmaine.org/iat-maine-chapter-annualmeeting-514-516/

SUMMER 2015

Friends of the Pleistocene 2015 Meeting & Trip

Glacial Lake Hitchcock and the Sea

June 5-7, 2015 Rocky Hill, CT Dinosaur State Park http://www2.newpaltz.edu/fop/

Maine Beaches Conference

July 17, 2015 Southern Maine Community College South Portland, Maine

http://www.seagrant.umaine.edu/maine-beaches-conference

GSM 2015 Summer Field Trip & Meeting

Saturday & Sunday July 25-26, 2015 Isle-au-Haut, Maine and vicinity.

Trip Leaders: Bob Gerber and Marshall Chapman Maine Geological Survey.

Check the GSM website http://www.gsmmaine.org & REGISTER

FALL 2015

2015 New England Intercollegiate Geological Conference

Department of Earth and Environmental Sciences Wesleyan University, Middletown, C. Columbus Day weekend: October 9, 10 and 11

http://w3.salemstate.edu/~lhanson/NEIGC/Conference.html

2nd Symposium on the Presumpscot Formation Advances in Geotechnical, Geologic, and **Construction Practice**

October 28, 2015 Portland, Maine

Abstracts Due May 1, 2015 (see announcement)

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 modem 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 a field trip). A newsletter, *The Maine Geologist*, is published for all members three times a year. The Society year runs from Sept. 1 to Aug. 31. Annual dues and gift or fund contributions to the Society are tax deductible. There are four classes of memberships:

\$20.00	REGULAR MEMBER	Graduate geologists, or equivalent, with one year of practice in geology, or with an advanced degree.	FEE SCHEDULE AS OF 2014-2015
\$20.00	INSTITUTIONAL MEMBER	Libraries, societies, agencies, businesses with	115 01 2017-2015
\$10.00	ASSOCIATE MEMBER	interests in or practicing geology and related disciplines. Any person or organization desirous of association	
\$ 5.00	STUDENT MEMBER	with the Society. Persons currently enrolled as college or university students.	

THE GEOLOGICAL SOCIETY OF MAINE ANNUAL RENEWAL / APPLICATION FOR MEMBERSHIP

Regular Member	\$20.00	\$	Name		Make checks payable to:
Institutional Members	\$20.00	\$	_		Geological Society of Maine
Associate Member	\$10.00	\$	_ Address		Bruce Hunter, GSM Treasurer
Student Member	\$ 5.00	\$	_		44 Old Fairgrounds Rd
Contributions to GSM		\$			_ Readfield, ME 04355
(please write gift or fund TOTAL ENCLOSED		k) \$			_
(GSN	A funds i			, and discretionary gifts as not	ed by contributor)

2014/2015 SOCIETY YEAR BEGAN SEPTEMBER 1 - PLEASE SEND DUES TO TREASURER.

THE GEOLOGICAL SOCIETY OF MAINE

c/o Carol White, Newsletter Editor
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THE MAINE GEOLOGIST is the Newsletter of the Geological Society of Maine, is usually published three times a year, in mid-winter, summer, and early fall, for members and associates.

Items for inclusion in the **Newsletter** may be directed to:

Carol White, cawhitemaine@gwi.net; C.A. White & Associates, 1 Main Street, Yarmouth, Maine, 04096

Correspondence about **membership** in the Society, **publications** and **dues** should be mailed to:

Bruce Hunter, Bruce.E.Hunter@maine.gov; Bruce Hunter, GSM Treasurer, 44 Old Fairgrounds Rd., Readfield, ME 04355

Geological Society of Maine Officers 2014-2015

President	Marty Yates	(2016)	University Maine-Orono, yates@maine.edu
Vice President	Henry Berry	(2016)	Maine Geological Survey, henry.n.berry@maine.gov
Secretary	Lisa Jacob	(2016)	Sevee & Maher Engineers Inc; ljj@smemaine.com
Treasurer	Bruce Hunter	(2016)	Maine DEP; bruce.e.hunter@gmail.com
Newsletter Editor	Carol White	(2016)	C.A. White & Associates; cawhitemaine@gwi.net
GSM Historian	Arthur Hussey	(2050)	Professor Emeritus, Bowdoin College, hussgeo@gwi.net
Directors	Keith Taylor	(2017)	St. Germain Collins; keitht@stgermaincollins.com
	Chris Morrell	(2016)	R.W. Gillespie & Associates, Inc.; cmorrell@rwg-a.com
	Steve Kelley	(2015)	Haley & Aldrich; skelley@haleyaldrich.com