The Maine Geologist

February 1995

Newsletter of the Geological Society of Maine

Vol. 21, No.1

President's Message
by
Fred Beck

I'm pleased to again be active as an officer of the Geological Society of Maine and hope that I can continue the competent leadership of Steve Pinette and his fellow officers. Steve recently delivered four boxes of files to my office which apparently is the dowry which goes with the job. I went through each box and cataloged the contents, read some of the old stuff and concluded that we need an archival system which will preserve the important things and get rid of the unnecessary items. For example, do we really need to keep publication requests from 1981 or GSM renewal applications from 1982 or cancelled checks from 1979? On the other side of the coin, where are all the meeting minutes from the past 20 years? And who has a complete set of The Maine Geologist? And who has a complete set of summer field guides?

My thoughts on the above situation seem to come down on the side of looking for a "historian" or "archivist" or at least a repository for GSM materials. It should be somebody who is going to be around for awhile (decade for example) or an institution which is willing to take on the responsibility (MGS?, Colleges or Universities?). Although I only have four boxes of stuff, I'm sure others have at least as much. In the coming months I'll try to locate the data which exists around the state and with the other officers and directors develop a save/discard schedule for the Society. Also, I'll work on some suggestions for archival and bring these to the membership to ponder at a future meeting.

The next meeting will be our regular Spring meeting at Bates College on April 14th. As in the past there will be a full afternoon of student papers. Following the business meeting, social hour and dinner, Tom Eastler will give a talk on Military Geology. Besides teaching students for years at the University of Maine in Farmington, Tom has worked for the Army as a consultant and as I write this he is in the DMZ area between the two Koreas mapping geology. Tom's talk is on a fascinating application of geology and a memorable evening for all is guaranteed (provided Tom is not mapping in Bosnia or Chechnia or along the Peruvian-Ecuadorian border or elsewhere!). I'll look forward to seeing you at the April meeting at Bates.

GSM Spring Meeting Schedule
April 14, 1995
Bates College
Lewiston, Maine

11am - 1pm	**Registration and Officers/ Directors meeting** Carnegie Science Lobby
1pm - 5pm	**Student Presentations** Oral Presentations in Carnegie Science Room Poster sessions in the Lobby
5pm -5:30pm	**Business meeting** Carnegie Science Room 204
5:30pm -6pm	**Social gathering** Rowe Room, Memorial Commons ($5.00 per person)
6pm - 7pm	**Dinner** Cafeteria/Rowe Room ($6.00 per person)
7pm	**Evening Speaker:** Dr. Thomas Eastler will present a slide talk on Military Geology

Call for Abstracts
Geological Society of Maine
Spring Meeting, April 14, 1995
Bates College, Lewiston, Maine

Maine university and college students and students from other schools working on projects in Maine are invited to present papers in oral or poster form at the Spring Meeting of the Geological Society of Maine. This program gives students working on Maine-related senior theses, independent studies or Master's theses an opportunity to discuss their research before a professional audience. Abstracts will be published in the next issue of the Maine Geologist following the meeting.

Oral presentations are 20 minutes in length, which should include 5 minutes for discussion and questions. Slide and overhead projectors will be available. Those presenting in poster format will have available one poster board 4 feet by 8 feet in size.

Abstracts must be written to fit within a 4-1/2" x 4-1/2" box and not exceed 250 words. Abstract forms, a sample abstract, poster info and additional instructions are available from:

Dr. Dykstra Eusden
Department of Geology
Bates College
Lewiston, Maine 04240
207-786-6152

Abstracts must be received by April 6, 1995. Late abstracts will not be accepted.

Ethics Alert!

There has been a renewed interest in professional ethics on a national and international level. Maine is no exception; the DEP Task Force has recently begun a series of seminars on ethical issues. The Board of Certification for Geologists and Soil Scientists has a continuing interest and obligation to promote ethical conduct, and recently distributed our code of ethics and a draft ASFE policy to our registrants. As another step in maintaining our standards, and keeping lines of communication open, several (Liz Champeon, Fred Beck and Andy Tolman) geologists agreed that posing ethics questions for GSM members response would be a good idea. Elsewhere in this issue you will find the first question.

GSM Treasurer's Report: February 16, 1995

Balance on hand 10/7/94	**$4564.52**	
Receipts Subtotal		1040.16
Dues		557.00
Publications		5.00
Bank Interest		30.31
Education Fund		74.00
Fall Meeting Banquet		373.85
Expenses Subtotal	**$1004.10**	
Bank Charges		41.82
Newsletters		176.00
Postage		46.16
Fall Meeting Banquet		729.80
State Sales Tax		10.32
Balance on hand 2/16/95	**$4600.58**	

Submitted by Martin Yates, Treasurer

GSM Fall Meeting Minutes
Holiday Inn, Augusta, Maine
November 18, 1994

by
Marita Bryant

The Fall business meeting was brief and began with the customary reading of the Treasurer's report. Several announcements, as well as the election of the officers for 1994-1995 followed:

1.) Janet Cornier mentioned the meeting of the Soil Scientists Society of New England, December 13, 1994, in Farmington.

2.) The GSM Spring Meeting will be at Bates College in Lewiston, April 14, 1995.

3.) The GSM Fall Meeting will be held in conjunction with the Annual NEIGC Meeting, to take place this year in southern Maine, October 6-8, 1995.

4.) The Friends of the Pleistocene will meet in southern Maine, May 12-14, 1995.

5.) Officers elected for 1994-1995 (addresses and phone numbers are listed in October 1994 newsletter):

President - Fred Beck
Vice President - Joseph Kelley
Secretary - Rebecca Hewett
Treasurer - Martin Yates
Newsletter Editor - Susan Weddle
Director (1994-97) - Marc Loiselle

6.) Fred Beck then thanked the outgoing officers and complimented the dedication and good work of Newsletter Editor Susan Weddle. He also asked for suggestions for a 1995 short course.

After dinner David Sanger of the University of Maine at Orono gave a talk titled "Archeology and Geology in Maine...Complementary Disciplines". After a century of separation during which archeology was associated with the humanities, while geology remained a natural science, scholars have recognized the value of each other's disciplines and overcome numerous misconceptions to integrate the two. In order to understand human behavior one needs to examine, for example, a people's environmental situation, such as the geomorphological settings described in the afternoon presentations. In addition, there is lithic sourcing, the process of identifying the material of artifacts and then locating the sources. This raises more questions such as whether certain populations were living near the source, that is, using local materials, or whether they were traveling and trading over long distances. Among the examples from the Ceramic Period mentioned, was the appearance of North Mountain, Nova Scotia basalt as artifacts along the Maine coast. Were native peoples in Nova Scotia gathering the basalt and making regular trips across the Gulf of Maine in canoes? If so, what were they taking back? Then there was chert from the Munsungan Lake area in Aroostook County that showed up as artifacts as far south as Bangor and Sebago. Did people travel to Munsungan Lake to collect it or was there a trading network in place? Very few chips were found at the archeological sites, which suggests that most of the processing took place at the quarry.

In an attempt to answer these and other questions, interested archeologists and geologists plan to gather again this year in southern New England. In the meantime work continues on compiling information on artifact quarries as well as a geological database.

Ethics Conundrum #1

You have just landed a spot at the top of an environmental lawyer's list of consultants to perform ESA's. You have been marketing this lawyer for quite a while, and want to reap the rewards of your work. Your first assignment is at an old industrial site proposed for re-development. The project is important to the local economy, and the lawyer has indicated that your firm would be in line for site development and permitting work if the ESA goes well.

From your knowledge of the site area and history, you suspect that there have been activities at the site which probably caused releases to the environment. You believe that a Phase I ESA will identify releases that will probably warrant further evaluation. The lawyer has indicated that the funding agency for the project only wants a Phase I study. In your proposal do you:

a. Recommend a Phase I/II combination assessment to assess the risks you suspect.

b. Propose to do the Phase I, planning to catalogue the potential releases and offer no recommendations at all.

c. Refuse to get involved in a site where you know you will be the bearer of bad tidings.

d. Propose to do the Phase I, and plan to submit a draft with all the facts to the lawyer.

e. Propose to do the Phase I, planning to recommend a Phase II.

f. An alternative of your own...

Please send your responses, comments, reasoning, and suggestions for other conundrums to Andy Tolman, Chair, Geologists & Soil Scientists Board, Robert G. Gerber, Inc., 17 West Street, Freeport, ME. O4032. The newsletter will publish the best response(s), either with or without attribution, as you wish.

"Mineralogy of Maine" Now In Press

by
Woody Thompson

Vandall King has been writing and editing a two-volume series titled "The Mineralogy of Maine", to be published by the Maine Geological Survey. The first volume ("Descriptive Mineralogy") is authored by King and Eugene Foord. It is currently in press and expected to be available by late March. King is well known as the leading authority on Maine minerals, and Foord conducts mineralogical research at the Denver office of the USGS. Both authors are part of a research team who are currently doing intensive research on Maine pegmatites.

The nearly completed volume is over 500 pages long and contains several hundred color and black-and-white photos of Maine minerals. This book should be of value not only to mineral enthusiasts, but also to economic geologists and anyone involved in bedrock geology in the state. Volume 2, covering mining history, gems, and other topics, is in preparation and likewise planned for completion this year. Both soft-cover and a limited hard-cover version of these books will be available from MGS and certain book dealers.

Maine Section ASCE
Technical Seminar

"Seismic Design in the State of Maine"

Wednesday, March 15, 1994
Ramada Inn Conference Center
Lewiston, Maine

The Maine Section of the American Society of Civil Engineers announces a one day seminar on seismic issues in Maine at the Ramada Inn Conference Center in Lewiston, Maine, 8:00 a.m. - 4:15 p.m., on Wednesday, March 15, 1995. On-site registration will be from 7:00-8:00 a.m. at the conference site. The cost including lunch and break refreshments is $75/person prior to March 8, 1995 and $85/person after March 8, 1995. A student rate of $25 is available and conference proceedings only may be purchased for $20. Topics to be discussed include geology and seismology of Maine, seismic stability, risk assessment, and design and seismic evaluation of bridges in Maine. The seminar format will be a series of technical presentations with keynote speakers, and will be followed by panel discussions. Registration should be sent to Janis Piper, Morrison Geotechnical Engineering, P.O. Box 399, Waterville, ME 04903-0399 (phone 207-873-4283; fax 207-873-4977). Checks should be made payable to "Maine Section ASCE".

Environmental Ethics and Professional Practice Seminar

Due to the enthusiastic response to the first seminar on Environmental Ethics conducted in October, the Maine Department of Environmental Protection (DEP) and Consulting Engineers of Maine (CEM) are again co-sponsoring the Environmental Ethics and Professional Practice Seminar. The seminar's goal is to provide better understanding of the practical, ethical and legal issues faced by environmental professionals. This seminar is available for all professionals; licensure or certification is not required. The seminar is conducted by E. James Hamilton who is both a Maine Registered Professional Engineer and an attorney in private practice in Portland. Seminar attendance is limited to thirty participants, with a composition goal of 1/3 consulting, 1/3 public sector, and 1/3 industry representatives.

The seminar is divided into three sessions which run for three consecutive weeks from 4:00-8:00 p.m. The objectives for the first session will be to provide participants with a broad overview of the multifaceted nature of identifying, analyzing, and resolving ethical issues in the environmental arena. Session 2 consists of application of ethical principles and analysis for four or five case studies by an environmental ethics panel comprising panelists from public, private and industry sectors. Session 3 provides participants with the opportunity for hands-on wrestling with ethical dilemmas. There will be a reading assignment prior to the first class and each subsequent class.

The seminar will be held at Alfred's Restaurant (Civic Center exit, beside the Comfort Inn) in Augusta, Maine. Registration fee is $130 for all three sessions, with checks made payable to "CEM". Sessions currently available are Program 95-2 (March 20, March 27, April 3) and Program 95-3 (October 16, October 23, October 30). Registration information should be sent to Consulting Engineers of Maine, c/o Jerry Haynes, 1 Allagash Drive, Oakland, ME 04963.

Maine Mineral Symposium
May 5-7, 1995

The sixth annual Maine Mineral Symposium will be held this apring in Augusta, Maine on the weekend of May 5-7. This educational event is organized by mineral hobbyists and the Maine Geological Survey. Indoor activities on Friday night and Saturday will again be held at the Senator Inn and Conference Center, located just off I-95 on Western Avenue.

The Saturday lecture program will include: Mineral Collecting in the French Alps (Ernie Schlichter); Recent Mining at the Songo Pond Quarry, Albany, Maine (Jan Brownstein); Mineral Collecting in Ontario and Adjacent U.S. (Roy Farnsworth); Early Mining in Vermont (Arlene Bentley/Ken Carlsen); Minerals of the Eden Wills Asbestos Mine, Vermont (Robert Whitmore); and Minerals of Gem-Pocket Pegmatites (Vandall King).

There will also be some outstanding mineral exhibits as part of the Saturday program. On Saturday night, an auction of fine minerals and related objects will be held to benefit future symposia. Dealers will have a large selection of minerals and gems for sale at The Senator on both Friday and Saturday evenings. One or more field trips to Maine mines will be held on Sunday, probably to pegmatite locations, so you can collect your own specimens. For details, contact Robert Hinkley, Yarmouth Road, Route 115, Gray, ME 04039 (207-657-3732).

Friends of the Pleistocene
May 12-14, 1995

The 58th field conference of the Friends of the Pleistocene will be hosted by the Maine Geological Survey on the weekend of May 12-14. The meeting will be based at the Howard Johnson Hotel, located just off the Maine Turnpike on the west side of Portland. Field stops will examine late Wisconsinan glacial deposits between Portland and the New Hampshire border, highlighting results of recent MGS mapping and thesis work. Trip leaders include P. Thompson Davis, John Gosse, Robert Johnston, Robert Newton, and Woodrow Thompson.

The Saturday itinerary will include coastal glaciomarine deposits, the problematic deglacial history of Sebago Lake basin, and glaciolacustrine deposits north of the lake. A lunch stop at Sebago Lake State Park will include discussion of seismic and side-scan sonar investigations of the lake floor. Sunday's trip will visit a wide range of deposits and focus on the style of deglaciation inland from the marine limit in the Saco and Ossipee River valleys. Transportation both days will be in chartered coaches.

To receive the final announcement and registration form, send your name and address by March 15 to Woodrow Thompson, Maine Geological Survey, State House Station 22, Augusta, ME 04333 (phone 207-287-7178; FAX 207-287-2353; e-mail: thompson@mgs1.doc.state.me.us).

Environmental Geology Institute:
Mountains, Glaciers and Water
July 9-July 14, 1995

Bates College and the New England Section of the National Association of Geology Teachers is sponsoring a summer short course the week of July 9, 1995. This intensive, group-project oriented course looks at issues in environmental geology with a focus on plate tectonics, glacial

geology, and hydrology. The field portion of the course will be in the White Mountains, specifically the Grafton Notch region of the Androscoggin River drainage basin. Laboratory analysis and curriculum development will be done at Bates. The intent of the course is for the participants to develop lesson plans in environmental geology with modules on the Paleozoic plate tectonic history of New England, the Pleistocene glacial events in New England, and the groundwater and surface hydrology of a typical New England river.

Each participant will have ample opportunity to develop and test lesson plans, and will receive the following: training in a variety of geologic/hydrologic field and laboratory techniques; an environmental geology textbook; handouts and geologic maps for developing lesson plans; water quality test kit (HACH Co.); geologic compass (Silva) and other geology field supplies (hand lens, rock hammer, shovel, etc.). These supplies are designed to be used in the course and also taken back with the participants to their classrooms for continued use.

Faculty include Dyk Eusden, Assistant Professor of Geology at Bates; Woodrow Thompson, a physical geologist at the Maine Geological Survey; and Patricia Millette, a secondary school teacher at Mount Blue High School who has recently served as the teacher coordinator for an NSF-funded program Curriculum Resources for Earth Science Teachers (CREST). The cost for the program is $300 which includes tuition, materials, room and board. The program is funded in part by a grant from the Howard Hughes Medical Foundation. For registration information, contact the Office of Special Projects, Bates College, Lewiston, ME 04240. Phone: (207) 786-6077.

NEIGC October 6-8, 1995
Brunswick, Maine

The New England Intercollegiate Geological Conference will be headquartered at and hosted this fall by Bowdoin College in Brunswick, Maine. A variety of bedrock, surficial and coastal geology trips will be offered. Detailed announcements of the trips will be mailed around April 5. Anyone planning to attend is urged to make their lodging reservations as soon as possible since this is being held on Columbus Day weekend. For further information, contact Arther Hussey, Dept. of Geology, Bowdoin College, Brunswick, ME 04011, (207-725-3219; e-mail: ahussey@polar.bowdoin.edu).

Because NEIGC is headquartered in Brunswick with numerous field trips planned, GSM will not be having a summer field trip. Instead, members are encouraged to attend NEIGC. The all Geologic Society of Maine meeting is tentatively planned to be held during the weekend of October 6-8 at Bowdoin in conjunction with NEIGC.

A Brief History of the New England Intercollegiate Geological Conference

by
Dee Caldwell and Tom Weddle

The New England Intercollegiate Geological Conference (NEIGC) began in 1901 with a field trip led by William Morris Davis to terraces of the Westfield River in south-central Massachusetts. The conference has met annually since that time with exceptions during World Wars I and II, and a two-year gap during 1913 and 1914. The NEIGC may be the oldest "nonorganization" in North America whose sole purpose is to organize and present field trips in areas of recent geologic mapping and topical studies.

The first meetings from 1901 to 1905 went unreported. In 1906, Herdman Cleland (Williams College) was appointed permanent secretary to report the annual meeting minutes to *Science* magazine. Reports of the early meetings from 1906 to 1935 can be found in the journal under the heading of the New England Geological Excursion (with several years unreported, including 1908, 1912, 1915, 1917, 1921, 1923, and 1925). In 1924, Wilbur Foye (Wesleyan University) was appointed second secretary until his death in 1935. Edward Perkins (Colby College) was appointed third secretary in 1935, however, he died unexpectedly in 1936, and it wasn't until 1939 that Lloyd Fisher (Bates College) was appointed fourth secretary. From 1936 to 1950, only three years went reported, and is most likely attributed to the changes in the secretary position, the WWII hiatus, changes in *Science* format after 1950, and the advent of NEIGC field trip guidebooks (first published in 1938). Guidebooks after 1938 were published irregularly until 1959, but have been published regularly since.

The meeting reports in *Science* are a wonderful collection of accounts of the field excursions. The early trips were led by one or two geologists and were professionally attended with few students present. Bedrock and surficial geology components of the trips were combined, and evening lectures and discussions were part of the meeting schedule. Travel arrangements for the early trips aren't known. However, the Waterville (Maine) Morning Sentinel of October 7, 1925, reported that participants of the first meeting of the NEIGC to be held in Maine were to be conveyed by auto. Several meeting minutes note the closing of the field trip was based on train schedules. Student attendance increased following WWI and the specialization of field trips began to appear. Marland Billings (who first attended the NEIGC in 1921 and acted as interim secretary at times) indicated that although handouts for field trips often accompanied the meeting, the trips were so informal as compared to today's field trips that, unfortunately, the details of these early meetings probably has been lost. Harvard University has a collection of some of the pre-1959 guidebooks, however, there is no known compilation of handouts from the early meetings.

Since 1951 when Fisher died, the following individuals have served as secretary; John Lucke (now deceased), University of Connecticut (1951 to 1959), John Rodgers, Yale University (1960 to 1968), and Dee Caldwell, Boston University (1969 to present), who has served longer than any other NEIGC secretary.

The NEIGC has since welcomed undergraduate students and is particularly aimed at their participation, although field trips are presented to the professional level; consequently, the number of attendees at meetings has increased dramatically. Similarly, the size of the field trip guidebook has increased significantly (two volumes in 1992!), with field trips quite regularly cited in professional publications. Most meetings have been hosted in Massachusetts, followed by Maine, Connecticut, New Hampshire, Rhode Island, and Vermont. The conference has met outside of New England in New York, Quebec, and New Brunswick. While still the only officer of the nonorganization, the secretary no longer reports the meeting events, but rather ensures a meetingplace for future conferences. Non-organizational rules have been unofficially established, and include no dues, evening papers, talks, or lectures. The sole purpose of the NEIGC is, as it has always been, to present field trips in interesting geologic areas.

ARSENIC IN MAINE GROUNDWATER: AN EXAMPLE FROM BUXTON, MAINE.

Bob Marvinney and Marc Loiselle
Maine Geological Survey
John Hopeck
Maine Department of Environmental Protection
Dave Braley
Maine Department of Human Services
Jack Krueger
Maine Health and Environmental Testing Laboratory

In the summer of 1993, residents of the towns of Buxton and Hollis, Maine, became concerned about the persistence of elevated arsenic concentrations (> 0.05 mg/L, the present EPA maximum contaminant level (MCL)) in the drinking water supply for a local school, although the elevated arsenic concentrations had been discovered several years earlier. This concern led to a town-wide survey of arsenic concentrations in over 1200 domestic water supplies. The survey found that over 13-percent of the tested samples had arsenic concentrations in excess of the MCL.

Elevated arsenic concentrations in private wells have come to public attention periodically in New England. Prompted by public concern over elevated arsenic concentrations in southeastern New Hampshire, the EPA (1981) undertook a study which suggested that bedrock was the likely arsenic source. However, there were insufficient data to truly support this conclusion. Boudette et al. (1985), based on detailed water chemistry of 26 wells in southeastern New Hampshire, questioned the conclusions of the EPA study and suggested that anthropogenic sources were likely for the arsenic. They further suggested, based on the positive correlation of arsenic and phosphorus in some wells, that phosphate detergents may be a source in some areas. Zeuna and Keane (1985) suggested a correlation of arsenic concentrations with sulfide-bearing stratigraphic units of northeastern Massachusetts and demonstrated that arsenic is readily leached from bedrock drill cuttings. Collectively, these studies suggest that multiple sources may be responsible for the elevated arsenic concentrations in northeastern U.S. groundwater.

Preliminary work by several state agencies (the Maine Geological Survey, the Maine Department of Environmental Protection, and the Maine Department of Human Services (Marvinney et al., 1994)) has shown that statewide, approximately 10-percent of all samples tested for arsenic have concentrations in excess of the EPA 0.05 mg/L MCL, and analyses in most populated areas show some elevated concentrations (>= 0.02 mg/L) (figure 1). These areas include virtually every geologic setting found in the State, leading the authors to conclude that the problem is of statewide significance.

The same work shows that in the Buxton-Hollis area, water samples from bedrock wells are much more likely to have elevated arsenic concentrations than dug wells or springs (figure 2). Also, among bedrock wells, wells drilled in granites have statistically lower arsenic concentrations than water from wells in metasedimentary rocks (figure 3), suggesting at least a partial source for the arsenic in the bedrock. Analysis of more complete water chemistry from 100 wells in Buxton and Hollis selected on the basis of geology, arsenic concentration, well type, and other factors shows a weak positive correlation of arsenic concentrations with pH, PO_4^{-3} HCO_3^{-1} and Na^{+1}, a weak negative correlation of arsenic concentrations with DO_2 and Eh, but a lack of correlation with other major cations, anions, and other trace metals.

The arsenic concentration of groundwater is the most likely the result of both natural processes and human activities. Arsenic is widely distributed in the earth's crust with an average crustal abundance of about 2 ppm (Mason, 1958). Mineral exploration programs have exploited the association of arsenic and

various types of ore deposits in prospecting (Hawkes and Webb, 1962, Boyle and Jonasson, 1973). Arsenic is a common constituent of many minerals, particularly the sulfides; arsenopyrite is the most abundant arsenic mineral but arsenic may also be found in trace amounts in other sulfides, most commonly pyrite and pyrrhotite (Mason and Berry, 1968).

Man-made sources of arsenic are many and diverse. The National Research Council of Canada (1978) compiled a list of these sources which include metallurgy, glass and ceramic production, and petroleum refining. While these are of minor importance in Maine, other sources may be significant. Arsenic compounds have been used in pesticides and herbicides which were widely applied in the first half of this century, in tannery processes, as phosphate detergent builders, and in some types of fertilizer. Arsenic is an important component of wood preservatives used today.

Preliminary landuse mapping in the Buxton and Hollis area shows a correlation between higher arsenic concentrations in ground water and many activities with a potential for use of arsenic compounds (railroad and power line right-of-ways, and some agricultural activities). Analyses of uncultivated glacial soils and glacial soils in old orchards (not in Maine) subjected to spraying with arsenicals show arsenic concentrations of 2-26 mg/kg in the A and B horizons of the uncultivated soils and 11-290 mg/kg in the soils subjected to spraying (Boyle and Jonasson, 1973).

Additional research funded by the Water Research program at the University of Maine will identify the nature and magnitude of past arsenic use in southern Maine and compile existing information on the behavior and fate of arsenic in soil and the shallow ground water environment. The results of the searches will be used to design a field study that will investigate those factors that are potentially important in controlling observed arsenic concentrations in ground water.

References Cited:

Boudette, E.L., Canney, F.C., Cotton, J.E., Davis, R.I., Ficklin, W.H., and Motooka, J.M., 1985, High levels of arsenic in the groundwaters of southeastern New Hampshire: a geochemical reconnaissance: U.S. Geological Survey, Open-File Rept. 85-202, 20 p.

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U.S. Environmental Protection Agency, 1981, Investigations of arsenic sources in groundwater: U.S. EPA, Region 1, 8 p.

Zeuna, A.J., and Keane, N.W., 1985, Arsenic contamination in private potable wells: proceedings of the U.S. EPA National Conference on Environmental Engineering, Northeastern University, Boston, MA, p. 717-725.

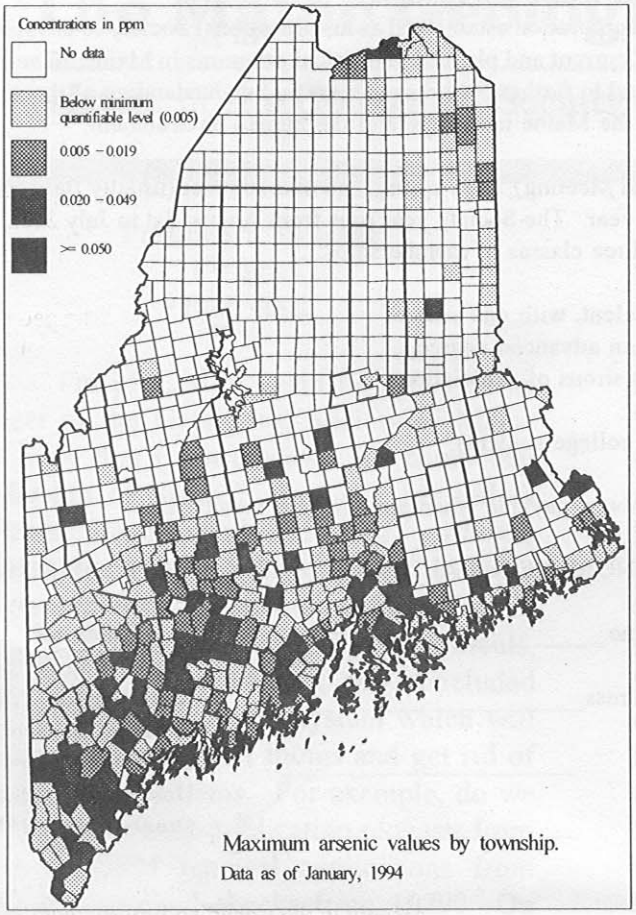

Figure 1. Maximum values of arsenic in water samples from Maine towns. Data from the Health and Environmental Laboratory database.

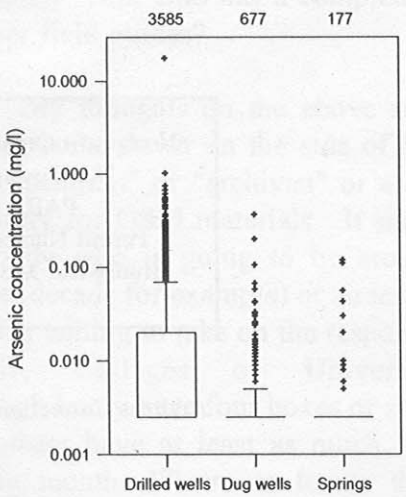

Figure 2. Box plots of arsenic concentrations in drilled wells, dug wells, and springs in Maine. Numbers above the plots are the number of samples in each group. Data from the Health and Environmental Laboratory database.

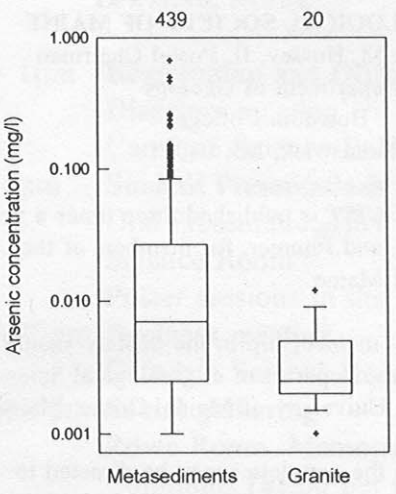

Figure 3. Box plots of arsenic concentrations in water from drilled wells in metasediments and and granites. Numbers above the plots are the number of samples in each group. Data from Buxton/Hollis arsenic survey.

MEMBERSHIP DUES STATEMENT

The GEOLOGICAL SOCIETY OF MAINE, INC. 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 dialoge among geologists working in Maine; and to further public awareness and understanding of the geology of the 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 1st to July 31st. Annual dues and gift contributions to the Society are tax deductible. There are three classes of memberships:

$7.00	REGULAR MEMBER	Graduate geologists, or equivalent, with one year of practice in geology , or with an advanced degree.
$6.00	ASSOCIATE MEMBER	Any person or organization desirous of association with the Society.
$4.00	STUDENT MEMBER	Persons currently enrolled as college students.

A $2.00 APPLICATION FEE is a one-time fee for all new members, payable when applying for membership.

THE GEOLOGICAL SOCIETY OF MAINE ANNUAL RENEWAL / APPLICATION FOR MEMBERSHIP

Application Fee	$2.00	$_____
Regular Member	$7.00	$_____
Associate Member	$6.00	$_____
Student Member	$4.00	$_____
Education Fund Contribution		$_____
TOTAL ENCLOSED		$_____

Name_____

Address_____

_____

_____

Checks payable to:
The Geological Society of Maine
Martin Yates, Treasurer
c/o Dept. of Geological Sciences
5711 Boardman Hall
University of Maine
Orono, Maine 04469

1995/96 SOCIETY YEAR BEGINS AUGUST 1 - PLEASE SEND DUES TO TREASURER

THE GEOLOGICAL SOCIETY OF MAINE
c/o Arthur M. Hussey, II, Postal Chairman
Department of Geology
Bowdoin College
Brunswick, ME 04011

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