THE MAINE GEOLOGIST

JULY 1987

THE NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MAINE

Vol. 13 No. 3

Society News:

SUMMER MEETING / FIELDTRIP

AUGUST 1,2 : 'DOWNEAST'

The 1987 Geological Society of Maine Field Trip/Annual Meeting will be held in Downeast Maine on August 1st and 2nd. Joseph Kelley and Ollcott Gates will lead the fieldtrips. Joe, and some of his students, will show the results of their work on coastal processes; while Ollie will lead us through his work on the bedrock of the region. The trip will begin at 8AM on Saturday, August 1, in the parking lot of the new Helen's Restaurant (on Route 1, just east of Machias). For late arrivals the 1st stop will be Jasper Beach in Machiasport. The Banquet/Annual Meeting will be held at the Cutler United Methodist Church at 6 P.M. on Saturday. An old fashioned ham and bean supper will be provided. People interested in the banquet should contact Bob Johnston (289-2801) for a head count. A group campsite has been reserved at Cobscook State Park for Friday and Saturday night. Contact Bob for more information on that. Other choices in lodging are the motels in the Machias area (Blue Bird, 255-3332; Margaretta, 255-6671; Seagull 255-3033).

☆☆☆

PRESIDENT'S MESSAGE

The Annual Field Trip this year is being led by Ollie Gates and Joe Kelley. These promise to be exciting trips downeast and I would urge all of you to seriously consider attending, if at all possible. The dates for these are August 1 and 2. Details are listed in another section of the newsletter. Our past field excursions have proven to be good opportunities to see and discuss areas of interest, as well as to meet and discuss areas of interest with our colleagues and students. This year will be no exception.

The Wall Street Journal, in a front page news item, recently reported on high unemployment rates of geologists in the oil business. It closed with a joke that is circulating in the oil patch that goes rather like this. "How many geologists can you fit into a pickup truck? Two plus their lawnmowers."

Emory University in Atlanta, Georgia is losing it's geology department. Emory's Board of Trustees has officially ruled that the geology department will be phased out as of August, 1989. This means the loss of a bachelor's, master's and doctoral program. Cutbacks this year have reduced Emory's geology staff to three full time faculty. On a recent trip to Colorado I became aware that for all its mineral, coal, oil and gas deposits as well as serious ground and surface water issues Colorado has only a state geologist, but no survey. I have been reflecting on these notes for some time now and trying to place these in perspective with the rather small but extremely active, enthusiastic, and vital geologic communities that I see in the northeast. The University of Maine is planning to introduce a Phd program in geology. The Maine Geological Survey is small, but exceptionally active.

Legislation involving various aspects of ground and surface water has been introduced in Augusta this spring. Issues involving nuclear waste are still in the news, and like it or not will most probably be discussed heatedly for several years to come. Regional geology, geography, and national and global economics has had profound effects on the locales and degree of geological employment. Many of these are beyond the control of those of us in the northeast.

In educational and legislative areas though, if geology is more "successful" in the northeast, why is it? Have we as a group, been able to sell geology to the citizen and legislator better than our colleagues in other geographic locales? Have we as a community of geologists convinced the general populace that geology is a fundamental science on par with physics, chemistry, and biology? Is the average citizen so environmentally concerned that they have readily grasped the fundamental link between the major environmental issues and fundamental geological principles? It seems that we here in the northeast are and have been doing things more or less "correctly," I would hope that we continue in the same vein.

SECRETARY'S REPORT

The spring Geological Society of Maine Meeting was held at Bates College on March 27, 1987. Having no secretary or treasurer present, there was no secretary's or treasurer's report. Pat Seaward kindly agreed to take minutes.

Carolyn Lepage reported that the nominating committee had proposed the following slate of officers for the next year:

President:	Carol White
V. President:	Carolyn Lepage
Secretary:	Peter Garrett
Treasurer:	Irwin Novak
Newsletter Editor:	Bob Johnston
Director:	Ollie Gates

The 1987 summer field trips will be on August 1 and 2. The bedrock trip will be led by Ollie Gates and Joe Kelley (et. al.) will lead a coastal geology trip. People should meet at 8:00 am on Saturday, August 1 at the Helen's Restaurant parking lot in Machias.

There was some discussion on whether GSM should be involved in supporting pending legislation. Two problems with this were noted:

--we will be perceived as having a vested interest.

--there is insufficient lead time to get information to the group as a whole.

Ollie Gates suggested that a small group effort, not necessarily portraying the views of the organization as a whole, would be a good alternative. Irwin Novak suggested that notification in the newsletter, followed by individual responses would be sufficient. Nothing was resolved, and the meeting was adjourned at 4:25 pm.

Submitted by John Williams, Secretary, with help from Pat Seaward.

NEGSA '88

The following symposia have been organized or are in the final stages of organization. For further information, please contact the conveners of the individual symposia.

1. **Human Occupation of Late-Pleistocene Ice-marginal Environments.** Sponsored by the GSA Archaeological Geology Division. Harold W. Borns, Jr., Institute for Quaternary Studies, University of Maine, Orono, ME 04469

2. **The Bedrock Geology of Coastal New England and New Brunswick East of the Merrimack Synclinorium.** Charles V. Guidotti and Daniel R. Lux, Department of Geological Sciences, Univesity of Maine, Orono, ME 04469, and Arthur M. Hussey II, Department of Geology, Bowdoin College, Brunswick, ME 04011.

3. **Glaciomarine Sedimentation: The Presumpscot Formation of Northeastern North American and Analogues.** Sponsored by Eastern Section SEPM. Joseph T. Kelley, Maine Geological Survey, State House Station #22, Augusta, ME 04333, and Robert N. Oldale, U.S. Geological Survey, Woods Hole, MA 02543.

4. **Contaminant Transport in Glaciated Terrains in Northeastern North America.** Sponsored by the GSA Hydrogeology Division. Andrews L. Tolman, R. G. Gerber, Inc., 17 West Street, Freeport, ME 04032, and John S. Williams, Maine Geological Survey, State House Station #22, Augusta, ME 04333.

5. **Hydrogeologic Aspects of Radioacative Waste Disposal.** Michael F. Weber, U.S. Nuclear Regulatory Commission, Mail Stop 623-SS, Washington, D.C. 20555, and Frank J. Wobber, ER-75, GTN, U.S. Department of Energy, Washington, D.C. 20545

6. **Paleoecology and Evolution of Encrusting Epibiont.** Sponsored by the Northeastern Section of the Paleontological Society. Carlton Brett, Department of Geology, University of Rochester, Rochester, NY 14627, and Richard Alexander, Geoscience Department, Rider College, Lawrenceville, NJ 04068

7. **Landslides of the Northeastern United States and Eastern Canada.** Irwin D. Novak, Department of Geosciences, University of Southern Maine, Gorham, ME 04038, and Charles A. Baskerville, Branch of Geologic Risk Assessment, Mail Stop 922, U.S. Geological Survey, Reston, VA 22092.

8. **Stratigraphic and Structural Analysis of Moutain Belts: A Symposium in Honor of Leo M. Hall.** Rolf S. Stanley, Department of Geology, University of Vermont, Burlington, VT 05405; Peter Robinson, Department of Geology, Univeristy of Massachusetts, Amherst, MA 01003; Philip H. Osberg, Department of Geological Sciences, University of Maine, Orono, ME 04469; Norman L. Hatch, Branch of Eastern Environmental Geology, U.S. Geological Survey, Reston, VA 22092.

9. **Earth Science Applications of Geographic Information Systems.** Walter A. Anderson, Maine Geological Survey, State House Station #22, Augusta, ME 04333, and Hugo E. Thomas, Connecticut Geological Survey, State Office Building Room 553, Hartford, CT 06106.

SPECIAL POSTER SESSIONS

1. **Coastal Zone Management Strategies in the Northeast: Regional Response to Changing Sea Level and Shoreline.** Stephen M. Dickson and Joseph T. Kelley, Maine Geological Survey, State House Station #22, Augusta, ME 04333.

2. **More Classic Field Sites for Teaching Earth Science in the Northeast.** Sponsored by the NAGT New England Section. Archie Berry, Department of Geology, University of Maine Farmington, ME 04938.

SURVEY NOTES

1987 Geologic/Hydrologic Legislaion

The following is a listing of Legistlative Documents (LD's) which have been passed by the 113-th legislature which will have an impact on the Maine Geological Survey and the rest of the geologic community. LD's 830, 1102, 1107, 1597 passed as originally submitted. LD 1102 passed with a much reduced appropriation.

LD 830 - An Act to Improve the Assessment of Floods, Droughts, Ground Water Contamination, Stream Water Quality and Hydropower Potential in this State.

-This bill allows improvements in the state's river, stream and ground water flow management network.

LD 1102 - An Act to Provide Funding to Accelerate Collection of Geologic Information Relating to Hazardous Waste Disposal and Geologic Resources and Hazards Assessment.

-The purpose of this bill is to accelerate the acquisition and publication of geologic baseline information and maps beginning in areas of the state where development pressures are high and there is the greatest need for this type of information.

LD 1107 - An Act Making Additional Appropriations from General Fund....for the Fiscal Year Ending June 30, 1987.

-This act provides funds to the Maine Geological Survey for detailed geological fieldwork on the Sebago Lake Batholith and the Bottle Lake Complex and other areas if needed.

LD 1117 - An Act to Provide Funds to Map Significant Aquifers.

-This bill provides funding to complete a sand and gravel aquifer program undertaken by the DEP, the Maine Geological Survey, and the USGS.

LD 1597 - An Act to Establish the Water Well Information Law.

-The purpose of this bill is to secure ground water and geologic information for the use of the Maine Geological Survey in its programs of investigation throughout the state.

By Michael E. Foley
Maine Geological Survey
Resource Administrator

Robert G. Marvinney has been hired by the Maine Geological Survey as a Physical Geologist, in charge of the Bedrock Geology Division. He replaces Marc Loiselle, who was hired by Caswell, Eichler & Hill. Bob graduated from Syracuse University and worked at Exxon in Houston for four years. His Phd work involved the rocks of northwestern Maine.

PAY YOUR 87/88 DUES

'FRIENDS OF THE PLEISTOCENE'

The "Friends of the Pleistocene" held their 50th reunion, with associated field trips, on May 9th and 10th, 1987. The trip was head-quartered in Northampton, Massachusetts and was co-lead by Carl Koteff (USGS), Janet Stone (USGS), Fred Larson (Norwich University) and Joseph Hartshom (University of Massachusetts-Amherst). At the banquet on Saturday night both Joe Hartshorn and Richard P. Goldthwait were honored by the "Friends" for their many years of dedication to the group.

The field trips centered around lower glacial Lake Hitchcock, from Middletown, Connecticut to Amherst, Massachusetts. The area has been studied since the early 1800's when Edward Hitchcock found evidence for lake deposits. Numerous geologists have been involved in studies since then, including Flint, Lougee, Jahns, Hartshorn and Koteff. During field trip stops evidence of postglacial uplift, spillway channels, and re-advance features were shown and discussed. Numerous delta stops were included to illustrate lake levels and ice margin positions. With over one hundred and twenty-five geologists on the trip there was plenty of debate on the origins and history of the features of Lake Hitchcock.

SPRING MEETING ABSTRACTS

THE TECTONIC EVOLUTION AND PETROGENESIS OF THE DECCAN TRAPS, WESTERN INDIA:

BEANE, John E., Department of Geology, Washington State University, Pullman, WA

The Deccan Traps which cover 500,000 km² of western India, were erupted through high grade metamorphic/igneous Archaean basement via randomly oriented fissures ca. 65 Ma. Early widespread tholeiitic flood basalts form a very gentle (0.4°) southerly plunging anticline which roughly parallels the Western Ghats 100 km inland from the west coast. Basalt formations become progressively younger from Igatpuri to the southern edge of the Traps. The composition and structure of the lava flows suggest that they were extruded as the Indian continent moved rapidly northward over a mantle plume. Later north-south faults cut the flood basalts and provided paths for the ascent of alkaline and acid magmas. These structures developed as the Seychelles block rifted from the west coast of India. The "ridge jump" was probably an effect of mantle plume upwelling beneath the continental crust.

The tholeiitic flood basalts display a wide range of chemical compositions. Major chemical variations result from low pressure crystal fractionation, implying residence time within the crust or at the crust-mantle boundary. MgO-rich picrite basalts are common, but all are porphyritic and appear to result from post-eruptive mafic phenocryst accumulation. The least evolved aphyric rocks have about 9% MgO. Olivine plus augite fractionation controls variation from 9% to 7% MgO. Olivine plus augite plus plagioclase fractionation controls variation from 7% to 4.5%. The Deccan Traps appear to be the eruptive complement of Muskox-like layered mafic intrusions which may correspond to gravity anomalies along the west coast. Sr isotope analysis indicates that crustal contamination is significant in some Deccan lavas.

BEDROCK GEOLOGY OF THE BETHEL, MAINE AREA

BRADY, James J. Department of Geology, University of Maine, Orono, ME 04469

Detailed field mapping on the 1:24000 scale in the Bethel, Maine area, reveals a conformable stratigraphic section that is correlated to Siluro-Devonian rocks in the Rangeley/Phillips areas to the north. Four(?) folding events are recognized, and metamorphic grade ranges from upper sillimanite to sillimanite + K-spar zone.

The youngest unit, which is correlated to the Carrabassett Fm., occurs within the center of a synclinal map pattern. Observations based on microstratigraphy indicate lithologic symmetry across this structure. Polydeformation is believed responsible for tectonic thinning and thickening of units, but all contacts appear to be conformable.

Previous workers (Moench and Hildreth, 1976), mapped two pre-metamorphic faults, the Blueberry Mountain Fault, which defines the western boundary of the Rumford allocthon, and the Plumbago Mountain Fault, tracing through the field area. They have been described as down to basin slides that occurred in semi-consolidated wet sediments. Recognition of these faults was based upon partial to complete omission of portions of the stratigraphic section.

Based on the new mapping, the geology of the area has been reinterpreted. A continuous stratigraphic section has been recognized in areas where faults were previously mapped. These observations allow construction of a conformable map pattern and obviate the need to propose faults. This suggest that a closer look at the nature and stratigraphy associated with the Rumford allocthon would be highly desirable.

THE ROLE OF BLUFF EROSION AND SEDIMENT RECYCLING IN SHAPING MAINE'S COASTLINE

SMITH, Rebecca V., BELKNAP, Daniel F., Department of Geological Sciences, University of Maine, Orono, ME 04469 and KELLEY, Joseph T., Maine Geological Survey, State House Station 22, Augusta, ME 04333

The distribution and abundance of coastal sedimentary environments was correlated with the type and abundance of eroding bluffs in three Maine embayments: Casco Bay, Damariscotta River and Machias Bay. Coastal marine geologic maps were planimetered to determine the percent of beach, mudflat, sandflat, ledge, mussel bar and marsh. The distribution of environments corresponds with a three-fold sedimentological model of Maine estuaries: Inner, Middle and Outer Zones. High energy conditions and the sediment-stripped nature of the Outer Zone result in exposures of ledge punctuated by pocket beaches. The Middle Zone, dominated by erosion, is characterized by beaches, sandflats, mudflats in protected areas, and some marshes, all of which may be flanked by eroding bluffs. Marshes and extensive mudflats bordered by stable bluffs typify the Inner Zone of sediment accumulation. The importance of each zone within the embayment is determined by bluff composition and bedrock geometry. Due to a paucity of fluvial sediment, bluff erosion is an important mechanism in the distribution, abundance, and maintenance of local estuarine sedimentary environments. The cycle of Maine Bluff erosion consists of wave attack causing slumping of the blurf, and subsequent colonization by salt marsh. With continued sea-level rise, the marsh is eroded and the bluff is again exposed to wave attack. Contrasting percentages of environments between bays are a function of the nature of the bluff material, the bedrock framework of the embayment and the energy conditions within the embayment.

DR. CHARLES T. JACKSON AND THE COAL MEASURES OF MAINE:

HINELINE, Mark L., Geosciences Dept., University of Southern Maine, Gorham, Maine 04038

Most historians of science agree on the need to avoid retrospective judgments when evaluating the work of historical figures in science. Thus, when assessing and interpreting the work of Maine's first state geologist, Charles T. Jackson, one must be careful to do so in the light of what was known in the period in which he worked (1836-39) and not upon "what we now know." At the time of Jackson's survey of Maine, the absence of economically significant coal deposits in Maine was not yet demonstrated, and frequent borings were being made into granitic and gneissic formations in search of the resource.

An examination of Jackson's methodical debunking of coal speculations is, in itself, interesting; even more interesting is an examination of the entire matrix of geologic beliefs, practices, and growth that characterize the 1830s. Jackson's work in Maine was contemporary with a revision of the stratigraphic column by the British geologists Adam Sedgwick and Roderick Murchison. Through their work, purely lithologic descriptions of older, stratified rock as "transition," would be replaced by the Cambrian, Silurian, and Devonian systems, determined in large part by the characteristic fossils of the systems.

Application of these systems was problematic in the structurally and stratigraphically complex geology of Maine, but Jackson was successful in showing the absence of coal measures here through the use of the "primary," "transition," and "secondary" sequences alone. However, he correlated the sandstone of Perry with the New Red, and found an insignificant but problematic coal seam in the "transition" rock of North Haven. Jackson also claimed to have found "bitumen" at a depth of three feet in a peat bog near Limerick, and published a paper in Silliman's American Journal of Science in which he argued that the process of bituminization was ongoing.

Jackson's interpretation of the geology of Maine, or rather an absence of interpretation, has been the subject of criticism by historians of science and geologists alike. A fresh look reveals a field researcher, committed both to his task and to his methodology, grappling with the complex geology of Maine.

RECONSTRUCTION OF THE LATE QUATERNARY PALEOGEOGRAPHY AND ARCHAEOLOGICAL GEOLOGY AROUND ROQUE ISLAND, MAINE:

WHALEN, Maureen S., Institute for Quaternary Studies, University of Maine, Orono, Maine 04469

The late Quaternary history of Maine's coast encompasses distinct paleogeographical changes produced by glacial erosion and deposition and a marine transgression-regression-transgression sequence. Roque Island and the bays which flank it (Englishman and Chandler) are located just east of Jonesport, Maine. The subaerial and submarine geology were studied using surficial maps, seismic profiles and vibracores. A local relative sea-level curve was used to constrain time-depth relationships. Archaeological sites on Roque Island were investigated by Dr.David Sanger of the University of Maine.

Paleogeographical reconstructions were made for six significant points in time. The ice margin had retreated past the present coast by 13,200 B.P.. The interlobate nature of the ice front and the concurrent marine transgression dominated the paleogeography. This transgression submerged the area by 13,000 B.P. The succeeding rapid transgression produced a coast marked by emerged marine beaches and terraces. Between 10,000 and 8000 B.P.,sea-level reached a lowstand of 65 meters below present sea-level. The Chandler River cut a channel into the subaerially exposed glacial deposits. By 6000 B.P., sea-level had risen to 15 meters below present. The dominant environment was a mudflat. The paleo-Chandler River estuary was retreating northward. The first documented archeological occupation of Roque Island may have begun as early as 4000 B.P.. At this time sea-level was 5.0 meters below present and Roque Island was no longer connected to the mainland. The rate of sea-level rise had slowed by 2000 B.P.. The area became an exposed marine embayment, similar to today, with greater erosion rates along the outer shoreline and an inner bay characterized by mudflats and gravel beaches.

THE LATEST HOLOCENE EVOLUTION OF THE LUBEC EMBAYMENT:

WALSH, Joseph A., Department of Geological Sciences, University of Maine, Orono, ME 04469
and KELLEY, Joseph T., Maine Geological Survey, State House Station 22, Augusta, ME 04333

The Lubec Embayment is an intertidal area (2.5km^2) in eastern Maine which has undergone extraordinary change during the past 200 years. Two small barrier spits of recent origin, and an extensive intertidal flat, whose morphology reflects both modern day processes, and relict coastal features, presently characterize the area. Factors contributing to the highly dynamic nature of the area include a macrotidal setting, and an anomalously rapid rate of sea-level rise promoting widespread erosion of coastal bluffs. Three major geomorphic phases are recognized from historic maps dating from the late 1700's. A late eighteenth century survey reveals a shoreline configuration that differs remarkably from the present day, by exhibiting a peninsula whose origin is likely related to littoral deposition during postglacial sea level regression. A secondary phase of barrier spit development culminated in the early-mid 1800's with a feature similar in size and form to the present-day spit, but more seaward. Subsequent maps record the disintegration of this early feature and the twentieth century evolution toward the contemporary morphology of the area. Coastal processes such as waves and tidal currents cannot fully explain the rapid growth of the present spits, since they act over a very limited portion of each tidal cycle. More important mechanisms may be tidal current transport of algae colonized clasts, and seasonal ice transport.

GRAVITY INTERPRETATIONS OF THE LEWISTON AND GARDINER 15' QUADRANGLES, SOUTHWESTERN MAINE

FLOQUET, Michael, Department of Geology, Bates College, Lewiston, Maine 04240

A gravity study using a Lacoste-Romberg Model G gravity meter was conducted over 325 square miles within the Lewiston and Gardiner 15-minute quadrangles, southwestern Maine. Within the study area metasediments of sillimanite grade and Silurian age are intruded by the Wales granite, the Litchfield foid-bearing syenite, and lesser stocks of granite and granodiorite. Minor high angles faults trending northeasterly are present within the field area. Initial deformation produced recumbent folds. A second period of deformation produced folds which are tight upright and strongly overturned.

Gravity was measured at benchmarks and spot elevations and reduced to Bouguer gravity values. Bouguer and residual anomaly maps were produced. Residual gravity from two profiles was modeled in two dimensions using a BASIC computer program TALGRAV2.

Previous work has shown that granite plutons emplaced in high-grade metamorphic rocks have thin plate-like shapes and produce small negative anomalies less than 10 milligals. Gravity models for the Wales pluton agree with these findings. A thickness of 975 meters was calculated for the Wales granite. The Wales expresses an anomaly of 4 milligals.

Although the faulted contact between the Central Maine Sequence rocks (Vassalboro, Sangerville, and Waterville) and the older Casco Bay rocks (Cushing and Cape Elizabeth) lies within the study area, no anomaly was observed in its extent.

GEOLOGY OF THE MOAT VOLCANICS, SOUTH MOAT MOUNTAIN, NEW HAMPSHIRE:

FITZGERALD, John P., Department of Geology, Bates College, Lewiston, Maine 04240

The Moat Mountain Range, located within the North Conway quadrangle of New Hampshire, is composed of felsic volcanics related to the emplacement of plutonic members of the White Mountain batholith. The lithologies exposed here are predominantly ash-flow tuffs, pyroclastic flows, megabreccias, mesobreccias, trachyte flows, and comendite flows. The rocks are interbedded and represent a caldera pile approximately 11,745 feet (3580 m) thick.

Fieldwork has shown that relationships between lithologies are depositional and not the result of a structural down-dropping of a block of volcanics as previously suggested (Billings, 1928). The thickness of the volcanics, presence of megabreccia, and orientations of the bedded units suggest that the volcanics exposed on Moat Mountain originated as a caldera fill sequence emplaced concurrently with caldera collapse. This fill accumulated within the caldera as the result of debris avalanches from the unstable caldera walls and from intracaldera volcanism and resurgence. Comparison with less eroded calderas of the western United States indicates that the stratigraphy exposed on Moat Mountain represents the deepest portion of an intracaldera deposit.

A model for the evolution of the Moat Mountain caldera based on Smith and Bailey (1968) supports this conclusion. After substantial ring fracturing of the roof of the magma chamber, caldera forming eruptions extruded a large volume of pyroclastic material. Sufficient emptying of the chamber was followed by catastrophic collapse of the chamber roof. Collapse of the walls of the caldera deposited great thicknesses of megabreccia initially. This was followed by intracaldera volcanic action and late stage resurgent doming. Such a developmental history is suggested by the occurrences of Moat volcanics on Moat Mountain.

1987 NEIGC

October 16, 17, and 18
Montpelier, Vermont

For more information contact:
NEIGC
c/o D. S. Westerman
Department of Earth Science
Norwich University
Northfield, VT 05663

MEMBERSHIP DUES STATEMENT

THE GEOLOGICAL SOCIETY OF MAINE, INC. is a non-profit Maine 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 dialogue 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, early spring and (with the Annual Meeting and sometimes field trips) in mid-summer. A newsletter, **THE MAINE GEOLOGIST**, is published for all members four times a year (more or less), approximately on a quarterly basis starting in September. 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 annual memberships:

$7 REGULAR MEMBER - Graduate geologists, or equivalent, with 1 year of practice in geology, or with an advanced academic degree in geology

$6 ASSOCIATE MEMBER - Any person or organization desirous of association with the Society

$4 STUDENT MEMBER - Persons currently enrolled as students in college who are interested in geology

$2 APPLICATION FEE - A one-time fee to all new members, payable when applying for membership

ANNUAL RENEWAL or APPLICATION FOR MEMBERSHIP - THE GEOLOGICAL SOCIETY OF MAINE

NAME _____
(Please print or type)

ADDRESS _____
(permanent Mailing Address)

_____

_____
Zip code

Please make checks payable to:
THE GEOLOGICAL SOCIETY OF MAINE, INC.

Regular Member $7 per year $_____

Associate Member $6 per year $_____

Student Member $4 per year $_____

Application Fee $2 One-time $_____

TOTAL ENCLOSED : $_____

MAIL TO: ROBERT G. GERBER, TREASURER
P. O. Box 270
South Freeport, Maine 04078

86/87 SOCIETY YEAR STARTED - AUGUST 1st - PLEASE SEND IN YOUR DUES

THE GEOLOGICAL SOCIETY OF MAINE
C/O Arthur M. Hussey, Dept. of Geology, Bowdoin College, Brunswick, Maine 04011

THE MAINE GEOLOGIST is published four times a year, more-or-less, in early Fall, late Fall, late Winter, and maybe June or July, for members of the Geological Society of Maine, a non-profit educational Maine corporation interested in all aspects of the geology of the State of Maine.
Correspondence about membership in the Society should be mailed to Robert G. Gerber, P.O. Box 270, South Freeport, 04078. Items for inclusion in the newsletter may be directed to Robert A. Johnston, Maine Geological Survey, Department of Conservation, Station #22, Augusta, ME 04333.

Nonprofit Org.
U.S. POSTAGE
PAID
Permit No. 20
BRUNSWICK, MAINE
04011

address correction requested

Please send in your dues and current mailing address