



THE MAINE GEOLOGIST

THE NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MAINE

SEPTEMBER
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Special Dickey-Lincoln Meeting Plans

The U.S. Army Corps of Engineers recently released their draft Environmental Impact Statement for the proposed Dickey-Lincoln School Lakes hydroelectric project on the St. John and Allagash Rivers, Aroostook County, Maine. Single copies of this report, and of a separate report on earthquake investigations at the damsites, are available without charge from the Division Engineer, U.S. Corps of Engineers, 424 Trapelo Road, Waltham, Massachusetts 02154.

Specifically to provide the geologist community in our region an opportunity to become informed in detail on geologic and geotechnical factors pertaining to the proposed project, the Geological Society of Maine is currently arranging to convene a special Fall meeting with Corps' experts. The meeting arrangements, which are being handled for us by Brad Hall, are not yet complete. It is currently anticipated, however, that the meeting will be held at the Geology Department, Colby College, Waterville, possibly on a Friday toward the end of October.

Two "workshops" have been held with the Corps to date on geologic matters relative to the development of the Environmental Impact Statement for Dickey-Lincoln: on soils, geology and seismic factors, April 27, 1977; and on water quality, June 28, 1977. Ken Fink, UM-Walpole, and Brad Hall, UM-Orono, respectively moderated and recorded these meetings. Because of scheduling or other problems these sessions were very poorly attended by local geologists. Few of us are now aware of the character or quality of the Corps' site and regional investigations on the pertinent features of surficial geology, bedrock geology, geomorphology, weathering, hydrology, mineral resources, tectonic structures, seismicity, etc., as these factors may influence design, construction, safety or feasibility of the proposed project.

The GSM/Corps meeting now being arranged will provide local geologists of all disciplines with a very special opportunity to gather detailed insight into the Corps' investigations and plans. We will announce the specific date, time and place for the proposed meeting in a few weeks. Plan on it. It will be a valuable and important occasion.

Annual Meeting 1977

The Annual Meeting of the Society was held in Science Hall, UM-Machias, on the evening of July 15, 1977, with about 30 attendees. After announcements and discussions about field trip plans for the weekend (see elsewhere), and about "Occasional Papers" publication planning (see elsewhere), the membership discussed the need for the Society's legal incorporation. Archie Berry will look into the matter of incorporation with a local Farmington attorney.

It having been determined by Bill Rideout that a quorum was present, the following motions were formally adopted:

1. To incorporate the Society as an educational, non-profit organization;
2. To authorize the publication of "Occasional Papers" on Maine geology;
3. To authorize an Editorial Committee for the "Occasional Papers", to be appointed by A.M. Hussey II;
4. To re-elect all present Officers and Councilors, each to continue in office until the next Annual Meeting.

1977-78 DUES ARE DUE

The GSM operates on an August 1 to July 31 year, and dues for the 1977-78 Society year are NOW DUE. If you wish to continue to receive the Newsletter and such other benefits as may from time to time accrue to members in good standing, please send us your check soon (with any desired address changes). Annual dues are \$5 for Regular Members; \$4 for Associate Members; and \$2 for Student Members.

If you were not a member in 1976-77, and wish to join now in some category, please send an additional \$2 as Application Fee, and be sure to provide the mailing address and Zip code where you prefer to receive the Newsletter.

PLEASE MAKE CHECKS PAYABLE TO THE GEOLOGICAL SOCIETY OF MAINE, and send to J. R. Rand, Treasurer, Cundy's Harbor, RD2-Box 210A, Brunswick, Maine 04011.

WE WILL NOT BE SENDING OUT INDIVIDUAL INVOICES

REGULAR FALL MEETING

The Regular Fall Meeting of GSM (not to be confused with the Special Dickey-Lincoln meeting) is scheduled for Friday, December 2, 1977, at the Geology Department, Bowdoin College, Brunswick.

The meeting will convene at 3 PM for afternoon discussions of business affairs, general and technical revelations, "Occasional Papers" publication planning, etc. After an evening meal at Bowdoin College, Dr. Bruce Bouley, Manager of Maine Operations, Phelps Dodge Corporation, Bangor, will present the evening's program on the kinds of terranes where one might look for strata-bound mineral deposits.

GSM PUBLICATIONS

Archie Berry reported at the Annual Meeting that the UM-Farmington press is willing to print the Society's proposed "Occasional Papers" volumes on a basis not competing with commercial printers. They estimate that they can run 300 copies of an 82-page publication for around \$150, not including photo plates or other graphics which have to be sent outside for plates. A spiral plastic binding will be the required form. Once the University press sees the finished, camera-ready manuscript, they can provide an accurate cost estimate for final printing.

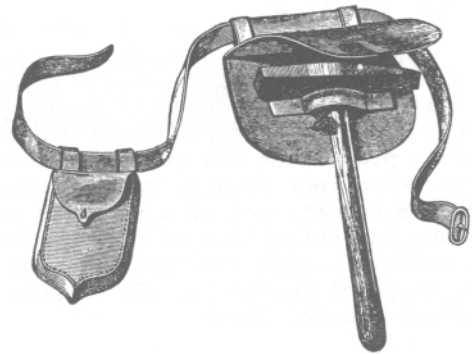
Art Hussey, who will be Editor for the first edition, is now prepared to accept papers for review by the Editorial Committee. He visualizes the procedure essentially as follows: authors send their manuscripts to him, who will then distribute the manuscripts around the Editorial Committee for review as to technical aspects; once reviewed, the manuscripts will be returned to the author for final, camera-ready typing and graphics preparation.

Bob Neuman, USGS, made a number of useful comments at the meeting, with respect to publication and distribution of "Occasional Papers". First, he noted that to get the best mailing rate the publication should be a periodical. Second, we might wish to think in terms of a 600-copy or greater press run per issue, to achieve a proper and definitive distribution among libraries. Third, Bob pointed out that the Society should define certain policy considerations with respect to manuscript review: 1, to accept a manuscript as is; 2, to accept with revisions; 3, to reserve the right to reject manuscripts completely.

J. Rand read the single letter which he had received concerning the concept of starting a formal technical publication. The letter, from a Regular Member of the Society, expressed opposition to publishing, on the grounds that "there are sufficient outlets for one's writing efforts", and that "the Society will start something that it will find a heavy commitment in future years". The consensus of the membership at the Annual Meeting ran counter to this

opinion, however, noting that publication policies of the large Societies are changing, and that the avenues for publishing geologic papers have narrowed significantly. A need for publications of the sort proposed by GSM is considered to be developing rapidly.

Finally, Brad Hall noted that we have not yet been deluged by manuscripts for the first proposed volume of "Occasional Papers". It is now requested that all who may be interested in submitting a paper for publication in the first volume contact A. M. Hussey II, Department of Geology, Bowdoin College, Brunswick, Maine 04011.

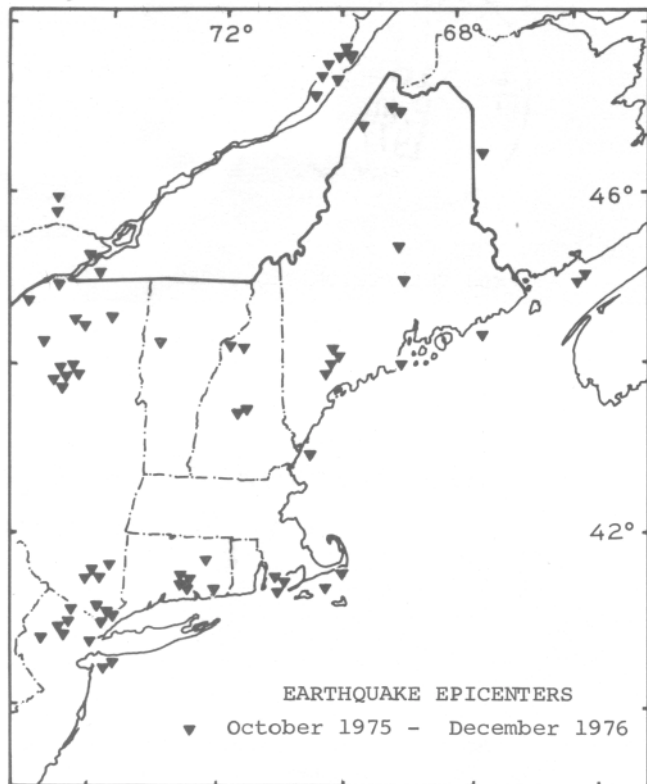


Summer Field Trip Program

Following the Annual Meeting and a delightful overnight sojourn at Sennett Hall on the UM-Machias campus, some 50 members and guests got into a 15-car caravan on Saturday morning, July 16th, and were escorted by Ollie Gates through the Silurian-Lower Devonian section of coastal volcanic belt rocks between Machias and Eastport. After a fine and relaxing Saturday evening at the better watering places of the Village of Calais, around 30 attendees were exposed on Sunday by Al Ludman and Dave Westerman to the complexities of the inland rocks of the Calais-Wesley area.

The whole affair was initially arranged by Brad Hall, ably business-managed by Bill Rideout, and well and efficiently directed from exposure to exposure by the three trip leaders, as all who attended will readily attest. In connection with the event, the Society issued an 8-page guidebook (1) which was hand-distributed to all attending members. For those who did not make the meeting, a copy of the guidebook is enclosed with this Newsletter.

- (1) Gates, O., A. Ludman and D. W. Westerman (1977) Bedrock Geology, Machias-Eastport Calais-Wesley Area. Guidebook for Field Trips 1 and 2, July 16-17, 1977. The Geological Society of Maine, Cundy's Harbor, Maine 04011.



After: Chiburis, E.F. and R.O. Ahner (1977)
Seismicity of the Northeastern United States. Bull.
5, Northeastern U.S. Seismic Network; Weston
Observatory, Weston, Mass. 02193.

A FEW MORE SMALL ONES

In the December 1976 Newsletter we showed a plot of earthquake epicenters in the region, as detected by the Northeastern Seismic Net during the period October 1975 - June 1976. This new plot shows epicenters for the period extended to December 1976. The additional events reported for Maine (all very small) include one offshore from York/Kittery; two in the Orrington-Milo zone (ref: THE MAINE GEOLOGIST, March 1977); and two near Dickey. A very small event was also detected just over the border near Bristol, N.B.

Dickey-Lincoln Seismicity

The Corps of Engineers Newsletter on the Dickey-Lincoln School Lakes Project (No. 3, Aug. 1977) reports "Information concerning earthquake activity in the upper St. John River Valley in the vicinity of the Dickey-Lincoln School Project is now being collected around-the-clock with the aid of seismic instrumentation installed last summer and fall". "Intensive studies are being conducted because of the project's location near a zone of high earthquake activity in the St. Lawrence Valley and the need to relate this seismic activity to the proper design of the structures at the proposed site of the Dickey Dam". (The address where you may obtain a copy of the Corps' current report on earthquake investigations is noted in the lead article of [this](#) Newsletter.)

The "zone of high earthquake activity" referred to in the Corps' Newsletter is the seismically most active location in northeastern North America, and is centered on and correlated with the Charlevoix structure, a meteor impact feature dated at about 380 million years age. The structure is essentially circular, about 25 miles (40 km) in diameter; its center is about at 47.6°N -70.3°W. The St. Lawrence River flows over the southeastern one third of the structure from near Baie St. Paul and Ile aux Coudres on the southwest to La Malbaie on the northeast.

In addition to very many smaller events, five earthquakes of intensity IX to X(MM) have been reported on the structure since the early 17th century (Smith; 1962, 1966). The most recent large event occurred on March 1, 1925 (GMT), having an epicentral intensity IX(MM) and Magnitude 7.0. This earthquake was felt over about 2,000,000 square miles (5,180,000 sq.km), from the eastern Maritime Provinces south to Virginia and west to beyond the Mississippi River. Only a narrow zone along the St. Lawrence River experienced important damage, commonly where foundation materials consisted of unconsolidated surficial deposits. Most of Maine experienced intensity IV(MM) effects or less, with intensities rising to V and VI(MM) in northern Maine.

The proposed Dickey earthfill damsite is located about 54 miles (87 km) east southeast of the rim of the Charlevoix impact structure. Extrapolation of historical attenuation data for the northeastern region (Boston Edison; 1977a) suggests that an intensity X(MM) earthquake at the Charlevoix structure may attenuate through 54 miles to result in Intensity VIIIVIII(MM) effects at the Dickey damsite. Intensity/acceleration relationships (Boston Edison; 1977b) further show intensity VIII(MM) to correspond to a maximum horizontal ground acceleration of about 0.27g on firm bedrock or above-average foundation conditions; of about 0.458 on average foundation conditions; and of about 0.75g on below-average soil material, or on man-made fill.

The proximity of the seismically-active Charlevoix impact structure, combined with the well documented relationships between earthquake intensity, attenuation and acceleration for the northeastern region, appears to require the consideration of intensity VIII(MM) effects at the proposed Dickey-Lincoln hydroelectric site, for the proper design of the dams, structures and shoreline embankments. (JRR)

Boston Edison Co. (1977) a. Earthquake Intensity-Attenuation Relationships, Fig. 2.5-44; b. Earthquake Intensity-Acceleration Relationships, Fig. 2.5-45; PSAR Amendment 30, March 11, 1977; Pilgrim Station Unit 2, License Application to U.S. Nuclear Regulatory Comm.

Smith, W.E.T. (1962) Earthquakes of Eastern Canada and Adjacent Areas, 1534-1927. Dominion Observatory Pubs., Vol. 26, p.271-301.

Smith, W.E.T. (1966) Earthquakes of Eastern Canada and Adjacent Areas, 1928-1959. Dominion Observatory Pubs., Vol. 32, p.87-121

**The Geological Society of Maine
c/o John R. Rand, Cundy's Harbor
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THE MAINE GEOLOGIST is published four times a year, more-or-less, in September, late Fall, late Winter and maybe June or July, for members of the Geological Society of Maine, a non-profit, non-incorporated educational society interested in all aspects of the geology of the State of Maine.

Correspondence about this Newsletter, or about membership in the Society may be addressed to John R. Rand, Cundy's Harbor, RD2-Box 210A, Brunswick 04011.

President	W. W. Rideout
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Newsletter	J. R. Rand

THE GEOLOGICAL SOCIETY OF MAINE
TREASURER'S REPORT

For the Year ended July 31, 1977:

The paid-up Membership at July 31st included 90 members:	
Regular	72
Associate	8
Student	10

(In addition, 20 old members still owe dues for 1976-77, 10 owe for 1975-77; total "apparent" membership = 120)

YEAR-END BALANCE SHEET

RECEIPTS - Balance over from 07/31/76	\$491.11
Dues & Application Fees	595.00
Total -	\$1086.11
EXPENSES - Printing: 4 Newsletters & Guidebook	\$415.35
Postage	75.30
1976 & 1977 Annual Meetings Expenses	60.67
Addressing Labels	18.69
Overpayment Refunds	13.00
Total -	\$583.01
BANK BALANCE, Canal Bank @ July 31, 1977	\$503.10

RECORD OF DISBURSEMENTS

08/06/76	Check #25	J.R. Rand, Meeting Supplies	\$19.16
08/16/76	#26	Color-Ad, Inc., Photo Work	5.25
08/16/76	#27	Fo'c'sle Press, Address Labels	9.44
08/26/76	#28	J.R. Rand, Postage	15.60
08/31/76	#29	J. H. French, 150 Newsletters	76.97
11/05/76	#30	J.R. Rand, Postage	9.00
11/09/76	#31	J. H. French, Announcement Cards	12.60
02/04/77	#32	J.R. Rand, Postage	15.60
02/14/77	#33	J. H. French, 150 Newsletters	88.20
03/04/77	#34	Olcott Gates, Overpayment Refund	5.00
03/24/77	#35	J.R. Rand, Postage	18.20
03/25/77	#36	J. H. Frerwh, 150 Newsletters	76.82
03/25/77	#37	J.R. Rand, Address Labels	4.00
04/16/77	#38	Maria Terres, Overpayment Refund	8.00
06/03/77	#39	J.R. Rand, Postage	16.90
06/06/77	#40	J. H. French, 150 Newsletters	35.81
07/13/77	#41	NE Direct Mail, Address Labels	5.25
07/15/77	#42	Holbrook's Store, Meeting Supplies	9.01
07/15/77	#43	J. H. French, 150 Guidebooks	119.70
07/16/77	#44	void	0.00
07/16/77	#45	U.Maine Machias, Speakers' Rooms	20.00
07/16/77	#46	David S. Westerman, Canoe Cushions	12.50

TOTAL DISBURSEMENTS: \$583.01
(There are no outstanding debts at July 31, 1977)

August 1, 1977

John R. Rand, Treasurer