

# THE MAINE GEOLOGIST

THE NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MAINE

SEPTEMBER

1984

VOL.11 NO.1

## Society News:

Fall Meeting  
Colby College  
November 16

Afternoon Program:  
Ground Water Sampling and Analysis:  
A geological and chemical synthesis

Happy Hour, Dinner at Colby Commons

Evening Program:  
Recent Contributions to  
Appalachian Geology:  
UMO Staff  
More details to follow  
in early November

### President's Message

As I enter my second (and last) term as your President, I have made several New Year's resolutions. First, we will leave no one standing at a field trip gathering point. My apologies to those we inadvertently left at the Darling Center. Secondly, the Society will not invest again in two Porta-Potties for five people. Thirdly, we will avoid trespassing on property from which we have been excluded, even though we got away with it. Fourth, we will endeavor to avoid scheduling conflicts, especially with MMRA: we work together better than separately.

With that off my chest, I want to thank the cast of many who helped make our summer meeting and field trips a success (see accompanying article). Gratitude is due and payable to Joe Kelley, Woody Thompson, Irwin Novak, and Art Hussey, who all ably organized, wrote up, and led portions of field trips. Equal or larger payments are also due to Dorothy Tepper, Carol White, Cathy Stultz, and Al Russell of the Darling Center for their logistical support. We couldn't have done it without them.

I also want to welcome our new Newsletter Editor, Chris Olson, and our new Director, Brad Hall. We expect great things from both of you and look forward to a productive year. A fifth resolution: the President will try to get his columns in on time!

Andy Tolman

## Summer Meeting '84

The Annual Meeting of the Geological Society of Maine was held at the Ira C. Darling Center in Walpole, Maine on July 28, 1984, with a handful of members, next-of-kin, and dogs present. Bob Gerber presented a brief treasurer's report, noting that the Society treasury had shown a net loss of approximately \$800.00 for the year. Bob suggested a dues increase for the up-coming year.

Andy Tolman solicited some thoughts on topics for the Fall and Spring meetings. Discussion followed concerning changing the Annual Meeting date, a poster session for students, a possible field trip to Acadia or thereabouts, and mention a field trip in late September in N.H. associated with the CUSMAP program and co-sponsored by MMRA.

Walter Anderson announced that a building had been acquired for sample rock core storage by the Survey and plans are in the works to set up an acquisition and inventory system.

Chris Olson, the new newsletter editor, discussed some of the options for printing and mailing the newsletter from Augusta. Chris also put out a plea for increased participation by the membership in the form of articles for the newsletter.

The following motions were formally adopted by the Society at this meeting:

- 1) Dues increase of two dollars for all membership categories effective when the Fall newsletter goes out (Now!).
- 2) To keep the same slate of officers for the 1984-1985 Society year. Those officers are:  
Andy Tolman, President  
Dorothy Tepper, Vice President  
Bob Gerber, Treasurer  
Carol White, Secretary
- 3) Brad Hall was elected as a Director, replacing Roy L. Farnsworth, whose term expired this year.

The meeting adjourned at approximately 9:30 p.m. with several members trooping off to the hospitable Gates Motel in Wiscasset.

dues are due!!

## YEAR-END TREASURER'S REPORT

## Membership

Regular Members	189
Student Members	34
Associates	<u>25</u>
Total Members	248

## 1983-84 INCOME STATEMENT

## INCOME:

Dues & Appl. Fees	953.91	
Bulletin Sales	1385.70	
NOW Acct. Interest	60.75	
less Cash Refunds		<u>3.00</u>
Total Income	2397.36	

## EXPENSES:

Postage Fees	163.63
Newsletter Printing	260.98
Bulletin Printing	2144.89
Meeting Expenses	261.25
Reimb. Members' Out-of-pocket exp.	204.18
Bank Service Charges	<u>19.01</u>
Total Expenses	3053.94

NET LOSS                      \$656.58

## 31 AUGUST 1984 BALANCE SHEET

## ASSETS:

Cash in Bank                                      948.55

TOTAL ASSETS\*                                      \$948.55

## LIABILITIES:

Sales Tax Payable	6.70
Prepaid Bulletin Sales	<u>7.00</u>
Total Liabilities	13.70

## CAPITAL:

Retained Earnings                                      934.85

TOTAL LIABILITIES AND CAPITAL                      \$948.55

\*Does not include our inventory of bulletins, which is probably worth several thousand dollars.

FOOTNOTES TO ACCOMPANY TREASURER'S REPORT

The accompanying income statement for the 1983-84 fiscal year shows the first net loss since I have been Treasurer. The loss is due to the large printing expense associated with Bulletin #3, which has not been recouped yet by Bulletin sales. It is clear that several steps are necessary to keep the Society solvent and also allow us to continue to issue new Bulletins periodically.

The first step was accomplished at the most recent Annual Meeting: a dues increase. Dues have been increased \$2 in each membership category. This dues increase will be effective 10 days from the date of mailing of this Newsletter. All dues for the current year received at the Treasurer's office prior to that time will be accepted at the old rates. This increase

is the first dues increase since the Society was established and was inevitable, if only to keep up with inflation. This should net us an additional \$500 per year, which should go a long way to erase this year's deficit, provided we do not print a new Bulletin this year.

The second major step in retaining solvency is to print fewer of each new Bulletin. Experience has shown that something on the order of 300 bulletins is the optimum number for our inventories and will not cost so much that we will suffer large losses in any given year.

Please be reminded that each member can tell through what year his/her dues are paid by looking at the number immediately after his/her name on the Newsletter mailing label. An "84/85" indicates that you are current. If your number is "82/83" or less, your dues payments are first applied to the previous year's dues before being applied to the current year's dues. If your number is "81/82" or less, your name will be purged from our mailing list by 1985 unless dues are paid by then.

The membership list, accounting, and a complete record of all Bulletin sales are on computer and we can rapidly give you an update on your status. Just write the Treasurer or give us a call at 207-865-6138. Please note that we have moved from Harpswell to Freeport.

## Summer Field Trip

The annual field trip, run in the Portland and mid-coast area, was a success. Saturday was devoted to a discussion of recent processes and environmental consequences, while Sunday was spent attempting to unravel bedrock structures in the Boothbay quad. Between the two, a hardy and faithful group ate lobster in New Harbor and held a meeting at the Darling Center.

Joe Kelley introduced us to several receding beaches, as well as a few which were growing. We saw the results of attempts to stabilize beaches and maintain channels. Woody Thompson then introduced us to his famous fossil wood locality. Unfortunately, Maine Central Railroad had refused permission for the Society to enter the pit. A few defied the ban and pronounced it interesting. We then visited the Gorham landslide in company with Irwin Novak, Mark Swanson, and Steve Pollock. The structure and senses of movement in the slide were fascinating, as was the slide's magnitude.

Art Hussey led us to some impressive exposures of both metasediments and igneous rocks in the Boothbay area. Good mineralization (sillimanite, cordierite, large feldspars, et al.) were visible. The most heated discussion took place at the last stop, right on Route 1. The unresolved controversy is on the age of some late(?) faulting and dike intrusion. Jack Rand contends it's still moving!

## AN APOLOGY....

To those members and interested persons that I inadvertently left behind in Walpole on Sunday morning. It wasn't Andy's or Arthur's fault. It was my responsibility to see that the Walpole contingent connected with the Sherman Lake contingent. I assumed incorrectly that all were assembled with Joe, Alice and the others in the Darling Center in the parking lot. My sincere apologies for the screw-up.

Carol White

## Maine Survey Notes:

**Mapping Programs:** Although the level of federal funding was considerably less during 1984, the MGS continued its diverse geologic mapping programs, with 20 contractors working on bedrock and surficial mapping projects in various parts of the state.

In northern Maine, Gary Boone carried out bedrock mapping in several quads in the Harrington Lake area, while Ruth Simmons (one of Gary's graduate students) continued her thesis work in the Northeast Carry-Moosehead Lake region. Lindley Hanson, Steve Pollock, and Dave Roy mapped in the Jo-Mary/Norcross, Caucomgomoc Lake, and Portage quads, respectively.

In eastern Maine, Ollie Gates continued his work in the Gardner Lake quad, and Al Ludman mapped in several quads in Washington County and the adjacent part of Penobscot County. Dave Wones investigated the igneous rocks of the Calais quad, which, along with Ludman's work in the Calais area, was part of a state-federal cooperative mapping project under the USGS COGEMAP program. Dick Gilman mapped in the Bar Harbor and Mt. Desert quads, as well as the Newfield-Kezar Falls area. Dick is also finishing the bedrock portion of a new MGS bulletin on the geology of Acadia National Park. The glacial section of this bulletin is being written by Hal Borns and Tom Lowell, and a geologic map of the park will accompany the report.

In southern Maine, Art Hussey carried out bedrock mapping in the Boothbay quad. The MGS also funded mapping by Don Newberg in the Palermo 7 1/2-minute quad, and by Phil Osberg in the Rockland quad.

Several other geologists conducted surficial mapping for the MGS basic mapping project and/or the MGS-USGS-DEP Gravel Aquifer Study. Sarah Miller, Woody Thompson, and Tom Weddle prepared sand and gravel aquifer maps for various parts of central and southwestern Maine. Dee Caldwell carried out additional work in the Katahdin quad (in preparation for a revised Baxter Park bulletin), while Bill Holland completed the detailed mapping of four 7 1/2-minute quads in the Kezar Falls area. Progress continued in northern Maine, where Steve Kite and Tom Lowell mapped in the Telos Lake and Seboomook Lake/Northeast Carry quads. In the southwestern part of the state, Jeff Smith worked on a detailed map of the Kennebunk quad, and Woody Thompson continued mapping of 7 1/2-minute quads in southern Oxford County.

**New Publications:** In addition to two new state bedrock and surficial geologic maps, the MGS is preparing a popular descriptive geology of the state. Authored by Robert Newman (Smithsonian Museum of Natural History), Woodrow Thompson, and Joseph Kelley, the bulletin is designed to provide the layperson with an overall description of Maine's bedrock and surficial materials and the processes responsible for their formation. Work on the new bulletin on the geology of Acadia National Park and a revised Baxter State Park bulletin is also progressing.

**Marine Geology Programs:** The MGS began the first year of a 5-year program funded by the

U.S. Department of the Interior to determine the quantity and quality of sand in, as well as the geologic history of, Maine's offshore areas. Seismic reflection profiles were collected from the shore out to a water depth of 300' (generally 10-15 miles offshore) from Kittery to Cape Elizabeth. Over 500 bottom samples were also collected to be analyzed for grain size, and percent carbon, carbonate, and heavy minerals.

Under the Crustal Warping Program funded by the Nuclear Regulatory Commission, seismic profiling was carried out in several bays along the Maine coast, including Oak, Cobscook, Passamaquoddy, and Penobscot Bays. Several cores were obtained from marshes primarily in Wells for determining former sea levels. Temporary tide gages were also installed at various locations.

## News From Orono:

Steve Norton has accepted a position as Acting Dean of Arts and Sciences and has moved into an office in Stevens Hall which is approximately twice the size of all 25 UMO Geology graduate student offices combined. Steve's position is for 1 year. In his absence Steve Kahl is directing the operations in the Boardman Hall Water and Sediment Chemistry Lab, and a new post-doc, Robert Stoeffler, is being taken on to direct the acid rain and other research projects Steve Norton is involved with.

Brad Hall in addition to becoming a GSM Director, has resumed his former role as Department Chairperson. When Brad is not managing the Department he is in India, working with Hal Borns to reconstruct Gondwana glaciations from the late Paleozoic. Brad and Hal's work is being done in an effort to relate the position of the continent to the South Pole with time.

The Orono Faculty now number in the low twenties, with as many as 5 new members being presently lured north. The largest segment of new faculty members belongs to the Appalachian Research Group. These new Orono researchers are trying to reconstruct the post-acadian thermal history of western Maine (and other neighboring regions). Led by metamorphic geologist Charlie Guidotti, the group includes geophysicist and paleoheat expert Ed Decker, geochronologist Dan Lux, and structural geologist and chief arm-waver Phil Osberg. Loosely associated with this group are sedimentologist Dan Belknap, coastal geologist Joe Kelley, and the infamous Brad Hall. Proposed new Appalachian Research staff include a new igneous geologist and a thermal modeler.

Specific projects of this group include constructing a time/depth cross section through the Maine Appalachians, and determining whether large igneous intrusions such as the Sebago Batholith really took 60 million years to cool 250°C. The Appalachian Research project was initially funded by EPSCORE, an NSF research program. Current funding is relying much less on EPSCORE, and more on outside sources.

Peter Magiori has been hired as a full time election microprobe operator, and may be available for doing outside work in the near future. Dan Lux has his K-Ar dating facility fully operational, and has agreed to discuss it at a forthcoming GSM meeting.

Finally, after all this news, some rumors. The faculty, currently outnumbering the grad students by a small margin, may be willing to offset this advantage by opening a PHD program. Two rumors I

haven't heard, but would like to start are that a new building will be constructed to house the 25 students in Aubert Hall, the 10 or so people in the Machine shop, the holdouts in Boardman Hall, and Steve Norton, who has staked a claim on Center Stevens. Finally, along with a new PHD program, I understand that retroactive doctorates will be given to those grad students who attended UMO on the multi-year plan in the 1970's.

JSW

### USGS Studies:

#### HYDROGEOLOGY OF SIGNIFICANT SAND AND GRAVEL AQUIFERS IN MAINE.

The U.S. Geological Survey, the Maine Geological Survey, and the Maine Department of Environmental Protection are currently involved in the fourth year of a proposed 7-year cooperative hydrogeologic study of significant sand and gravel aquifers. Major objectives of the study include identification of the significant aquifers and accurate mapping of their boundaries; collection and interpretation of data on yield, stratigraphy, depth to water table, and depth to bedrock; characterization of regional ground-water chemistry; and assessment of potential ground-water contamination sites.

The study area for 1984 (figure 1) covers 1400 square miles, which includes approximately 40 square miles of significant aquifers. Field work was started in the spring and should be completed by October.

The study area for 1985 (figure 1) covers 2300 square miles, which includes approximately 180 square miles of aquifers. The 1985 study will include the local regional planning commissions as cooperators with the previously mentioned state and federal agencies.

The project results for each study area will be presented in separate interpretive reports with 1:50,000-scale maps. The 1984 results, consisting of three reports, will be available from MGS in January 1986. The 1985 results will consist of seven reports and should be available from the MGS by January 1987. Reports for map areas 18,24,25,26,27,30,31, and 45 will include one or more maps (1:50,000 scale) and accompanying text. The maps will show locations of test wells, cross-sections, potential ground-water contamination sites, data on depth to water table, and depth to bedrock. Aquifer boundaries and estimated yields will also be shown. The text for each report will include a summary of the project objectives, methods of investigation, results, and conclusions. The following specific data and related interpretive discussions will also be included in the text: well inventory information, well logs, cross-sections seismic profiles, results from chemical analyses, and summaries of site investigations. The results of the investigations for Maps 21 and 22 will be presented in the MGS County Series. These reports will primarily be a summary of site investigations.

Questions concerning these studies can be directed either to Jim Adamik, U.S. Geological Survey, 26 Ganneston Drive, Augusta, ME 04330 (# 622-8208), to Andy Tolman, Maine Geological Survey, State House Station #22, Augusta, Maine 04333, (#289-2801) or to John Williams, Maine Department of Environmental Protection, State House Station #17, Augusta, Maine 04333, (#289-3355)

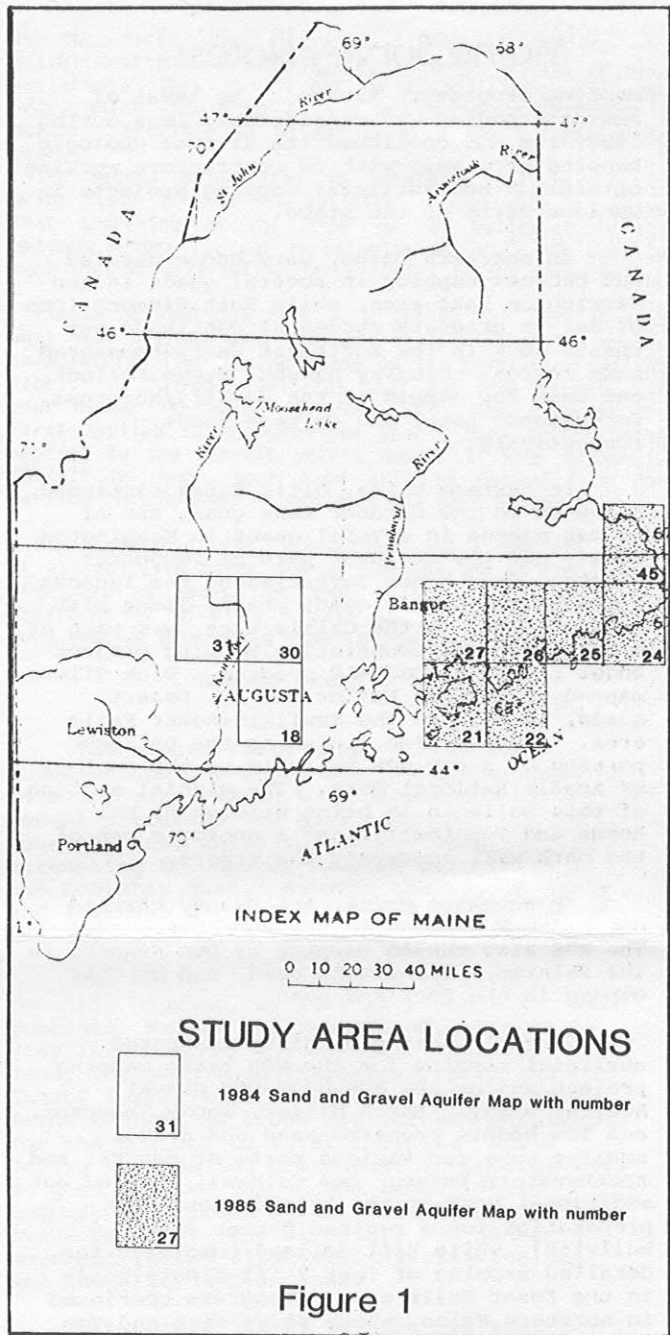


Figure 1

#### SACO RIVER AQUIFER STUDY

The Saco River Valley aquifer study is a quantitative assessment of the sand and gravel aquifer along the Saco River from North Conway, New Hampshire to Fryeburg, Maine. The study is funded cooperatively by the USGS, the MGS, the New Hampshire Water Supply and Pollution Control Commission and the town of North Conway. The study was started in October 1983 and will be completed by 1986.

The purposes of the study are to assess the quantity and quality of water available from the aquifer, to determine the effects of underground disposal of septage in the North Conway, New Hampshire area, and examine the affects of agriculture on ground water quality near Fryeburg, Maine.

During the past field season approximately 20 miles of seismic refraction profiling were completed to determine the geometry of the sand

and gravel deposits. Marine reflection profiling was done along the Saco River from East Conway, New Hampshire to Swans Falls to identify buried coarse grained sands and gravel. (There were some surprised looks on canoeists faces when they saw a 17' Boston Whaler chugging down the river). Test wells were augered at 55 locations to obtain information on stratigraphy, depth to bedrock and water level altitudes. Ground-water samples were taken at about 45 locations for chemical analysis. Seepage runs were conducted along the Saco River during periods of baseflow to determine ground-water contributions to streamflow. Small tributary streams are also being monitored to determine the amount of recharge they provide to the sand and gravel aquifer as they flow from upland areas across the stratified drift.

Plans for the next year include additional water quality sampling, modeling of ground-water flow in the aquifer, and additional geophysical work possibly including the use of radar to map the water table surface. Current budget cuts in the State of Maine threaten to reduce funding by approximately 40 percent. Such cuts would seriously hamper project activities. Anyone interested in the project should contact Dan Morrissey, Dorothy Tepper or Carole Johnson at the U.S. Geological Survey, 26 Ganneston Drive, Augusta, Maine 04330, (207) # 622-8208.

#### EVALUATION OF THE MAINE OBSERVATION WELL NETWORK

The evaluation of the Maine observation-well network has recently been completed. The results are presented in a report "The present and proposed ground-water program in Maine", which has

received approval for publication. It will be undergoing final drafting and should be available in 1985. The 1-year study was conducted by the U.S. Geological Survey with support from the Maine Geological Survey. The report presents designs for a statewide observation-well network and evaluation of the current observation wells.

Three networks were designed to provide reliable data to describe the effects of natural and manmade stress on water levels in the State. They are a climatic-effects network, a terrain-effects network, and a local-effects network. The climatic-effects network consists of wells in unconfined aquifers that show the effect of climate on shallow ground-water levels. The terrain-effects network consists of wells in confined and unconfined aquifers in a variety of topographic and hydrogeologic settings. The local-effects network consists of wells located near major pumping centers.

A review of the current observation well network resulted in deactivation of 15 wells. Fourteen wells were dropped from the network because of reliability problems and one was deactivated because it provided redundant data. The remaining 17 wells were each assigned to one of the three types of networks mentioned previously.

The report also recommends locations and hydrogeologic settings for additional wells needed to complete the statewide network.

Questions about this study should be directed to Jim Adamik, U.S. Geological Survey, 26 Ganneston Drive, Augusta, Maine 04330, (207) 622-8208 or to Andy Tolman, Maine Geological Survey, State House Station 22, Augusta, Maine, 04333 (207) 289-2801.

#### 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

## In Other News:

Melanie Lanctot, Water Resources Analyst at the MGS, attended the International Conference on Indoor Air Quality held in Stockholm, Sweden, August 20-24. Many of the papers given at the Conference concerned the occurrence of radon in the domestic environment. Melanie is currently involved in an epidemiological study to determine the relationship between radon and cancer. This research is co-sponsored by the MGS, the UMO Physics Department, Maine Medical Center, and the Maine Department of Human Services.

Walter Anderson, Art Hussey, Phil Osberg, Bob Newman, and Bill Forbes attended the IGCP symposium, "Evolution of the Caledonide-Appalachian Orogen", held September 3-8 in Glasgow, Scotland.

Alice Repsher Kelley is working as a geological consultant/graphic artist, out of her home in Orono. She's an experienced geologist and draftsman, and can be contacted at 866-3422. (Same day service for 35mm slides!)

### REGISTRATION INFORMATION FOR THE 76TH ANNUAL NEIGC CONFERENCE

Hosted by  
Department of Geological Sciences, Salem State College  
745-0556

**Dates:** October 12, 13, 14

**Headquarters:** Danvers, MA at the Inn At Danvers.

This year there will be a total of 27 different field trips encompassing a region from southwestern Maine to Boston and covering a wide variety of geologic interests.

### Northeastern Section

GSA

Host Farm Resort

Lancaster, Pennsylvania

March 13-16, 1985

Abstract deadline: Oct. 17, 1984

for information contact

Dr. William Jordan

Department of Earth Sciences

Millersville University

Millersville, Pennsylvania  
17551

(717)872-3289

Abstracts should be mailed to:

GSA Abstract Coordinator

P. O. Box 9140

Boulder, Colorado  
80301

84-85 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 Chris...

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