

# The Granite State Geologist



## Newsletter of the New Hampshire Geological Society

Suite 133 \* 26 South Main Street \* Concord, NH 03301  
Number 11 \* October 1994

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### Family Outing Was Successful

*Joanne McLaughlin*

On Saturday, June 11, the NHGS hosted a family outing at the Christa McAuliffe Planetarium. The guest speaker was Russell Kempton of the New England Meteoritical Services, who spoke on the history of the universe, meteorites, and their "impact" on the geology of the earth. The outing also featured a pizza party in the garden, the Planetarium's new "Pathfinders" show and a meteorite exhibit. Thanks, Russ, for giving us the opportunity to hold pieces of the oldest matter in the universe!

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### Evidence for Delayed Isostatic Rebound and Stable Sea Level?

*Greg Kirby*

On Saturday, August 6, 1994, over 50 NHGS members, relatives and friends attended the Fourth Annual NHGS Field Trip. Carl Koteff of the USGS was generous in donating a full day out of his busy schedule to lead this group to several excellent exposures of Pleistocene glacial and glaciomarine deposits in New Hampshire and Maine. Approximately 80 miles was covered by a car convoy of twenty automobiles. A near-cloudless day with temperatures in the low 80's helped make this a completely successful day in the field. The trip consisted of five stops (six were planned) where we observed evidence of a late-glacial marine invasion, including examples of glacial marine deltas, and drumlins reworked by the marine environment. The purpose was to show evidence of a stable sea level and a delayed isostatic rebound after glacial retreat in this region approximately 14,000 to 15,000 years before present.

At glaciomarine deltas in Rochester, NH and Wells, ME, Carl showed evidence of a 1,000-year stable sea level by explaining his process to measure delta topset/foreset bed contacts. These measurements recorded marine sea level elevations where topset beds were in contact with foreset beds. Carl's measurements were recorded with an accuracy of +/- 3 feet (1 meter), which provided a baseline for his model. Maintaining a stable sea level seems to require a delay in isostatic rebound after ice retreat.

Carl also explained that with the measurements of these contacts, in addition to carbon age dating, he was able to gather evidence supporting a sudden rise in sea level of approximately 20 to 30 feet (7 to 10 meters) that must have occurred within a period of only 50 to 100 years.

Carl showed us excellent examples of drumlins that were wave-modified by the late-glacial sea. Evidence of marine wave action was shown at two stops, Beach Hill in Madbury, NH and Great Hill in Eliot, ME. At these drumlins, we observed glacial till reworked by wind and current action and the re-deposition of this material along the drumlins. The marine and aeolian action ultimately modified the structures and axes of these drumlins

from a northwest-southeast axial trend to a more east-west direction. The extent of the reworking presented further evidence that the sea level must have been constant for an extended period.

NHGS wishes to express its gratitude to the landowners, the University of New Hampshire, the Town of Wells, ME, and the Maine Department of Transportation for allowing access to these stops. Also, we would like to thank Carl, and Tom Weddle of the Maine Geological Survey, for permission to use their October 1993 GSA Field Trip Guide for this field trip. Finally, NHGS thanks those members who helped to make this field trip a memorable success.

[Editor's Note: Special thanks to Greg Kirby for all his effort in putting together the field guide and road log, and for arranging for the boxed lunches!]

## **NHGS Annual Meeting, October 13, 1994**

NHGS is pleased to announce that Dr. Dykstra Eusden of Bates College, Lewiston, ME, will present "Bedrock Geology of the Presidential Range, New Hampshire." Dyk has recently completed his six-year study of the structure, stratigraphy and metamorphism of the alpine region of the Presidential Range, and has just submitted the map for review and approval with the NH State Geologist, Gene Boudette. NHGS feels honored to have Dyk provide us with new New Hampshire geology hot off the presses. This meeting is also the Annual Meeting of the Society, and members will be electing a new set of officers (the slate of candidates is published in this newsletter) and voting on a change in the Bylaws of the Society (also published in this newsletter). The dinner-meeting will be held on October 13, 1994, at the Sheraton-Tara Inn in Bedford, NH. A cash bar is provided with refreshments beginning at 6:00 p.m. A sit-down dinner will be provided with a choice of two entrees at 7:00 p.m. The cost for members and non-members is \$16.00 per person. For more information, contact Greg Kirby at 603-271-3624.

## **Annual Meeting Slate of Candidates**

Featured at the Society's Annual Meeting on Thursday, October 13, 1994, will be the election of officers. Presented here is the Slate of Candidates:

- For President:

Gregory Kirby.

BS, 1985, Geology and Geophysics, University of New Orleans. 1986-87, Graduate Studies, University of New Orleans. 1987-1991, Geologist/Project Manager, Various private consulting firms. 1991-Present, Geologist/Project Manager, NH-DES. 1992-Present, Member NHGS. 1993 to Present, Member GSA, Friends of Pleistocene. 1993-94 Vice President, Board of Directors, NHGS. 1993-94, Program Committee Chairman, NHGS. 1992 to Present, Vice Chairman, Merrimack Conservation Commission.

- For Vice President:

Nelson Eby.

BA, MS, Geology, Lehigh University. PhD, Geology, Boston University. Faculty member in the Department of Earth Sciences, U. Mass Lowell, since 1970. Charter member of NHGS. Known around the department as the "Old Rock Basher," I've bashed a few rocks in New Hampshire, mostly in the White Mountain magma series. Past chairman of the Burlington Conservation Commission, and a past president of the Lowell chapter of Sigma Xi. I'm interested in educational issues and would like to see the NHGS become more involved in public awareness activities.

- For Secretary:

Patricia (Tricia) A. Drobat.

I have been involved in the consulting end of the geological sciences for nearly four years as a field technician for Environmental Science and Engineering, Inc. My particular interests lie in geochemistry and its potential applications towards site remediation. In addition to employment at ESE, I am a full-time student at Keene State College, where I will receive my BS in Geology with a Chemistry minor in May. At KSC, I am President of GEODES, our own student geology club, as well as a laboratory instructor for entry level students. I am also an active member of the Keene Mineral Club. I feel that I could lend a slightly different perspective to the Board if elected, in that my experience bridges both academia and industry. I have plenty of energy to go around and would welcome the opportunity to serve the Society.

Wade Ewing.

BS, 1989, Environmental Science/Geology, University of Lowell. Has been working in the environmental consulting field for the past five years. Currently employed in the Bedford, New Hampshire, office off Haley & Aldrich, Inc. and working on various problems throughout the state. Member of the GSA, AGWSE, NGWA, NHGS (founding member), Sigma Gamma Epsilon and Sigma Xi. Interests include camping, hiking, computers, radio communications and bicycling.

Ken Milender.

BS, 1982, Geology, Tufts University. MS, 1987, Geological Sciences, University of Wisconsin. 1987-1990, Hydrogeologist, GZA. 1990-1192, Hydrogeologist, Fuss & O'Neill. 1992-present, Hydrogeologist, NH-DES, Water Resources Division. Member of NGWA, AEG, AIPG (application pending).

Leland (Lee) A. Wilder.

BA, Geology, 1964, University of New Hampshire. MEd, 1993, Administration and Supervision, University of New Hampshire. Board of Directors, NH Science Teachers Association-one of his major functions here is to organize and lead field trips and workshops for NH Earth-Space Science teachers. State contact person for the National Earth Science Teachers Association. Member, Hopkinton Conservation Commission. Current Secretary of the NHGS. Teaches Earth-Space Science at Rundlett Junior High School, Concord. Has taught college level Earth-Space Science courses. Married to Betsy (Osgood) and lives in Hopkinton, NH. They have a (married) daughter, living and going to school in Boston, MA.

- For Treasurer:

Craig Durrett.

BS, Geology, University of Rochester. I currently work for Wehran-EMCON Northeast as a hydrogeologist. I am a native of New Hampshire and a charter member of NHGS. Since I joined NHGS, I have been an active member, participating in meetings and field trips as well as helping out with the Program Committee and organization of field trips and events.

David Wyman.

BA, 1974, Geology, University of New Hampshire. BA, 1974, Chemistry, University of New Hampshire. Field Operations Manager, Normandeau Associates, Inc., 1974-81. President, Buoy Technology, Inc., 1981-present.

- For Member-at-Large (one position):

Pierre Bruno.

BS, 1984, Geology, Cleveland State University. MS, 1988, Geology, University of Akron. Additional graduate study in geology at Michigan State University. Pierre's interests are in glacial geology with respect to water resources, so he is a Friend of the Pleistocene. Pierre started with Environmental Science & Engineering (ESE) in Michigan and eventually moved to their Amherst, NH office. After a short stint with the NH-DES Solid Waste Compliance Section, he is currently employed with New England Environmental Associates in Concord, NH as Environmental Services Manager. In the 4th grade, Pierre tried to make rocks in his home utilizing water, sediment, sundry objects for weights (pressure) and Dad's torches. He was not successful because Dad stopped him

before the proper temperatures were reached. As a member of the NHGS Board, "I hope to encourage well-attended meetings with stimulating speakers and increase opportunities for educational exchanges between members."

Charles (Chuck) Franks.

BS, 1972, Geology, University of Missouri, Kansas City. 1964-68: USASA (Caribbean/Far East) special Analyst. 1972-73: Missouri Clean Water Commission, Pollution Control Tech. 1973-86: Woodward Clyde Consultants (Kansas City) Engineering Geology; Alaska Pipeline, Algeria, Saudi Arabia, Guyana, nearly every AB Brewery in Continental US, Drilling Technology, Blasting Design and monitoring, Applied Rock Mechanics design, Remedial Rock Mechanics, Geotechnical Instrumentation equipment design and application, Applied Engineering Geophysics, plus other duties as assigned. 1986-present: US-EPA Region I (Boston, MA) Waste Management Division; RCRA site manager, closure lead, landfill lead, manager of the state landfill permit approval program, peer support for remedial site characterization, GIS application and modeling development, plus other duties as assigned.

John Lyons.

BA, 1938, Geology, Harvard University. MA, 1939, Geology, Harvard University. PhD, 1942, Geology, Harvard University. 1946-1987, Professor of Geology, Dartmouth College. 1987-present, Professor Emeritus, Dartmouth College. Fellow: GSA, MSA, Arctic Institute of North America.

Michael Metcalf.

No biography available at press time.

Peter Richards.

BS, 1984, Geology, Syracuse University. MS, 1990, Geology, University of New Hampshire. He is a certified geologist in the State of Maine and is a certified professional geologist through the AIPG. Besides the NHGS and AIPG, he is a member of the NGWA and the GSA. Currently with Wehran EMCON Northeast, Inc. (Andover, MA), he has worked for Leggette, Brashears and Graham, Inc. (Nashua, NH) and Haley and Aldrich, Inc. (Cambridge, MA) conducting environmental site assessments and groundwater investigations.

The Nominating Committee consisted of Bob Luhrs and Dorothy Richter.

## Proposed Bylaw Change

The Board of Directors proposes the following change to the Bylaws of the Society:

Current:

Article IV: Officers

Section B. The officers shall be elected for a term of one year each, one member at large of the Board of Directors for a term of two years and second member for one year, by a majority of members present at the Annual Corporate Meeting.

Proposed:

Article IV: Officers

Section B. The officers shall be elected for a term of one year each. The Members-at-Large of the Board of Directors shall be elected for a term of two years each, with their terms staggered and overlapping such that only one Member-at-Large will be elected each year.

Rationale: This change will ensure continuity in the Board of Directors and the direction of the Society, as each year there will always be at least two members of the Board returning, the Past President and the continuing Member at Large.

Current Situation: Last year, two Members-at-Large were elected: Tim Allen to a two-year term, and John Cotton to a one-year term. Thus one Member-at-Large position is open for election this year.

Implementation: Passage of amendments to the Constitution or changes to the Bylaws require a two-thirds vote of members voting at the Annual meeting. If this change is approved, the Board suggests immediate implementation, such that the Member-at-Large elected at this meeting would be elected for a two-year term.

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## NHGS News and Events

The **NHGS Annual Meeting** will be held Thursday, October 13, 1994, at the Sheraton-Tara Inn in Bedford, NH. Dr. Dykstra Eusden of Bates College, Lewiston, ME, will present "Bedrock Geology of the Presidential Range, New Hampshire." Dyk has recently completed his six-year study of the structure, stratigraphy and metamorphism of the alpine region of the Presidential Range, and has just submitted the map for review and approval with the NH State Geologist, Gene Boudette. We are honored to have Dyk provide us with new New Hampshire geology "hot off the presses." This meeting will also feature the election of a new set of officers (the slate of candidates is published in this newsletter) and voting on a change in the Bylaws of the Society (also published in this newsletter). A cash bar will be provided with refreshments beginning at 6:00 p.m. A sit-down dinner with a choice of two entrees will begin at 7:00 p.m. The cost for members and non-members is \$16.00 per person. For more information, contact Greg Kirby at 603-271-3624.

**Future Meetings** are scheduled for January 12, April 13, June 8 (tentative), and October 12, 1995, with a field trip August 5, 1995. For reference, the Society schedules its meetings for the second Thursday of the appropriate month, and its field trip for the first Saturday in August.

The **AEG New England Section** will be hosting the following meetings:

- Oct. 20, 1994: Arthur Socolow, Sand and Gravel Resources of New England, an Engineering Resource
- Nov. 10, 1994: Peter Church, Effectiveness of Highway Drainage Systems in Preventing Road Salt from Contaminating Ground Water
- Dec. 15, 1994: Stan Rossier, So You Think Our Dig is Big! Planning for the Panama Canal in the 21st Century
- Jan. 19, 1995: Richard Heely, Buried Valleys: Buried Treasure or Buried Trouble.

Future dates are Feb. 16, Mar. 25, Apr. 20, and May 18, 1995. For more information contact Erik Bankey at Massport: 617-973-5389 or FAX 617-973-5395. It is hoped that none of these dates conflict with the NHGS!

The NHGS is always looking for speakers and field trip leaders. If interested, please submit a topic and abstract to the Program Committee or a member of the Board.

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