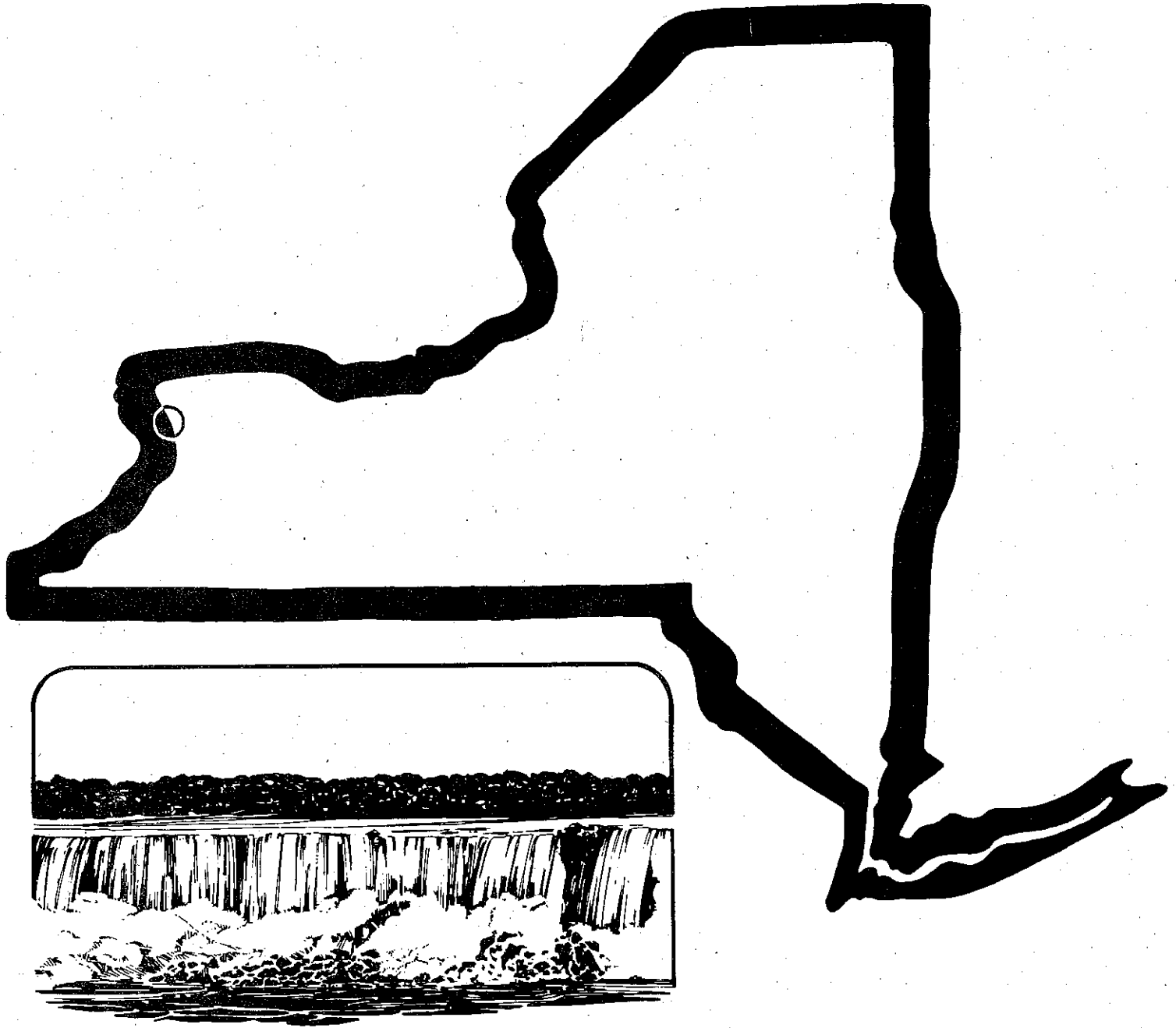


P. F. KATROW

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# NEW YORK GLACIOGRAM



DEPARTMENT OF GEOLOGY

University at Buffalo  
Buffalo, New York 14260

EDITORIAL POLICY

The GLACIOGRAM is intended to be a collection of informal notes concentrated on Quaternary work relating to New York either directly or indirectly. It is not a formal publication and is not circulated to libraries, nor to individuals not engaged in Quaternary research. The information included is often of a preliminary and tentative nature and as such should not be quoted and certainly not without communication with the appropriate authors. It is suggested that reference to information in the GLACIOGRAM be identified merely as informal communication.

Parker E. Calkin

Paul Bierman---Geology, University of Vermont

We have been working busily to re-establish Quaternary Geology and Geomorphology at the University of Vermont. I have four masters candidates with a fifth scheduled to arrive in January. Amy Church, recent recipient of the GSA Mackin award, is studying the record of Holocene hillslope denudation preserved in small (4000 m<sup>3</sup>) alluvial fans in western Vermont. The stratigraphy is complex, the charcoal plentiful and her initial data are intriguing showing an episode of rapid deposition 8000-7500 years ago. Pat Larsen has been sampling glacially polished bedrock and boulder surfaces in northern New Jersey with the goal of understanding better the history of these rock surfaces and better constraining the production rates of <sup>10</sup>Be and <sup>26</sup>Al over the past 20 ky. He's been processing his samples in our renovated cosmogenic extraction lab and making isotopic measurements in collaboration with Lawrence Livermore Laboratory. Lin Li just joined us from China and will be coring several Vermont ponds at a variety of elevations in order to learn more about Holocene vegetation change and fire frequency. Kim Marsella is mapping glacial moraines and collecting <sup>10</sup>Be and <sup>26</sup>Al samples on Baffin Island in order to understand the timing of deglaciation. Tim Whalen will be working with me and our department chair, Barry Doolan, mapping Lake Vermont shorelines and modeling the deglacial isostatic response.

We have just defined a new Environmental Geology path through our major and classes in Geomorphology, Geohydrology and Environmental Geology are full up. Research and teaching in surface processes will continue to expand at UVM with two new hires. Andrea Lini (coming to us from ETH Zurich) will start analyzing carbonates and natural waters in our stable isotope lab this spring. A yet to be selected Limnologist will be a pivotal part of the new Lake Studies program.

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Parker E. Calkin---Geology, University at Buffalo

Grad student Michael Liener has completed a 1:62,500-scale surficial geology map of Monroe County and also developed cross-sections compiled from subsurface logs across the county. I thank Dick Young for his considerable help on this project.

Except for a brief excursion to look for evidence of faulting in the glacial deposits of Allegheny County, and the Young and Sirkin NYSGA field trip (see Karrow and also Sirkin reports this issue), I have barely looked at glacial deposits in New York. For the most part this year, my thoughts have been on the Gulf of Alaska and Antarctica. I will go to Marie Byrd Land at the end of this month until mid January.

The UB Department of Geology will host the 1996 Northeastern Section annual meeting of GSA during 20-22 March. Subject to modification of the titles, I am planning with Dick Young's help to organize a Symposium or Theme Session related to pre-Late Wisconsin glacial or climatic history of eastern North America. In addition, Paul Karrow will help organize a session related to glacial drainage. I hope all of you will consider contributing to one or both of these proposed topics when the time comes.

I include below an announcement from Yvonne Herman, Dept. of Geology, Washington State University, on behalf of the U.S. National Committee for INQUA. -

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## ANNOUNCEMENT

### Travel Grant Program to the XIV INQUA Congress Berlin, Germany; August 1995

The American Geophysical Union jointly with the U.S. National Committee for the International Union of Quaternary Research (USNC/INQUA), is expecting to obtain funding for its travel grant program to the XIV INQUA Congress in Berlin, Germany, August 3-10, 1995. Pre and post congress field excursions are planned. The U.S. National Committee, under the sponsorship of AGU, and with the cooperation of the American Quaternary Association (AMQUA), seeks to ensure appropriate U.S. representation by providing travel grants to enable Quaternary scientists residing the United States (regardless of citizenship) to participate in the activities of the congress. Travel grants, which will cover only a portion of a participant's expenses (mainly airfare), are to be awarded competitively, in part on the evaluation of papers submitted for presentation at the congress. The Awards Subcommittee also plans special consideration for those judged to benefit most by participation at this important international event.

*Deadline.* The completed application, including the abstract of your paper and a one page curriculum vitae, must be received or postmarked by January 31, 1995.

*Stipulated Requirements.* Grantees will be required to use U.S. flag carrier to the extent possible and to file a meaningful trip report (emphasizing the benefits of attendance) within 60 days of the end of the congress.

*Grant Announcements.* The committee aims to announce the travel awards by early spring of 1995. However, some awards may be made later because of cancellations or delays in availability of funding.

Travel grant applications and detailed instructions are available from:

Anne Linn  
USNC/INQUA-HA-460  
National Academy of Sciences  
2101 Constitution Ave NW  
Washington, DC 20418  
(for applications by phone call (202) 334-2744

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David J. DeSimone---Geology, Williams College

-----I wonder if we eastern glacial folks would benefit from a shared list of e-mail addresses? It would be more useful to have our own network rather than the quaternary@morgan digest<sup>1</sup> which never seems to have much of interest in it for me!

Research this summer took me far from New York to the Absarokas and Beartooths of Wyoming and Montana. This was another Keck project which lasted four weeks and consumed some travel and prep time besides. The alpine features there are glorious and it was a treat to spend the summer at or near 10,000 ft and miss the heat and humidity and thunderstorms in the east. Unfortunately, lightning damaged my satellite dish, receiver and totaled my VCR... but before I left! And the lightning in the west is just spectacular, wow!

Much nearer to New York, I got back a <sup>14</sup>C date on material recovered from a depth of 216 ft in a 576-ft boring in southern Vermont. The date is greater than 63,300, I've just begun to analyze the boring logs in the hope of coming up with a stratigraphic interpretation. A quick glance suggests perhaps two tills above this buried peaty material and one till beneath. With luck, I'll come up with something to share with you all for GSA in March. I'd like some feedback if any of you out there are or have recently done some work on multiple till sequences in surrounding areas. Contact me.

Look for a poster by Damian Saffer ('95, Williams) and Ed Madera ('95, Wesleyan) describing the results of their research with me last summer in the NY-VT-MA tri-state locale. It may prove very interesting, especially as these guys had just completed their sophomore years. Some nice research.

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<sup>1</sup> Quaternary Listserv - to subscribe, send the message to listserv@morgan.ucs.mun.ca - SUBSCRIBE QUATERNARY Your Name. To get off the list, send the message: SIGNOFF QUATERNARY to the same address. (Ed.)

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P.J. Fleisher----Earth Sciences, SUNY, College at Oneonta

### Comments on the Bering Glacier Surge

As party chief for BERG, the New York-based Bering Glacier Research Group\*, I'd like to borrow from our AGU abstract and briefly report on the methods and results of our multi-seasonal investigation of the 1993-94 surge of Bering Glacier. Movement at the surging ice-front was monitored by airborne videography linked to a simultaneously recorded GPS. Surveys using this newly developed system were flown in October and November, 1993, and again in January, March, June and October of 1994. The resulting maps show differentially-corrected ( $\pm 10$  m) ice-marginal positions along the entire piedmont lobe. In addition, we used conventional aerial photos for detailed measurements of continuous ice-front movement on eastern foreland islands, from September, 1993 through March, 1994 from which we determined that average rates of daily advance ranged from 3.1 to 7.1 m/day throughout the winter, but slowing to 1.4 to 2.0 m/day by early summer, 1994.

Small-scale movement during six to twelve hour intervals were also recorded by a sheltered video camera placed within meters of the ice-front to capture oblique time-lapse views of basal sliding at rates of 1-2 mm/minute. Movement along stacked, low-angle thrust plates accounts for much of the observed ice-marginal thickening.

It appears as though summer measurements of declining rates of advance did indeed signal the waning stages of surge activity along the eastern sector. With additional field work in October, we found that end moraines, formed in late July, marked the maximum extent of advance on the eastern foreland. This has been followed by rapid retreat as accelerated melting degrades the highly fractured ice-front. During the 94 days between late July and late October, field measurements of 20-23 m and 30 m of retreat were recorded at two surface survey stations on Weeping Peat Island, and 13 m on Bentwood Island.

The end of surging advance coincides with an abrupt and catastrophic jokulhlaup discharge from a subglacial vent into an ice-contact lake at the end of July (to be reported by Bruce Molnia at AGU in December). BERG mapping in October indicates that progressive headward sapping and collapse formed an ice canyon 70 m deep, 130 m wide and nearly a kilometer in length over the loci of a subglacial conduit system that fed the outburst. Similar hlaup-type meltwater discharge from a comparable subglacial conduit system was captured in photos by Austin Post during the 1966 surge.

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Paul F. Karrow----Earth Sciences, University of Waterloo

There is an old Mennonite saying around here, "the hurrier I go, the behinder I get". When I get your requests for Glaciogram submission, about the first thing I do is look to see what I said last time. It is discouraging to see so many things still in progress, rather than completed!

K. Rajakaruna did complete his M.Sc. study of part of the Waterloo moraine subsurface stratigraphy, but S. Gautrey is still working on completing his further study of the moraine. It is based in the southern part of the moraine and will complement (and complete) a comprehensive drilling program, parts of which were the subject of earlier studies by V. Paloschi, K. Rajakaruna, and me. A paper has been submitted.

The buried valley paper with John Greenhouse is now in press in CJES. Papers on Lake Algonquin and west coast Washington have been submitted.

I attended AMQUA and the St. Anthony's Falls field trip led by Herb Wright. I was struck by the similarity of the gorge and its story to the other classic study of falls retreat at Niagara. After the meeting I visited two students doing geoaerchology M.Sc. theses: Andy Stuart is working on the Sibley Peninsula near Thunder Bay examining Superior basin lake levels and Paleo-Indian history; Remi Farvacque on the east shore of Lake Superior at Pukaskwa National Park has completed paleoenvironmental field studies in relation to past lake levels and archeological sites.

Another paper with John Coakley (CCIW, Burlington) examines water level changes in western Lake Ontario and is in press with CJES. As a reviewer, Ernie Muller drew attention to the discordance of conclusions with Dick Young's account of the level of Early Lake Ontario at Rochester which appeared in the Glaciogram a year ago. We did discuss, as mentioned by Ernie in last April's issue, a small workshop but it didn't happen. What did happen is that I talked to Mike Lewis who did some work on Lake Ontario last summer off Rochester. He was able to supply some new data to Dick by the time of the NYSGA field Trip in October, which I attended. It now appears that the pine pollen and the 9300 year date (on peat) are compatible and correct and the two dates of 11,790 and 11,340 on organic silt are incorrect (old carbon error?), allowing a compatible lower Early Lake Ontario level north of Rochester. Dick may well offer further comment on this.

The second focus of Dick's trip was on the stratigraphy and Mid-Wisconsinan organics in gravel pits south of Rochester. The problem is to relate the organics to glacial events which followed them and transported the organics from unknown sources to the north. Some day, undisturbed stratigraphy may be discovered but in my view the dates still hang rather loosely. There is clearly an important stratigraphic sequence there.



Two new students have joined the lab group here. Astride Silis, cosupervized by Denis Delorme (CCIW) is studying ostracodes in Lake Algonquin and Nipissing sediments in southwestern Ontario. Roger Paulen plans to map an area near Timmins with the GSC next summer, probably tied to drift prospecting. Meanwhile, Jenny Yang continues her study of marls near Kitchener.

Our stable isotope geochemist, Tom Edwards, is in Germany on sabbatical. He was in Russia part of the summer with several others on a large collaborative climate study.

I did return to Manitoulin Island briefly early last summer to survey shorelines. A new profile at Whitefish Falls may provide additional data on the lowest water levels of the declining Algonquin series. It is hoped to continue the search northward on the mainland in spring 1995, unfortunately at the time of NC G.S.A. in Lincoln, in order to work in the bush before leaves are out.

Owen White and I are editing a proposed Special Paper volume for the G.A.C. on urban geology of Canadian cities. A symposium of 18 papers was held at the G.A.C. meeting here in May. We anticipate including papers on Victoria, Vancouver, Edmonton, Calgary, Saskatoon, Regina, Winnipeg, Sault Ste. Marie, Windsor, London, Kitchener, Niagara Falls, Toronto, Ottawa, Montreal, Sherbrooke, Fredericton, Halifax and St. John's.

Just today (Nov. 2) I received word of the death of Lyman Chapman, coauthor of the long-standing classic, "Physiography of Southern Ontario". This publication went through three editions (1951, 1966, 1984) and is a standard reference on glacial features of southern Ontario.

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Mike Lewis,  
Geological Survey of Canada, Box 1006, Dartmouth N.S., B2Y 4A2

Earlier this year, I prepared a review and synthesis of the lakes of the Huron basin (spanning 18-7 ka) with particular reference to runoff and meltwater from the Laurentide Ice Sheet. This paper, for Quaternary Science Reviews, puts much of our new work in Lake Huron and Georgian Bay, with Dave Rea and Ted Moore from the University of Michigan and their associates, into a regional context.

In May, Peter Barnett (Ontario Geological Survey) and I had the pleasure of chairing a session on "The onshore-offshore geology of the Great Lakes Basins" at the Annual Meeting of the Geological Association of Canada in Waterloo, Ontario.

This summer, Steve Blasco (also GSC) and I examined the bedrock and Quaternary section underlying parts of the eastern Great Lakes for structural and neotectonic features. We used submersibles from the Canadian Navy and Harbor Branch Oceanographic Institute as well as a Canadian Coast Guard ship. Steve and colleagues worked mostly in Georgian Bay and I with colleagues worked at issues in Lake Ontario mostly but we did collect a few cores in Lakes Huron and Erie as well.

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Norton Miller, Biological Survey, New York State Museum

Excavations in October 1994 associated with the installation of a new waste-water treatment plant at the Washington Correctional Facility, Comstock, New York (northeast of Fort Ann, northern Washington County) uncovered a complex stratigraphy consisting of several discrete clay beds, peat, and a thick layer of plant detritus containing logs, some up to 60 cm in diameter. Both gymnosperm and angiosperm wood is present. The plant detritus consists of wood fragments and plant parts, including seeds and fruits of various deciduous trees and cones of conifers, for example eastern hemlock. The plants represented appear largely to be species that now occur in east-central New York, which therefore suggests that the section is Holocene, despite its stratigraphic complexity. Samples for pollen and plant macrofossil analyses and radiocarbon dating were taken. The exposure is located below a terrace that is above the Barge (Champlain) Canal. The sediments appear to record various episodes of slack water (ponds or shallow lakes) along the river between the Lake Champlain basin and the drainage basin to the south, which connects to the Hudson River. There have been few studies of Holocene plant macrofossil deposits in New York or elsewhere in glaciated parts of North America. Information from this deposit should help validate biogeographic conclusions based on pollen, as well as contribute to an understanding of the drainage history of lake basins in eastern New York. Bob LaFleur (Rensselaer Polytechnic Institute) and Norton Miller are collaborating on this research.

## Fritz Nelson---Geography &amp; Planning, SUNY, Albany

Fritz Nelson of Rutgers University will join the faculty in the Department of Geography and Planning at SUNY-Albany, effective July 1, 1994. He will hold cross-appointments in the graduate programs of the Departments of Atmospheric Sciences and Geological Sciences at Albany. At Rutgers, Fritz has given courses in permafrost and periglacial geomorphology, physical geography, field techniques and Quaternary science. He also gave a graduate seminar in periglacial geomorphology in the Department of Geological Sciences at Cornell in 1992, and taught geomorphology at the undergraduate level there in 1993 during Art Bloom's sabbatical. He will offer similar courses at Albany, where a Ph.D. program in Geography is being prepared and an interdisciplinary graduate program focused on global change is almost ready to be launched. The latter program involves the Departments of Geography and Planning, Atmospheric Sciences, Biological Sciences, and Geological Sciences. Funds have been dedicated to support several generous fellowships and assistantships for graduate students working on topics related to global change.

Graduate student Susan Millar, working under the direction of Fritz Nelson at Rutgers, spent the 1993 field season finishing up field work in Alaska and southwestern New York under the auspices of an NSF Doctoral Dissertation award. Her project involves comparative analytical work on macrofabric data from active solifluction lobes at Eagle Summit, Alaska, the Tanana Formation in the Fairbanks area, and colluvial deposits in the Salamanca Reentrant in Allegheny State Park. By comparing the Eagle Summit data with those collected at the Fairbanks and Salamanca sites, Susan is assessing the utility of fabric analysis as a tool for identifying relict solifluction deposits.

Kaye Everett (Ohio State), Fritz Nelson, and Jerry Brown (International Permafrost Association) are continuing work on their active-layer project on Alaska's North Slope in association with NSF's larger ARCSS/LAH/FLUX project. Accomplishments in 1993 include establishment of UTM-registered observational grids (in collaboration with Skip Walker of the University of Colorado) at Happy Valley, Prudhoe West Dock, and at Barrow. Data loggers were installed at the first two sites; high-frequency ground temperature measurements were begun in June and will proceed continuously on a year-round basis. Thaw data were collected at all sites in late August using a variety of sampling designs. Grad student John Fagan (Rutgers) is working up the observational data and evaluating the effectiveness of the various sampling methodologies in simulated ice-rich terrain. Results to date show that despite high summer temperatures during the 1990s, the active layer is thinner at Barrow than it was during the 1960s. Variations in soil moisture appear to be a major factor behind this situation and will be monitored henceforth as part of this project. Everett, Brown, and Yuri Shur (University of Alaska) made a late autumn trip to Barrow to replicate a soil coring project undertaken by CRREL in 1963. Resampling of the Barrow site is planned this spring by Ken Hinkel (University of Cincinnati), who with Sam Outcalt (University of Michigan) is directing a project on the use of soil electric potential to monitor coupled heat and water flow in the active layer at the Barrow and Happy Valley sites.

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Les Sirkin----Earth Sciences, Adelphi University

As a participant in and contributor to the NYSGA meeting at Rochester this year, I want to congratulate Dick Young on the excellent glacial trip he led in the Genesee Valley (I was co-leader and take little credit for the success of the trip, only some of the data). Dick made a good case, I think, for the mid-Wisconsinan events in this region. This suggests to me a possible topic for Parker's symposium at next years NEGSA: Pre-late Wisconsinan, Pleistocene history in eastern North America.

I would also like to inform the Friends of the Glaciogram that I published a book this year entitled "Block Island Geology." The text includes a review of geologic history, geologic processes and glaciation in this part of southern New England, as well as a selection of field trips on the Island, maps, diagrams, and photographs. It is available for \$15 plus postage (for example, priority mail at \$2.90).

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Robert Thorson---Geology, University of Connecticut

After many years of keeping my nose out of some of the more contentious issues in regional Quaternary Geology, I have written a review paper that is in the final stages of review for the GSA Bulletin. It is titled "Deglacial Eolian Regimes in New England" and should be out within a year or so. If anyone wishes to discuss this prior to publication, please contact me at UCONN (phone 486-1396; email thorson@uconnvm.edu).

Additionally, Bill Niering (Connecticut College; botany) and I (UCONN; geology) are coordinating a theme session for the next GSA sectional meeting in Cromwell, CT. It is titled "The Geologic Record of Freshwater Wetlands" and will emphasize the lithostratigraphic records available. Watch the upcoming announcement for details. Everyone working on the subject is encouraged to submit and abstract.

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Richard A. Young---Geology, SUNY at Geneseo

REFINED AGES FOR MIDDLE WISCONSIN PEAT AND BONE,  
GENESEE VALLEY, NY

As reported in the October 1994 NYSGA Guidebook (p. 89-115; Table 1), the radiocarbon AMS ages on the Middle Wisconsin site in northern Livingston County (Genesee Valley) have been refined by the addition of a carefully rerun amino acid extraction age (INSTAAR) on the mastodon(?) bone (45,800+/-2800 BP) and a finite age on well-preserved wood (46,337+/-2982 BP) associated with the lowest peat-bearing till and outwash sequence. These reworked wood and bone samples are sandwiched between lacustrine silty clays that have given several ages in the 34,000 to 36,000 BP range. A logical scenario for the site would involve peat of Port Talbot I age (warming following Heinrich ice berg event H5) incorporated in till from an advance around 35,000 BP. This Middle Wisconsin advanced would correspond with the H4 cooling event of the same age in the North Atlantic cores. The entire sequence could be contained in the interval between Interstadial Numbers 12 through 8. The implication is now strong that Middle Wisconsin ice crossed Lake Ontario between the Port Talbot and Plum Point Interstades and advanced at least 45 km southward along the Genesee Valley. These results support earlier radiocarbon evidence of ice damming in the Cayuga Lake trough at about the same time as well as events associated with the Titusville Till advance in northwestern Pennsylvania.

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