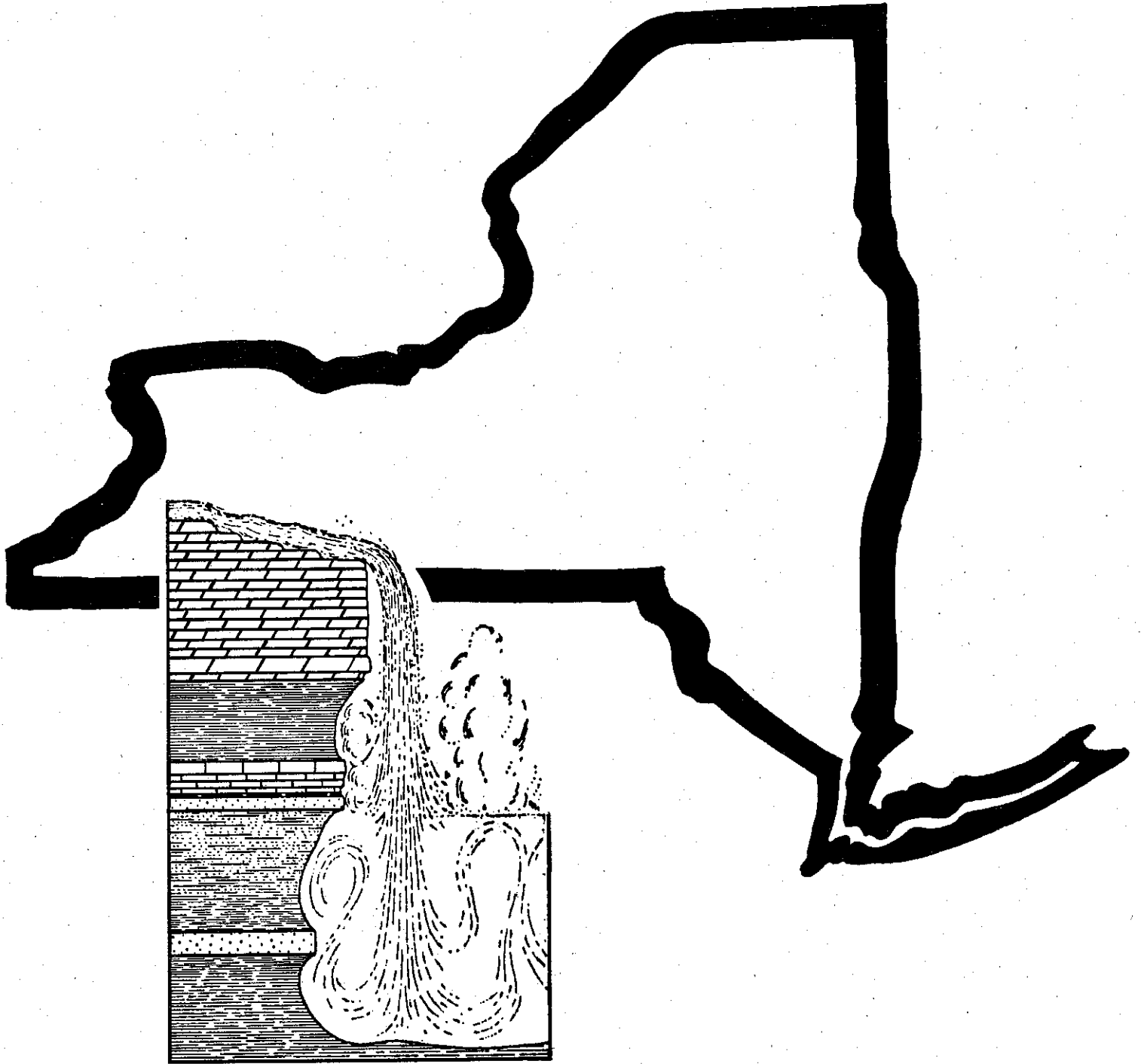


VOLUME 11, NUMBER 1 • APRIL 1976

# NEW YORK GLACIOGRAM



**DEPARTMENT OF GEOLOGICAL SCIENCES**

State University of New York at Buffalo  
Buffalo, New York 14207

## 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 appropriate authors. One of the charter contributors (Guller, v. 6(1)) has suggested that reference to information in the GLACIOGRAM be identified merely as informal communication; we agree with this suggestion.

Parker E. Calkin and G. Gordon Connally

Robert F. Black - Geology, Univ. of Connecticut

Off to western Aleutian Islands on studies of Late Quaternary history on NSF Grant. En route stop at Juneau Icefield for lecture of field types. Sabbatical leave next fall with extra time in Australia after I return Geol. Congress.

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Donald R. Coates - Geology, SUNY/Binghamton

This has been a very good year at SUNY/Binghamton. We finished the St. Lawrence project and uncovered enough new and controversial information that would make a revisit by the FOTF an interesting challenge. Dr. Jorge Rabassa, a Fullbright Scholar from the Bariloche Foundation of Argentina has been with us during the academic year and has provided much color and dialogue to our glacial program.

Our Seventh Annual Geomorphology Symposium is now finalized (See program below) and we feel the topic "Geomorphology and Engineering" should attract widespread interest. At least six of the papers...those by Krieg, Fakundiny, Legget, Olson, Philbrick, and Swanson...are in glaciated terrane and discuss materials of interest to glacialists.

The summer will be spent in diverse ways. I am directing at least four graduate theses and several independent research projects on glacial topics. I will be doing a variety of consulting including siting of sanitary landfills, writing of geologic source reports (NYS DOT), and work on condemnation cases (NYS Attorney General). Much of June will be spent editing and writing the volume on Landslides for the Geological Society of America. In addition to developing more data on the glacial problems I have been preparing, I plan a return to some of the coastal projects on the south shore of Long Island and at Cape Hatteras, North Carolina. Thus I have planned a spectrum of activities that should alternately keep me in and out of trouble.

7th Annual Geomorphology Symposium

PROGRAM

(September 24, 25, 1976)

9:00 a.m.

Morning Session. Methods and Mapping Introductory Remarks. SUNY/Binghamton staff "Landuse Contributions of Soil Survey with Geomorphology and Engineering" G. W. Olson, New York State College of Agriculture and Life Sciences "Mapping of Mountain Soils west of Denver, Colorado for Landuse Planning" P. W. Schmidt and K. L. Pierce, U.S. Geological Survey. "Preconstruction Evaluation for the TransAlaska Pipeline Project" R. A. Krieg, and R. D. Reger, R & M Consultants, Inc.

1:30 p.m.

Afternoon Session. River Engineering. "The Mississippi River Flood of 1973" C. C. Noble, U.S. Army Corps of Engineers (ret.). "Geological Control of Sand Boils along Mississippi River Levees" C. C. Kolb, U.S. Army Corps of Engineers (ret.)

Channelization: Environmental, Geomorphic, and Engineering Aspects" E. A. Keller, University of California, Santa Barbara. "Drainage Basin Characteristics Applied to Hydraulic Design and Water Resources Management" J. F. Orsborn, Washington State University.

8:45 p.m.

Evening Program. Geomorphic Synthesis. "River Management Criteria for Oregon and Washington" L. Palmer, Portland State University. "The Role of Geomorphology in Planning" R. F. Legget, National Research Council of Canada (ret.)

9:00 a.m.

Morning Session. Resource Engineering. "Kinzua Dam and the Glacial Foreland" S. S. Philbrick, U.S. Army Corps of Engineers (ret.). "Timber Harvesting, Mass Erosion, and Steepland Forest Geomorphology in the Pacific Northwest" D. N. Swanston and F. J. Swanson, U. S. Forest Service and University of Oregon. "Forecasting the Effect of Landuse Plans upon the Regional Market Conditions of the Sand and Gravel Business" R. H. Fakundiny, New York Geological Survey. Urbanization Effects. "The Urbanization River: a Case Study in the Maryland Piedmont" H. L. Fox, U.S. Soil Conservation Service.

1:00 p.m.

Afternoon Session. Urbanization Effects. "Geomorphology and Engineering Control of Landslides" F. Beach Leighton, Leighton Associates, Inc. "Scientific and Engineering Parameters in Planning and Development of a Landfill Site in Pennsylvania" R. W. Foose and P. W. Hess, Amherst College and Hershey Foods Corp. Discussion Session and Concluding Remarks.

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Thomas M. Cronin - Geology, Harvard University

My work on Champlain Sea Foraminifera and Ostracoda has progressed and has yielded significant paleoenvironmental data on late Wisconsin climates of the St. Lawrence and Champlain Valleys. More than 55 foraminiferal and 35 ostracode species have been recognized, all of which are extant. The fauna consists of an interesting mixture of normal marine and brackish water species signifying temporally and geographically variable salinities. Water temperatures varied in a similar manner, particularly during the final phase of the sea where arctic and cold temperate ostracode species are found associated with each other. A complex paleo-oceanographical situation from 10,500 to 10,000 yrs B.P. resulted from mixing of warm, marine water from the Atlantic Ocean with cold, fresh water from the melting ice sheet and probably the draining of Lake Algonquin. The paleoenvironments at the close of the Pleistocene will be discussed in a paper in preparation on the last stage of the Champlain Sea.

Our knowledge of the absolute age of the sea in the Champlain Valley has been greatly increased thanks to the help of Walt Newman and Richard Pardi of Queens College Radiocarbon Laboratory, who kindly dated two of my samples. I intentionally selected samples that I thought would give old and young dates and sure enough, the age of deposits in the Champlain Valley can be predicted to some extent on the

basis of altitude ASL. QC-199 from about 130' gave 10,300 ± 180 while QC-200 was 11,665 ± 175. The latter is the oldest date from the U.S. and 10,300 is the youngest from New York.

I will be speaking on the Foraminifera and Ostracoda at the Colloquium on the Quaternary of Quebec in October at Trois-Rivieres and am looking forward to speaking with those concerned with the interrelationship between Great Lakes and St. Lawrence Wisconsin history, a subject that needs considerable work.

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George H. Crowl - Geology, Ohio Wesleyan University

I have spent much of the winter compiling a map and my part of a joint paper with Bill Leon on The Woodfordian Border in Northeast Pennsylvania.

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Robert Dineen - State Education Building Annex

Work has been completed on the surficial map of the Voorheesville quadrangle, west of Albany, New York. A thin (1 to 3 meter) till sheet was found interbedded with Lake Albany varved clay. This till can be traced in exposure from Guildenland center to the Schenectody County line, a distance of 7.9 km to the northwest. It was traced southeast along the Normanskill for 5.5 km. It has been encountered in test borings and water wells 8 km to the northeast. The emplacement of this till sheet took place after the initial +360' Lake Albany, lowering of the lake to +310 to +290 ft, and re-establishment of a +330 foot level. More than 330 ft. lake sediments overlie the till. This till is tentatively named the Grant Till for its exposure in a cut on the south bank of the Norman Skill east of Grant Hill Road.

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Aleksis Dreimanis - Geology, Univ. of Western Ontario

Last winter I became interested in the Late Wisconsin deglaciation of New York again, because of my involvement in the Conference on Amerinds and their paleoenvironments in eastern North America early this spring, and the participation on the IGCP Project 73/1/24 (Quaternary glaciations in the northern hemisphere) as the coordinator of the Canadian work group (we had a very fruitful correlation meeting in Ottawa on 19 and 20 March). Though there are many uncertainties and gaps - in time and areally, and many puzzles, e.g. differences in some stratigraphic and paleogeographic schemes of adjoining areas, it seems that it is possible to reconcile at least those of different terrains, by considering local differences in glacial regimes. For instance: glaciers over highlands behaved differently than in lowlands. If we add regional differences in climatic changes during the glaciation, changes in temperature of ice, shifting of the areas of accumulation and many other factors that were not the same over the entire glaciated area and adjoining to it, there is room for regional variability. Attending of the last Royal Society and Irish Academy joint meeting in London, England, and its very objective papers and discussions on the last glaciation on the other side of the big pond a few weeks ago showed that they are faced with similar problems, and the only solution is-gathering more facts and variety of criteria.

Parker E. Calkin - Geology, SUNY/Buffalo

The Buffalo-based Sea Grant studies program has been continuing with the following papers given May 4-6th in the 19th Conference On Great Lakes Research - in Guelph:

William R. Brownlie and Robert P. Apmann (Deceased), Civil Engineering Dept., SUNY/Buffalo - Erosion and deposition at Sodus Bay, New York

Herbert T. Buxton and Robert K. Fahnestock, Geology Dept., SUNY/Fredonia - Preliminary estimates of the fluvial sediment contribution of small western New York watersheds to the Lake Erie Sediment budget

G. M. Weir, P. E. Calkin, SUNY/Buffalo, R. Nugent, SUNY/Oswego, and W. N. Seelig, Coastal Eng. Res. Ctr., Va. - Inlet changes and baymouth bar stability of North Sandy Pond, eastern Lake Ontario

P. E. Calkin and S. F. Brennan, Geology Dept., SUNY/Buffalo and R. W. Adams, Eth. Sci., SUNY/Brockport - Glacial stratigraphy along the south shore of Lake Ontario, New York

The general conclusions of the last study are that although there is more than one ice advance indicated, i.e., either by occurrence of multiple tills or by superimposition of multiple ice-contact drift of other types, the drift is all related to the "Port Huron" or last ice advance out of the Ontario basin into New York. Water-laid tills and deposits related to ice which was intermittently grounded and floating make up an important part of the ice contact deposits. See also Salamon, v. 10 n. 2 last N.Y. Glaciogram).

This summer work will continue on the engineering characteristics of the bluffs along the south shore of Ontario - Sandra Brennan; Gary Weir will extend his studies on North Sandy Pond, and Tony Richards - Ph.D. candidate at Buffalo, will undertake a sand tracer study along the Erie County shoreline south of Buffalo. Larry Onesti with his student-Diane Reeves, Geography, SUNY/Buffalo will continue the comprehensive measurement of bluff recession along the Ontario shoreline from maps and photographs.

Last year at this time I called attention to the work of John Bowlby, Geology, Queen's U., Ontario who described ice wedge casts in the Kingston basin of eastern Lake Ontario. For all those interested in the late glacial ice retreat in New York and the Iroquois - Champlain Sea sequences - John has some interesting ideas relative to two stages of the Champlain Sea, a Two Rivers (Valders) advance across the St. Lawrence into N.Y. and some yet undescribed low lake stages in the Ontario basin.

Take Note Don Coates and Tom Cronin!

Jane L. Forsyth-Geology, Bowling Green University

Not too much time for research, what with teaching, workshops for Ohio naturalists and EPA, and a trip to England, but I have been working on the geologic settings of Ohio prairies-most sites appear to have been wet, not dry, and to have had mostly universally distributed marsh plants, not western dry-land species, contrary to the theories of many very famous and competent botanists. Still eager to know just where Lake Erie drained to in its Great Flood (12,500 years ago), awaiting Ernie Muller's answers and maps.

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Charlie Rich - Geology, Bowling Green University

Reports that he has been working on the glacial stratigraphy revealed in central Lake Erie bluffs (in Erie and Lorain Counties) where a clayey continuous till overlies a more loamy, pebble-rich discontinuous till, which in turn lies on bedrock (Devonian Ohio Black Shale), all capped by lacustrine sediments. Problems, mostly still unsolved; relate to correlations of the tills, origin of complex structures in tills and lacustrine materials, and nature of wave-erosion processes now active along this shore. Charlie's tentative interpretations, presented at the Ohio Academy of Science meetings last Saturday, elicited no arguments and only moderate response; I guess they liked his ideas. Summer teaching here and at our field station out west will curtail but not stop his continued work on these bluffs.

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Richard P. Goldthwait - Geology, Ohio State University

I'm busy reading Marc Hoyer's dissertation on the Minford Silts of Ohio and adjacent states. This year Marc is holding down a job at Murray State in Kentucky. Although he revised his magnetics, most of the silts are reversed so early Pleistocene Glacial origin (Kansan) still seems to have maximum evidence for it. Mike Quinn (now with Shell in Louisiana) and I are still pushing two county maps and bulletins (Ohio Geological Survey) Champaign and Ross, which pretty well "clean up" modern work around the fringes of Scioto Sublobe. Bob Larson (Wright State University) and I are updating Ohio general glacial mapping, adding drifts of different textures in preparation for the next U.S. Glacial Map (by U.S.G.S.). Just now we're getting at all the Miami University thesis material into Indiana, but we hope to coordinate with Pennsylvania and New York by Autumn.

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Bryce M. Hand - Geology, Syracuse University

K. P. Thrivikramaji, one of my Ph.D. students, is studying deposits related to the Syracuse cross channels. His goal is to relate the stratigraphy of these deposits to the various episodes of discharge from Onondaga Trough Lake into Butternut (Jamesville) Trough Lake. In particular, we hope he will be able to provide some independent checks on my story of catastrophic failure of a drift dam in Rock Cut. (As reported at NE Section GSA last year, I contend that discharge through Rock Cut may have peaked at 20-30 times that of Niagara.)

Barry P. Cohn has recently completed his dissertation, "A Forecast Model for Great Lakes Water Levels". Using a rather sophisticated form of spectral analysis, Cohn has been able to identify cycles in lake level fluctuations having periods of 1, 11, 22 and 36 yrs. These cycles are identified with respect to amplitude and phase, and combined to provide reconstruction of the past and forecast of future levels. Tests of the method include truncating the data string at either end and "forecasting" (hindcasting) on the basis of the remaining record. For example, lake levels from 1935 to 1970 were predicted on the strength of the 80-year record prior to 1935. The results are impressive, particularly since accuracy of the forecast does not evidently diminish with time.

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Paul F. Karrow - Earth Science, University of Waterloo

Quaternary Geology Activities At The University of Waterloo

D. P. Schwert is studying fossil beetles from Winter Gulf, New York, and Kitchener, Ontario for his Ph.D. The latter site is a peat (4') over marl (11') over gravel sequence spanning the period 13000 to post 7500 BP. T. W. Anderson (CCIW) is doing pollen studies, L. Kalas (CCIW) is doing molluscs, and F. Michel (UW) and P. Fritz are doing oxygen isotopes. A series of radiocarbon dates is also being run, partly to assess the effects of old carbon on C<sup>14</sup> dates of marl and molluscs.

C. Baker is beginning an M.Sc thesis on microfabrics of clay till in the Waterloo moraine.

W. R. Sigleo, post-doctoral fellow for 6 months, studies the pollen from Erie Interstadial silts near St. Mary's, Ontario. A paper is in preparation.

P. F. Karrow is trying to complete several manuscripts before departure for Scripps (La Jolla) for a year's leave. These include the "final" report for the G.S.C. on the Stratford-Conestogo area, Lake Algonquin molluscs (joint paper with Barry Miller at Kalamazo GSA), find of a muskox bone from Scarborough (with C. S. Churcher), find of wood from the Brampton esker (with W. Harrison and H. C. Saunderson). Study is in progress on an interstadial site at Guelph discovered by A. Ward (U. of Guelph). The age is unknown but may be Port Talbot. Under at least two tills there is a well-developed paleosol with a lens of amorphous organics in a depression. The organics are yielding an invertebrate fauna of beetle fragments, snails (mainly terrestrial) and a



few ostracods. Pollen is also present and indicates the usual boreal-tundra environment.

A successful paleoecology conference was held last May with an attendance of about 75. Resulting papers are being submitted to the Canadian Journals of Earth Sciences, Botany, and Zoology, with the intention of collecting the papers in a proceedings volume afterward.

Recent publications include Churcher and Morgan on a Mid-Wisconsinan grizzly bear from Woodbridge, and Karrow and Anderson on C<sup>14</sup> dating errors, both in Canadian Journal of Earth Sciences.

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George J. Kukla

Recently was awarded a grant for the study of snow and ice variability on a global basis, which includes of course, New York State. The first stage of the project will concentrate on variation during the 1967-76 period based on satellite photographs. Analysis of the pre-satellite period is the second part of the project. The U.S. Weather Bureau has station data for approximately the last hundred years. Any tips on how to get a longer record?

CLIMAP is trying to update its reconstruction of the 18,000 B.P. world. Please let me know of any new or old or poorly accessible information on surface environment of the eastern United States at the peak of the Wisconsin glaciation.

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C. F. M. Lewis<sup>1</sup>, T. W. Anderson<sup>2</sup>, R. J. Richardson<sup>1</sup>, J.H. Foster<sup>1</sup> -  
Geological Survey of Canada

REMANENT MAGNETISM IN GREAT LAKES SEDIMENTS

Preliminary results of work on the paleomagnetism of Late Quaternary sediment sequences from the lower Great Lakes is proving exciting to us and may be of interest to others.

Cores from central Lake Erie spanning the Holocene section and penetrating into the Late Wisconsinan Port Stanley Till show a distinct dichotomy in remanent magnetic signature (Creer et al., in press). The residual magnetic vectors in the lower section, comprising Wisconsinan glacial sediments and lowermost Holocene lacustrine muds (14,000 to 8000 B.P. approximately), characteristically exhibit wide variations in inclination, even becoming negative (reversed) in some segments. This distinctive signature is termed the Erieau excursion by Creer et al (in press).

<sup>1</sup>Ottawa, Ontario

<sup>2</sup>Canada Centre for Inland Waters, Burlington, Ontario

The Holocene magnetic data, in contrast, are extremely coherent with inclinations showing little scatter and uniform trend. The Holocene declination values show an interesting low amplitude oscillatory pattern down the core; each complete cycle incorporating about 2000 years of record on the average.

A similar declination pattern has shown up in cores from Lake Michigan Holocene sediments (Creer, et al., 1976). Decreasing inclination values noted at the base of these cores may correlate with the uppermost Eriean excursion in Lake Erie.

Magnetic work has just been completed at the Geological Survey, Ottawa, on core PC28 collected in 1974 by Anderson and Lewis (1975) from Lake Ontario 40 km northeast of Rochester, N.Y. This core recovered Holocene mud, glaciolacustrine clay and till overlying the bedrock floor of Lake Ontario. Gross features of the magnetic stratigraphy are identical to those seen in Lake Erie—a section of coherent, scatter-free inclination values overlying a section of widely varying inclinations believed to be equivalent to the Eriean excursion. Low amplitude oscillations in the Holocene declination values are present as well.

The high rates of sedimentation in the Great Lakes basins (relative to oceanic rates) appear to provide a good medium for recording and resolving events of the late Quaternary geomagnetic field. Other work by Stupavsky *et al.* (1974a, 1974b) show that the useful paleomagnetic results can be obtained from onshore glacial deposits in the Erie and Ontario basins. Comparison with current paleomagnetic work on Seneca Lake (Russell and Woodrow, 1976) and Lake Michigan (Dodson *et al.*, 1976) should prove interesting as well. The physical explanation for the observed geomagnetic field variations is elusive. Creer *et al.* (1976) believe the cyclic declination signature is best explained by a standing non dipole field model in which radial dipoles oscillate with a characteristic period. This allows for the different declination swing periods observed between the Laurentian Great Lakes and Lake Windermere, England. Whatever the ultimate explanation may be, we are hopeful the magnetic stratigraphy documented so far will provide a useful tool for the chronology and correlation of Quaternary sediments.

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Walter S. Newman - Earth and Environmental Sciences, Queens College

The three day New York Academy of Sciences' Conference on Amerinds and their Paleoenvironments in Northeastern North America last February, brought together about 200 earth scientists and archaeologists. Simply bringing together these workers from several disciplines so that they might meet and talk counts the meeting a success. I was particularly struck by the information that early man was exploiting the marine littoral environment in southern Labrador some 8000 years ago. The evidence is available for examination only because the amount of postglacial rebound there exceeded the sea level rise. The paucity of early man finds in the 10,000-7500 year B.P. interval seems due to the fact that most northeastern marine littoral sites available during that time interval have subsequently been drowned by the rising sea. I was also impressed by Richard Harrington's meticulous documentation of Champlain Sea marine mammals. These whales and walrus apparently ranged as far west as the Huron basin. However, there is till no evidence that they made it into the Ontario basin. The implication of Harrington's data is that, for some short time interval, a sea level route existed between the Champlain Sea and the Algonquin stage of Great Lakes development. The conference volume should be published by the end of the year.

The Queens College Radiocarbon Laboratory, under the directorship of Richard Pardi, has now been operating for a little more than a year and has produced more than 200 dates. I am constantly chagrined concerning the cost of operating the lab. For example, each sample run consumes one ounce of Lithium which now costs about \$20/lb. The lab requires 55 liters of liquid Nitrogen/week, costing \$30. We consume 50 lbs. of dry ice each week, costing \$6.50. Furthermore, there is a constant need for replacement equipment and supplies. We would welcome the contribution of surplus equipment and supplies. For further information, contact Richard Pardi at the Queens College Radiocarbon Laboratory, 212 520-7651.

We have been continuing our investigation of the late Wisconsinian and Holocene history of the lower Hudson Estuary. For example, we are accumulating considerable data on the submergence history of the estuary based on radiocarbon dated basal peats beneath the several tidal marshes along the banks of the valley. Two new long cores penetrated more than 100 feet of estuarine organic silt. Pollen spectra from the base of the organic silt are rich in small pine and spruce. We believe these spectra represent the A Pollen Zone. There is no evidence of the Tundra Zone. Unfortunately, we have been able to find datable material in the lower levels of these bores.

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W. D. Sevon & T. M. Berg - Pennsylvania Geological Survey

A "quiet" winter was spent in the office working on project completions. Pocono Pines, Mt. Pocono and Skytop 7½' quadrangles are finished, but not processed editorially. Brodheadsville is through galley proof and nearing publication. D. M. Hoskins and Sevon reported at the NE-SE GSA Section meeting (Abst., v. 8, no. 2, p. 200) on a new Illinoian till (?) locality which may extend Illinoian ice another 19 km. farther down the Susquehanna River Valley. They also discussed the river terraces in the area of Millersburg. Berg continues compilation for the new bedrock map of Pennsylvania and would like to hear from anyone with pertinent information. Sevon is starting compilation for the U.S. Quaternary Map Project (1:1,000,000) and would be happy to hear from anyone with data for Pennsylvania suitable for inclusion at the above scale or at 1:250,000. Some reconnaissance field work is anticipated this summer, but no detailed investigations are envisioned.

Late last fall, E. Ciolkosz, Dept. of Agronomy, The Pennsylvania State University, and several others, started soil characterization studies at two sites in Lycoming County in soils developed in till thought to be Altonian in age. Preliminary results indicate that the soils are definitely intermediate in development between those found on tills of Illinoian and Woodfordian age.

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George White - Geology, University of Illinois

George White's review in Quaternary Research, vol 6, p. 123-124, 1976 of Claud Albritton's Philosophy of Geohistory 1785-1970 may be of interest. His paper "Glacial Geology of Ohio in 1874-The End of An Era" Ohio Jour. Sciences, vol. 76, no. 2, p. 51-56 reviews the extensive discoveries and the theories of the 1869-73 Ohio Geological Survey with some introduction for earlier work.

G. Gordon Connally - Geology Dept., State University of NY/Buffalo

My involvement with the Pleistocene now centers around the west coast of Mexico. Our program down there is very exciting. Nick Coch joined Les and me last year to look at beach processes and Fred Manley of Georgia State, began studying the clays. This year, in addition to several students to help Les with the pollen stratigraphy, Larry Onesti of our Geography Department will begin to study the stream processes and B. L. Allan of Texas Tech will examine the soils. I will continue with the soil stratigraphy. We will have 14 students and 9 staff there for our six weeks this summer.

I have been involved with a project directed by Ed Weil of our Anthropology Department that concerns a bog in the Valley Heads Moraine. We hope to have dates and pollen stratigraphy from the University of Arizona later this spring.

In closing, I would like to mention the continuing dialogue between Walt Newman and myself. Walter quite evidently missed the point of last spring's editorial - but he hasn't gotten the same point for years so there is no point in beating a dead horse (or any of its parts). However, I would like to comment on Walter's reluctance to accept deglaciation of Long Island. Walter, your argument that no date older than 13,000 has been found on Long Island ignores the data from surrounding areas like saying that because there is no Devonian found on Long Island that there isn't any... Walter? ... the Devonian? ... Walter, no! ... the Devonian, Walter?

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Donald H. Cadwell - Geology, Lafayette College

I have been working on the Terminal Moraine near Belvidere, New Jersey. A new radiocarbon date has just been received on the Terminal Moraine in 19000. This is a bog bottom date from a bog in the uplands of Jenny Jump Mtn, N.W. of Belvidere.

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