DEPARTMENT OF GEOLOGY
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Buffalo, New York 14226
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. It is suggested that reference to information in the GLACIOGRAM be identified merely as informal communication.

Parker E. Calkin
The new mapping program in the Pennsylvania Piedmont is well under way. The first phase of the program involves the completion of several detailed transects across the province by Rodger Fail and David Valentino for the purpose of developing a new tectono-stratigraphic model of the Piedmont. Experimental mapping of the surficial materials in the Piedmont is being carried out by Bill Sevon in the southern Lancaster County area. Preliminary results of his work on saprolite development are presented in the guidebook for the 7th annual field trip of the Harrisburg Area Geological Society. Although the issue is not yet fully resolved, Bill favors the theory that saprolites in Pennsylvania are remnants of very ancient weathering, and that recent weathering has had little influence other than dissection.

Looking into the near future, and based on a serious commitment to mapping the surficial materials of the Piedmont, the Pennsylvania Survey and the Maryland Survey have submitted a joint proposal to the U. S. Geological Survey under the COGEOHMAP Program to map the surficial geology of the York 30' x 60' quadrangle (scale = 1:100K). When finished, the York quadrangle would be one of a series of 1:100K bedrock and surficial quadrangles covering the state. Bill Sevon (PGS) and Emery Cleaves (MGS) would be the principle investigators.

The Pennsylvania Survey is moving along several avenues to obtain the hardware and software to manage its extensive bituminous coal and oil and gas databases. The Survey may be selected to be the lead agency for development of a geographic information system (GIS) in the Department of Environmental Resources. If a GIS is established at the Survey, the 1:100K bedrock and surficial geologic maps will be the "common denominator" digital databases for the system. The maps of the glacial deposits of the Wellsboro and Towanda 30' x 60' quadrangles that Bill Sevon has finished will become part of the digital database when it is established. These two quadrangles are in the completion stages and will be submitted for review, editing, and publication in the very near future.

The physiographic provinces map of Pennsylvania has been revised and will be submitted to our Editing Section by January, 1989. The revision was reviewed by over 45 external reviewers, including several contributors to the GLACIOGRAM. You will be able to see the new map at the NE Section GSA Meeting in New Brunswick, NJ. Survey staff who served on the Physiographic Provinces Committee included J. Barnes, T. Berg, W. Sevon, V. Skema, P. Wilshusen, and D. Yannacci.

Bill Sevon is involved with preparations for the 20th Annual Geomorphology Symposium, "Geomorphic Evolution of the Appalachians" to be held at Dickinson College, Carlisle, PA, October 20-22, 1989. Contact Bill for further information.

Jon Inners continues his detailed mapping of the Eastern Middle Anthracite Field of Pennsylvania. He is working on the Hazleton 7% quadrangle, and is significantly revising the limits of pre-Wisconsinan glacial deposits. Jon was co-leader with Duane Braun of Bloomsburg University on several glacial geology and geomorphology stops at the 1988 Field Conference of PA Geologists held at Hazleton. The trip focused on the bedrock and surficial geology of the North Branch Susquehanna lowland and the Eastern Middle Anthracite Field. Copies of the guide-
book may be purchased for $14.00. Make checks payable to Field Conference of Pennsylvania Geologists, and mail your order to Pennsylvania Geological Survey, Box 2357, Harrisburg, PA 17120.

Helen Delano continues her research on the Lake Erie shoreline. During this last summer, she investigated the stratigraphy of the bluff face of the western portion of the shoreline. The principal focus is to relate the nature of the bluff materials to erosion rates and mass wasting processes. The results of Helen's investigations will be an Environmental Geology report on the whole Lake Erie shoreline in Pennsylvania. She has also completed a guide to the geology of Presque Isle State Park.

Dave MacLachlan continued his mapping of the Freeburg 7½' quadrangle 30 miles north of Harrisburg. Some revisions will be made to the surficial geology (pre-Wisconsinan) before the final map is submitted for release to Open File. When Dave is finished with Freeburg, he will join the Piedmont mapping team.

Jack Epstein of the U.S. Geological Survey will be returning to Pennsylvania mapping for a short while. He will be working with the support of the Pennsylvania Survey to complete the bedrock and surficial geologic map of the New Tripoli 7½' quadrangle in western Lehigh and eastern Schuylkill Counties. Pre-Wisconsinan glacial deposits are included in the quadrangle.

Tom Berg moves slowly but surely ahead on the revised geologic map of Warren County which will be used for an extensive report on groundwater resources of Warren County being done in cooperation with the Water Resources Division of the USGS. The new map will show detailed distribution of alluvium (including alluvial fans), undifferentiated outwash and lacustrine deposits, kame moraines, ice-contact stratified drift, and "valley-fill deposits" (till, fl ow till, stratified drift). Garry Price, the Survey's new geophysicist, has run several seismic profiles across the buried valleys of Warren County to determine drift thickness.

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James E. Bugh - Department of Geology, SUCCO-Cortland

I have investigated several sites which were suggested as potential solid waste disposal locations. One of these sites has been drilled and the glacial sediments were logged by the driller's geologist as one unit of till—in excess of 200 feet thick. The town has obtained the services of another driller and consulting geologist to verify the existence of such uniform, low hydraulic conductivity drift.

I am interested in hearing from readers of the New York Glaciogram who may have come across any thick till bodies lacking stratified units of any kind.
Presently I am involved with Norton Miller of the Biological Survey in studying the Lord Hill site along Cattaragus Creek near Sardinia. Information on our work there has been presented in earlier numbers of the Glaciogram. We are awaiting an accelerator age that may confirm or conflict with an earlier bulk carbon date that suggested we have Plum Point interstadial deposits.

Graduate student, Richard Morevec of this department is putting together a glacial story for the village of Dundee, Yates Co. This is part of, and preliminary to, groundwater modelling in the area supervised by my colleague, Adel Hussein. I'm hoping to supplement the glacial phase of this work by dating some wood recovered from sand beneath the Valley Heads Moraine at Millport.

Graduate student, Eric Pefly of this department continues to collect boring logs from the buried, preglacial Allegheny Valley. He is also involved in detailed surface mapping of the Conewango Valley and with identification of pollen from local bogs and from deep drill cores there.

LATE PLEISTOCENE AND EARLY HOLOCENE PALEOECOLOGY AND ARCHEOLOGY OF THE EASTERN GREAT LAKES REGION

Proceedings of the Smith Symposium, held at the
Buffalo Museum of Science, October 24-25, 1986

Bulletin of the Buffalo Society of Natural Sciences, Buffalo, New York • Volume 33 • 1988

Edited by
Richard S. Laub (Buffalo Museum of Science)
Norton G. Miller (New York State Museum)
David W. Steadman (New York State Museum)

This collection of 21 authoritative papers presents
an up-to-date view of the climatic, geologic,
biologic, and cultural conditions prevailing in the
Northeast as it emerged from the Ice Age.
Included are studies from other regions that are useful
for interpreting the local record. The Hiscock Site,
a rich new locality in Western New York, is given
detailed treatment in several papers from various
perspectives.

Anticipated date of publication: August, 1988
Approx. 300 p., 33 photographic figures,
89 line-drawn figures, 25 tables, 5 indexes,
soft bound (permanent™), printing by
Allen Press, Inc., Lawrence, Kansas.
Price: $36.00 (or, if ordered by September 1 – $27.00,
a 25% Discount)
GEOL O GICAL AND ENVIRONMENTAL BACKGROUND

- The Role of Modeling Experiments and Empirical Studies — Thompson Webb III and Patrick J. Bartlein
- Paleobotanical Interpretation of Geographic Patterns in Pollen Data: Spruce and Birch in Northeastern North America — Denise C. Gaudiereu
- Synchrony of Rapid Change in Late-Glacial Vegetation South of the Laurentide Ice Sheet — George L. Jacobson, Jr. and Eric C. Grimm
- Ice, Lakes, and Plants, 13,000 to 10,000 Years B.P.: The Erie-Ontario Lobe in Ontario — P.F. Karrow and B.G. Warner
- Late Pleistocene and Holocene Geology of the Eastern Great Lakes Region: Geologic Setting of the Hiscocck Paleontological Site, Western New York — Ernest H. Muller and Parker E. Calkin

SECTION II
STUDIES OF THE HISCOCK AND OTHER LATE QUaternARY SPRING SITES

- The Hiscocck Site: A Rich Late Quaternary Locality in Western New York State — Richard P. Engb, Mary P. DeReme, Catherine A. Dufort, and William L. Parsons
- The Late Quaternary Hiscocck Site, Genesee County, New York: Paleontological Studies Based on Pollen and Plant Macrofossils — Norvon G. Miller
- Vertebrates from the Late Quaternary Hiscocck Site, Genesee County, New York — David W. Steadman
- Season of Death of the Hiscocck Mastodons — Daniel C. Fisher
- Fossiliferous Spring Sites in Southwestern Missouri — Jeffrey J. Saunders
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Rob Dineen - New York State Geological Survey, Albany

We have been very busy on the Adirondack Sheet of the State Surficial Map. The reconnaissance mapping is over 80 per cent completed. The mappers this summer included Chuck Cubbison (SUNY at Binghamton), Bob Dineen (yours truly), Joe Gurrieri (Bureau of Land Management), Don Lovejoy (Palm Beach Atlantic College), Laurie Musiker (Geraghty and Miller), and Don Pair (Syracuse University).
Thanks to the efforts of these people, I've been able to summarize and compile a draft 1:250,000 map of 200 7-1/2 minute quads. We still need work in the Oswegatchee-Massena-Moira and Pulaski-Port Leyden areas if anyone is interested. I've also started to generate "ice margin" and "ice movement" maps. The latter map is a compilation of striae, drumlins, and till fabric orientations. The ice streams suggested by Buddington show up clearly. My mapping was in the Malone area. I had a chance to closely examine the "Chateaugay Channels" and hope to write a paper on these features soon.

Dave DeSimone (Williams College), Eric Hanson (Environmental Design Corp.) and I ran a field trip in the Hudson Valley for the AMQUA Meeting in Amherst, MA. We examined the stratigraphy of Lake Albany. I continued to explore the possibility that Sparkill Gap was the outlet for Lake Albany. Curt Sorenson (US Military Academy at West Point and University of Kansas) noted that his cadets were unable to find lacustrine sediments in the Hudson Gorge between Newburgh and Peekskill. Thus, the outlet (and spillway) of Lake Albany is still undefined.

Eric Hanson retrieved some peat from a borehole in the Northumberland (Louden Road) area north of Saratoga Lake. The peat was overlain by 39 feet of dune sand and graded down into lake sand. The lake sand was at an elevation of 310 feet, at the LakeQuaker Springs level of the Lake Albany sequence. Geochron Laboratory (Krueger Enterprises) dated the sample at 11,050± 450 C-14 years BP (GX-14348). We think that the sample dates the burial of a wetland by a migrating dune in post-Lake Albany time.

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Aleksis Dreimanis and Steve Hicock - Department of Geology, The University of Western Ontario

We will continue from the last paragraph of Aleksis' letter printed in the April 1988 issue of the New York glaciogram, elaborating on some of the conclusions of the three papers mentioned there.

The Columbus SEPM Midyear Meeting (August '88) paper dealt with the sequence of invasions of Late Wisconsinan glacial lobes into the Erie basin. First was the Huron lobe that succeeded in reaching the north-central shore of Lake Erie, then the Georgian Bay-Lake Simcoe lobe depositing most of the Catfish Creek Drift, and finally the Ontario Erie lobe that persisted to dominate the Erie basin during the Port Bruce and Port Huron Stadials. A similar lobal sequence is also concluded from the lithology of Bradtville Drift, and now we are wondering whether there was a similar pattern, involving different lobes, in the Ontario basin.
Age assignments for the Bradtville Drift were discussed at the Symposium on the last interglacial-glacial transition (GSA Centennial Meeting, Denver, October 30, 1988) with two alternatives considered equally (different than in the abstract): (a) Bradtville Drift was deposited during the Early Wisconsin Substage, or (b) Bradtville Drift was deposited during the Illinoian Stage, with the overlying lowermost members of accretion gley soil and varved clays then belonging to the Early Wisconsinan.

The above discussion was followed on October 2 at the same GSA centennial meeting in our joint paper on a re-examination of Sunnybrook Drift at Toronto. Based mainly on field investigations of structures, fabric, and clast pavements containing sets of consistently oriented glacial striae along the Scarborough Bluffs, we concluded that the Ontario lobe overran the Toronto area during the Early Wisconsinan, contrary to some recent claims that Toronto was merely flooded by an Early Wisconsinan proglacial lake. The results are in press with Geology.

Together with Katharine Albino, Aleksis documented a time-transgressive kinetostratigraphic sequence spanning 180° in a single section of Catfish Creek till at Bradtville (published in Balkema's 1988 Glaciotectonics volume edited by David Croot). In another paper Aleksis presents a preliminary investigation of pollen in tills from ten sites in the Erie and Ontario basins. The paper is co-authored by Elsbert Liivrand and Anto Raukas (Estonian Academy of Sciences in Tallinn). Aleksis is also continuing to work on several other unfinished projects dealing with Late Pleistocene glacial and nonglacial sediments in southern Ontario and northern Ohio.

Steve supervises three M.Sc. students working in southwestern Ontario, including: Greg Brown who is writing up his work on the Bedford shale formation and glacial dispersal of it in southwestern Ontario (western end of Erie basin), Cliff Lawton who is completing a detailed sedimentologic study of ice-mariginal deposition of Catfish Creek Drift into a proglacial ancestral Lake Erie at Bradtville, and Jim Butler who is reconstructing a similar story in Catfish Creek Drift at Plum Point. Another M.Sc. student and a Ph.D. student are working on projects in the Northwest Territories, and Queen Charlotte Islands (British Columbia), respectively.

Please note that Genetic Classification of Glaciogenic Deposits, R. Goldthwait and G. Match Eds., Balkema, is published. In addition, Glaciotectonics, edited by Croot is also now available from Balkema.

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Ed Evenson - Lehigh University

I am happy to report that I am again working in New York. Our project there takes me back to an old love - Drumlins. I am working with Doug Stahman (M.S. candidate, Lehigh), Dan Lawson (CRREL) and John Menzies (Brock). We are working in a small area of the Weedsport drumlin field at the north end of the Cayuga trough. In this area we can see a well defined north-south and east-west transition in drumlin shape from oval to elongate drumlins and then to megaflutes. The project is still in its inception, but we have collected till samples (believe it or not, the drumlins are made of till!) from 81 exposures and are now performing grain size analysis and various geotechnical tests (i.e., direct shear strength at various water contents and loads, Atterburg limits, etc.). We hope to discover a relationship between till properties and bedform shape that will increase our understanding of the ice/till bed interaction and cast some light on the mechanisms and mechanics of drumlin formation.

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George M. Haselton - Clemson University

This next summer, 1989, as time and spirit allow, Brian Fowler and I will be working out the complex details in regard to the Late Wisconsin and Early Holocene stratigraphy in the Peabody River Valley in Northern New Hampshire. Its a complex "picture" of local ice advance from a decaying icesheet, a history of ponding on three different occasions and a stage of lake filling from boulder-filled sandurs.

Much remains to be done to fully understand the facies relationships from outcrop to outcrop, and the environments of deposition.

Granulometrics have yet to be run on the mappable units, more fabric measurements and provenance work, and close attention to the physical features in each stratigraphic horizon need to be addressed.

At long last I've found the mysterious Basal Till.

If others, with drilling or auguring equipment, can go north with us and core bogs, we'll have a closer carbon 14 network and then can talk about or dismiss the aspects of the "Younger Dryas Stadial".

We hope to have a "run down" on the pollen assemblage by fall 1989 thanks to the cooperation of Dr. George Jacobsen who will look at our samples. If there are dateable micro-organics in our lacustrine units, we may "luck-out" and have an in-situ carbon 14 date to work around.
Woody Thompsons' big moraine is within "shouting distance", so we hope to exchange some ideas and compare stratigraphic settings, elevations, etc. etc.

Work is still in the "detailed reconnaissance stage" due to cliff trenching, stream-wading, bushwacking etc., but we are happy with our good progress to date. We hope sometime, Ernie Muller and Parker Calkin will lead us back to Alaska to show us their modern analogues? We believe this will be a critical stop for a pre- or post- G.S.A. meeting trip when G.S.A. meets in Boston in October of 1993.

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P.F. Karrow - Department of Earth Sciences, University of Waterloo

The past six months have mostly been spent indoors dealing with paperwork, partly resulting from an unusually heavy load of committee work, but also partly occupied with the backlog of unpublished work, which even concentrated effort never seems to reduce. Even so, some accomplishments can be recalled.

Meeting attendance has been restricted to Eastern Friends in New York in May, ANQUA in June, and the 41st Geotechnical Conference at Kitchener in October. At ANQUA, Quaternary Sciences Institute members presented six poster papers, including two coauthored by this writer.

Field work consisted mainly of two weeks on Manitoulin Island in July surveying the Nipissing shoreline (more planned for 1989). Sampling was undertaken at the Fernbank site in New York with Barry Warner and Barry Miller and of the Mill Creek interstadial site near Port Huron, Michigan, which has yielded a diverse molluscan fauna and some microvertebrates: Bern Feenstra showed us a terrestrial mollusc site in silt inclusions in the Kettleby Till (Port Huron Stade) south of Georgian Bay and identification is underway.

Access was gained to the Don Valley Brickyard in September after a two year prohibition on sampling. Time is wreaking havoc with only about half of the face still exposed (most of the Don Fm. is slump covered). A government committee is considering its fate! Also mostly slump covered is the Woodbridge cut, but we found a large fishbone in the "Scarborough" unit there.

A paper was written on the Toronto interglacial resulting from the Ottawa symposium on the last interglacial (January 1988) destined for publication in GPQ and a Discussion of Nick Eyles' recent paper on the Don Brickyard was submitted to CJES. A paper on the Catfish Creek Till was presented as a poster and published as a preprint for the Canadian Geotechnical Conference in Kitchener. A final report is nearing completion with John Greenhouse and Maurice Dusseauult on Quaternary stratigraphy and downhole geophysics of the Kitchener-Waterloo area. A paper with Barry Warner on "Ice lakes, and plants, 13,000 to 10,000 B.P.: the Erie - Ontario lobe in Ontario" appeared in the Buffalo Museum Bulletin on the Smith Symposium.
Tom Edwards and I, aided by a grant from Environment Canada, are pursuing paleoclimates through analysis of oxygen isotopes and deuterium in tree rings. We started with a 250 year record in an elm tree from our museum and further extensions are planned. Recently 700-year old living cedars have been reported along the Niagara Escarpment so we apparently have a longer local tree ring record than previously thought. Work continued too on the molluscs of the Gage Street marl site in Kitchener.

Barry Warner, after missing the AMQUA meeting because of an accidental injury, was on sampling expeditions to New Brunswick and British Columbia, and attended the peat congress in Leningrad. His M.Sc. student Karen Hanf has nearly finished lab work on her thesis on a lake and bog near Woodstock, Ontario, while new M.Sc. student Steven Marsters has begun a palynology project on a bog near the Algonquin shoreline east of Georgian Bay. Brian Theimer is engaged in an M.Sc. thesis using radar to profile peat bogs (this with Barry and David Nobes).

My own graduate students are: Andy Bajc is doing his Ph.D. thesis on the Rainy River area (NW Ontario) aided by 70 rotasonic holes 30m or more to rock (multiple tills and a good Agassiz story); Jill Sacre is doing her M.Sc. project on new Brunswick tills; Dianne Harding’s M.Sc. project is a literature review of Arctic sub-till organic sites; Andy Heath proposes to study Algonquin shorelines in the northern Huron basin; and Lloyd Lemon hopes to do a combined hydrogeology-Quaternary stratigraphy project in the Waterloo area.

Plans for this winter are to push along with fossil processing and identification from sites in Florida and the Great Lakes area and to work away at the list of papers to be written (10 are now in press-supposedly).

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Donald W. Lovejoy - Palm Beach Atlantic College

The April ’88 GLACIOGRAM contained a request for helpers in connection with the forthcoming Adirondack Sheet of the State Surficial Map. I responded to this request and, as a result, spent the summer doing road recon for Bob Dineen. During this recon I became acquainted with The Gulf, a 1100-foot deep fault-line valley located in the Au Sable Forks Quadrangle. A summary of my findings regarding the glacial history of this interesting feature has been submitted for a poster session at the NEGSA Meeting in March.
My work this past year has been related only indirectly to New York and adjacent areas. I am trying to use some of the results and characteristic glacial sediment features of the Great Lakes and Hudson Bay Region as analogs to interpret some of the Lower Permian Rock sequences of the Parana Basin in Brasil. One interesting discussion that is going on there is whether some thin coal layers are interglacial-interstadial or post glacial. The coals are found in a prograding deltaic-alluvial sequence which is locally interlayered with sandy diamictites. The problem is whether the diamictites and some of the features such as stone pavements, foldings and shear zones are of glacial origin, or whether the exotic-bearing diamictites are the result of post glacial fluvial and sediment gravity reworking of material. I am looking for Quaternary peats (even thin ones) which are of interglacial or interstadial nature, to establish their relationship with the glacial events and which sedimentary facies association they occur in. In Ontario, the best two examples I know of are in the Moose River Basin and at Innerskip (S. Ontario). I would appreciate if any of you would suggest other sites and references.

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BARRY B. MILLER-Kent State University, Kent; WILLIAM D. MCCOY-University of Massachusetts, Amherst; WILLIAM J. WAYNE-University of Nebraska, Lincoln; C. SCOTT BROCKMAN-Ohio Department of Natural Resources Columbus.

Amino acid studies of shell protein from molluscs collected at several sites in Ohio and Indiana that have produced some interesting results. Alloisooleucine/isoleucine (aIle/Ile) values of shell from beneath the buried soil and till exposed near Sidney, Ohio, are most similar to ratios in shell obtained from Illinoian age silt at Clough Creek, in southeastern Hamilton County, Ohio. The first well developed weathering profile in the sequence above the implied Illinoian age silt at the Sidney Cut, therefore, may represent the Sangamon weathering interval.

Molluscs from an organic silt exposed at Bantas Fork, near Eaton, Ohio, have aIle/Ile ratios similar to those measured in shell from beneath the Sidney Soil and at Clough Creek. These data suggest that the organic silt at Bantas Fork is pre-Wisconsinan, and that the 44,800±1700 years B.P. date on wood collected from the same unit as the snails, should be considered a minimum age. The Fairhaven Till, which overlies the organic silt at this locality, therefore, could be interpreted as pre-Wisconsinan and the weathering profile developed in the Fairhaven Till, as Sangamon weathering.
At the American Aggregates quarry in Richmond, Indiana, the New Paris Interstade silt is in direct superposition above the Whitewater Till. Shells from this silt have \( \text{Al} \) ratios that exceed by a factor of two the values obtained from the same taxa at Bantas Fork and at Clough Creek. These values imply an early Illinoian or possibly pre-Illinoian age for the New Paris Interstade silt unit and the underlying Whitewater Till. The amino acid data does not support an interpreted Wisconsinan age for either the Whitewater Till or the New Paris Interstade at their type section.

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Alan Morgan - Department of Earth Sciences, University of Waterloo

Just a few comments to bring Glaciogram readers up to date on some aspects of developments at Waterloo. As most are aware, June 1-9th, 1990 will see the first joint meeting of the American and Canadian Quaternary Associations. The Meeting will be hosted by the Quaternary Sciences Institute at the University of Waterloo. In the section below I have outlined some of the provisional structure of the meeting, and these details have been approved by CANQUA and AMQUA Councils at the recent meeting in Denver.

The Programme format was decided as a single theme meeting with invited speakers, but with some refereed submitted papers, and with those accepted to act as discussants to the major speaker. There will be a major attempt to create a strong series of parallel poster sessions. Papers and posters may be submitted and presented in either of Canada's two official languages.

The theme of the 1990 Joint Meeting at Waterloo will be

RAPID CHANGE IN THE QUATERNARY RECORD

This topic opens up the full area of the Quaternary to all interested participants. It could cover areas as diverse as the appearance of cold water faunas in the Calabrian, to the extinction of the vertebrate faunas in the late Pleistocene, to catastrophic events (earthquakes and volcanic hazards), the movement of the Polar Front, El Niño and La Niña Pacific changes, Missoula and Agassiz floods, to agricultural modification, desertification, acid rain and the greenhouse and ozone events. The biggest problem is trying to rationalise all this into a solid theme and flowing format, so that it doesn't become a real "dog's breakfast" of kibbles and bits! However, the theme has great potential and it should lead to some interesting exposés and discussions. Of course the question of "expanded" and "contracted" chronologies is also something that will need to be covered. If anyone has suggestions and or comments, please inform me as soon as possible. We shall be starting work on the organisation early in the New Year.
Short Courses:

The Waterloo meeting will offer 3 short courses. These will be as follows:

- **Techniques in shallow geophysical methods.** (Resistivity/Reflection/Logging/Radar) This will be aimed toward aspects of applied Quaternary studies (waste disposal and contamination of aquifers), and should be of interest to both academics, government and industry personnel.

- **Techniques of biological interpretation of paleoenvironments.** This course will explore the different biological groups traditionally used in the interpretation of paleoenvironments, outlining sample techniques and size, methods of isolating the material, identification, storage, and commenting on the interpretation of results.

- **Examples and Critiques of Quaternary Dating Methods.** A theme which should cover radiocarbon (standard and AMS), TL; Amino acids; U. Series; ESR; and possibly Tephra. The objective will be to show the methods of interpreting each technique and the limitations imposed by the method. Sampling methods will also be demonstrated. The idea is to expose the audience more to the problems and interpretation of the same, rather than to the methodology of the technique. There will need to be considerable outside input to this short course. G. Miller at Colorado has offered help.

Research continues (slowly) with the recent publication of several papers on data and material far removed from New York. At present administrative duties with the Canadian Geoscience Council, CANQUA, AMQUA, and the Steering Committee of the Royal Society (on Global Change) are keeping me very busy. I’ll send more in the next Glaciogram.

Henry T. Mullins - Department of Geology, Syracuse University

For inclusion in the GLACIOGRAM, I can inform you that we are continuing to work on our NSF-sponsored research project on the "Paleolimnology/Climatology of New York State Finger Lakes". Phase I of the study, seismic stratigraphy, is now complete and two manuscripts have been submitted for publication:

Mullins, H.T., and Hinchey, E.J., Erosion and infill of New York Finger Lakes: Implications for Laurentide ice sheet deglaciation: GEOLOGY.

In addition, Ed Hinchey and I are currently working on a manuscript for QUATERNARY RESEARCH on the seismic stratigraphy of Cayuga Lake and Ed continues to work on his Ph.D. dissertation which we hope will be completed by August 1989.

This past June we also collected 12.5 km of multichannel seismic reflection profiles from on-land areas just north and south of six Finger Lakes. This land work was done in cooperation with Bob Sheridan at Rutgers University and processed results are expected by the end of January 1989. We hope to do more on-land seismic work in the drumlin fields north of the Finger Lakes and in the valleys south of the lakes either this coming summer or the next.

We have also recently submitted our Phase II proposal to NSF for deep lake drilling. If funded, we plan to drillcore the late Quaternary (< 14 Ka) sediment record (~ 235 m thick!) beneath southern Cayuga Lake in order to: (1) calibrate our seismic stratigraphy; (2) develop a high-resolution paleoclimatic record; (3) provide in situ ground truth for various models of Laurentide ice sheet deglaciation; and, (4) test various hypotheses for the origin and evolution of the Finger Lakes. Drilling is tentatively scheduled for August 1989.

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Ernest H. Muller, (Geology) Syracuse University


With Jay Fleisher, Don Cadwell and Bill Morrill, I enjoyed a stimulating two weeks in July and August on an interlobate zone on the east margin of the Bering Glacier in the Controller Bay area of southern Alaska. This glacier, the largest in North America, surged twice in the early 1960's. To our biased view, it is presently doing its best to provide analogs for the wasting of the lake-fronted Laurentian ice sheet in upstate New York.

Hank Mullins kindly invited me to join him and Ed Hinchey as co-author of a short manuscript reviewing the development of thought regarding origins of Finger Lakes landscapes. All three of us evolved a bit in our perception of the historic interplay between the Rochester "sander" (Fairchild) and the Cornell school (Tarr, von Engel and others, who vascillated yet persistently came down on the side of the "gougers").

In the April, 1988 Glaciogram, Hank and Ed launched a trial balloon invoking pressurized subglacial meltwater as a unifying agency responsible for drumlin pattern, meltwater channeling and trough basins of the Finger Lakes region.
Though I have for some time been interested in the role of meltwater in subglacial deposition, I recognize little evidence to support the view that these features were simultaneously and catastrophically developed. Nor do I conceive that subglacial meltwater played the primary role in the molding of drumlins or scouring of troughs.

The view is, indeed, novel and should stimulate us to question again the evidence for concepts we have easily accepted. Mullins and Hinchey now have hundreds of kilometers of seismic profiles for the Finger Lakes which provide new insights and raise questions still to be answered.

In this regard, a visit by Lew and Ned King from Dartmouth, last August, proved interesting in terms of comparison with seismic stratigraphy on the continental shelf off Nova Scotia.

Also relative to the Finger Lakes area, Robert Ridky at the University of Maryland, has re-examined the regional drumlin pattern, reaching interpretations which I hope he will soon feel ready to publish.

Don Fair is in the process of moving to the country (between Delphi Falls and Oran, SE of Syracuse) and probably will not have time to report on the progress of his work.

Last July and August, he spent 6 weeks on northwestern outlet glaciers of the Harding Ice Cap, southern Kenai Peninsula with Greg Wiles (SUNY Buffalo). Before and after the Alaskan field work, Don put in his stint in quadrangle mapping toward completion of the NYSGS Adirondack Quaternary Map.

Don has collected countless oriented samples of lacustrine and estuarine sediments across the freshwater/marine transition in the Champlain Sea embayment of the upper St. Lawrence Valley. He is presently running analyses to determine paleomagnetic variation through this important interval. This investigation is closely tied to paleoecologic studies which Cyril Rodrigues (Windsor University) is conducting on the same exposures.

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EASTERN FRIENDS OF THE PLEISTOCENE, 1989
Pierre LaSalle, with Michel Lamothe and Bill Shilts is extending an invitation to the Eastern Friends of the Pleistocene to meet May 20-22, 1989, with headquarters in Quebec City, to examine stratigraphy and sedimentology of glacio-marine sediments, subaqueous outwash etc. in traverse from St. Pierre les Becquets to southern Beauce.

The first circular with preliminary details will be mailed early next year. If you have responded to an announcement of an Eastern Friends reunion within the past two years, you may expect to receive the first mailing. Others interested in receiving this circular should contact

Dr. Pierre LaSalle
Ministere de L’Energie et des Ressources
1620 Boulevard de l’Entente
Quebec, G1S 4N6, CANADA

Make due allowance for delays in international postal delivery.
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