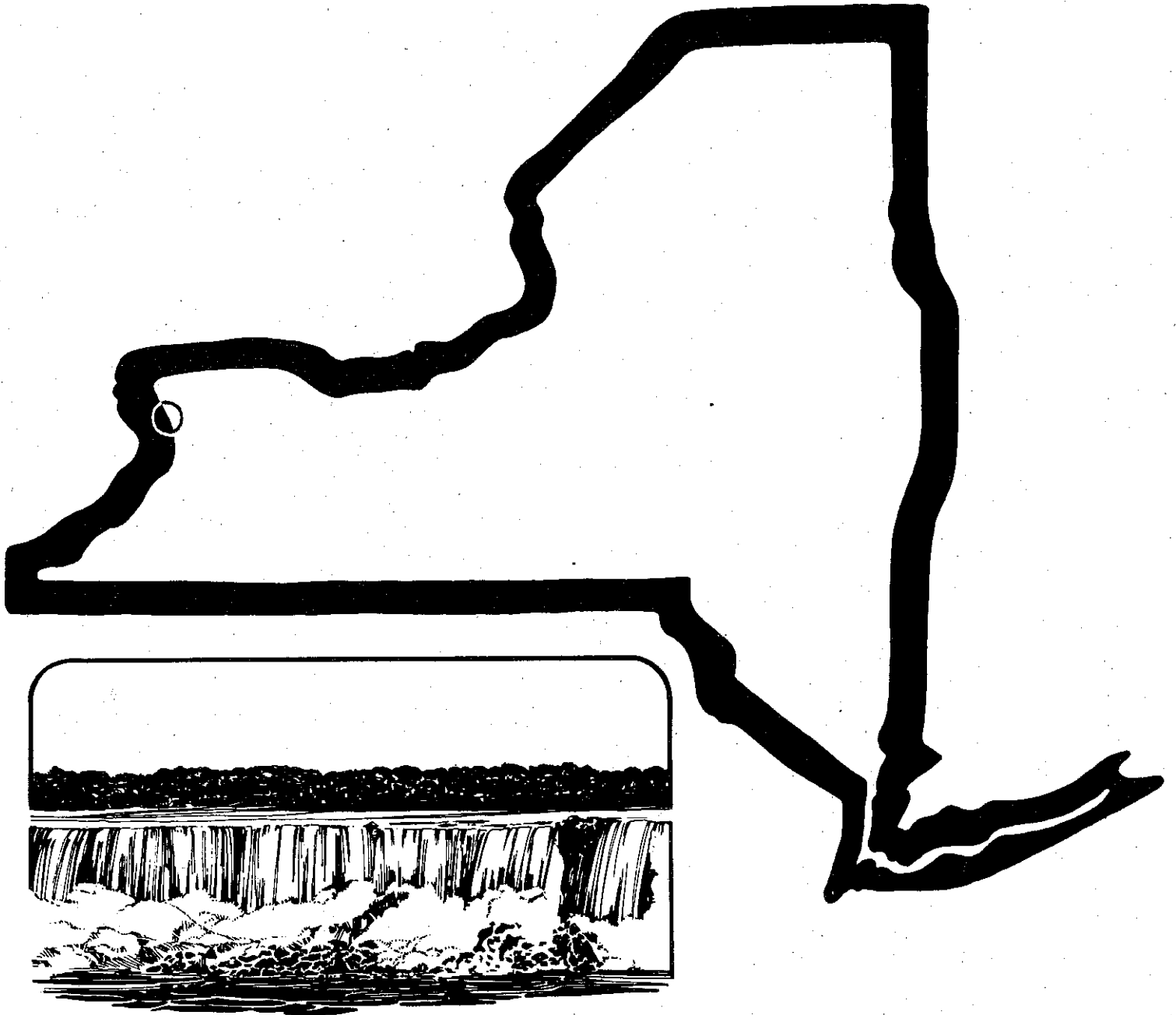


F. E. KARROW

VOLUME 18, NO. 1 • MAY 1983

# NEW YORK GLACIOGRAM



DEPARTMENT OF GEOLOGICAL SCIENCES

State University of New York at Buffalo

Buffalo, New York 14226

John E. Adams and Fred Van Alstyne - NYS Department of Environmental Conservation

Summary of Recent and Future NYSDEC  
Activities Relating to Pleistocene Deposits

Over the past year NYSDEC has participated in several projects relevant to Pleistocene glacial deposits throughout New York State. These projects have included ground water resource evaluation, definition of areas containing substantial Pleistocene deposits and examination of contamination problems in surficial materials. It is hoped that through a better understanding of the distribution and extent of Pleistocene sand and gravel materials that our valuable ground water resources may be better managed and protected.

NYSDEC and the Susquehanna River Basin Commission have recently completed a three year study of ground water resources in key areas of the Susquehanna River basin. The ground water resource evaluation included an extensive study of local hydrogeology, hydrology and water quality. Methods of study included seismic refraction, test well drilling, water quality analysis and mass measurement well inventories in the areas of interest. The results of this intensive investigation are ground water resource reports for the Big Flats area, Tioga County and a collection of available data in the I-88 corridor between Sidney and Colliersville. The ground water investigations will enable local planners to formulate resource management plans for present and future development.

The distribution of Pleistocene sands and gravels has been mapped in the Capital District counties. These include Saratoga, Schenectady, Albany, Rensselaer, Greene and Columbia Counties. The intension of this study was to delineate all glacial deposits in these counties which have the potential of yielding significant quantities of ground water. NYSDEC in cooperation with USGS intensified their efforts to define the extent of the Clifton Park aquifer. This area is of particular interest due to its rapid growth and heavy dependence on ground water. This compilation of available data into area specific reports will be a valuable reference to those involved in ground water resource management.

A geohydrologic study was completed for the area in and around the Bolton Landing Sewage Treatment Plant. Recent plans to construct condominiums and connect them to the Town's sewage system created a necessity to more fully understand the subsurface geology in this area. Existing data was analyzed and supplemented with an electrical resistivity study. The potentiometric surface, extent of sands and gravels, and ground water flow directions were identified.

A major portion of our 1983 geohydrologic projects will focus on contamination trackdown studies in the Endicott and Medford, L.I. areas. Both are areas in which organic chemicals have contaminated wells used for drinking water. These studies will involve subsurface exploration to supplement existing information. A determination of aquifer parameters, flow directions and ground water quality will be undertaken in an attempt to define a source of the contamination.

In addition to these trackdown studies the Department will be involved in a ground water resource study in the Olean-Salamanca area. This area has been designated as a primary aquifer and as such, is of particular interest to resource managers. Further understanding of the surficial deposits is imperative for proper ground water management.

To aid in resource and contamination studies we are stepping up our ground water modeling efforts. Analytical and digital models relating to resource evaluation and contamination transport are planned for use in the previously mentioned study areas. In addition, the Department will be increasing its capabilities for subsurface exploration.

\*\*\*\*\*

Thomas M. Berg & William D. Sevon - Pennsylvania Geological Survey

The Pennsylvania Survey has entered into a cooperative program with the Water Resources Division of the USGS and the Susquehanna River Basin Commission to map and evaluate the buried valley aquifers of the Plateau part of the North Branch Susquehanna River Basin. Larry Taylor of the Pennsylvania Survey and John Williams of the USGS will work on the hydrogeology, and Bill Sevon of the Pennsylvania Survey will map the glaciofluvial, alluvial, and lacustrine deposits. The program will also include seismic investigations and test drilling. Present plans call for completion of the project by mid-1986.

A new stratigraphic correlation diagram for all of Pennsylvania has just been completed by T. Berg, M. McInerney, J. Way, and D. MacLachlan. The diagram includes everything you ever wanted to know about the present "state of the art" in Pennsylvania stratigraphy, including the Pleistocene (admittedly a small part of the whole diagram). The diagram should be published within the next six months.

John Way and Jon Inners continue their bedrock and surficial mapping in the Allenwood-to-Millville area (parts of Union, Northumberland, Montour, and Columbia Counties). Surficial deposits being mapped include Illinoian till and kame, Altonian (?) till and glaciofluvial material, Woodfordian outwash and terraces, Woodfordian loess, various kinds of colluvium, and Holocene alluvium.

\*\*\*\*\*

James E. Bugh - Geology, SUNY College at Cortland

Last fall I hosted a Sigma Xi sponsored Science and Society Symposium treating radioactive waste disposal. State Geologist Bob Fakundiny spoke on the glacial investigations at West Valley. What may be of interest to Glaciogram readers is that I am seeking funding for a Conversation in the Disciplines to extend our studies of radioactive waste disposal. SUNY geologists who have offered to present papers at this conference are:

- John Hubbard, Brockport
- Carol Waddell, Buffalo
- Dick Young, Geneseo.

My glacial studies in New York have been confined to mine-land reclamation and D.O.T. reports. I am now preparing a general map depicting the quality of aggregates in New York State.

\*\*\*\*\*

Donald H. Cadwell - New York State Geological Survey

There are several topics I would like to report on:

1. Status on surficial mapping on the 1:250,000 scale sheets  
The greatest emphasis has been on completion of the Hudson-Mohawk Sheet. We have now completed 122 of the 211 7½ minute quads, or 58% of the entire sheet. We would like to be able to complete the remainder of the sheet this summer, but I think that there will be a void area to the north of the Mohawk River. Anyone who wants to help fill the voids please call me- my new phone number is 518-473-8056.  
  
The Lower Hudson Sheet is approximately 25% completed (30 of 124 7½ quads). The Adirondack has only 4% completed (11 of 256).
2. The Pleistocene Time-, Rock-, and Morpho-Stratigraphy Symposium at the NE Section Meeting went very well. We are now in the process of receiving the manuscripts from each participant. These will be published by the NYS Museum as a proceedings volume. Included with this Museum Bulletin will be an ice-margin map of eastern New York. We have been making great progress with the correlation of ice margins from the Hudson Valley across the Catskill Mountains and into the Susquehanna drainage basin. (Thanks to all of the participants!).
3. My field work this summer will be concentrated in the western Catskills and the eastern Susquehanna basin. Jay Fleisher and I hope to complete this area this summer.

\*\*\*\*\*

Parker E. Calkin - Geology, SUNY at Buffalo

I would like to call your attention (if you haven't already noticed) to the excellent program being presented during the Geomorphology Symposium "Models in Geomorphology" on Sept. 23-24th next at SUNY Buffalo. Mike Woldenberg and colleagues have assembled an outstanding cast (see Mike Woldenberg this issue). The conflict with NYSGA at SUNY Potsdam was unavoidable.

Please also note the "Call for Papers" for the GSC Meeting session on "Quaternary Evolution of the Great Lakes" (see Paul Karrow).

By the time you read this the abstracts deadline (3 June) for the GSA annual meeting in Indianapolis (Oct. 31-Nov. 3) may have past but you'll want to attend the various Quaternary-oriented symposia and field trips.

The Symposium on Correlation of Quaternary Chronologies organized by Bill Mahaney of York University (May 26-29) will be over by the time you receive the Glaciogram. Be on the lookout for proceedings; there were over 35 speakers.

Have a great summer - I'm off to the Brooks Range, Seward Peninsula, and northern Maine.

\*\*\*\*\*

Donald R. Coates - Geology, SUNY at Binghamton

During this past year three students have completed their M.A. on problems dealing with glacial aspects of hydrogeology: William Kramer, Peter Murdoch, and Mark Raybuck. Bill and Mark and now working for consulting firms and Pete is with the U.S. Geological Survey in Albany.

Dave Ozsvath is bringing to a close his PH.D. His dissertation is a study of the western Catskills, Matt Gubitosa will finish his M.A. thesis this summer on another part of the Catskills.

Doug Chichester has started his M.A. thesis on an evaluation of terrain differences between glaciated and unglaciated regions. Tim Pagano has been working several months on his M.A. thesis which is an evaluation of differences between south-flowing and north-flowing streams. He will test my hypothesis that glaciation has caused differences in water regimes as a function of basin orientation.

My own work has consisted of assessment of different glacial terranes and valley fill drift and their influence on hydrologic systems. This work has resulted from projects with ARCO and their gasoline spills.

\*\*\*\*\*

G. Gordon Connally - GGC Inc., Buffalo

During the Fall of 1983, the New York State Geological Survey plans to coordinate a workshop in the Albany area on "Till" (diamictons?). The workshop will feature three or four of the speakers who presented papers in the symposium on till facies at the Geological Society of America, North-Central Sectional Meeting in Madison Wisconsin this Spring. All those on the Glaciogram mailing list will be issued invitations. Plans are to have Friday morning sessions by invited speakers, Friday afternoon working groups led by the speakers, and a Saturday field trip to one or two extensive till exposures.

\*\*\*\*\*

Robert J. Dineen - New York State Geological Survey

This season I mapped along the Mohawk River from Schenectady to Gloversville. I was especially impressed by the large, sandy medial moraine that can be traced from Gloversville to Middle Grove. This moraine was deposited between the Mohawk and Schroon glacial lobes (Brigham, 1929 and Yatsevitch, 1969). I also mapped several recessional moraines and their associated outwash systems between Broadalbin and Saratoga Springs. I was able to trace the Delmar Readvance from Voorheesville through Altamont and north to West Schenectady and Rotterdam.

I worked in the Rosendale area also. I traced the Rosendale Readvance margin from Esopus to Kallops Corners, High Falls, and Whitfield. I could not trace the ice margin north of Krumville, but am now convinced I should recant my previous notion that the Rosendale and Middleburg Readvances are the same event. The Rosendale Readvance is clearly older than the Middleburg-Oak Hill Readvance. The Middleburg-Oak Hill Readvance enters the Hudson Valley at Lawrenceville and Timmerman Hill.

Now for an entry for the "Post-Glaciogram". I've been collaborating with R. Funk and B. Wellman on a study of archeological sites along the Susquehanna River between Wells Bridge and Emmons. We've been able to trace three persistent post-glacial terraces throughout this area. The youngest, T<sub>0</sub>, is less than 1000 years old. T<sub>1</sub> is 1000 to 3000 years old, T<sub>2</sub> is 3000 to 8500 years old. All three terraces are graded to the same base level (at Wells Bridge) and all three show the same sequence of sediment: basal gravel overlain or interbedded with a woody leaf mat, overlain by rapidly fining-up sand to silt. The terrace sedimentary sequences get thicker with age, the terrace width gets wider with age, meander wavelength and amplitude increase with age, and the width of the meander belt increases sharply with age. The Susquehanna is a significantly straighter river now than it was 4000 years ago. T<sub>1</sub> contains very few archeological sites, while T<sub>2</sub> is relatively site-rich. We hope to extend the archeo-geological work in the Susquehanna Basin next year.

\*\*\*\*\*

Rhodes W. Fairbridge - Geology, Columbia University

On December 3, 1982, I was honored with a retirement dinner and now I am "Professor Emeritus," which means theoretically that I have nothing to do but listen to the seagulls and toss stones into the pond (to admire the elegance of the wave forms). Only theoretically true... in the last two months I attended five conferences, including one on Mediterranean geology in Sicily, one on Milankovitch (LDGO) and gave a paper on Nile flood periodicities (GSA, New Orleans). I am working now on a new Ephemeris from NASA (JPL) that enables one to plot solar and terrestrial cycles with respect to the systemic barycenter, back for 2000 years.

The Encyclopedia of World Regional Geology (II, Europe and Asia) is now mostly at the publisher's (Hutchinson & Ross). Other encyclopedias in production include Beaches, and Applied Geology. Expected soon are Structure, Petrology, and Climatology. Others down the line a few years, are History of Geology, Geoarcheology, Petroleum Geology, Stratigraphy and Regional (III, Africa and Middle East). The Benchmarks continue and recently passed vol. 70.

International commissions still keep me occupied (and happy!). INQUA Neotectonics Commission has graciously made me honorary president. Shorelines and Holocene commissions still work closely with us, and in the friendliest ways; likewise IGCP 61. I'm working on the new shorelines handbook.

The new Inter-Union Commission on the Lithosphere looks interesting and INQUA is collaborating for the Hamburg IUGG meeting. IGU Morphotectonics may also fit in here.

I have moved to a new office at Columbia down the Hall 25 m to Schermerhorn 609, but May to September I'm more likely to be watching beach erosion and sedimentation from our country retreat: Box 801, Anagansett, N.Y. 11930 (phone 515-267-8329)

#### STRIAE and STRIOLAE

Noticed in the last N.W. Glaciogram was a remark to the effect that Striae was a "perhaps obscure" or hard-to-get publication. Both serials (with Striolae) are published regularly by the Societas Upsaliensis pro Geologia Quaternaria and edited by Lars-König Königsson and colleagues at the Quaternary Geology Dept., University of Uppsala, S-75122, Sweden. (Note the UPPSALA in modern Swedish gets two "p"s, but only one in Latin.) While they like library subscriptions, private persons (specialists) can get specific numbers by request. Striae is a general journal of Quaternary research, entirely in English, mainly on Swedish field work, but vol. 14 (1981) was a general one, dedicated to the 75th anniversary of Maj-Britt and Sten Florin, respectively distinguished palynologist and Quaternary geologist; this volume, 212 pages, contains 43 articles in Festschrift style, covering the whole world. A charge is made for it, but every geology library should have a copy. The whole series, 8½ x 11½ inches, is well worth getting.

The baby-brother Striolae (Latin for little Striae), 5½ x 8 inches, contains the INQUA Newsletters, which are summaries and reviews of Quaternary commission research, and should be seen by every reader of the N.Y. Glaciogram.



Future volumes of Striae are promised, which will deal for example with the Report of the INQUA Holocene Commission Working Group on Chronologic Subdivision (with a global authorship, price about \$30). Another Striae will deal with the working Group on Holocene Glaciers (ed. by W. Karlén; papers by Calkin et al.).

Following the MOSCOW INQUA (Aug. 1982), there has been some "cabinet shuffling" among the commission personnel. Holocene is still led by Königsson; Shorelines goes from D. Colquhoun (U.So.Carolina) to Douglas Grant (Geol. Surv., Canada, Ottawa); Neotectonics goes to Nils-Axel Mörner, Stockholm, from Fairbridge, N.Y.C., who becomes "honorary president." The Bulletin of the Neotectonics Commission will continue to be issued by Mörner, and is free on request to him: Geological Institute, K.U.S., P.O. Box 6801, Stockholm, S-11368.

Fairbridge - Continued next page.

\*\*\*\*\*

Robert F. Black - Geology, University of Connecticut

Joe Guerrieri is finishing his M.S. this summer on the Glacial Geology of the Saranac Lake Quad., N.Y. Gary Kjelleren will continue field studies of the South Hinerburg delta, Vt. this summer. Laurie Muriker will continue her studies of glacial drainage features near Willimantic, Ct.

\*\*\*\*\*

Aleksis Dreimanis - Geology, University of Western Ontario

Last winter I was re-thinking various situations and problems related to the origin of till, and in March and April I gave several talks at seminars and symposia on this topic. Another old topic, I tried to re-evaluate, was the Wisconsin stratigraphy in the Great Lakes-St. Lawrence region. -- In late fall I re-visited the field areas of two of my graduate students, Michel Lamothe and Michel Parent who are doing their Ph.D. research in S. Quebec, discussed with them their findings, and also re-visited some of the Lake Erie north shore sections. Even if you have seen some sections repeatedly many times, every re-examination reveals something new.

Michel Lamothe has been trying to apply the new and still controversial TL dating method in his thesis area.

Another backlog task that kept me busy last winter, was the geological terminology for a Latvian-English-German technical dictionary.

Dick Goldthwait -- Geology O.S.U. and Wolfeboro, N.H.

Even though we live in Florida and watch sealevel rise and fall on our barrier island (in response to glaciers, of course) I give lectures various places and spend much time on Ohio and N.H. Pleistocene research. This year it's Teays Valley papers --the beginning of the Pleistocene--including a preKansan locality just west of Cincinnati. Next year it may be that old question: where are the deposits of the local White Mtn. cirque glaciers in N.H.? (if Woody Thompson and I get enough field time together: he found a good moraine).

## ENCYCLOPEDIA OF EARTH SCIENCES SERIES

Series Editor: Dr. Rhodes W. Fairbridge, Columbia University  
 Status Report, January 17, 1983

<u>VOLUME NUMBER</u>	<u>SHORT TITLE</u>	<u>EDITOR(S)</u>	<u>PUBLICATION DATE</u>
<u>PUBLISHED:</u>			
I	OCEANOGRAPHY	R. W. Fairbridge	1966
II	ATMOSPHERIC SCIENCES AND ASTROGEOLOGY	R. W. Fairbridge	1967
III	GEOMORPHOLOGY	R. W. Fairbridge	1968
IVA	GEOCHEMISTRY AND ENVIRONMENTAL SCIENCES	R. W. Fairbridge	1972
IVB	MINERALOGY	Keith Frye	1981
VJ	SEDIMENTOLOGY	R. W. Fairbridge/Joanne Bourgeois	1978
VII	PALEONTOLOGY	R. W. Fairbridge/David Jablonski	1979
VIII	WORLD REGIONAL GEOLOGY, Part I: Western Hemisphere (Including Antarctica and Australia)	R. W. Fairbridge	1975
XII	SOIL SCIENCE, Part 1: Physics, Chemistry, Biology, Fertility, and Technology	R. W. Fairbridge/C. W. Finkl, Jr.	1979
→ XV	BEACHES AND COASTAL ENVIRONMENTS	Maurice L. Schwartz	1983 <i>Just arrived!</i>
<u>IN PRODUCTION:</u>			
XIII	APPLIED GEOLOGY	Charles W. Finkl, Jr.	10/83
VIII	WORLD REGIONAL GEOLOGY, Part 2: Europe and Asia	R. W. Fairbridge	1983
<u>UNDER CONTRACT:</u>			
X	STRUCTURAL GEOLOGY	Carl K. Seyfert	3/83
XIV	FIELD AND GENERAL GEOLOGY	Charles W. Finkl, Jr.	6/83
V	IGNEOUS AND METAMORPHIC PETROLOGY	D. R. Bowes	7/83
	VOLCANOLOGY AND GEOTHERMAL RESOURCES	Jack Green	9/83
XII	SOIL SCIENCE, Part 2: Morphology, Genesis, Classification and Geography	Charles W. Finkl, Jr.	10/83
VIII	WORLD REGIONAL GEOLOGY, Part 3: Africa and Middle East	R. W. Fairbridge	12/83
→	GEO-ARCHEOLOGY	R. W. Fairbridge/Allan Gilbert	3/84
→	SNOW, ICE, AND GLACIOLOGY	David E. Thompson	7/84
I	OCEANOGRAPHY, 2nd Edition	R. W. Fairbridge	12/84
→	CLIMATOLOGY	R. W. Fairbridge/John E. Oliver	7/85
→	GEOLOGICAL BIOGRAPHY HISTORICAL	Mott T. Greene/R. W. Fairbridge	8/85
	GEOPHYSICS	David E. James	3/86
	STRATIGRAPHY	R. W. Fairbridge/David Jablonski/ Susan M. Kidwell	3/87
<u>UNDER CONSIDERATION:</u>			
	PETROLEUM GEOLOGY		
	GEOHYDROLOGY AND WATER RESOURCES		
	WORLD ORE DEPOSITS		
	ORE GENESIS AND METALLOGENY		
	MINING AND MINERAL RESOURCES		

Jane L. Forsyth - Geology, Bowling Green State University, Ohio

My own efforts at meaningful research seem to be bogged down in teaching, editing, and thesis-review obligations (and just getting out from under the responsibilities that seem to increase with the years). However, my graduate student, Don Guy, who is also an active researcher with the Ohio Geological Survey, is completing a fine, detailed thesis on the nature and origin of Bay Point, the sandspit opposite famous Cedar Point, at the mouth of Sandusky Bay in Lake Erie. Using vibracore sediment-stratigraphic data, he has been able to demonstrate a glacial stage when late Wisconsinan lacustrine-type till was being deposited in the lake basin; followed by low-energy sedimentation in a restricted lake, as lake level rose with isostatic recovery of the Niagara sill; and high-energy sedimentation in a higher lake, with deep flooding over lake-bottom moraines, a sedimentary sequence much like that found in the western basin by Michael Lewis (1969). Another almost-completed thesis by Valerie House, on the glacial geology of Wyandot County in Ohio (at Upper Sandusky, in north-central Ohio) shows that, where the published Ohio glacial map shows only ground and end moraine, there were four ice-dammed lakes, with six or seven clear outlets, some dunes, two eskers, and a kettled delta! A third graduate student, Bob Metzger, is mapping the glacial features and buried bedrock surface (a fascinatingly deeply scored dolomite bedrock ridge) and environmental problems of Hancock County (at Findlay, in northwestern Ohio). It is exciting to see these studies evolve; I only wish that I were as productive as they.

\*\*\*\*\*

Inez Kettles and William Shilts - Geological Survey of Canada

In anticipation of your next issue of "Glaciogram", we have prepared a brief summary of our activities in southern Ontario since we last wrote you a few years ago.

For the past three summers we have carried out a program of systematic till sampling on the Frontenac Arch and adjacent areas of southeastern Ontario. The primary objective of the sampling was to map those chemical and mineralogical components in the overburden that are related to the sensitivity of the terrain to the effects of Acid Rain, as reported in "Glaciogram" a few years ago.

The Frontenac Arch area was chosen because it is underlain and flanked by a variety of lithologies capable of producing soils and sediments with variable capacity for buffering the effects of wet and dry acid precipitation, and the tourist industry there is in some potential jeopardy because the region is located in the main North American plume of industrial emissions. The carbonate components in till and derived glacial and postglacial sediments are of particular interest since they can buffer the excess acid of acid precipitation. Geological Survey of Canada Paper 81-14 presents maps and discussion of the buffering capacity of rocks throughout eastern Canada.

Because the predominate ice flow direction across the Frontenac Arch was from the northeast, we are able to trace the dispersal patterns of carbonate-rich till derived from areas underlain by Paleozoic rocks onto the Precambrian rocks of the arch. Trace element analyses of the  $<2\mu\text{m}$  fraction of till and related sediments reveal anomalous concentrations of trace elements that generally can be related to areas of known or possible mineralization. Arsenic anomalies, for example, clearly outline sedimentary-volcanic belts that have yielded arsenical gold. Mobilization of potentially toxic trace elements from drift by exchange reactions with the excess protons produced by acid precipitation is a particularly worrisome problem as is the differentiation of patterns of natural metal enrichment from those caused by atmospherically transported metals.

When we began this work we assumed that the till derived from Precambrian marble belts would be enriched in carbonate. We found, however, that carbonate content of till lying directly on and down-ice from marble outcrops is considerably less than that of till lying on and considerable distances down-ice from the Paleozoic carbonate rocks that flank the arch on the northeast. This may be explained by the marble's coarse-grained texture and the massive nature of its outcrops compared to the well-bedded, jointed nature of the Paleozoic outcrops. The latter must have produced relatively more debris through glacial plucking and subsequent abrasion of the basal load.

As part of the same project, Phil Wyatt is examining the acid neutralizing capacity (ANC) of a variety of surficial sediments from this region. The effects of acid loading on these sediments are measured using ANC titrations, batch titrations in which identical amounts of sediment are brought into equilibrium with a 0.01 M NaCl solution. A small but increasing quantity of  $\text{H}_2\text{SO}_4$  is added to each sample and allowed to equilibrate under mild agitation for 24 hours. Taking the ionic strength of the solution into consideration, the initial and final pH of the sample can be used to calculate the amount of acid neutralized by the sediment. The ANC reveals how much acid the sediment can neutralize before the solution it is in contact with is lowered to a certain pH.

Also, in this area, Christine Kaszycki is mapping, at a detailed scale, the Quaternary deposits around Haliburton. This work will form the basis of her Ph.D. thesis at the University of Illinois. Christine is paying particular attention to till facies, particularly the various supraglacial facies so well-exposed in the Haliburton region.

Finally, in support of the acid rain and surficial mapping programs, we are carrying out low-frequency sonar studies of the lakes of the Frontenac Arch. These studies have yielded some spectacular subbottom profiles with over 30 m of bottom penetration. Preliminary results have been published in Geological Survey of Canada Papers 82-1A and 82-1B.

\* \* \* \* \*

Paul F. Karrow - Earth Science, University of Waterloo, Ontario

Glaciogram news is brief because I am between trips to Florida (sabbatical there early 1984) and the N.C.G.S.A. in Madison, following which I will explore glacial lake deposits of the Michigan, Superior, and Huron basins searching for fossil (particularly molluscs and wood) sites.

Summer plans are still uncertain but I hope to spend at least some time on writing reports and papers (St. Joseph Island, Quaternary of Canada volume, Stratford-Conestogo, and others).

Grad students are either thesis writing as previously reported (Richard, Finamore, Coakley) or taking courses and looking forward to summer field and lab work (Kerr-Lawson on Toronto Interglacial, Barnett on Lake Erie bluffs, Zilans on Lake Huron bottom cores, Courtney on northern Lake Huron raised shorelines).

I would also like to call your attention to the call for papers for a special session of the next annual meeting of the Geological Association of Canada (see below).

\*\*\*\*\*

Announcement and Call for Papers  
Special Session  
on  
QUATERNARY EVOLUTION OF THE GREAT LAKES

Geological Association of Canada  
Annual Meeting, 13-16 May 1984  
London, Ontario

We hereby request the submission of abstracts on the above topic, which will form the subject of a day-long special session at the annual meeting of the Geological Association of Canada.

The focus of submitted papers should be on some aspect of the history of glacial lakes of the Great Lakes region, their correlation, age, relations to deglacial history, outlets, and tilting.

Related papers on biogeography and archeology will also be considered for acceptance if there is space in the program.

The papers here requested will be complemented by invited papers summarizing the state of knowledge of the five major lake basins.

Abstract forms and information may be obtained from:

Geological Association of Canada  
c/o Department of Earth Sciences  
Memorial University  
St. Johns, Newfoundland

- or from the organizers listed below.

Deadline for submission of abstracts for this special session only is October 1, 1983.

Submit abstracts to one of the three organizers:

P.F. Karrow (Committee Chairman)  
Department of Earth Sciences  
University of Waterloo  
Waterloo, Ontario  
N2L 3G1

P.E. Calkin  
Department of Geological Sciences  
State University of New York  
Buffalo, New York 14226

B.H. Feenstra  
Ministry of Natural Resources  
Petroleum Resources Laboratory  
458 Central Avenue  
London, Ontario  
N6B 2E5

Les Lynn - Biology, Berger Community College, Paramus, NJ

I have just finished a paleoecological study in southeastern New York dealing with the reconstruction of the postglacial vegetation of a bog and will soon begin a similar study in the same vicinity (Orange Co.).

\*\*\*\*\*

Alan and Ann Morgan - Geology and Biology respectively, Univ. of Waterloo, Ont.

The Quaternary Entomology Laboratory at Waterloo had a busy year in 1982. Papers were presented in the Arctic Workshop at INSTAAR on fossil faunas from Baffin Island and Alaska, and at the Northcentral G.S.A. on insect assemblages from Garfield Heights, Ohio and Longswamp, PA. In May, papers were given at the GAC/MAC meeting in Winnipeg on beetles from the Brampton site (Ontario), and a summary of the uses of fossil insects in archaeology at the Annual Meeting of the Canadian Archaeological Association in Hamilton. A contribution to the GAC field guide on the Nelson River, Manitoba (Missinaibi Formation) was also completed.

At the AMQUA conference in June, a poster session was given on pre-Vashon insects from the Fraser Lowlands. In August two papers were presented at INQUA (Moscow). One of these was a summary of fossil insect work in southern Ontario and the adjacent United States, the second on a late Middle Weichselian site at Belchatow, Poland. Also in August a paper was given on the results of fossil Coleoptera analyses of sites in southern Ontario and New York State, in the time frame 11,000-10,000 yr. B.P., at the N. American Paleontological Congress in Montreal. Two papers were given at GSA, on fossil insect assemblages, and on new geochemical data derived from insect chitin. In December a paper and a poster session were presented on movements of certain Canadian and American species to the joint American and Canadian Entomological Society meetings in Toronto.

During July and August 1982, A. V. Morgan was a visiting guest professor at the University of Kiel, Germany, and beetle analyses of several sites were commenced in Scheleswig-Holstein. Investigations into many sites continue.

Scott Elias returned to Boulder, Colorado in June after spending the first half of 1982 at Waterloo. R. F. Miller is continuing his investigations of stable isotopes in insect chitin for his Ph.D. thesis. John Motz (M.Sc. student) is carrying on with further analyses of materials from the Late Glacial Brampton site (Brampton, Ontario). Jerry Pilny (M.Sc. student) is



working on samples from the Rostock, Ontario, mammoth(s) site. Anne Morgan is currently examining samples from the L'Anse aux Meadows Viking site, Newfoundland.

The modern collection is being expanded with samples collected from Northern Ontario (Motz and Pilny); Churchill/Eskimo Point (Sexton); Yellowknife/Kluane (Miller); Lake Baikal and the Lena River, Siberia (Morgan and Morgan) and Northern Manitoba (A. V. Morgan).

In May papers are being presented in Virginia at the NATO Symposium on Deglaciation, and at the G.A.C. Annual Meeting in Victoria, B.C. Contributions on fossil insect faunas have been made to Field Guides for the Mid-west Friends in Lafayette, and the G.S.A. Annual Meeting in Indianapolis.

\*\*\*\*\*

Marie Morisawa - Geology, SUNY Binghamton

Several students and I have been working on studies of river and slope problems in the Binghamton area. Another student will soon finish her thesis on washovers on a section of the south shore of Long Island.

Dr. Theodore Astaras, a fluvial geomorphologist at Aristotile University Thessaloniki, Greece spent the fall semester in our department collaborating with me on some research.

\*\*\*\*\*

Ernest H. Muller -- Geology, Syracuse University

Winter has been mild, brief and marked by a lack of progress on a number of fronts. Now that spring is upon us, snow has at last come to the Miami of the North, and things are beginning to liven up again.

With Dave Franzi and Jack Ridge, I am preparing a manuscript on part of the Western Mohawk Valley for Don Cadwell's symposium volume on Pleistocene Time-, Rock-, and Morpho-stratigraphy of Eastern New York.

We conclude that the westward-spreading Mohawk glacial lobe and the eastward flowing Oneida lobe responded to the same climatic fluctuations during late Wisconsinan deglaciation. The resulting readvances, however, culminated asynchronously as indicated by interbedded lake sediments between till sheets exposed in stream bluffs of West Canada Creek. This difference in response time may have resulted from different distances from outflow centers; it may reflect incremental contribution by Adirondack throughflow supplementing the Mohawk lobe during advance, but lost progressively during recession with resultingly rapid drawback; or it may be due to some totally different and unrecognized cause.

Present indications are that Fullerton's Indian Castle margin delineates parts of two different Oneida lobe till sheets and includes "Hawthorne till" of an earlier Mohawk advance, as previously suggested by Don Krall. Fullerton's border defines part of the margin of the "Norway till" and part of the margin of the "Holland Patent till". These two tills are similar in appearance and are considered to correspond to two phases of of the Valley Heads moraine complex. Antonetti's thesis, defended last fall, shows them to be separated by glacial recession of several tens of miles and varves representing perhaps a century or so of intervening lacustrine deposition.

Cheryl Lykens' M.S. research is presently directed toward re-examination of the Oneida lobe drift margins in the Little Falls and Oppenheim Quadrangles. Bob Foresti's thesis research in the Ilion Quadrangle is focussing on till structure and fabric. Greg Flick plans to map in the Herkimer Quadrangle. Jack Ridge will continue his intensive stratigraphic study in the Newport, Middleville and adjacent quadrangles, applying paleomagnetic analysis to correlation and evaluation of the interbedded lake sequence. Dave Franzi, who will take up a faculty position at Lafayette College this fall, hopes for time for reconnaissance along the plateau margin south of the western Mohawk, following completion of his dissertation.

My summer interests include doing something with a couple of existing manuscripts and turning further attention north along the west margin of the Adirondacks, as well as, sometime, getting onto the Ontario bluffs manuscript which Parker and I have been contemplating. There's plenty to do, but the only firm plans I have made involve attending the Permafrost Conference and field trip in Alaska in July.

\*\*\*\*\*

Walter S. Newman - CUNY, Queens

I'll present the results of our Hudson Valley Ramapo Fault Zone Investigation at the Kurt Lowe Symposium of the Northeastern Section of the GSA next March. More than 100 radiocarbon-dated sea level dates suggest (but do not prove) that the fault zone is still active with a recurrence interval of about two millennia.

Enjoyed our adventure travelling the Moscow subways with Parker Calkin at the Moscow INQUA last August.

Still working on computer-generated isobase maps with results being published in the Masters-Flemming volume on Hominid Migrations early next year by Academic Press. In it we conclude that changes in level of the geoid at least equal so-called eustatic sea level changes so that one cannot relate sea level to ice volume changes. Further, one cannot tell when the last sea level minimum occurred.

(The above was too late for Fall '82 issue; see Spring news on next page -ed.)

Late again! I'm still organizing after returning from sabbatical year. Still working with sea level data on main-frame computers. With more than 4200 world-wide radiocarbon-dated former sea level data packets, we are unable to discern a eustatic sea level curve and find that the differences between the 90 percentile limits are of the same order of magnitude as supposed glacial-eustatic changes. Moreover, the isotropic distribution of data prior to 12,000 radiocarbon years ago prevents us from determining either the date of the Wisconsinan sea level low nor its magnitude. All we can say is that the Late Wisconsinan low was almost certainly less than 100 meters below present sea level and perhaps even less than 80 meters. Yes, there are data that suggest sea levels as low as minus 200 meters but the bulk of 12,000-20,000 YBP data are less than 100 meters below sea level.

We presented our Hudson Estuary sea level data at the annual meeting of the Northeast Section of the GSA at the Concord Hotel this past March. For the past 6000 years, sea level has been rising at a rate of more than 2.0 meters/millennium at New York City but only about 1.0 meters/millennium near Poughkeepsie. These two curves are essentially straight lines. However, our stations at and adjacent to the Ramapo Fault Zone portray considerable noise and spectacular rises near 4000 and 2200 YBP. Is this evidence for <sup>fault</sup> throw and a recurrence interval of about 2000 years?

I have no firm plans for this coming summer. It is time to write up all that accumulated data. And we must address all those local problems: home repairs and improvements and even field excursions.

\*\*\*\*\*

Gerald W. Olson - Agronomy, Cornell University

Soils tours provide the best mechanism to teach students, special interest groups, and the general public about soils. During a tour of soils in the field, each participant can relate the soil map and report to soil profile and landscape characteristics according to each individual's perspective. In New York State, a systematic sustained program of soils tours is underway to communicate soil survey information to decision-makers. The base for the program is a series of published "Soils Tour Fact Sheets" which outline a route and observations on a soil map sheet. Published photographs and descriptions of soil conditions emphasize the important things to be observed on the tour. In New York State, Soils Tour Fact Sheets are under preparation in a number of counties, and have already been published for the following counties: Broome, Cayuga, Chemung, Cortland, Genesee, Herkimer, Lewis, Monroe, Montgomery, Niagara, Onondaga, Ontario, Schenectady, Schoharie, Schuyler, Seneca, Suffolk, Tioga, Tompkins, Ulster, Washington, Wayne, Westchester, Wyoming, and Yates. Examples of published soils tours

and experiences will be exhibited in this poster session. A Workbook on Soils and the Environment has been prepared to provide details "in-depth" during the sessions. Through experience, the best format for the soils tour program appears to be an indoor session followed by an outdoor session on the same day. Each tour group is different, and the publicity for the tour can be targeted toward a specific or a general audience. When the tour is over, everyone has been mentally and physically enlightened and challenged--and has a sense of accomplishment in learning about the surface and subsoil characteristics of the local environment. Typical evaluation comments include: "I learned more about soils today than in all my courses at Cornell!"; "I never realized we had so much clay (gravel) in \_\_\_\_\_ County"; and, "If only we had this information when we were planning the subdivision last year". Enthusiasm for the tours is high, and plans are to develop them and implement them in all the counties in New York State. Other states and countries could similarly develop systematic soils tour programs adapted to the needs of each community. No more effective techniques in teaching and training can be found than to bring the people to the object of study--the soils.

\* \* \* \* \*

B. E. Raemsch - Anthropology, Hartwick College

During the last two weeks of October, 1982, we were indeed fortunate to attend the 1st International Congress of Human Paleontology where I presented a paper on comparative studies of core-biface stone tools in pre-Paleoindian cultures of New York State through attribute analysis. These were compared with similar artifacts in Eurasia excavations. (Our materials are associated with Pleistocene sediments of Schoharie and Otsego Counties.) The Congress was composed of a distinguished and alert audience, associated with many work sessions, sponsored by UNESCO and chaired by, among others, the husband and wife team of Henry and Marie-Antoinette de Lumley. It was held in Nice, France, and we were able to visit several sites of Pleistocene antiquity (for example, Terra Amata & Lazaret).

We had a good reception, I should judge, with respect to the results of our work; with Madame de Lumley, as well as two UNESCO consultants. Our paper will be published along with the others, "sometime soon".

Four unusual features of the Congress might be of interest to readers of the GLACIOGRAM:

1. The more than accustomed cordial atmosphere, and serious consideration of the French and others toward the presentations of their guests.
2. The intense interest, irrespective of ideas presented, in not only questions in anthropology but geology and diverse cultures up to the present recent prehistoric. Terra Amata, for example, has been almost entirely preserved by the city of Nice at no small expense, with a modern museum erected over the site, where lay public and scientists alike are seen coming and going.

- 3. The accuracy and knowledge of the newspaper reporting and staff writers of the day-by-day events as they occurred, and conclusions.
- 4. New views and/or interpretations (frequently neglected) of human evolution through the Pleistocene, as raised by Prof. Pierre Grassé, member of the French Academy of Sciences, for example, were raised and dealt with in an effort to adequately explain continuing difficulties with respect to the appearance of Homo sapiens sapiens on the world scene.

\*\*\*\*\*

Edward Sado and Owen White - Ontario Geological Survey

Activities of O.G.S. Quaternary Geologists related to New York and surrounding states.

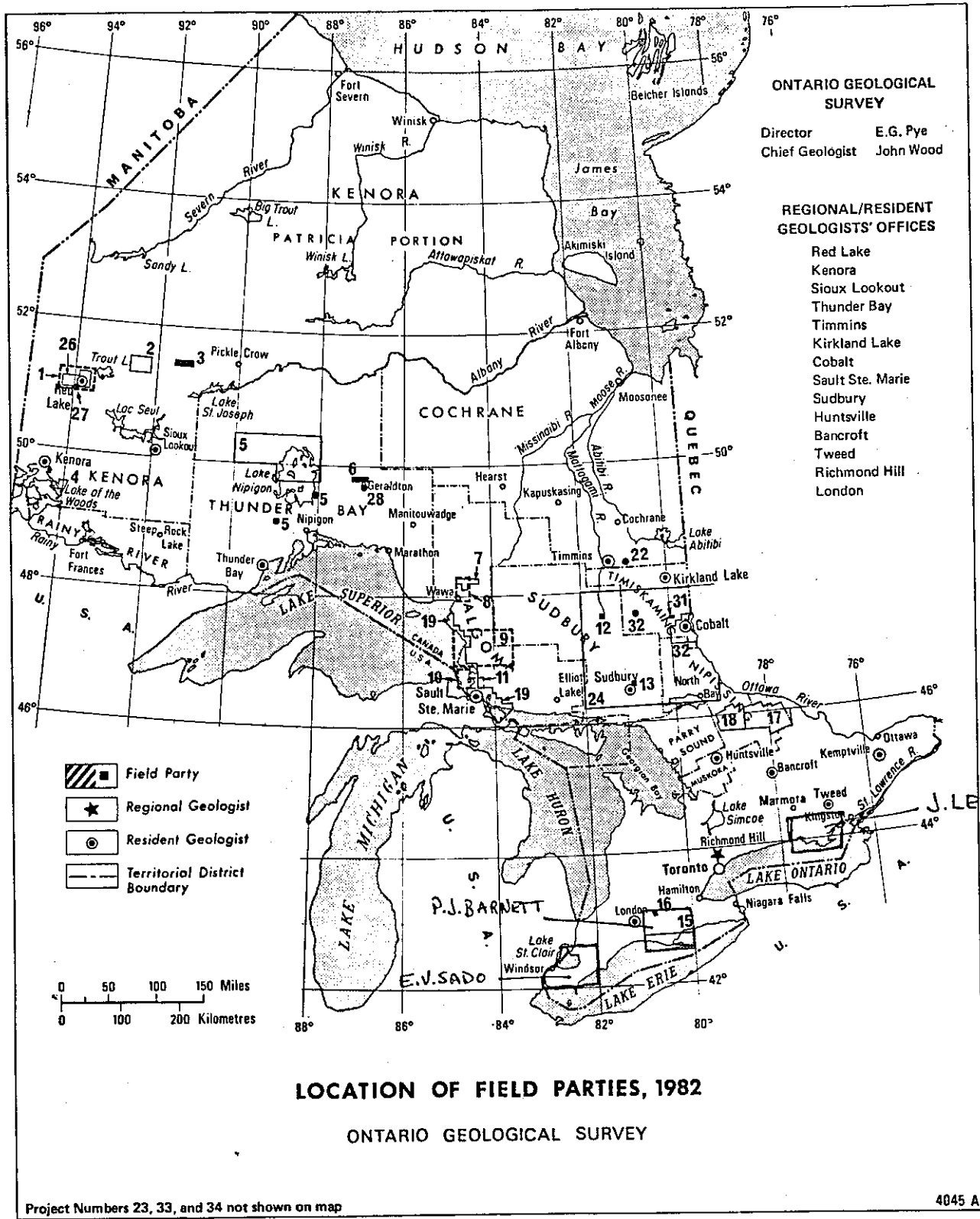
Quaternary Staff at O.G.S.

- O. L. White, Chief, Engineering & Terrain Geology Section
- E. V. Sado, Supervisor, Quaternary Geology Subsection
- P. J. Barnett, Quaternary Geologist on temporary educational leave of absence to obtain Ph.D. at University of Waterloo
- C. L. Baker, Quaternary Geologist
- R. S. Geddes, Quaternary Geologist
- M. J. Ford, Contract Quaternary Geologist
- J. Leyland, Contract Quaternary Geologist

Activities of Staff Relevant to New York State (see map attached)

- E. V. Sado - currently putting together Synoptic Overview of quaternary deposits in the Windsor-Chatham, Ridgetown-London areas of S.W. Ontario.
- P. J. Barnett - mapping of the Pt. Burwell-Long Pt. map areas along the north shore of Lake Erie. This is part of his Ph.D. thesis at the University of Waterloo (under Karrow).
- J. Leyland - Completing quaternary mapping of 8 map areas (1:50,000) in the Kingston area.
- E. V. Sado - Compiling Quaternary Map of Ontario for publication in 1991 (1:1,000,000 scale)

\*\*\*\*\*



Location of Field Parties of the Ontario Geological Survey, 1982.

Richard B. Waitt, Jr. - USGS, Vancouver, WA

This winter and spring I will get into review a much-overdue report on glaciation and deglaciation of the northeastern North Cascades, Washington. Cordilleran-icesheet deglaciation of the high-relief Cascades shows patterns and sequences that seem to be common to Laurentide-icesheet deglaciation of high-relief terrain in New England. Perhaps the two regions deserve fuller comparison in the future.

Unlike New England, the maximum icesheet surface in the NE Cascades can be objectively reconstructed and contoured from field evidence on nunataks that protruded the icesheet surface. During deglaciation the icesheet both downwasted and the terminus backwasted, thereby uncovering uplands first and valley floors last. Moraines resembling alpine-glacial moraines were built by distributary tongues of Cordilleran ice late during deglaciation. There seem to be similarities here with parts of Maine and western Vermont.

Upvalley-transported erratics and other evidence show that cirque floors in the NE Cascades were last occupied by Cordilleran, not local ice, and that local glaciers re-formed only in the high-altitude cirques that contain modern glaciers. The general lack of late-glacial occupancy of cirques in the NE Cascades by local ice is quite similar to deglacial sequences reported from the Presidential Range, N.H., in the mountains of west-central Maine, and at Mount Katahdin, Maine; the NE Cascades sequence accordingly differs from sequences reported from the Mt. Mansfield area, Vt. and from the high Adirondacks, N.Y.

Most studies on Pleistocene icesheets have been carried out in terrain of low to moderate relief. Processes of icesheet glaciation and deglaciation in the high-relief Cascades may be revealing of some icesheet processes in high-relief uplands in New England and New York. A different summary of this comparison appeared in AMQUA Abstracts for 1982.

\* \* \* \* \*

Michael Woldenberg - Geography, SUNY Buffalo

"Models in Geomorphology"

Geomorphology Symposium, S.U.N.Y. Buffalo, September 23-24, 1983

THURSDAY EVENING (Sept. 22). 7:00 to 9:30 p.m., Moot Court Lobby, O'Brien Hall, Amherst Campus. Registrants collect conference materials. Late registration. Meet your friends. (All sessions in Moot Court).

FRIDAY MORNING

Glacial Session

David Drewry, Scott Polar Research Institute, Cambridge University.  
"The Antarctic Ice Sheet: Large-scale Patterns and Processes."

George Denton, Terry Hughes, University of Maine, Orono.  
"Evolution of Laurentian Ice Sheet."

William Shilts, Energy Mines and Resources, 601 Booth St. Ottawa, Canada.  
"Evolution of Laurentian Ice Sheet: Interpretation of Glacial Stratigraphy Around Hudson's Bay."

John T. Andrews, J. Stravers and G.H. Miller, Institute of Arctic and Alpine Research, Department of Geology, University of Colorado, Boulder.  
"Patterns of Glacial Erosion and Deposition around Cumberland Sound, Frobisher Bay and Hudson Strait, and the Location of Ice Streams in the Eastern Canadian Arctic."

FRIDAY AFTERNOON

Coastal Session

Arthur Bloom, Department of Geology, Cornell University.  
"Coastal Terraces Generated by Sea-level Change and Tectonic Uplift."

James Clark, Department of Geology, Geography, and Environmental Studies, Calvin College, Grand Rapids, Michigan.  
"Forward and Inverse Models in Sea-level Studies."

Paul Komar, School of Oceanography, Oregon State University, Corvallis.  
"Numerical Simulation Models of Nearshore Processes and Beach Morphology."

Charles Adams, John Wells, and James Coleman, Coastal Studies, Inst., Louisiana State University, Baton Rouge.  
"Sediment Transport in Relation to a Developing River Delta."

FRIDAY EVENING 6:00 p.m., Center for Tomorrow. Social hour and dinner.



## MODELS IN GEOMORPHOLOGY (Continued)

## SATURDAY MORNING

Fluvial Session

Marie Morisawa, Department of Geology, State University of New York, Binghamton.

"Deltaic Networks."

Lawrence Band, Department of Geography, San Francisco State University.

"Slope Modelling."

Michael Kirkby, Department of Geography, Leeds University.

"Models for Soil Evolution on Slopes."

André Roy, Department of Geography, University of Montreal.

"Optimal Models for Branching Angles in Rivers."

## SATURDAY AFTERNOON

Mars Session

R. Craig Kochel, Alan Howard, Charles McLane, Department of Environmental Sciences, University of Virginia, Charlottesville.

"Channel Networks Developed by Groundwater Sapping in Fine Grained Sediments: Analogy to Some Martian Channel Systems."

Victor Baker, Department of Geosciences, University of Arizona, Tucson.

"Models of Fluvial Erosion on Mars."

Lisa Rossbacher, Department of Geology, Whittier College, Whittier, CA.

"Ground Ice Models for the Distribution and Evolution of Curvilinear Landforms on Mars."

Ronald Greeley, Steven H. Williams, Bruce R. White, James B. Pollack, and John R. Marshall, Dept. of Geology, Arizona State University (and elsewhere).

"Wind Abrasion on Earth and Mars."

## SUNDAY MINI-CONFERENCE ON NETWORK ANALYSIS

We hope that active investigators and students of networks will stay over for this extra event. Please indicate whether you will attend on your pre-registration form. Please write M.W. if you would like to present a paper on Sunday (not to be published).

Cost: Registration and 4 coffee breaks \$20.00. Meals optional: 2 lunches and dinner \$20.00. For further details write Michael Woldenberg, Dept. of Geography, State University of New York, Buffalo, 14260

## CONTRIBUTORS

	<u>Page Number</u>
John E. Adams and Fred Van Alstyne, New York State Department of Environmental Conservation, Albany, New York 12233	1
Thomas M. Berg and William D. Sevon, Pennsylvania Geological Survey Harrisburg, Pennsylvania 17120	2
James E. Bugh, Department of Geology, State University College Cortland, New York 13045	3
Donald H. Cadwell, New York State Geological Survey, Albany, New York 12234	3
Parker E. Calkin, Geology Department, SUNY at Buffalo, Amherst, New York 14226	4
Donald R. Coates, Geology Department, SUNY at Binghamton, Binghamton, New York 13901	4
G. Gordon Connally, GGC Inc. 468 W. Ferry Street, Buffalo, New York 14213	5
Robert J. Dineen, New York State Geological Survey, Albany, New York 12234	5
Rhodes W. Fairbridge, Geological Sciences, Columbia University, New York, New York 10027	6
Jane L. Forsyth, Geology, Bowling Green State University, Bowling Green, Ohio 43403	10
Inez Kettles and William Shilts, Geological Survey of Canada, Ottawa Ontario, Canada K1A0E8	10
Paul F. Karrow, Department of Earth Sciences, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1	12
Les Lynn, Department of Biology, Bergen Community College, Paramus, New Jersey 07652	14
Alan and Ann Morgan, Geology and Biology Depts., University of Waterloo, Waterloo, Ontario, Canada N2L 3G1	14
Marie Morisawa, Geological Sciences, SUNY Binghamton, Binghamton, New York 13901	15
Ernest H. Muller, Geology, Syracuse University, Syracuse, New York 13210	15

	<u>Page Number</u>
Walter S. Newman, Dept. of Earth and Environmental Sciences, Queens College, Flushing, New York 11367	16
Gerald W. Olsen, Dept. of Agronomy, Cornell University, Ithaca, New York 14853	17
B. E. Raensch, Dept. of Anthropology, Hartwick College, Oneonta, New York 13820	18
Edward Sado and Owen White, Ontario Geological Survey, Toronto, Ontario, Canada, M5S 1B3	19
Richard B. Waitt, Jr., U.S. Geological Survey, Vancouver, Washington 98661	21
Michael Woldenberg, Dept. of Geography, SUNY at Buffalo, Buffalo, New York 14260	22
Robert F. Black, Dept. of Geology, University of Connecticut, Storrs, Conn. 06268	8
Richard P. Goldthwait, P.O. Box 656, Anna Maria, Florida 33501, OR (normally June 1-Oct. 15, but this year til Nov. 1) R.D. 2, Wolfeboro, N.H. 03894	8a
Aleksis Dreimanis, Department of Geology, Univ. Western Ontario, London, Ontario, Canada N6A 5B7	8a