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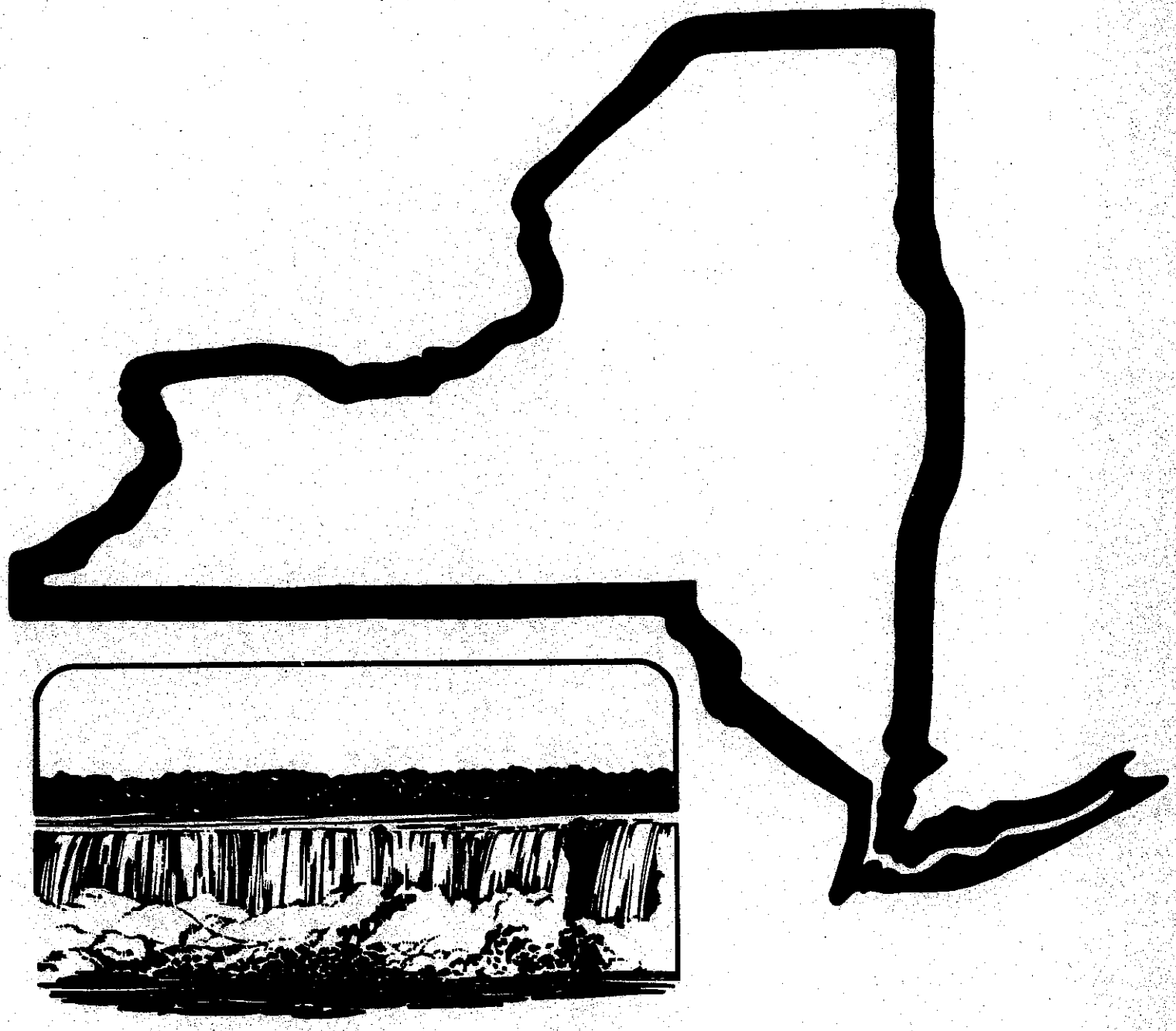
NEW YORK GLACIOGRAM



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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.

Interim Editor

Don Cadwell - New York State Geological Survey, Albany.

The Finger Lakes 1:250,000 scale sheet is at the publisher and we hope that it will be ready for distribution during the summer. The field mapping data for the Hudson-Mohawk Sheet has been transcribed onto the 1:250,000 scale map and the data will be checked this summer. This sheet is scheduled for publication next winter (1986-1987).

New York State Museum Bulletin 455, The Wisconsinan Stage of the First Geological District, Eastern New York, should be published and ready for distribution this summer. We are now preparing the page proofs.

Most of my personal research for this summer will have to take a back seat to the completion of the above tasks.

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Peter Clark — Geological Sciences, University of Illinois-Chicago

During the summer of 1985, Jim Street (St. Lawrence University) and I continued our mapping of recessional moraines in the northwestern Adirondack Mountains (cf. Clark and Street, 1985, GSA Abstracts v. 17, p. 11). We have identified recessional positions from the Black River Valley east-northeast to the Owl's Head area, where they correspond to positions mapped by Denny (1974, USGS Professional Paper 786). The position of the receding ice margin in relation to encroaching waters of Lake Iroquois was identified.

A graduate student (Allen Melcer) is completing his Masters thesis on the sedimentology of four late Pleistocene glaciolacustrine deltas in the St. Lawrence Lowland. These were deposited in Iroquois and post-Iroquois lake levels by rivers rivers flowing north out of the Adirondack Mountains.

Don Pair, Paul Karrow and I have an abstract submitted for the Champlain Sea symposium organized by Nelson Gadd for the May, 1986 GAC meeting in Ottawa. Karrow and I responded to a discussion by Gadd on our paper on late Pleistocene water bodies in the St. Lawrence Lowland (Clark and Karrow, 1985, GSA Bulletin, v. 96, p.1224).

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George Crowl - Geology, Ohio Wesleyan University

I'm working on a general map of the Illinoian glacial border in Pennsylvania. I hope the PAGS will put it on open file as a compendium of information to date.

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David DeSimone — Geology, Williams College

This field season I'll be examining the deglaciation of the middle Hoosic valley region from Williamstown, MA, through Hoosick Falls, NY and adjacent quads in southwestern Vermont through Bennington and northward if time permits. This work will be partly funded by Williams College who will also support my field assistant, John Robinson, for ten weeks. Our effort will include evaluation of previous studies, air photo analysis, surficial mapping and sedimentological interpretations. We hope to better define the

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David DeSimone (continued)

lower levels of Lake Bascom, identify appropriate outlets, and address the question of lakes in the lower Vermont Valley (Lake Shaftsbury)

I have been reviewing again the older literature for the above area and for the southeastern Adirondacks and adjacent Hudson-Mohawk lowland fringe. As a result, I have an enhanced admiration for these early workers — Woodworth, Stoller, Taylor, Chadwick and Miller to name a few. It seems we're still working within the framework set down by these and others during the early part of this century. There's a lesson here for students not to ignore old literature just because it is old!

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Robert Dineen - New York State Geological Survey

I will be continuing my work in the eastern and south-central Adirondacks this summer. I am tracing Glacial Lake Warrensburg in the Schroon River Valley. I think that it was really several lakes, connected by narrow outlets or straits. Several ice margins in the Champlain Valley can be correlated with the lake.

I have also traced ice margins from the Old Forge area into the Sacandaga River basin. I hope to report on them next spring.

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Aleksis Dreimanis — Geology, University of Western Ontario

In 1985/86, I taught the Glacial geology graduate course again, and its main emphasis was on a joint field and laboratory project dealing with glaciotectonic deformations and the formation of boulder pavements and sand lenses in association with subglacial ice-marginal deposition of Catfish Creek Drift. Last fall and early winter the Lake Erie cliff sections exposed these features beautifully, because of the combination of high lake level and wave erosion. However, the earthquake of January 31st caused slumping, covering the foot of the cliff, but exposing sections higher up, formerly inaccessible. You can never have the entire section exposed at the same time!

During the winter, jointly with Elsbet Liivrand and Anto Raukas from the Estonian Academy of Sciences, we finally completed a paper on pollen in tills from selected areas in N. America and N. Europe.

A paper on the transition from lodgement till to subaquatic flow tills at Port Talbot, Ontario, and another one on flow and shear structures in tills were completed during the winter. Still incomplete is the final report on the Port Stanley map area, a joint project with Peter Barnett for the Ontario Geological Survey, and several sections should be re-examined this spring.

The rest of the time is spent on the INQUA Commission on Genesis and Lithology of Glacial Deposits.

Michel Parent is close to the completion of his Ph.D. thesis "Late Pleistocene stratigraphy and events in the Asbestos-Valcourt area, S.E. Quebec". (continued on next page)

Aleksis Dreimanis (continued)

Brian Hart, when returning from his work on applied aspects of the glacial geology in the Timmins area this summer, will resume his research for an M.Sc. thesis, on a half-a-kilometer stratified Catfish Creek diamicton layer between two unquestionable till layers, in order to decipher its origin.

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Edward B. Evenson — Geological Sciences, Lehigh University

At the present time I am conducting and/or directing little research that has a direct bearing on the Quaternary history of New York state. Those of you who were on the 1985 Friends trip which was hosted by Lehigh University partook in a review of the work conducted over the past 5 or 6 years by the Lehigh Quaternary Group working in New Jersey. This group (Cotter, Witte, Ridge) is now dispersed (University of Minnesota-Morris, New Jersey Geological Survey and Tufts University, respectively) and a new one is forming. At present it consists of Pat O'Toole (a gift from Ernie!) who will be working on "The origin of the debris in New England heads-of-outwash" under the direction of Carl Koteff and myself. This project is an outgrowth of our work on active glacial systems in Alaska and Spitsbergen (Mike Clinch's almost completed Ph.D. dissertation) which has clearly demonstrated that it is meltwater transported debris (inwash and outwash) rather than ice transported debris which feeds major outwash systems. Another Ph.D. level project which will have a bearing on our understanding of glacial processes will begin this summer in Labrador, where Andre Bolduc (sent by Bill Shilts and Rod Klassen of the G.S.C.) will attempt to determine where and how eskers obtain their debris load and how they can be used for mineral exploration.

My field work is currently concentrated in very high latitudes (Antarctica and Spitsbergen) where I, and my students, are working on debris transport processes and on the dating of the early glaciations of the Patagonian Andes (Argentina). I also have a new student arriving soon (Andre Meglioli) who will tackle the glacial history of Tierra del Fuego. I'm not certain yet just exactly how these studies will relate to the glacial history of New York but I'm certain that we will think of something.

Finally, a few copies of the 1985 F.O.P. meeting guide book "Woodfordian Deglaciation of the Great Valley, N.J." are still available. If you want one, send me a check for $12.00 and I will forward them until the supply is exhausted. I'd like to take this opportunity to thank all of you who attended the 1985 F.O.P. for making it a pleasurable and rewarding experience for all who were involved.

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Dave Franzi - Earth and Env. Science, SUNY College at Plattsburgh

I have finally settled in at S.U.N.Y. College at Plattsburgh following an all-to-brief stay at Lafayette College in Easton, Pennsylvania. The geology program at P.S.U.C. is part of the Center for Earth and Environmental Science, which also includes the

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David Franzi (continued)

geography and environmental science departments. The Center is affiliated with the Miner Institute, an agricultural research institute in Chazy, New York. The adjustment has been an easy one and I am looking forward to beginning a research program here.

I will be doing some contract work with the New York Survey in preparation for the publication of the Mohawk Sheet of the state surficial map. In addition, I hope to begin work on some of the Quaternary/Holocene problems in the High Peaks region of the Adirondacks. I anticipate that this work will lead to a better understanding of the extent of local glaciation and the style of deglaciation in the region.

My studies of the sandur northwest of Bemidji, Minnesota will continue through this field season. This work is an outgrowth of a comprehensive U.S. Geological Survey (W.R.D.) effort to determine the fate of petroleum contaminants that were released into the outwash aquifer following a pipeline break in August, 1979. My research was undertaken to determine the physical properties, stratigraphy, and areal distribution of the aquifer materials. I recently presented some preliminary results, dealing primarily with the lithostratigraphic and morphostratigraphic relationships of the deposits, at the north-central sectional meeting of the G.S.A. at Kent, Ohio. My work this season will concentrate on characterization of the physical properties of the sediments and the small-scale, 3-dimensional anisotropy of the aquifer.

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David. J. Froehlich - Geological Sciences, S.U.N.Y. at Buffalo

I am continuing my work in the Black River valley and adjacent Adirondacks, as was described in Parker Calkin's note in last fall's Glaciogram. Over the winter I have compiled a preliminary map of the glacial geology of most of the Number Four and Lowville 15-minute quadrangles. However, much field work still remains to be done this summer. I am also trying to decipher the relationship between the Adirondack ice and the Black River sublobe. Finally, there are at least 9 different deltas along the Beaver River which were deposited in glacial lakes Port Leyden and Glenfield. I hope to be able to correlate these deltas with the outlet channels on the northern slope of the Tug Hill Plateau which were described by Fairchild in 1912.

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Paul F. Karrow — Earth Sciences, University of Waterloo

Don Pair completed his M.Sc. thesis on St. Lawrence Valley water levels and will be reporting his results at the Champlain Sea Symposium in Ottawa at the Geol. Assoc. Can. meeting May 21st. Linda Ross, also from New York, completed her M.Sc. project report on subsurface stratigraphy of the Kitchener-Waterloo area. Both will graduate this spring.

Andy Bajc is nearly finished writing his M.Sc. thesis on

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Paul Karrow (continued)

mollusc assemblages and water levels of the Superior basin. Peter Barnett continues writing his Ph.D. thesis on Lake Erie bluffs.

John Easton is studying bedrock valleys along the Niagara Escarpment between Burlington and Georgetown. In support of this and my mapping of the Brampton area the Ontario Geological Survey had 500 feet of drilling done this winter. Core logging and analysis are underway. Field mapping will continue in May and June.

Geological Association of Canada Special Paper 30 "Quaternary Evolution of the Great Lakes", edited with Parker Calkin, was released January 1986 and is available for purchase for $42.00 (Canadian) payable to G.A.C. at GAC Publications, Business and Economic Service Ltd., 111 Peter Street, Suite 509, Toronto, Ontario M5V 2H1.

This winter I completed a short ms. with Bob Geddes, Ontario Geological Survey, on drift carbonate on the shield north of Lake Huron and Lake Superior. I also revised a half chapter contribution to the DNAG volume on the Quaternary of Canada.

Papers on subsurface stratigraphy of the Kitchener and Guelph areas (with J. Greenhouse and L. Ross) will be presented at the Kent GSA and on the Toronto interglacial (Don Fm.) paleontology (with L. Kerr-Lawson) at the AMQUA meeting. The list of taxa of plant and animal fossils has now reached a length of several hundred and will form a useful reference for comparison with other interglacial sites.

A revised report on the Hamilton-Cambridge area (originally GR16 Hamilton-Galt, 1963) is expected to be published later this year (?) by the Ontario Geological Survey, as is a report on open file on the Stratford-Conestogo area.

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Ernest Muller - Geology, Syracuse University

This sedentary academic anticipates a real change of pace now that the term has ended. This week, with Vic Schmidt, Dick Young and Larry Lundgren, I'll be visiting an organic site near Macedon (E of Rochester) reported by Brad Higgins of the Rochester SCS office.

After that comes Nelson Gadd's Champlain Sea Symposium and Field Trip at the Geological Association of Canada meetings in Ottawa. The field trip ends in good time to reach Fort Kent, Maine for Tom Lowell and Steve Kite's Eastern Friends of the Pleistocene field conference (May 22-23). A week later I'll be off to AMQUA in Champaign, and from there to Glacier Bay, Alaska for Dick Goldthwait's INQUA Commission Field Conference.

A Genesee Valley manuscript, reported in the last Glaciogram as being in author's draft, continues to evolve in the hands of co-authors Dick Young, Duane Braun and Michael Wilson.

The Hiscock Site (nee the Byron Mastodon site) has roused widespread and multi-disciplinary interest, and will be a focus of attention during the Buffalo Museum of Natural History's Smith Symposiuum on the Archeology of the eastern Great Lakes October 24-25.

Henry T. Mullins — Geology, Syracuse University

The past few months have seen the completion of two M.S. theses by Ed Hinchey and Dave Stephens on the geoloyg/limnology of Otisco Lake and northern Seneca Lake, respectively. We have mapped, for the first time, the bedrock configuration and total sediment fill beneath northern Seneca Lake and an acoustically impenetrable zone in Otisco Lake. (For more information feel free to contact me.)

We plan to continue our seismic reflection profile studies of the eastern Finger Lakes this summer, hoping for 20-30 "field days" in the lakes. We have submitted a three-year research proposal to NSF to continue our geophysical studies (Phase I) and ultimately, drill core sampling of the entire fill to bedrock of one of the Finger Lakes (Phase II, possibly as early as 1990). Comments and suggestions always welcomed; I would be glad to forward copies of our research proposal.

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E.V.Sado - Ontario Geological Survey

The Quaternary Geology activities of the Ontario Geological Survey have been steadily shifting northwards away from New York State. This trend will likely continue with the transfer of the Ontario Geological Survey from the Ontario Ministry of Natural Resources to the new Ministry of Northern Development and Mines. Nevertheless, the O.G.S.to be responsible for the geology of the entire (+1,000,000 sq. km) province.

The responsibility of the Quaternary Geology Subsection continues to be the conduct of studies of glacial and recent sediments throughout Ontario. These studies provide basic geological data regarding the distribution, thickness, physical, chemical properties and stratigraphic relationships of these sediments. In addition, the paleoenvironmental, age relationships, economic and engineering significance of these materials is reported.

Quaternary geology maps, reports and special studies produced by the Quaternary group provide basic geological data for:

- Mineral Exploration using Drift Prospecting
- Aggregate Inventories
- Soil Survey (Agricultural, Forestry)
- Land Use Planning
- Geotechnical Engineering Projects
- Landslides, Hazard Land Studies
- Shoreline Erosion Studies
- Acid Rain Studies
- Hydrogeology/Waste Disposal Studies
- Peat Inventories
- Remote Sensing of Terrain

Southern Ontario Quaternary studies which may be of interest to Glaciogram readers include:

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E.V.Sado (continued)

Don Valley Brickyard Study - Peter Barnett and Ross Kelly are currently compiling all existing references and information on the geology of the Don Valley Brickyard. If any Glaciogram readers are aware of any unpublished or ongoing research on the brickworks section, please let us know. The status of this classic section remains uncertain. At present an attempt is being made by the Province to expropriate the land on which this famous section is located. This would ensure its availability for future study and viewing.

QUATERNARY MAPPING OF THE BARRIE AREA - Peter Barnett will commence mapping west of Lake Simcoe where there is a good record of glacial Lake Algonquin Shorelines.

QUATERNARY GEOLOGY OF THE BRAMPTON AREAQ - Paul Karrow will continue his mapping for the O.G.S. west of Toronto.

QUATERNARY GEOLOGY OF THE PORT STANLEY AREA - Alexis Dreimanis will complete final geological report along this portion of Lake Erie. The area includes many classic stratigraphic sections.

COMPILATION OF ONTARIO QUATERNARY GEOLOGY - The undersigned will continue to compile the Quaternary geology over the entire province. This data is being compliled on the provincial road map base at 1:600,000 and 1:800,000 scales for southern and northern Ontario respectively.

Quaternary mapping and applied special studies continue in Northern Ontario with the work of Cam Baker in the Timmins - Kirkland Lake area and Bob Geddes in the Hemlo area. Paul Finnamore is continuing with the Opapimiskan Lake Project in a remote locality of NW Ontario. This year, four multi-year mapping, applied special studies are expected to start in the Fort Frances, Geraldton, Sudbury and Parry Sound areas.

Otber activities include the preparation of INQUA field trip guidebooks. Peter Barnett and Ross Kelly have compiled an impressive 9-day field guide dealing with the Quaternary History of Southern Ontario. This excursion will visit many of the key Quaternary sites in Ontario on which the Quaternary stratigraphic framework of the Great Lakes - St. Lawrence Region is based. This compilation includes contributions from 17 researchers representing a broad range of Quaternary related disciplines. Bob Geddes, Rik Kristansson and Jim Teller are preparing an INQUA field excursion guide along the north shore of Lake Superior. Peter Barnett has also co-authored with Clyde Kennedy a one-day field trip guidebook detailing the deposits and features of the northwest arm of the Champlain Sea. (This guide will also be used during a four-day excursion to examine the glacial and glacio-marine stratigraphy of the Ottawa Valley). Additional details regarding these field trips will be available in the second INQUA circular.

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William Shilts - Geological Survey of Canada

Since we are in the process of spending a great deal of money

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Bill Shilts (continued)

on Quaternary research that is either adjacent to or has implications for New York State, I have taken the opportunity to attach a slightly expanded version of an article I prepared recently for our own GSC internal paper, "Geogram". We are one or two years into some of these programs, and their potential for glacial sedimentological and stratigraphic breakthroughs is already obvious. I might add that, in the process of carrying out these programs, we have had to become experts at dispersing a maximum amount of research money with a minimum expenditure of personnel.

Terrain Sciences Role in Federal/Provincial Mineral Development Agreements

Over the past two years geologists from Terrain Sciences Division have been increasingly involved in drift prospecting projects financed under the Federal-Provincial Mineral Development Agreements (MDA) and the Federal Asbestos Initiatives, Geoscience Program. The objectives of most of this work are to provide a regional geochemical base for glacial deposits in the areas of interest and to provide glacial sedimentological and stratigraphic models for areas where drift cover is a significant impediment to mineral exploration. Over a 7-year period that commenced in 1984, this division has spent or will spend approximately $8 million of operating funds on glacial geological research in support of federal and provincial intiatives.

Althnough many of the scientists and support staff within the division are involved to some extent in these projects, the principal responsibilities for specific projects are borne by Ron DiLabio (Manitoba), Denis St-Onge (Ontario/Kenora/Dryden), Rod Klassen (Newfoundland/Labrador), Ralph Stea (Nova Scotia; seconded from Nova Scotia Department of Mines), Michel Lamothe (New Brunswick), Bill Shilts (Ontario and Eastern Townships/Quebec) and Jean Veilette (Gaspesie/Quebec). In addition to these scientists, several other scientists and support staff have been engaged to assume responsibilities for various aspects of this enhanced program, including Christine Kaszycki (Manitoba), Sharon Smith (Eastern Townships and general duties), Frank Thompson (Labrador), Martin Rappol (New Brunswick-NSERC post-doctorate fellow from Amsterdam), Rob Burns (computer processing of Quaternary data), and Martin Clarke (Manitoba).

A number of significant benefits have accrued or are expected to accrue to the Canadian geoscience community as a result of these programs: 1) heightened awareness in the mineral exploration industry of the importance of applying up-to-date techniques and knowledge of Quaternary geology to mineral explorations problems. An example of this benefit is the establishment of regional background drift geochemical patterns with which to evaluate local anomalies, derived from geophysical survey or surveys using other geochemical sample media; 2) bringing to the attention of the exploration community various drilling and near-surface sampling techniques for areas with heavy or continuous drift cover; and 3) significant advances in understanding of fundamentals of glacial sedimentology and stratigraphy through extensive drilling programs that have been carried out or are planned for the Eastern Townships, Ontario, New Brunswick and Manitoba.

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Bill Shilts (continued)

NOVA SCOTIA. Regional drift geochemical sampling is being carried out in Nova Scotia in conjunction with mapping the surficial geology of the mainland - a program that has carried on from a mapping and sampling project initiated by Nova Scotia Department of Mines with federal funding several years ago. Stratigraphic studies of the numerous sea-cliff and other natural and man-made exposures in the province have provided new insights into the complex relationships between glacial sediments deposited by glaciers entering the province from offshore and those deposited by expansions of "native" ice caps. A suitable model for these interrelationships is critical to interpretation of many types of mineral exploration data.

NEWFOUNDLAND/LABRADOR. Mapping and glacial dispersal studies based on geochemical and lithological composition of till in Labrador have likewise provided new information on the configuration and geographical shifting of the centre of the Labrador/Nouveau Quebec ice mass. As in Nova Scotia, an understanding of ice flow history is critical to interpretation of provenance of mineralized boulders and of the sources of regional geochemical variation.

NORTHERN MANITOBA. Regional geochemical sampling of till and 1:100,000 mapping of surficial materials in northern Manitoba are the primary activites of the Manitoba MDA. In northern Manitoba the importance of the blanket of fine grained bottom deposits of glacial Lake Agassiz in modifying geochemical signatures of modern lake sediments is also being investigated. In conjunction with these projects new maps of the surficial deposits of northern Manitoba are being compiled from original mapping where no published information exists and from data already published by the province and by GSC. The first 1:250,0900 maps from this latter project were released in January 1986.

EASTERN TOWNSHIPS/QUEBEC. In the Eastern Townships of Quebec, 28 deep continuosly cored boreholes were drilled to bedrock in 1985 in an attempt to place the buried gold placer deposits of the Beauceville area in correct stratigraphic perspective and to provide a genetic model that would facilitate further exploration for similarly concealed deposits in Chaudiere River valley. Although the preservation of the gold-bearing strata in Gilbert River valley seems to be unique, their preglacial origin has been established.

NEW BRUNSWICK. A significant start has been made in New Brunswick on elucidating the complicated temporal and spatia relationships between the Laurentide glacier and local ice caps with attendant complexities of ice flow and dispersal. An additional mineral exploration problem is the presence of a deeply weathered preglacial regolith over large areas within the Miramichi mineral belt. The regolith has been reworked into a till that is almost impossible to distinguish from the parent material and consequently poses a real, though local problem in mineral exploration.

ONTARIO. The Ontario Mineral Development Agreement, scheduled

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Bill Shilts (continued)

to be implemented in 1986, comprises several projects, the most ambitious of which is a transect of continuously cored boreholes from the edge of the southernmost Hudson Bay Lowlands, where glacial stratigraphy is well displayed in natural exposures, to the Timmins and Matheson mining camps where thick, stratigraphically complex drift units cover much of the bedrock with highest mineral potential. Drift prospecting using various drilling techniques has has been widely practised in the Timmins-Noranda area since the completion of the federally funded EGMA program in which Bob Skinner pioneered these techniques in 1971, but an adequate stratigraphic system for the clay belt has never been established. Other projects include a similar stratigraphic drilling and drift sampling project in conjunction with Ontario Geological Survey in the Beardmore-Geraldton area, a region covered by exotic surface drift composed largely of Paleozoic debris glacially transported from Hudson Bay, and surficial geology mapping of the Kenora-Dryden area and of four 1:50,000 map areas in eastern Ontario.

GASPESIE/QUEBEC. Terrain Sciences component of the Gaspesie MDA comprises two principal activites: 1) A map of the surficial geology of the peninsula is being compiled at a scale of 1:250,000 from work published by Quebec Ministere de l'Energie et des Ressources, with unmapped areas filled in by GSC personnel. 2) In association with Universite de Montreal and Universite de Quebec a Montreal, a study of lithological and geochemical glacial dispersal patterns is being carried out around outcrops of distinctive bedrock lithologies. The latter project is designed to clarify the complex patterns of ice flow caused by the interaction of Laurentide and local glaciers, critical to understanding results of exploration geochemistry. This problem is common to the Eastern Townships, Gaspesie, New Brunswick and Nova Scotia.

The Mineral Development Agreements presently in place should be finished with published results by 1991. To put the magnitude of these projects in perspective, it is estimated that we will drill approximately 15 km of continuously cored boreholes through Quaternary sediments over the next three years. This stratigraphic drilling alone cannot help but have an unprecedented impact on the scientific base of North American Quaternary geology. The direct benefits of drilling, mapping, and sampling activities to the mineral exploration industry remain to be seen, but it is our opinion that the MDA's will bring Quaternary input into mineral exploration to a level equal to or above its level in the highly integrated exploration programs carried out in Finland and Scandinavia.

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David Steadman - New York State Museum

VERTEBRATE PALEONTOLOGY OF THE HISCOCK SITE, GENESEE COUNTY, NY

Thus far I have identified 32 taxa of vertebrates (amphibians, reptiles, birds, and mammals) from the latest Pleistocene through

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David Steadman (continued)

Holocene sediments from the Hiscock Site. Each of the hundreds of specimens has stratigraphic data. When combined with the paleobotanical information (pollen and macrofossils) under study by Norton G. Miller, we will be able to trace the development of vertebrate communities in western New York over the past 11,000 years. Excavation at the Hiscock Site is done in cooperation with Dr. Richard S. Laub of the Buffalo Museum of Science.

I would be pleased to hear from geologists who have found vertebrate remains anywhere in New York. The Hiscock Site forcefully demonstrates that many species besides mastodonts and mammoths are waiting to be found in our late Quaternary sediments.

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Thorson, Robert M. — Geology and Geophysics, Univ. of Connecticut

The most recent project that I have been involved in regarding New England Geology is the reinterpretation of Robert F. Black's reinterpretation of what he called "pseudo-ice wedges" in southern Connecticut. Essentiallty, we believe, but cannot yet prove, that the structures in the Hain quarry are sediment-filled ground fissures that resulted from seismically induced liquefaction. This research will be reported in GEOLOGY by the end of the summer. Wilson Clayton (a graduate student of mine) presented the results of his research on this topic at the spring Northeastern GSA meeting. More work is dependent on funding. If you read the paper, and if you have noticed similar localities, I would be delighted to hear of them.

My field plans include work on paleohydrology of a large wetland in southeastern Connecticut and additional reconnaissance of the glacial geology in the vicinity of Storrs. Hopefully, most of the summer will be spent writing reports that I should have gotten out a long time ago.

This newsletter also provides me with an opportunity to plug our (Hamilton, Reed, and Thorson) recent volume on Glaciation in Alaska — The Geologic Record, which will be announced more completely in appropriate journals and newsletters.

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William J. Waltman — Agronomy, Cornell University

During the upcoming field season, the Cornell Soil Characterization Laboratory will be involved with three soil genesis projects, largely focusing upon the composition and weathering characteristics of tills from southwestern New York, the Tughill Plateau, and in Otsego and Delaware Counties.

In southwestern New York, a chronosequence of soils will be studied across the various Late Wisconsinan drifts. During the soil survey of Chautauqua County, some problems have arisen in recognizing fragipans and argillic horizons consistently on the Lavery and Kent tills. Additionally, we will also look into the origin of the "silt-caps" overlying these tills.

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William J. Waltman (continued)

The Tug Hill Plateau project also focuses upon fragipan development across a toposequence (the Worth, Empeyville, and Westbury soils). "Silt caps" (1 to 3 feet thick generally overlie the coarser-textured fragipan horizons, and may be attributed to loess deposition.

Finally, in Otsego and Delaware County, we will be sampling a sequence of till-derived soils from the high-lime areas to the red, acid tills in the Catskill region. The transects will emphasize the changes in soil development with till composition and relationship of fragipan development to properties of the basal till.

During the past year, we have also completed characterization work on soils derived from the Champlain Sea, Late Iroquois and Lake Vermont sediments in St. Lawrence and Clinton County (J.Kern's M.S. thesis). From extractable cations (Ca, Mg, K, Na), $CaCO_3$ equivalency, and soluble salts, we were able to differentiate the freshwater and marine clays. Furthermore, the soils derived from both the freshwater and marine clays were previously assumed to be illitic; however, the clay mineralogy of these soils is generally mixed (significant amount of interstratifieds and 14A minerals), but also occasionally vermiculitic. Some additional sampling is planned in support of this project for Clinton and Essex County.

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Barry Warner - Earth Sciences, University of Waterloo

Since joining the faculty in the Department of Earth Sciences at Waterloo last spring, I have become involved in a variety of projects of interest to New York Quaternary geologists.

I am continuing work on the paleoecology of interglacial and interstadial deposits in Ontario in collaboration with P.F.Karrow and A.V.Morgan. A presumed Mid-Wisconsinan deposit near the south shore of Georgian Bay, referred to as the Clarksburg site, has produced a variety of arctic plant and beetle taxa. This is one of the coldest interstadial sites in Ontario. A manuscript is nearing completion.

Plant macrofossil studies from late-glacial sites on the north shores of Lake Erie (with P.J.Barnett) and Lake Superior (with A.F.Bajc) have revealed a number of range extensions and disjunctions. A.F.Bajc discovered a marl and peat complex from near Manitouwadge, Ontario. We are undertaking a detailed paleoecological study on the site using pollen, plant macrofossils, testate amoebae, molluscs, Cladocera, sponges and isotope chemistry. A preliminary pollen profile will be presented in June at the Canadian Botanical Conference.

Finally, the main focus of my research centers on the developmental history of peatlands in the Great Lakes Region. A few peat profiles have been collected and paleoecological analyses are under way. I have collected a nyumber of surface samples from Sphagnum peatlands in Ontario for testate amoebae (Rhizopods). These organisms are unicellular, microscopic animals that preserve well in

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fossil peat deposits and are good indicators of hydrological change. This group of fossils has received little attention in North America. My analyses show that we have several species in common with Europe, but some species seem to have different ecologies. A manuscript is nearing completion..

Much of this summer will be spent visiting peatlands in Ontario to continue the work begun in 1985, and doing the analyses on the samples collected already.

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Michael Wilson -- Geology, SUNY College at Fredonia

Five theses beginning or underway on glacial geology and hydrology, concerning Chautauqua County and neighboring areas.

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SEE YOU AT

GEOLOGICAL ASSOCIATION OF CANADA
Ottawa, Ontario, May 18-21

EASTERN FRIENDS OF THE PLEISTOCENE
Fort Kent, Maine, May 24-25

AMQUA
Champaign-Urbana, Illinois, June 2-5

SMITH SYMPOSIUM
LATE PLEISTOCENE AND EARLY HOLOCENE PALEOECOLOGY
AND ARCHEOLOGY OF THE EASTERN GREAT LAKES REGION
Buffalo, NY, October 24-25.

ABSTRACT

DONALD PAIR

Reconstruction and History of Ice Retreat, Proglacial Lakes, and the Champlain Sea, central St. Lawrence Lowlands, New York
M.S. Thesis, Earth Sciences, University of Waterloo, 1985

Surficial mapping of four 7 1/2' quadrangles near Ogdensburg, New York, as well as extensive reconnaissance to the east, south and west, was undertaken in order to: evaluate the nature and style of ice retreat; reconstruct proglacial lake events in the Lowland and assess their relationship to water levels in the Ontario Basin; and to establish the southern and western limits of the Champlain Sea and its relationship to events in the Ontario Basin.

Limited exposures in the map-area reveal a glacial stratigraphy consisting of glaciofluvial sediments underlying a single till, the Fort Covington, which is in turn overlain by glaciofluvial sediments at some locations. A loose, sandy, bouldery melt-out till has been identified on the crests of many of the till ridges in the map-area. This sediment, identified as "winnowed till" by previous authors, is believed to be genetically different from the underlying lodgement till and may have been produced in the latter stages of the formation of the till ridges in the map area. These landforms are part of a ribbed moraine complex and a mechanism of formation proposed by Shaw (1979) appears to explain best the landforms and sediments noted in the map-area. This model suggests that the ribbed moraine was the product of englacial thrusting and folding in zones of compressive flow within the glacier. The associated sediments, consisting of melt-out till and glaciofluvial sediments, resulted from stagnation, downwasting, and undermelt of the overlying ice during the final stages of ice retreat out of the St. Lawrence Lowlands.

The patterns of isostatic uplift in the region were examined and were found to vary, both geographically from Covey Hill to the Ontario Basin, and chronologically, from the time of Lake Iroquois to the Champlain Sea. Projection of strandline data from the St. Lawrence Lowland onto curved profiles has made possible the differentiation of water levels region. At least four, and possibly five, lacustrine water levels were recognized and these appear to correlate well with water levels identified in the Ontario Basin. These levels were initiated with the Watertown phase of glacial Lake Iroquois, and they continued as the water levels dropped successively through the post-Iroquois stages.

Following the establishment of the last post-Iroquois proglacial lake, the Champlain Sea invaded the isostatically depressed St. Lawrence Lowlands and the proglacial lake was lowered to sea level. Reconstructions of the maximum extent of the marine incursion, based on strandline and/or fossil evidence, and consideration of threshold elevations and water plane gradients, established that the marine water plane (Level V) did extend into the Ontario Basin.

On the basis of the relationship of the sea level to Early Lake Ontario and the controlling sill's uplift history, the maximum extent of the Champlain Sea into the Ontario Basin is suggested to have been reached about 11,780 B.P. and its confluence with

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Donald Pair (continued)

a post-Trenton water level in the Ontario Basin continued until 11,400 B.P. At this time, uplift of the Duck-Galoo Sill separated the water bodies and initiated Early Lake Ontario. Stratigraphic and geomorphic evidence from the map-area indicate that marine offlap was initiated shortly after the sea's maximum was reached. Marine regression resulted in the emergence of nearshore sands; eolian activity commenced and dunes were formed and stabilized quickly. Swamp and bog deposits were also initiated in the lows underlain by marine sediments. These were maintained and expanded as the base level of northward-flowing streams was elevated during the Holocene..

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ABSTRACT

DAVID B. STEPHENS

Seismic Stratigraphic Analysis of Glacial and Post-glacial Sediments in Northern Seneca Lake, New York

M.S. Thesis, Geology, Syracuse University, 1986

Forty-four high resolution, UNIBOOM, seismic-reflection profiles from northern Seneca Lake, New York, reveal a complex and multistaged depositional history. Sediments in the lake onlap an irregular, steep-sided glacially eroded bedrock surface. Seven, first-order, depositional sequences have been defined by amplitude anomalies interpreted to represent compaction of glaciolacustrine sediments by overriding ice and/or fundamental lithologic changes. Total sediment thickness is in excess of 100 m. The lowest sequence, a chaotic, high-amplitude trough-fill, is interpreted to correlate with the retreat of Late Wisconsin ice during the onset of the Mackinaw Interstadial (13,500 Y.B.P.). At the top, sediments are characterized by continuous. low-amplitude reflectors interpreted as Holocene pelagic drape.

A bedrock map of the Seneca Lake basin indicates a southward deepening valley with a broad saucer-shaped cross-sectional profile. The valley walls approach 16 degrees in slope. Minimum values for depth to bedrock range from 100 to 130 m below sea level and 100 m below the lake floor.

A repeating pattern of internal reflectors is seen within each depositional sequence in northern Seneca Lake. This pattern begins with reflection-free to low-amplitude, discontinuous reflectors at the base of the sequences that grade up to high-amplitude, discontinuous reflectors at the top. The reflectors are generally horizontally and parallel to sub-parallel.

Interpretation of seismic data suggest four stages of development for the Seneca Basin: 1) modification and over-deepening of pre-existing valleys by Wisconsin glaciation: 2) deposition of till on the valley floor; 3) deposition of glaciolacustrine sediments over till during retreat of the Late Wisconsin ice sheet; and 4) deposition of lacustrine sediments.

Two possible working models for the deposition of glaciolacustrine sediments in Seneca Lake are proposed: 1) an unstable or ‚nervous' ice front which advanced and retreated over glaciolacustrine sediments, overcompacting them. Overcompaction may be recorded on the seismic record as high amplitude events; or 2) a stationary ice front at the northern end of the lake which periodically discharged large volumes of meltwater and sediment into the lake basin in the form of turbidity currents. These density flows, or under-currents, transported sediments into the lake basin and were the dominant depositional mechanism acting in the lake during the Late Wisconsin. The amplitude anomalies may be a result of fundamental lithologic changes.

ABSTRACT

ANNE I. VEEGER

Groundwater Flow Simulation in the Oneida County Section of the Tug Hill Aquifer of New York State.

M.S.Thesis, Geology, Syracuse University, 1986

The Tug Hill aquifer in western Oneida County includes both valley-fill deposits and the surficial materials on the surrounding highlands. Valley-fill deposits are as much as 250 feet thick and consist of outwash sand and gravel interbedded with lacustrine sand, silt and clay. Deltaic, kame and outwash sand and gravel deposits on the highlands are from 50 to 150 feet thick.

Most of the Tug Hill Aquifer is unconfined. Localized semi-confining conditions probably occur between Sylvan Beach and Pine Crest because of the interbedded lacustrine deposits with low hydraulic conductivity. Groundwater flow in the aquifer is generally towards Oneida Lake. Recharge to the aquifer is from permeable sand and gravel deposits on the uplands, whereas most groundwater discharge occurs along the axis of a buried valley located in the southern part of the study area.

The chemical composition of groundwater from bedrock and surficial aquifers indicates that there is little hydraulic communication between these two groundwater systems. The surficial aquifer produces calcium-bicarbonate type water. Bedrock groundwater is characterized by hydrogen sulfide and salt.

Well yields in the study area range from 2 gallons per minute (GPM) to 125 GPM. The highest yields are from wells cased in sand and gravel at the base of valley-fill. Numerical modeling results indicate that yields as high as 300 to 600 GPM may be possible in fully penetrating wells. Wells completed in the thinner sand and gravel deposits may produce yields as high as 300 GPM. However, water table fluctuations during periods of low recharge in these areas may lower yields substantially as the saturated thickness of the aquifer decreases with water table decline.

MEETINGS

SMITH SYMPOSIUM

Late Pleistocene and Early Holocene Paleoecology and Archeology of the Eastern Great Lakes Region

Buffalo Museum of Science , Humboldt Parkway, Buffalo, NY 14211

October 24-25, 1986

Session I - Geological and Environmental Background (Webb, Gaudreau, Jacobson, Karrow, Calkin)

Session II - Integrated Studies of the Hiscock and other Late Quaternary Sites (Laub, Miller, Steadman, Fisher, Saunders, King)

Session III - Paleoecological Studies of Various Groups (McAndrews, Barnosky, Semken, Morgan, Erickson, Camp)

Session IV - Archeological Studies (Storck, Gramly, Roberts, Graham)

PUBLICATIONS OF INTEREST

Karrow, P.F. and Calkin, P.E., 1986, Quaternary Evolution of the Great Lakes. Geol. Association of Canada Special Paper 30, 253p

Quaternary Geology Map of Maine

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