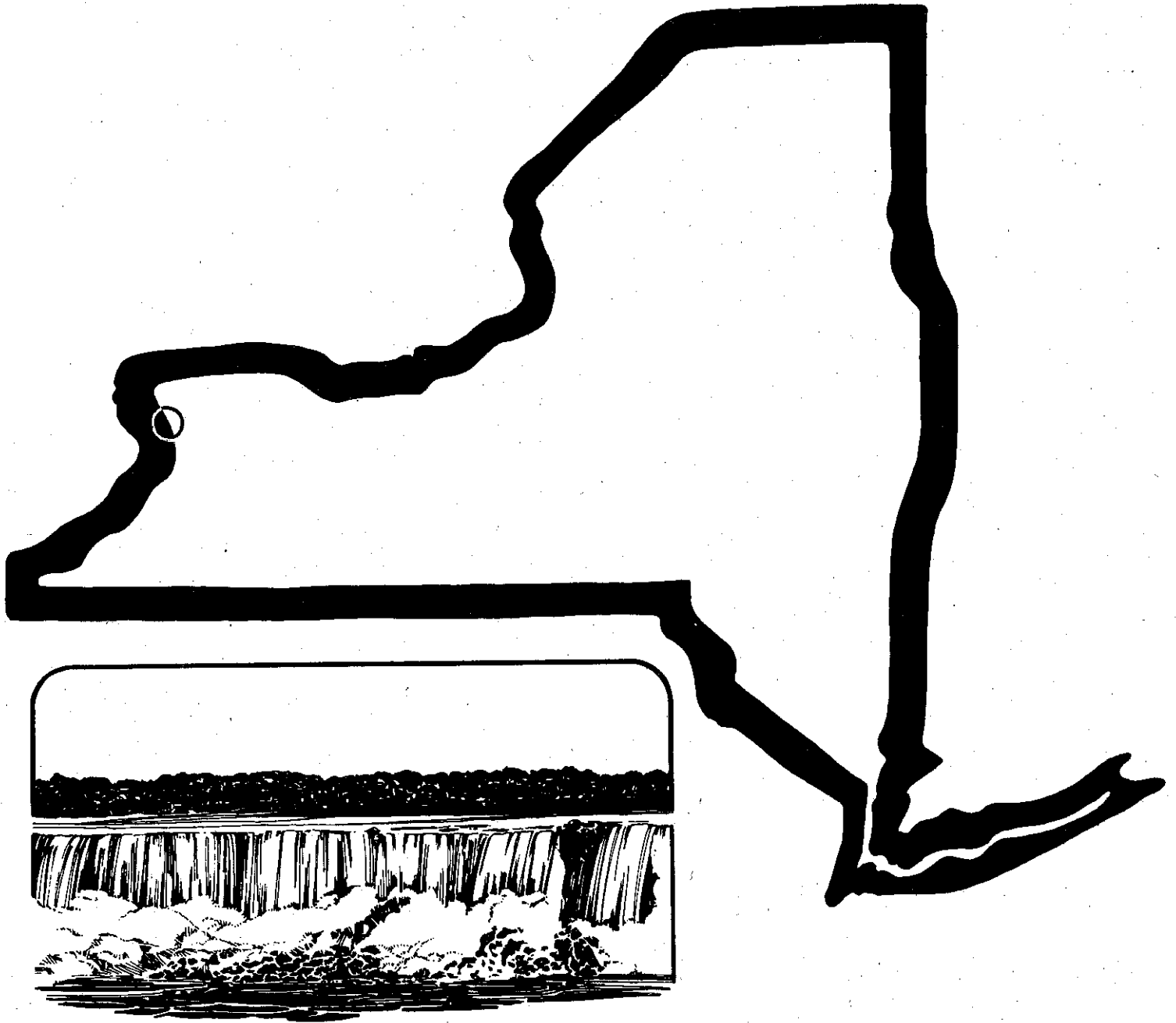


VOLUME 24, NO. 1 • MAY 1989

P. F. KARROW

NEW YORK GLACIOGRAM



DEPARTMENT OF GEOLOGY

University at Buffalo
Buffalo, New York 14260

EDITORIAL POLICY

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

Thomas M. Berg - Ohio Geological Survey, Columbus

This will be the first time readers of the Glaciogram have heard from the Ohio Survey, but I just couldn't pass up the opportunity to make a contribution from my new home state--"The Heart Of It All" as they call the Buckeye State. I was appointed State Geologist starting March 13, 1989. Although the Ohio Survey is suffering from severe financial problems, we have top-quality geologists actively working on our glacial geology. Rick Pavey, Scott Brockman, and Joel Vormelker are working on bedrock topography maps, drift thickness maps, and detailed glacial geology maps of Ohio's counties. Nate Fuller and Don Guy in our Sandusky office are working on Lake Erie sediments and shoreline features. Our full-time Lake Erie Research vessel, the GS1, is captained by Dale Liebenthal, also of our Sandusky office.

We will be moving ahead in the next several months to reset the goals of the Ohio Geological Survey, but Glaciogram readers can rest assured that we will be moving dynamically ahead on mapping and characterizing Ohio's glacial and surficial deposits. We will also accelerate our Lake Erie investigations, with emphasis on characterization of the moraines extending beneath the lake. Rick Pavey and I spent a most rewarding afternoon with Dr. Richard Goldthwait, who will probably be working with us on a new 1:250K Quaternary map of Ohio. It was our great honor this year to present the W. W. Mather Medal to Dick Goldthwait for his outstanding contributions to the geology of Ohio.

I hope we will be permitted to continue to contribute to the Glaciogram even though Ohio does not border on New York. At least we share Lake Erie with New York!

Parker E. Calkin - Geology, University at Buffalo

First of all, "University at Buffalo" is still SUNY at Buffalo but our leaders here have decided to use this as the preferred name. Now, to business:

I have obtained recently, an age of >40,270 BP from wood chips retrieved from a long drill core at Millport, NY, beneath the Valley Heads Moraine. Millport is in the drainage channel that runs south from Seneca Lake valley. The wood was obtained from a fine brown sand with clay and wood chips at a stated interval of 150 to 200 feet. The overlying 150 feet included till and sand according to the driller. I guess all we can say is that the till and the Valley Heads drift is younger than 40,000 B.P. Of course that was an infinite age.

Graduate student Eric Pefley (see v 23 no.1) is now recovering some interesting interstadial ? pollen from lake clay beneath two till horizons in the Conewango Valley (preglacial Allegheny Valley) just south of the Lake Escarpment terminus. More later.

Graduate student Andy Smith is beginning work to correlate all the subsurface strata of Niagara County. He is busy collecting and selecting from thousands of boring logs; he's also looking around for computer programs to organize and plot the results.

I'm off to Alaska again with students Greg Wiles and Clay Padginton. We're doing some tree-ring studies as well as conventional glacial studies at glacier margins near Homer on the Kenai Peninsula.

P. Thompson Davis - Department of Natural Sciences, Bentley College

Pollen analysis from 55 levels in the 7.7-m core retrieved from East Roadway Pond 0.5 km south of Star Lake on the Oswegatchie, New York, 7.5-minute quadrangle has been completed by Rudy Nickmann. Peter Clark and I have reported the basal radiocarbon age of 12,640 ± 430 yr B.P. (GX-13278) from the core and the regional significance of this site in previous Glaciograms. We now have three additional radiocarbon ages from the core that provide us a sediment accumulation curve and data for constructing absolute pollen influx diagrams. We also plan to obtain an AMS radiocarbon age from macrofossils to compare with the conventional radiocarbon ages derived from bulk sediments. Dot Peteet (NASA, New York) will collaborate with us by identifying macrofossils. Please stay tuned to learn whether we recognize the Younger Dryas (????!!) event in our core!

David DeSimone - Geology, Williams College

Last field season was a fairly busy one with several projects and successfully co-leading an AMQUA pre-meeting field trip with Bob Dineen and Eric Hanson.

Two large projects consumed most of my time. The first consisted of surficial mapping (1,000 ft/in) for the Town of Stephentown, NY, in the Stephentown Center and Hancock quadrangles. The final map and users manual Bob LaFleur (RPI) and I completed looks very nice and should be helpful in future town planning and zoning. I have prepared a paper (in review for Northeastern

Geology at this writing) which discusses the glacial history of the area. This paper should be out in late 1989 or early 1990. Some late additional information from Don Cadwell (NY Survey) presents the possibility of expanding the ice margin correlations determined in this paper.

The second project consisted of mapping the surficial geology (2,000 ft/in) and hydrology (1,000 ft/in) of the Town of Williamstown, MA, for the Williamstown Planning Board with David Dethier (Williams College) and student helper Eric Oelkers.

Our products included a report and maps of the surficial geology, depth-to-bedrock, aquifer locations, and aquifer recharge areas. All well information and borings are tabled as an appendix to this report. Binding of the report is forthcoming and copies may be available to interested parties.

Last season also saw the completion of surficial mapping (2,000 ft/in) in the southwestern corner of Vermont for the Vermont Geological Survey. The area I covered with David Dethier includes the Pownal quadrangle and Vermont portions of the North Pownal, Williamstown, and Berlin quadrangles. The surficial geologic map and a depth-to-bedrock overlay will be published with the report as part of the Vermont Survey's Special Bulletins series. The chances of a color map are slim to zero, but I wonder if we might include a color code, perhaps using Eagle Prismacolor numbers, as part of the legend. I would welcome anyone's comments on this possibility. Wouldn't it be nice if we could all agree to some standard color code and list of mapping units? I have a list of units and colors and would be glad to trade for any of yours.

Prospects for the coming field season have yet to be finalized but may include an expansion of mapping in the Stephentown area and will include the beginning of mapping in the Bennington and Hoosick Falls quadrangles for the Vermont Geological Survey.

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

The winter was spent writing and re-writing papers on topics discussed in the December, 1988, Glaciogram. Our brief report "Sunnybrook Drift indicates a grounded Early Wisconsin glacier in the Lake Ontario basin" was published in Geology, in February. Please write us for reprints if interested.

This summer we are planning to continue our investigations of Late Pleistocene deposits in the Lake Erie basin. Steve will also travel to British Columbia and northern Ontario to study stone pavements and related features in subglacial tills formed under active ice.

Robert H. Fakundiny - N.Y.S. Geological Survey

I'm spending a good deal of time working on the New York State Low-Level Radioactive Waste Advisory Committee to the New York State Low-Level Radioactive Waste Siting Commission reviewing the activities associated with finding a permanent disposal facility site. At present ten candidate areas are being considered. Within a short time several will be eliminated. Pleistocene deposits appear to be the most likely geological environment for the facility. We expect at least four sites to receive intense study. These site studies should provide new valuable local data.

P. Jay Fleischer, Don Cadwell, and Ernie Muller - SUNY-Oneonta, N.Y.S. Geological Survey, Geology, Syracuse University

Current mapping for the New York State Surficial Map has led to hypotheses regarding ice dynamics during deglaciation. Conditions of ice stagnation in association with active ice retreat have been reported in the high-relief terrain of central New York. Here, on the dissected Appalachian Plateau, north-south trending valleys influenced retreating continental ice flow to produce valley ice tongues, some of which were 10 km or more in length. Where situated in through valleys (open northward), ice tongues remained active due to continuous nourishment from the ice sheet. However, adjacent non-through valley ice tongues were ultimately deprived of ice supply due to thinning over headward divides leading to large-scale stagnation. Thus, topographically-controlled stagnation yielded contrasting environments of deposition in adjacent valleys. Even within through valleys, where active flow characterized ice tongue dynamics, large marginal blocks (2-4 km. wide, 4-6 km. long, > 100 m. thick) were detached during retreat and partially buried by outwash and inwash. Ultimately, the stagnant blocks melted to create stagnant ice landforms (dead-ice sinks) in valleys otherwise characterized by active ice features.

To better understand the deglacial conditions of this region we conducted reconnaissance field investigations on the Bering Glacier piedmont lobe in central, coastal Alaska. Several distinctly different parts of the Bering provide glaciologic and sedimentologic analogs for environments in which active and static ice exist together and constitute ideal locations to study causes of stagnation and associated ablation processes.

Our paper given at NEGSA in New Brunswick summarizes the results of a topographic profile that traverses an ice-marginal position and depicts englacial structures that suggest a marginal-ice cleat may exist.

We have a longer field season planned for the Bering in 1989, during which we hope to measure indicators of ice dynamics, and study ice-contact lake sedimentation in greater detail.

Jane L. Forsyth - Geology, Bowling Green State University

My only activity only moderately close to New York glacial geology is my effort on a paper for our Ohio Academy of Science meeting this weekend* on the correlation of my western-Ohio (Logan County, dissertation area) tills with other tills carrying different names elsewhere in western Ohio and extending eastward into the edge of the plateaus in eastern Ohio. (A copy of my abstract, as published in the Ohio Journal of Science abstract Volume is enclosed). Dick Goldthwait is also contributing a paper on the late Wisconsinan tills of western Ohio in this symposium on Ohio stratigraphy (some papers on the Pennsylvanian, some on the Pleistocene).

There will be little time for research this summer, since we have to vacate our building for a year to allow for it to be renovated, and the move will be time-consuming, and I have a lot of other jobs to take care of, in the process.

* Letter dated April 28, 1989.

4:00 THE THREE TILLS OF LOGAN COUNTY, OHIO Jane L. Forsyth, Geology Department, Bowling Green State University, Bowling Green, Ohio 43403

Three Woodfordian (Late Wisconsin) tills were identified in Logan County by Forsyth in a dissertation (1956) and a quadrangle report (1967), tills named (youngest first) Marysville, Bellefontaine, and Pickrelltown, and distinguished on the basis of their texture (Marysville is clay-rich, the others loamy), associated soil (Marysville - Morley, the others - Miamian, the old Miami 6A and Miami 60), and regional occurrence from north to south, plus association with specific tree species in mature woodlots. Only local names were assigned at that early time. Now that other till names are in the literature, correlation of these tills with others in western Ohio is possible, generally agreeing with the later authors: correlation of the Marysville with Goldthwait and Rosegreen's (1969) Hiram and Gooding's (1973) Union City, et al.; the Bellefontaine with Goldthwait and Rosegreen's Darby and Gooding's and Stewart's (Goldthwait and Stewart 1981) Knightstown; and the Pickrelltown with Gooding's and Stewart's Crawfordsville/Shelbyville tills. Eastern equivalents of these tills also exist, but correlation is complicated as lime content lowers markedly in this direction and associated soils change to Alexandria, two depths of which (Centerburg (younger) and Mount Liberty - Forsyth, 1966 - Licking Co. - and 1961 - Knox Co.) I correlate with the two older Logan Co. tills (no true clayey Hiram-type till was recognized in these counties).

Richard P. Goldthwait - Anna Maria, Florida

I'm working on two Ohio papers:

- (1) "Historic overview of Early Wisconsin Glaciation" given at GSA-Denver and being published by them. Includes reference to Otto, NY, Olean drift, bluffs near Toronto, etc. Only reviews until 1970.

(2) "Glacial geology of Western Ohio, 1947 to 1977" to be given at Ohio Academy this month and published by them. Gives till sheets and type localities for western Ohio - Columbus west (Abstract below).

3:15 GLACIAL GEOLOGY OF WESTERN OHIO 1947 - 1977, Richard P. Goldthwait, P.O. Box 636, Anna Maria, FL, 34216

For these 30 years my students, and those of Perry Stewart, Jane Forsyth, and Dick Durrell studied and produced theses on 32 counties scattered over western Ohio. Some were published by Ohio Water Division, Geological Survey and in field guides. Great strides were made due to 1. the coming of ¹⁴C dates, 2. the turn to key stratigraphic sections, 3. correlation of units by granulometry, lithology, and fabric and, 4. soils reports supplied a critical help. Each of two main ice lobes deposited 6 to 7 discontinuous overlapping till sheets last identified as following:

* * * * *

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<u>Till member (or feature)</u>	<u>Terminal mor. (or position)</u>	<u>Date range (¹⁴C avg. BP)</u>	<u>Soil catena (Composition)</u>	<u>Other features</u>
Rainsboro T	(Plateau Scarp (Ohio R.)*	125-150 T (>125,000)	Cincinnati (clay-loam)	loess 3'+ leach 7"
Gahanna T (Wolf Crk)*	(buried mid-OR)	55-65 T (>60,000)	patchy (clay-loam)	stone ct.
Boston T	outer Cuba M buried*	21-23 T (21,000)	deep Russell (silty-cl-loam)	loess 2' stone ct.
Whitewater*				
Caesar T (Shelbyville)*	Cuba-Xenia M Hartwell M*	18-20 T (18,100)	Miami-Russell (stony-cl-loam)	loess 1' leach 3"
Darby T (Arcanum)*	Reesville M Farmersville*	17-18 T (17,300)	Miami-Crosby (loam)	E.belts 2' lchd. pavens' ts
Olentangy T	Powell M Union City*	14-15 T (14,800)	Hurley-Blount (clay-loam)	leach 1' graded N
Tymochtee T	Wabash M	12-13 T	St. Clair	boulders

*Miami sublobe only

* * * * *

George M. Haselton - Earth Sciences, Clemson University

I plan to be continuing with the field mapping of glacial stratigraphy in the Peabody River valley of northern New Hampshire. The lowermost till unit in the stratigraphic section could possibly be Illinoian in age: as yet, there are no positive indications. Byron Stone of the USGS, favors a pre-Wisconsinan age for our lowermost till unit. Should this turn out to be the case, then the upper tills represent two Wisconsinan advances.

Some of our Canadian friends have even suggested that this area may have been influenced by a Younger Dryas pulse of ice up this valley. I only wish we had a definite chronology to prove these ideas.

I'd really enjoy correspondence from colleauges interested in this problem or a visit in the field by others who may be working in this area.

* * * * *

Paul F. Karrow - Earth Sciences, University of Waterloo

Three B.Sc. theses are nearing completion by F. Baudet on a late-glacial delta at North Bay, S. Balzer on subsurface till stratigraphy near Timmins, and M. Schaff on gold occurrences in till in easter Quebec.

After the NC GSA I plan to spend a few weeks on Manitoulin Island surveying raised shorelines and what appear to be iceberg drag marks on drift surfaces. My field assistant T. Chandler will then join A. Heath to extend the surveys north into the Sudbury basin (M.Sc. thesis for Heath). If there is time I will then do some more reconnaissance collecting of till samples for the Shield carbonate problem.

Meanwhile, work on the paper mountain has continued. The Champlain Sea volume with our (D.Pair and P.Clark) paper on the central St. Lawrence valley, expected out in February, has not yet appeared. With Barry Warner and Alan Morgan, our paper on the Clarksburg interstadial site appeared in *Palaeo* at the end of 1988. Work on the Woodbridge site, spanning Illinoian to Port Huron time, and begun in 1962, will be drawn together with J.H. McAndrews, A.V. Morgan, and J.A. Westgate. Considerable lab fossil work is still ahead but writing has begun. The Mill Creek, Michigan, site mentioned in the last Glaciogram, has yielded at least three fish species and two or more rodent species, as well as about 20 mollusc species.

C.F.M. Lewis (Dartmouth, N.S.) and T.W. Anderson (Ottawa, Ont.),
Geological Survey of Canada

Our hypotheses concerning the response of the Great Lakes system to enhanced inflows from Lake Agassiz are now in press at the *Journal of Paleolimnology* under the title "Oscillations of levels and cool phases of the Laurentian Great Lakes caused by inflows from glacial lakes Agassiz and Barlow-Ojibway". We suggest the first eastward diversion of Agassiz drainage at about 11 ka resulted in the Main Algonquin phase of the Upper Great Lakes which overflowed through the Erie basin. The enhanced flux of cold water through the system is postulated to have suppressed seasonal warming and to have induced a local (Great Lakes) climate reversal, documented in pollen records of vegetation change. The second diversion at about 9.6 ka resulted in a prolonged period of previously unrecognized high lake levels supported by hydraulic resistance to the enhanced flow at a deep narrow bedrock constriction in the Ottawa Valley (not the North Bay outlet). These effects together with a second climate reversal were mainly expressed in the northern parts of the Great Lakes region.

With Peter Barnett of the Ontario Geological Survey and Gordon Cameron of Dalhousie University, Halifax, we are preparing a paper on the correlation of glacial sediment stratigraphy exposed in the bluff of north central Lake Erie to offshore acoustic units. This correlation permits us to extensively map the subcrop distribution of glacial units in central Lake Erie beneath the post-Port Huron late Wisconsinan and Holocene lake sediments.

With Gordon Cameron (MSc. student) and David Scott (Professor) of Dalhousie University, we are also investigating the seismostratigraphy, physical properties and paleoecology of the offshore deposits in eastern Lake Erie centred on Long Point. Alex Zeman and the National Water Research Institute, Burlington, Ontario, assisted us with the collection of cores and acoustic profiles for this study. Gordon is at the stage of final data analysis for his dissertation.

One of us (CFML) is contributing unpublished profiles of the Nipissing shorebluff to assist P.F. Karrow of the University of Waterloo with a study of former shorelines on Manitoulin Island.

Ernest H. Muller, (Geology) Syracuse University

Though commitments tend to expand to fill any vacuum, I anticipate increased freedom at the end of this spring term as a result of retirement from the active faculty at Syracuse University.

Wanda and I will keep Syracuse as our headquarters, and I will hope to make progress on a number of projects that are presently under way. In late July and August, I expect to return with Jay Fleisher, Don Cadwell and Dave Franzi to Bering Glacier.

If opportunity develops, I will participate in the NYSGS surficial geology mapping project (Adirondack 1:250,000 sheet), and NYS Low Level Nuclear Waste Siting Commission studies. Even if these do not develop, I foresee no problem in keeping busy for the rest of the summer.

Victor K. Prest - Geological Survey of Canada, Ottawa

I'm still planning on investigations on "Lake Iroquois" in Ontario, and maybe in New York if Ernie Muller, when retired, can take a few days to join me.

W. D. Sevon, Pennsylvania Geological Survey, Harrisburg

This report is mainly an update of items discussed by Thomas M. Berg in the last issue of the Glaciogram. Tom has left the Pennsylvania Survey to become Director and State Geologist of the Ohio Geological Survey. We wish him much success and know that he will be very involved in glacial topics in that state. Jon Inners has been recommended as Tom's replacement for the position of Chief, Geologic Mapping Division and Associate Bureau Director. Confirmation of his appointment is expected soon.

Work on the Piedmont surficial materials continues slowly. The Pennsylvania Survey and the Maryland Geological Survey have received COGEMAP first-year funding for preliminary work on the surficial geology of the York 30' x 60' quadrangle (scale: 1:100K). Part of the Pennsylvania program will involve development of a soils/landform model for the Piedmont by Ed Coilkosz and a Masters candidate from Pennsylvania State University.

The physiographic provinces map is undergoing some further revision following comments at NEGSA meeting in New Brunswick, NJ and publication is expected in July in time for IGC in Washington.

Duane Braun, Bloomsburg University, gave an excellent poster session at NEGSA on ice-margin positions in north-central PA (Geological Society of America Abstracts with Programs, v. 21, p. 6) and the Survey is evaluating publication of his material along with Sevon's materials maps of the same area.

Helen Delano is continuing her work on the Lake Erie shoreline with a somewhat longer commute to the field area. She and Noel Potter were joined in marriage in April, 1989 and she now resides in Carlisle and works out of the Harrisburg office.

Jack Epstein is working in the New Tripoli 7.5' quadrangle and reports that pre-Wisconsinan drift is present along with a variety of other surficial materials.

With the departure of Tom Berg to Ohio, completion of the surficial materials part of Warren County falls to W. D. Sevon.

Don't forget the 20 Annual Geomorphology Symposium, "Geomorphic evolution of the Appalachians", Dickinson College, Carlisle, PA, October 20-22, 1989. An outstanding program should stimulate new thought and research in the Appalachians for years to come. Contact W. D. Sevon for more information.

John P. Szabo - Geology, University of Akron

Rick Storck and I have been busy working on the type sections of the Navarre and Millbrook tills. It is readily apparent that the type section of the Navarre Till is not typical of this till in the type area. The type section consists of massive diamicton possibly deposited through subglacial meltout. Most sections in the type area consist of material derived from higher in the ice under stagnant conditions. Stratified diamictons and flow tills are common. Only at two locations in two counties did we find evidence for lodgment.

The type section of the Millbrook Till is mostly covered. We drilled in a field above the type section and penetrated 10 m of section. The Millbrook Till is overlain by the Hayesville and Navarre tills; but we do not know what underlies it because the gas line broke on the rig when things were getting interesting. Thus the Millbrook Till at its type section is not bounded below as of yet. This is also true of the Hayesville Till at its type section farther west.

The Millbrook and Navarre tills cannot be separated from each other on the basis of texture or lithology. White noted a color difference in the weathered parts of each unit. We analysed the free iron in series of oxidized samples and the iron contents were not significantly different statistically. We analysed the elemental composition of unoxidized samples using ICP analysis. Based on data from a 22-element analysis, the tills differed only statistically on their tin and titanium contents. Our tentative conclusion is that these tills apparently had the same source area.

The term, "Millbrook" may not be used much longer or it must definitely be redefined. Previous work has shown the multiple nature of this unit and that it has a variety of source areas. Rick Pavey of the Ohio Survey will give a position paper on the status of Pleistocene units in Ohio at the Ohio Academy of Science meeting this year. I do not think that he wants to redefine everything as of yet, but the nomenclature problem is compounding.

Mike Wilson - Department of Geosciences, SUNY, College at Fredonia

Ernie Muller should be receiving Todd France's thesis which indicates about 350' of fill at Conewango - Alleghany juncture; based on gravity, seismic, and several 150'+ wells that do not encounter rock. He also reviews new well data for Alleg. and several southerly tributaries (beyond? the glacial limit) that corroborate previous workers notions of multiple lake sequences in Alleg. valleys or tributaries.

I continue to work with Randy Woodbury on the five 1000' deep wells for which he has logs and cuttings in the Conewango at Cherry Creek.

Aside from the above, this summer I'm working with Ron Feinen (SUNY Fredonia senior soon to be Archeology student at U.B.) on geophysical investigations of Ripley archeological site. Also, I'm completing hydrologic evaluation of Green Lake in Orchard Park, NY, and finishing over-seeing particle size study of Silver Creek, buried valleys stratigraphic exposure, a study carried out by Charles Lake, an undergraduate student.

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