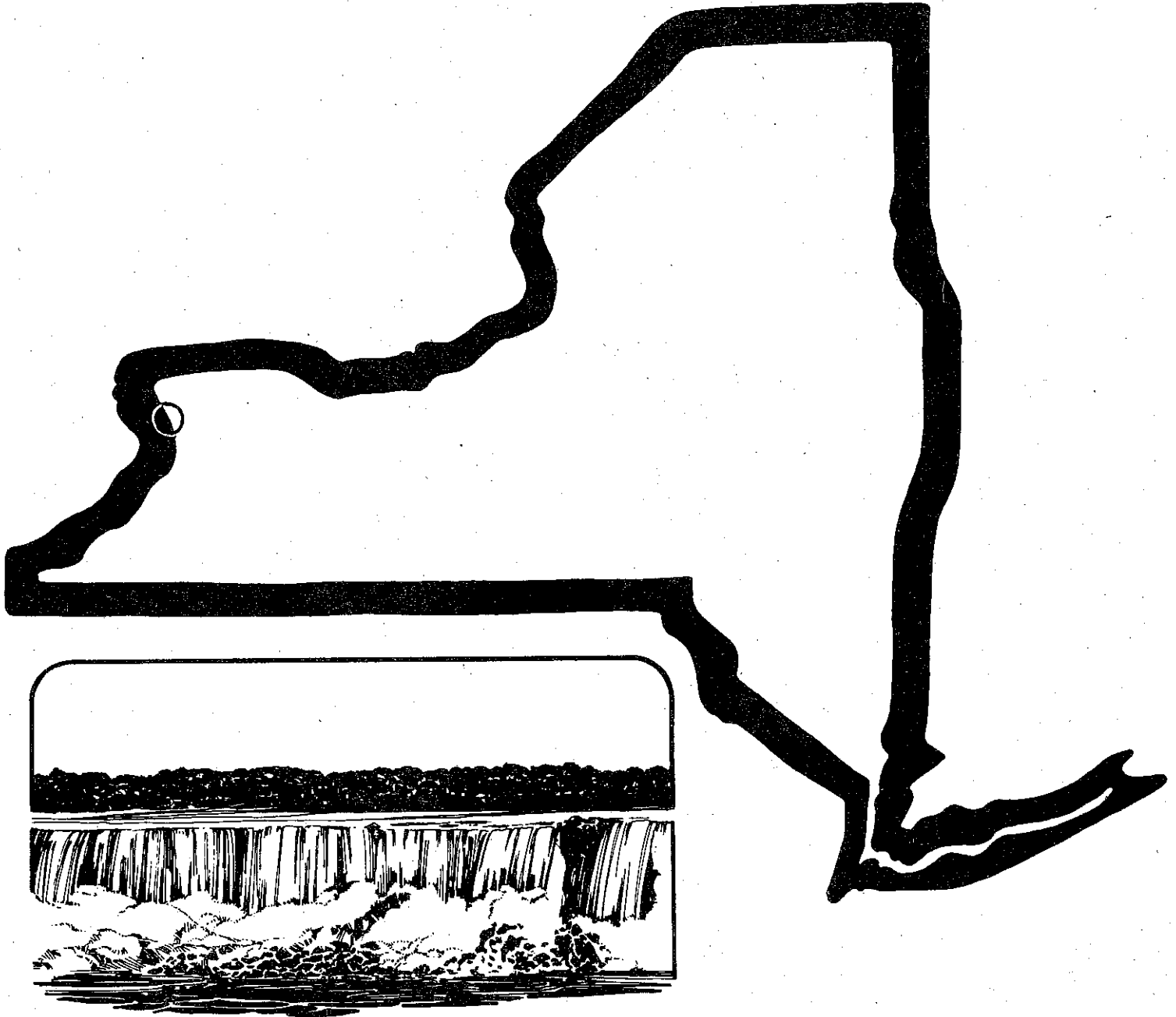


E. F. KARROW

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NEW YORK GLACIOGRAM



DEPARTMENT OF GEOLOGICAL SCIENCES

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

Parker E. Calkin

Robert F. Black - Geology, University of Connecticut

The following publications may be of interest to Glaciogram readers:

R.F. Black and S.M. Clebnik, 1982, Mode of deglaciation of Shetucket River Basin: in NEIGC Guidebook, p. Q3-1-20.

R.F. Black, 1982, Mode of deglaciation of the Shetucket River Basin: in NEIGC Guidebook, p. Q3-21-28.

Laurie Musiker, graduate student at U. Conn. is working on esker-like forms in the Shetucket River Basin for her M.S. thesis. Joe Gurrieri, graduate student at U. Conn. is completing field work on the glacial geology of the Saranac Lake Quad.; Adirondacks, for his M.S. thesis.

Parker E. Calkin - Geology, SUNY at Buffalo

My past summer was taken up with projects in Alaska, western New York, Maine, and Moscow - in that order. Students Phil Burns, Beth Lamb, Ron Harding, and Leah Haworth are working on glaciology and/or glacial geology problems in the Brooks Range.

Studies on-going in western New York include those by: Brenda Gagne - Glacial Stratigraphy in the Eastern Cattaraugus Basin (in writing stage); Pierrette Turcotte-Roy - Till Differentiation in Western New York (still data collecting stage); and, David Marcus - Dynamics of Nearshore Ice, Sturgeon Point, Lake Erie, N.Y. (data collecting). A paper titled "The Gowanda Hospital Interstadial Site, New York" with Ernie Muller and John Barnes (Pa. Survey) has been published this past summer (Am. J. Sci., v. 282, p. 1110-1142). Presently I am also looking into some aspects of dating of the Mid-Wisconsin interstadial deposits in Cattaraugus Creek Valley with Bob La Fleur. We may have a date on the late-Mid Wisconsin to compliment the early-Mid Wisconsin dates from Gowanda Hospital and Otto. I hope we have more information for you by the Spring Glaciogram.

A significant amount of time in the Spring and Summer were taken up with organization of the 54th Ann. Meeting of the New York State Geological Association and with the 11th Ann. Meeting of the Eastern Section AAPG held in Buffalo on 6 through 10 October past. Guidebooks for the NYSGA Field trips are available from Dr. M. P. Wolf, Dept. of Geology, Hofstra University, Hempstead, N.Y. 11550 - cost \$18, including postage. I have a few reprints of the following for those interested:

Glacial Geology of the Erie Lowland and Adjoining Allegheny Plateau, Western New York - P. Calkin

Glacial and Engineering Geology Aspects of the Niagara Falls and Gorge - P. Calkin and T. Wilkinson (Buffalo Corps of Engineers Office)

Quaternary Stratigraphy and Bluff Erosion, Western Lake Ontario, New York - P. Calkin, E. H. Muller, and T. F. Drexhage

Contact Jon Boothroyd - Geology, U. Rhode Island for another guidebook paper and roadlog - Sedimentologic and Geomorphic Processes and Evolution of Buttermilk Valley, West Valley, New York - J. Boothroyd, B.S. Timson, and L.A. Duane. Geologic and Engineering Geology Aspects of Presque Isle Peninsula, Pa. - is considered by Joan Pope and R. J. Gorecki - U.S. Army Corps of Engineers, Buffalo District (1776 Niagara St.).

Tom Lowell, Ph.D. student, is gathering all available data and collecting new material of a glacial-geologic nature on northwestern-most Maine. This is for the Maine Quaternary Map Compilation and for his thesis. One of the most interesting aspects of his studies so far is evidence he has gathered favoring northward glacial flow in latest Wisconsin time. The source of this flow may have been an ice mass separated from the main Laurentide Ice Sheet and located near the Maine-Quebec-New Brunswick border area.

In August I attended the INQUA Congress in Moscow and presented a paper on Holocene Glacial Chronology of the Brooks Range, Northern Alaska (Striae, v. 18, 1982). The references is rather hard to get (perhaps obscure?) but summaries will appear in GSA in near future I hope.

In a distinctly different vein, I enclose below an outline and summary from a beautifully illustrated book received by my boss - Chet Langway. This book describes alternative processes (to those we normally accept) for the Great Lakes and the Ice Age (the last I presume). We scientists are supposed to be open to different ideas aren't we??

"Summary on the Great Lake Region"

Immediately after the impacts of the Major and Minor Group meteorites, the entire area of the Great Lakes Region appeared completed cratered. The boulders which were hurled in all directions created other depressions and multiplied the destruction for hundreds of miles around this Region. This vast number of boulders is responsible for holding down the massive amount of sediment that was eroded, moved and deposited by the Deluge waters and the Ice Age melt. In this manner, to a great extent, the contours of the Great Lakes shorelines were formed.

In view of the facts presented, the field evidence demonstrates that at the time the Great Lakes were formed, no massive movements of glaciers occurred in these Regions (Szpytman, 1980, p. 48).

Who says catastrophism is dead!

* * * * *

A General Summary

Theory of
THE ORIGIN AND FORMATION OF THE
GREAT LAKES REGION
and
RESULTANT CAUSES OF GLOBAL DELUGE
and
FORMATION OF THE ICE AGE
Part I

ILLUSTRATION SUPPLEMENT. (page vi)

The basic concept of this theory is illustrated together with a chart of ocean levels which indicate the resulting causes through a progression of altering time intervals and periods.

CHAPTER 1. (page 1)

The Origin of the Great Lakes.

A) Although the Great Lakes Region has undergone massive changes in formation, the topography of this area still shows evidence through the remaining roots of deformation caused by a multi-impact occurrence.

B) A description of the chain of events and effects of their progression which followed the Earth's collision with a meteoritic swarm.

C) A description of the meteoritic swarm, trajectory, and extent of meteoritic fall area. (Fig. 3/6)

CHAPTER 2. (page 7)

The Formation of the Great Lakes Region.

A) Each lake is described separately in order to show the various effects caused by the multi-impacts.

B) Illustrations of the lakes showing locations of several impact areas, and cross sections of large and small craters as they appeared in the past and as they appear at the present time.

C) Photographs showing boulders that indicate direction of fall after ejection by meteoritic impact and their own impact marks left on exposed rock surfaces. Several areas throughout the Region are taken into account.

CHAPTER 3. (page 49)

Resultant Causes of Global Deluge.

A) An explanation - how the meteoritic collision with the Earth caused massive precipitation of rain and immediate changes of the climate.

B) As a direct result of the collision, the effects on the Earth's magnetic field and displacement of the poles are explained.

C) A description of the angle of entry by the meteoritic swarm which caused the Earth to shift into a new and colder orbit.

D) An explanation - how the Earth's unbalanced gravitational forces caused the Earth's crust to undergo centrifugal distortion due to gyration of axis and a sudden displacement of stable ocean pressures.
(Accumulating masses of ice increased pressure at the polar regions, while the regions about the equator were relieved of ocean pressure.)

CHAPTER 4. (page 55)

The Formation of the Ice Age.

A) An explanation of the stabilization of Earth's axis and how the present position of the north and south pole was established.

B) A description of the Great Lakes Region as it developed through the effects caused by the ice age period.

Reference: Szpytman, Jack J., 1980, Theory of the origin and formation of the Great Lakes Region and resultant causes of global deluge and formation of the Ice Age: Grosse Pointe Woods, Michigan, Szpytman, 64p.

Donald Coates - Geology, SUNY at Binghamton

Since my last report several items have continued the same, and there is some new information in addition. David Ozsvath (Ph.D. candidate) and Matt Gubitosa (M.A. candidate) are continuing their work and mapping in the western Catskills. Some of these results will be mentioned during our presentation at the Northeastern Section Geological Society of America meeting in March 1983. We still have not found till that predates Late Wisconsinan in this region. However, there continues to be different till lithologies which we interpret as different facies of a single major event.

Three M.A. candidates have now completed their degrees within the past six weeks.... Although the principal subject on all projects was hydrogeology, a significant component of all work dealt with glacial materials. In much of the work an understanding of drift was crucial to solution of the problem that was being addressed. Peter Murdoch's study area was in the Adirondacks and he compared two drainage basins and their degree of water quality change by acid rain. Mark Raybuck did a hydrogeological assessment of water supply problems in south Binghamton.... an area where homeowners still have wells for their water source. William Kramer studied possible pollution sources of valley fill aquifers in the east Vestal area of the Susquehanna Valley. Abstracts of all these projects will be provided for the spring issue of GLACIOGRAM.

Fortunately my research has been funded by various government agencies and industry. The three sets of projects I have performed have all dealt with glacial materials, and how their interpretation is crucial in environmental geology problems. As a consultant for ARCO on their underground gasoline storage tank leaks it has been important to determine the nature of the drift at such sites. Identifying material properties dictates the type of recovery system to be emplaced. The monitoring wells that are drilled provide vital substrate data on the areas of concern.

In work performed for the New York State Attorney General on three lawsuits, I am able to have test holes drilled to determine the quality and quantity of sand and gravel. In addition the NYS Department of Transportation evaluates the material on the basis of magnesium sulfate soundness tests. A very interesting case has just ended that involved the character of the glacial materials immediately north of Labrador Pond.

More of this at a later date....

The third set of projects has dealt with water problems being encountered by the Town of Vestal. During the summer more than 30 monitoring wells were drilled... most were drilled to bedrock which ranged from 120 to 165 feet in the valley fill sediments of the Susquehanna Valley. The logging of these wells has provided new insight into the character of the valley fill. For example I am sure that some people still believe such major valleys have mostly glacial materials. What we are increasingly discovering is that although the ground surface may now appear rather flat, the substrate is anything but uniform. The picture that is emerging is one of a very hummocky and kettled terrane with the demise of ice. For example in one bore hole wood was discovered at many horizons, and I chose two of these to date. At 70 feet the C-14 age is 9560 +/-305 ybp. At 90 feet the C-14 age is 12,060 +/-445 ybp. I will let you make your own inferences about this. However, to me this means the ice had left the Binghamton region quite a bit prior to such dates. Thus, the valley fill sediment contains appreciable Holocene material. A similar pattern, although the dates were younger, had been previously observed and mentioned in a paper Allan Randall and I did back in 1973. This now confirms our earlier interpretations.

G.H. Crowl - Geology, Ohio Wesleyan University

I spent October in central Pennsylvania reviewing Denny Marchanel's work on the Pre-Wisconsinan in the area of the 1978 Friends Trip. When he died, he left the maps and some comments. I had fun doing the field work; now I'm paying the price by writing the report for the USGS.

Ron DiLabio - Geological Survey of Canada

Ron DiLabio and Paul Egginton (Geological Survey of Canada) and Andrew Rencz (Canada Centre for Remote Sensing) have completed a project on the biogeochemical expression of metalliferous till at a site about 80 km west of Ottawa. The first step was to map a classic dispersal train of metalliferous till and boulders derived from a zinc occurrence in Grenville marbles, similar to ores at Balmat-Edwards, New York. Then we mapped the distributions of zinc levels in black spruce, balsam fir, and grasses over the dispersal train. This showed strong relationships between plant metal levels and till metal levels, which suggests that biogeochemistry may be a useful adjunct to till geochemistry in exploration for this type of ore deposit.

A paper describing this work is in press with the Canadian Journal of Earth Sciences, and probably will be published in the December/82 issue.

Edward Evenson - Geology, Lehigh University

Our work on the deglaciation of Pennsylvania and New Jersey continues. At the New Orleans G.S.A. meeting, we presented Jim Cotter's work on the Francis Lake (N.J.) core. Dates of $18,570 \pm 250$ and $18,300 \pm 200$ from the herb pollen zone at the base of this bog (located behind the "Terminal Moraine") suggest that ice retreat from this area began around 19,000 yrs. B.P. Ron Witte (L.U. graduate student) is currently mapping the area south of Odgensburg, N.J. and has good evidence for several ice margins between the Odgensburg-Culvers Gap moraine and the "Terminal Moraine". Jack Ridge's thesis on the "Deglaciation of the Great Valley of N.J." is completed and slated for publication by the Pennsylvania Geological Survey. Jack has demonstrated systematic retreat from the "Terminal Moraine" and has developed a detailed model for ice retreat from the area using morphosequence mapping (ala Koteff).

On a separate front, and in conjunction with John Guilday (Carnegie Museum), Dorothy Carmichael (N.Y. University), and a host of others, we are working up the Hanover Quarry No. 1 Local Fauna. This sinkhole filling has thirty-seven vertebrate taxa of which at least 40% of the mammalian species are extinct. The fauna is Irvingtonian and the morphology of Microtus and Pitymys dentitions suggests that the fauna is older than that of the late Kansan Cumberland Cave, Maryland and the Cudahy local fauna of Kansas (i.e. greater than .6 million years B.P.). On the basis of faunal evolution, pollen and botanical remains (14 identified species of seeds) the fauna is assigned to a temperate episode during Kansas or conceivably, Aftonian time. This fauna is believed to be the oldest Pleistocene fauna known from any northeastern cave.

* * * * *

Nelson Gadd - Geological Survey of Canada

Although based mainly on very rapid reconnaissance of many areas, my observations during summers '81 and '82 in southern Quebec indicate that some modifications of regional concepts (e.g. Gadd, McDonald and Shilts, 1972) will be necessary. A few pages in "Current Research - Part B" for 1983 (look for it in April-May) will sketch the main ideas; compilation maps at 1/500,000 scale for a region extending from Ottawa to Lake Megantic (31H, 21E) and a more detailed report should follow within a year (or two).

The most interesting feature seems to be that ice (= remnant Lake Champlain lobe ?) controlled glacial meltwater drainage of the region distal to (SE of) Highland Front morainic system as well as of an area between Sutton (Green) Mountains and Cowansville, Quebec (see also Prichonnet, et al, 1982) down to levels below 475' a.s.l. Note that this is well below the previously accepted marine limit (500-525') for the area immediately north of Lake Champlain. Thus ice prevented marine invasion of at least the area between Mont Yamaska, Missisquoi Bay of Lake Champlain, and the Sutton (Green) Mountains until a significant amount of isostatic rebound had taken place in Champlain Sea basin. Mya phase of Champlain Sea is the first marine record near Cowansville and this appears below 400' a.s.l. Radiocarbon dates compatible with Champlain Sea at Burlington are anticipated.

A careful examination of drainage history of the international boundary region between Lake Memphramagog (Newport, Vt.) and Lake Champlain, particularly of lake levels at and below 1000' a.s.l. would seem to be indicated. That all late-glacial drainage of that part of southern Quebec was ice-controlled until, say, mid-Champlain Sea time and flowed southward and southwestward towards Lake Champlain basin, mainly via Missisquoi valley, seems fairly clear. Somewhat earlier drainage history of the eastern boundary region of southern Quebec (from L. Memphramagog east to L. Megantic) at elevations between 2000' and 1000' is related to early history of Connecticut River valley.

From various contacts at St. Hyacinthe Friends' and NBQUA field excursions (two excellent trips in Spring and Summer '82) it seems that segregation of ice south of St. Lawrence valley during at least early Champlain Sea time is more or less compatible with the ideas of late ice in New Brunswick and, particularly, northern Maine. I recall some stimulating discussion on similarities and differences in ice-flow patterns and possible chronologies in adjacent areas north and south of the international boundary.

References

Gadd, N.R., McDonald, B.C. and Shilts, W.W., 1972; Deglaciation of southern Quebec; Geological Survey of Canada, Paper 71-47; Map 10-1971.
Prichonnet, G., Doiron A., et Cloutier, M., 1982; Le mode de retrait glaciaire tardi-Wisconsinien sur la bordure Appalachienne au sud du Quebec; Geographie Physique et Quaternaire, vol. XXXVI, Nos. 1-2, p. 125-137.

Richard P. Goldthwait - Geology, Ohio State U. and Anna Maria, Florida

Dick Goldthwait writes

- 1) He is busy trying to get the state of Ohio to print the Quaternary Map of Ohio on 1:250,000. A little of your pressure on Geology Division and Dept. of Natural Resources at Columbia might help a lot. The soils people are solidly behind it.
- 2) Have coauthored with soils experts (maybe in QR) a detailed account of a buried paleosol (well weathered like gumbotil is supposed to be) under "Kansan" drift in southwestern Ohio at Cleves. If there is a "Nebraskan" this is it!
- 3) Am preparing papers (for Ohio biologists and GSA) on the present story of Teays and Minford clay. None, or little, of the work is mine, but it is slowly unfolding.
- 4) Am keeping track of the sea at my backdoor! Yes it's rising - but very slowly (near 1 mm per year).

George M. Haselton - Geology, Clemson University

Academic year '81-'82; spent weekends looking at, in Reconnaissance, Playa Basins in Central and Eastern Oregon while on sabbatical.

Paul F. Karrow - Geology, University of Waterloo

Work is continuing on Long Point postglacial history (John Coakley, Ph.D.), the Fenelon Falls outlet of Lake Algonquin (P.F. Finamore, M.Sc.) and the Cochrane advance (J.A. Richard, M.Sc.). The first is supported by federal funds while the latter two are supported by the Ontario Geological Survey.

Leslie Kerr-Lawson, after working in the Quaternary lab all summer sieving interglacial Don Fm. samples for microfossils will work on the paleontology of the Don for her M.Sc. thesis. This will include isotopic analysis of mollusc shells for paleoenvironmental interpretation.

U. Eicher again visited the Department from Switzerland this summer to continue his study of isotopic variations in marls. We would like to sample some marl sequences farther south near and beyond the glacial margin. We would appreciate hearing of any suitable sites with potentially long marl records.

Anita Godwin is beginning a study of C-0 isotopes in molluscs from fluvial deposits of S.W. Ontario with Peter Fritz. Also working in Peter's isotope lab is Tom Edwards (M.Sc., Queen's - Kingston) who is studying marl deposits for his Ph.D.

Also this summer, I.J. Smalley and M.B. Dusseault joined the Department as engineering geologists. Ian is known for his work on drumlin formation and loess deposits, while Maurice has worked recently on tar sands.

As planned, I completed the mapping of glacial geology of St. Joseph Island for the Ontario Geological Survey. It is supposedly in the zone between the Two Rivers (nee Valdres) and Marquette advances of the Superior-Michigan-Huron basins but neither ice margin has been documented in Ontario. The Island has a fine record of Algonquin shorelines tilted about 1 m/km.

Five papers were presented at four meetings in May and June. A guidebook for the IAS meeting in Hamilton was published this summer and a paper on the Guelph buried soil appeared in the Canadian Journal of Earth Sciences, September issue. This site bears some similarity to Parker Calkins Gowanda site also recently described in American Journal of Science. A paper with Peter Clark (M.Sc., University of Waterloo, 1980) on glacial history of the Malone, N.Y. area has been accepted for the G.S.A. Bulletin.

Collection of molluscs for study of their paleogeography and biostratigraphy in glacial lake deposits has continued. We have had better success recently in collecting the fragile unionid clams by generous coatings with clear nail polish. Mollusc collection continued as well from probable interglacial beds in the Woodbridge railway cut (Toronto).

Peter Barnett will make a detailed study of Lake Erie bluffs exposures from Port Burwell east to Port Dover for his Ph.D., which he will come to Waterloo to begin in January. Peter mapped the area for the Ontario Geological Survey this summer.

Next year I am due for sabbatical and am hoping to at least partly "clear the decks" for that. This involves completing a second revision of the report on Stratford-Conestogo for the Geological Survey of Canada, a report on St. Joseph Island for O.G.S., and papers on the Waterloo interstadial, marl dating problems, and Toronto interglacial microfossils, among others.

I expect to be away the second half of 1983 but where is not yet sorted out.

Carl Koteff - U.S. Geological Survey, Reston, Virginia

The past summer was spent in the Burlington, Vt., area, on the postglacial uplift project. Altitudes were obtained on some beaches and from some deltas that do not agree completely with earlier work. More has to be done here before things can be ironed out, however.

Of more immediate interest, a new readvance locality was discovered east of Burlington in the town of Williston. Here, clayey reddish brown till, containing few pebbles and granules, is as much as 3 m thick and overlies silty to sandy gray to yellowish gray and relatively nonoxidized till. A shear zone up to 0.5 m thick separates the two tills. Folds and other directional data in the shear zone indicate a southeast direction for ice movement, which is here called the Tafts Corner readvance. The lower till is identical to the surface till throughout the area, and the clayey till is thus interpreted to have been derived by a minor pulse of the Woodfordian ice sheet, readvancing over late Wisconsinan lake bottom sediments. Distribution of the clayey till suggests a readvance of at least 3 km.

A field trip in northwest New Jersey this fall with Ron Witte, graduate student at Lehigh, and Ed Evenson led to the discovery of an ice readvance locality of Sparta, N.J. Excellent exposures there revealed till overlying lacustrine beds in thrust contact. Shears and folds in the lacustrine unit show a southwest direction for ice movement. Another part of the exposure, about 100 m to the east showed delta foreset beds at a higher elevation; the delta beds appear to postdate the till, but this was not firmly established. The till is interpreted to represent a minor readvance in a lake ponded by the ice sheet to the northeast. The soil profile on the till is only weakly developed. The exposure at Sparta is about 5 km southwest of Ogdensburg, N.J., and thus it indicates that the Woodfordian Terminal position in the Upper Wallkill Valley is more extensive than recently suggested by Connally and Sirkin.

Ernest H. Muller - Geology, Syracuse University

In late Spring, along with the Heussers, Ed Evenson, Art Bloom and Manfred Strecker, I took part in the regional meeting of the INQUA Commission on Genesis and Lithology of Quaternary Deposits in Neuquen, Argentina. An extended field trip in the southern Andes ended after the declaration of hostilities, but fortunately before the outbreak of open fighting in the Falkland War.

In mid-summer, Wanda and I enjoyed a month-long drive to Seattle for the biennial meetings of AMQUA, with field trips in the western Columbia Plateau and on the Olympic Peninsula.

For many years, I have been intrigued by the full range of horizontal partings, shear surfaces, washed drift and other evidences of the role of water and of dewatering in deposition of basal tills. In final analysis, although till is of glacial origin, water is fundamental in its deposition, whether as an ephemeral liquid film, in a slurry or as a sorting and washing medium. I have two papers submitted for publication which attempt to consider just what is involved in the lodgement of till.

Parker Calkin and I share a joint interest in several problems of Quaternary stratigraphy in western New York. Our joint paper (with John Barnes) on the Gowanda Hospital Site appeared this summer in the American Journal of Science. With Tom Drexhage, we cooperated in preparation of a field guide for an NYSGA trip to examine stratigraphy and shore bluff erosion in Niagara and Orleans Counties. We share an intention to continue investigations of bluff stratigraphy along the south shore of Lake Ontario already begun in M.S. theses by Sandy Brennan (Buffalo) and Nena Salomon (Syracuse).

It has been stimulating this fall to have Duane Braun in the Syracuse Geology Department on sabbatical from Bloomsburg State College.

The Syracuse University "pod" (Cadwell, 1980), led by Ph.D. candidates Dave Franzi and Jack Ridge, has been unraveling a wealth of stratigraphic detail relative to oscillation of several late Wisconsinan ice lobes in the western Mohawk Basin. Individuals involved in this effort are:

Michael Antonetti defended his M.S. thesis on the South Trenton Quadrangle, detailing stratigraphic evidence of two recessional till sheets separated by at least several decades of lake clay deposition during Fullerton's Indian Castle Glaciation.

David Franzi has mapped the Hinckley and Ohio Quadrangles and is focussing his dissertation research on geochemical characterization and variation trends of the several tills.

Jack Ridge has mapped the Newport and Middleville Quadrangles with a keen eye to stratigraphic detail. In the absence of otherwise datable materials, he is investigating paleomagnetism as a basis for correlation of proglacial lake units.

Robert Foresti is mapping the Ilion Quadrangle with emphasis on fabric analysis.

James Loewey is mapping the Oriskany Quadrangle and investigating heavy mineral ratios as a criterion for correlation.

Cheryl Lykens has just begun mapping in the Little Falls Quadrangle and Gregory Flick plans to map the Herkimer Quadrangle next field season.

Among the effects left by Chauncey D. Holmes, was a carton of reprints which Frances Holmes has given me for distribution to persons to whom they may be of use or of interest. Included are:

- 1931 A method of making topographic models: Science 78:368-369.
- 1942 Nebraskan-Kansan drift boundary in Missouri; Geol. Soc America Bull. 53:1479-1490.
- 1944 Hypothesis of sub-glacial erosion: Jour. Geol. 52:184-190.
- 1953 Teacher, text and student: Jour. Geological Education 1:26-29
- 1951 Geology in the Liberal Arts College: Sci. Monthly 73:194-197
- 1955 Geomorphic development in humid and arid regions - a synthesis: Am. Jour. Sci. 253:377-390.
- 1956 Key to a more efficient and effective elementary geology course: Jour. Geol. Education 4:37-42
- 1960 Evolution of till-stone shapes, central New York: Geol. Soc. America Bull. 71:1645-1660.
- 1960 Patterned ground near Dundas (Thule Air Base), Greenland; Meddelelser om Grønland, 158:1-15 (with Roger B. Colton).
- 1963 Tidal strain as a possible cause of microseisms and rock jointing: Geol. Soc. America Bull. 74:1411-1412.
- 1969 Geology and liberal education: Jour. Geological Education 17:142-144
- 1971 From Nelson to Chittenango: a geological journey. Mid-York Press, 26p.

Persons wishing a single copy of any of the above reprints are urged to write, identifying the reprints desired and enclosing their return address. I will be pleased to try to get the requested reprints to you on a first come, first served basis.

Ernest H. Muller
204 Heroy Geology Laboratory
Syracuse University, Syracuse 13210

Antonetti, Michael D.

Following defense of his M.S. thesis (Abstract enclosed herewith), Mike departed for richer fields of investigation with Chevron in New Orleans.

THE PLEISTOCENE GEOLOGY OF THE SOUTH TRENTON, NEW YORK 7.5-MINUTE QUADRANGLE
M.S. Thesis, Syracuse University
August 1982

ABSTRACT

Evidence of two glaciations is present in the South Trenton quadrangle. Till fabric data, striae, and pebble lithology indicate the drift of both glaciations had an origin in the Oneida Lake basin.

Consistent with terms proposed by Fullerton (1971), the earliest drift units are attributed to the Oneida lobe of the Indian Castle readvance during the Port Huron Stade of the Late Wisconsinan. The second glaciation occurred as a minor readvance during the retreat of the Indian Castle ice. Ice from this glaciation was strongly influenced by local topography, filling the valleys and leaving the highest elevations of the Deerfield Hills uncovered.

Till of the first glaciation is a silty-clay, black to gray lodgement till. The till of the second glaciation consists of two facies, a clayey sub-aquatic till and a silty-clay lodgement facies. The clay facies crops out in the lowest elevations of the eastern sections of the quadrangle. The silt facies can be seen in outcrop throughout the quadrangle.

The receding ice from the second glaciation formed a series of proglacial lakes in the Ninemile and Reall Creek Valleys. Drainage for the waters in the Ninemile Valley was to the northeast into the West Canada Creek Valley and, eventually, into the Glaciomohawk River basin. Drainage from the Reall Creek Valley was to the south, into the Glaciomohawk River basin.

The heavy mineral suites of till deposits of the Oneida lobe from the South Trenton quadrangle and adjacent areas were compared and contrasted to the heavy mineral suites of tills of the Black River, Adirondack and Mohawk Regions. Tills of the Black River, Adirondack and Mohawk Regions exhibited enough similarities to be classified as one group for the purpose of comparison to the Oneida lobe samples. Significant differences in the amounts of sand content, heavy mineral content, hypersthene grains, and opaque minerals were revealed in this study. The tills from the Oneida lobe were deficient with respect to sand content, heavy mineral content and hypersthene relative to tills from the Adirondack Group. These differences reflect the bedrock source area as well as the amount of transport each till unit was subject to before deposition.

Principal components analysis accentuated the differences between the two groups but did not reveal any differences a confidence interval test had not previously shown.

Cluster analysis tended to group samples based on their gross similarities. Thus, till in similar stratigraphic horizons clustered at high similarity levels irrespective of provenance.

David A. Franzi - Geology, Syracuse University

My research is concerned with the stratigraphy and geochemical provenance of tills in the southwestern Adirondack - western Mohawk region. Field study conducted over the past three years by Jack Ridge, several master's students and myself has led to the recognition of a complex late Wisconsinan stratigraphy in the western Mohawk Valley. The stratigraphic column includes at least eight till units, some of which are time-correlative, from four distinct source terranes.

To date, I have analyzed approximately 120 samples throughout the region and from key stratigraphic exposures. The differences in elemental composition within a single till unit can be large due to the strong influence of local bedrock. The picture is further complicated where previously existing and compositionally diverse glacial deposits were incorporated into younger tills. The geochemical composition of till is dependent upon its parent materials, depositional environment and any post-depositional changes that may have occurred. In spite of these drawbacks, once the compositional trends of the tills have been ascertained, till geochemistry is proving to be a useful stratigraphic tool in the western Mohawk Valley.

William D. Sevon & Thomas Berg - Pennsylvania Geological Survey

Several items of interest related to glacial geology in Pennsylvania have occurred since Tom Berg reported in May, 1982. George Crowl examined the area between Selinsgrove and Mifflintown (Snyder and Juniata Counties) for evidence of glaciation and found none. This area is the southern southwest trending tongue of Illinoian drift shown on the 1980 Geologic Map of PA and also on the small Glacial Deposits of PA map. I put this tongue on both maps because of till-like deposits at Mifflintown. These deposits remain a problem even though they have been examined by several geologists and soil scientists. Our best guess is that the diamictons are debris flow deposits, but when they formed and from whence they came remains a mystery.

Jeb Baxter (geology, PA State Univ.) is concluding Masters' thesis work on surficial deposits in the Lock Haven-Beech Creek area, Centre County, and has found no evidence to support the former existence of Glacial Lake Lesley, a hypothesized lake of considerable dimension created by damming the West Branch Susquehanna River by Illinoian ice. We now are left with the question "I wonder where the water went?"

Mike Hoover (agronomy, PA State Univ.) is concluding Masters' thesis work on colluvial soils in Centre County and demonstrates convincingly the widespread occurrence of colluvium with probable Sangamon soil development overlain by younger colluvium with modern soil development. At some localities the surface morphology and clast distribution within the younger colluvium indicates probable colluvial movement by solifluction.

The PA Geological Survey is presently considering a large program of work on the glacial deposits of northeastern PA. The program would involve materials mapping and evaluation of resource and aquifer potential. Specifics about this program have yet to be decided.

Stanley M. Totten - Geology, Hanover College

The glacial map and report for Geauga County, Ohio, were completed this summer (1982), and are on file at the Ohio Geological Survey in Columbus. George White's Glacial Geology of Northeastern Ohio was published in September as Bulletin 68 of the Ohio Survey. All readers of the Glaciogram should have a copy.

George White - Geology, University of Illinois

My long awaited report on Glacial Geology of Northeastern Ohio has just appeared as Bulletin 68 of Ohio Geological Survey Bulletins. It is accompanied by a large map.

Richard Young - Geology, State University College at Geneseo

The Fairchild Centennial Symposium Volume is going to press soon and will contain and update on the glacial geology of the Rochester area, as well as articles on the local stratigraphy with appropriate revisions.

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