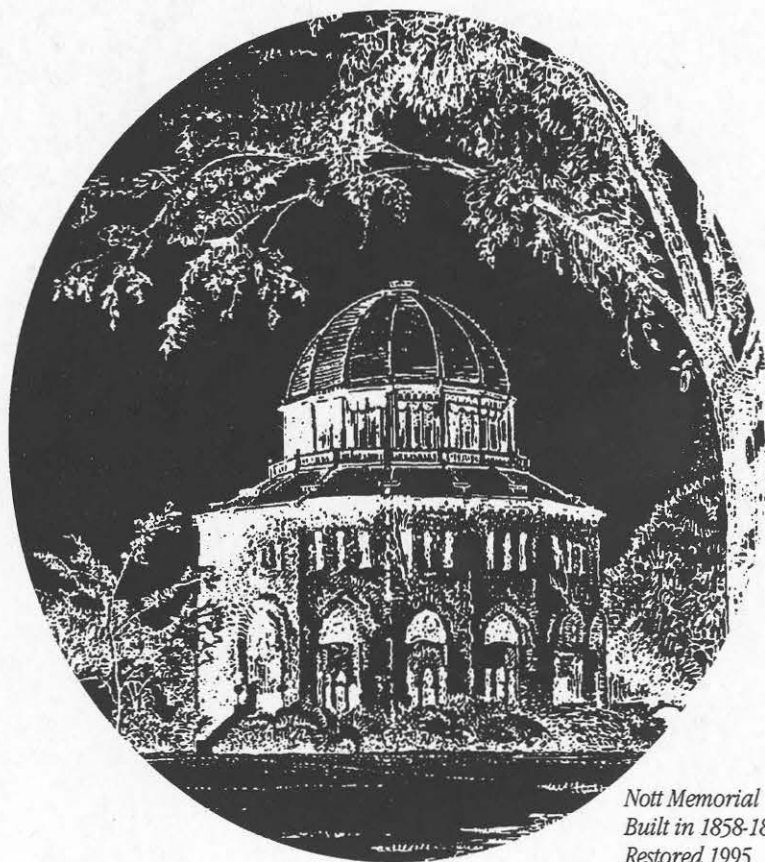


Field Trip Guide for the 67th Annual Meeting of the New York State Geological Association

Edited by
John I. Garver
Jacqueline A. Smith



*Nott Memorial
Built in 1858-1879
Restored 1995*

Hosted by
Union College Geology Department
Schenectady, New York
New York State Geological Survey/Museum
Albany, New York

October 13-15, 1995

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Jacqueline A. Smith

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For the combined meeting of the
**67th Annual meeting of the New York State Geological Association &
26th Annual meeting of Eastern Section of the American Association of Petroleum Geologists**

Sponsored by

New York State Geological Survey/State Museum and Union College

Hosted by

Geology Department, Union College, Schenectady, NY

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Additional copies may be obtained from the Executive Secretary of the NYSGA:

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Introduction

The Geology Department at Union College is proud to co-host the sixty-seventh annual meeting of the NYSGA and AAPG Eastern Section. Together this combined meeting has brought together academics, students, teachers, petroleum geologists, and environmental geologists. The Geology Department at Union College is happy to be a co-sponsor and co-host of the NYSGA meeting this year because it has been quite some time since we have been able to host such an event. The last time the annual NYSGA meeting was held at Union was 30 years ago when the principal movers in the Department were Philip Hewitt and Leo Hall (see Shaw, this volume). Shortly after this meeting the Geology Department was effectively disbanded and only recently came to life in 1985 after the College received a generous donation from a Geology alumnus. Now, with four permanent faculty, one visitor, and several adjuncts, it is safe to say that we're back for good!

Since the last time NYSGA was held at Union, the Geological Sciences have experienced a major transformation. The first twenty of those years were clearly dominated by the then new plate tectonic paradigm. During the last ten years, and especially the last five years, we have seen quite a dramatic change in the focus of the geological sciences. Due in part to a number of external factors, the geologic community has placed a greater emphasis on issues associated with global change, hydrology, and environmental geology. This shift, has been away from the more traditional areas in geology such as field-based studies in stratigraphy, sedimentology, paleontology, and structural geology. There is little doubt that NYSGA guidebooks reflect the focus and ideas of the times and if one compares the focus of the trips in this meeting to those in the guidebook for the previous NYSGA meeting at Union in 1965, you will see just how much our science has changed.

In assembling the trips for the 67th annual meeting of the NYSGA we tried to balance three important factors: our unique and exciting geologic setting; the breadth of interests of our members; and, importantly, the availability of field trip leaders. Certainly in terms of the first two factors, I feel that we have succeeded and we are looking forward to an exciting meeting!

The geologic setting of the lower Mohawk Valley is ideal for teaching and research. The lower Paleozoic stratigraphy has a regional tilt to the south so one can examine the Grenville-aged rocks of the Adirondacks to the north (Whitney and Olmstead, this volume; McLelland, this volume; Kelly and Hill, this volume), Cambro-Ordovician carbonates and clastic rocks in the Mohawk Valley (Garver, this volume; Kidd and others, this volume), and Silurian and Devonian rocks in the Catskill Mountains to the south (Friedman, this volume; Wolosz and Paquette, this volume; and Ver Straeten and Brett, this volume). The lower Paleozoic stratigraphy in eastern New York is punctuated by thick synorogenic sequences deposited during the Ordovician Taconic Orogeny and the Devonian Acadian Orogeny. To the east of the tilted lower Paleozoic stratigraphy, deformation in the section increases towards the front of the Taconic Allochthon where it and underlying rocks were deformed during the Taconic Orogeny (Hollocher, this volume; Kidd et al., this volume; Friedman, this volume). In the Taconic Allochthon, Cambro-Ordovician deep-water sedimentary rocks have been placed over shallow-water sediments of the Cambro-Ordovician margin.

The surficial and glacial geology in this area is as impressive and diverse as the bedrock geology. Ice dynamics related to the obstructing effects of the Adirondack Mountains resulted in non-uniform migration of ice sheets that coalesced south of the Adirondack massif only to encounter the Catskill Mountains to the south (Dineen and Hanson, this volume). During retreat, glacial Lake Albany (and its relatives) covered much of the Capital District and left an impressive sequence of glacial lacustrine deposits (Wall and LaFleur, this volume). During and after the most recent glaciation, karst and caves formed in the local carbonate strata, resulting in important landform development and interesting problems in hydrogeology (Rodbell and Hays, this volume; Rubin et al., this volume; Rubin, this volume). The long history of industry in the area and demand for space and water have resulted in some unique environment geology (Smith and Eslinger, this volume; Maswick and Snow, this volume; Hewitt, this volume). Finally, the neotectonic setting of eastern New York is examined in a unique trip aimed at understanding the seismic hazards in Columbia County (see Nottis and Cadwell, this volume).

It has become clear that the education of educators is and will continue to be an important priority for both Academe, government, and industry. With this in mind we have included several trips aimed at earth science teachers (Garver, this volume; Hollocher and Hollocher, this volume; and Kelly and Hill, this volume, and others) and we hope that many of the teachers who go on the field trips participate in the special one day workshop which will be held in Monday following the NYSGA meeting

Finally, I would like to personally thank all of the people that have made this guidebook happen. First and foremost are the trip leaders who have spent a considerable amount of time putting together these trips and to my co-editor, Jacquie Smith, who helped with the endless task of reigning in papers and keeping track of things. Thanks are also due to the Organizing Committee and Committee Chairs for the combined NYSGA & AAPG Eastern Section meeting for their support, suggestions, and recommendations. Among them, Ken Johnson (Skidmore College), the General Chair, deserves special praise for keeping us together and focused for the committee meetings which periodically met for more than one year prior to the actual meeting. He also deserves special recognition for finally getting on EMail during that time (you can personally thank him at kjohnson@skidmore.edu). I would also like to thank Bill Kelly (N.Y. State Geological Survey), who is the N.Y.S.G.A. Executive Secretary, for his important contributions which include, but are not limited to advice and planning the logistics of putting this guide together. Finally, Gretchen Turner did a superb job handling the problems that editors face in terms of communication with authors and the nuts and bolts of putting the guide together.

To all who are just about to embark on the 67th annual NYSGA meeting -- have a great time and enjoy the fall foliage!

John I. Garver
President, NYSGA, 1995
Geology Department
Union College
October, 1995

PLEASE READ THIS!

Landowners and outcrop defacement

In preparing this guidebook we asked the authors to do their best to ascertain landowner status at each stop. We have done this because increasing number of problems have arisen between landowners and geologists - in some cases geologists are no longer permitted to visit some localities in the Mohawk Valley. Additionally, a number of classic and important outcrops have been defaced, marked, or heaped with garbage by overzealous visitors who must leave their mark on every outcrop visited. Please pay careful attention to landowner status and cultivate a relationship with the landowner if you plan to use an exposure from year to year. Also remind your trip participants to use have respect for the future geologists who will visit these geological sites. Thank you.