

CNYAPG September 1997 Newsletter

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HAZMAT EMERGENCY MANAGEMENT: Good Science or Science Fiction?

Presented by Mr. C.B. Melton

FMC Corporation

Senior emergency response officials from around the country, with HAZMAT training from USEPA, OSHA, or the National Fire Academy, were recently in Baltimore, MD, and were asked to perform a risk assessment for a chemical emergency. They were 'dispatched' to a vehicle accident with a chemical spill. "Three children are trapped in the car..." they heard, "... and the car's engine is on fire." Their decision on a safe course of action based on their risk assessment was both unanimous and shocking. We will view disturbing excerpts from a recently released hazmat training video showing workers at a small business being left to rescue themselves, while SCBA-equipped responders look on... and on... and on. Is the emergency response to hazmat incidents really all that complicated, or have we been reading too much science fiction? Mr. Buzz Melton is a Senior Environmental Engineer with FMC Corporation's Agricultural Products Group in Baltimore. He holds Bachelor of Science and Master of Science degrees in Environmental Science from John Hopkins University. Buzz retired from the Baltimore City Fire Department in 1995, following 23 years of service including 12 years as a Battalion Chief, serving in many capacities including Chief of Hazardous Materials Operations and Chairman of the Baltimore City SARA Title III LEPC. Buzz is a professional member of the American Society of Safety Engineers, the American Chemical Society, and the National Fire Protection Association. Buzz is also a member of the teaching faculty at John Hopkins University in Baltimore, where he teaches graduate and undergraduate courses in environmental science and chemistry. Mr. Melton is one of the country's top experts on hazmat emergency response and is an extremely animated and entertaining speaker.

Please join us in welcoming him to the Glen Loch on Thursday, September 11, 1997.

President's Message

by Meg Harris

I would like to thank the members who took the time to send in their ballots in July, officially electing the new slate of officers. We are looking forward to serving the group and hoping to act on many of the suggestions offered by the membership.

At the top of my list is an expansion of the newsletter's content and an earlier deadline and mailing schedule. Roy Wagner has kindly volunteered to be in charge of the publishing this year. All information to be shared and ideas for articles can be sent to him at:

phone: 457-5200 fax : 451-0052

There have been many great suggestions for additions to the newsletter. Some of the things we'd like to include are: articles on geologic points of interest around the area; a listing of promotions, publications, and recognition earned by our membership; the highlighting of one local college in each issue; and our

members' favorite web sites

Since people have been rather shy about making contributions in the past, don't be surprised if you get a call sometime this year soliciting your input. Please feel free to clip and fax to Roy any information, geologic to esoteric, that you think might be of interest or entertainment to our membership.

Although we hope to get each month's issue out in a timely fashion, please take a moment now to pencil our meetings in your calendar for the second Thursday of every month. December may be the only exception to the rule if we hold our traditional joint meeting with the engineers at the Carousel Sky Deck.

Our Vice President, Christin Gachowski, has been busy recruiting speakers for the coming year. In addition to our September speaker, we have received confirmation from Carlton Brett from the University of Rochester and Dr. Scott Bair of Ohio State University for the October and November meetings, respectively. Dr. Brett has been involved in the detailed study of early Paleozoic sequence stratigraphy in the Northeast. Locally, he has been working for the NYS Geological Survey creating detailed geologic maps of the quadrangles south of the City: Tully, South Onondaga, Otisco, Jamesville, and Marcellus.

Some of you may remember Dr. Brett as the presenter for our field trip to the Jamesville Quarry. We would like to continue offering an annual field trip to our group. This year we will be running our trip in the spring. This fall we have a unique opportunity because the NYSGA is holding its meeting at Hamilton College in Clinton from September 26 through 28. There are many wonderful field trips being offered, many in our own backyard, on topics that have been covered at past meetings. Of special interest to many might be the 2-day trip covering all facets of the geology of the Tully Valley.

This is the beginning of our fifth full year! We are no longer a brand new organization. Through experience we have found out some of the things that appeal to our members, but we need your continued participation and feedback to keep things fresh. Please share your ideas and wishes with our officers. This is your organization- make sure we know how we can best serve your interests.

Geologic News of Interest

by Christin Gachowski

NYS COUNCIL OF PROFESSIONAL GEOLOGISTS SYMPOSIUM

Mark your calendars! on November 5, 1997, the Council will be sponsoring an informational symposium on the process of licensing geologists in NYS. Tentative speakers include:

Bill Kelly, President
Steve Englebright, State Assembly
TBA, Group Lobbyist
TBA, NYS Society of Engineers

The meeting will be held at the embassy Suites Hotel from 3:00 to 9:00 p.m. with dinner included. For more information, contact Gerry Gould at 437-1142.

69TH ANNUAL NYSGA MEETING HOSTED BY HAMILTON COLLEGE SEPTEMBER 26-28, 1997

This year Hamilton College in Clinton, NY will be hosting the Annual GSA meeting. On Friday, September 26, there will be registration and a Welcoming Party from 5:30 to 8:30 p.m. Field trips take

place on Saturday from 8:00 a.m. to 5 p.m. and on Sunday from 8:00 a.m. to 3:00 p.m. The highlight of the weekend is the Banquet and Annual Business Meeting on Saturday from 7:00 to 9:30 p.m. The keynote speaker is Dr. Cathryn Newton of Syracuse University whose talk is entitled "The Great Extinctions: Comparing Mechanisms". We are providing a brief summary of the field trips and workshops below. Also included is a pre-registration form for the meeting. For further information, you can contact David Bailey, meeting chair, at (315) 859-4142, fax (315) 859-4807, or e-mail: dbailey@hamilton.edu.

Saturday Trips & Workshops - September 27

A-1: Madison County Landfill & Environmental/Engineering Drilling
(Paul Miller, Madison County Dept. of Solid Waste, and Bill Morrow, Parratt Wolff, Inc.)

Participants will spend the morning at Green Lakes State Park, where they will be met by a Parratt Wolff drilling crew, observe the drilling of a well, and discuss drilling and sampling methods for environmental engineering projects, description of geologic samples, preparing well logs, and monitoring well installation. After lunch, the group will travel to the Madison County Landfill and tour a new, state-of-the-art landfill, observe and discuss the closure of an old landfill, and discuss landfill construction and monitoring requirements.

A-2: Landform Evolution Along the Southeastern Shoreline of Lake Ontario
(Charles E. McClennen and Paul Pinet, Colgate University)

The trip presents field evidence for an evolutionary model of drumlin bluff retreat along a segment of rapidly-eroding shoreline (0.31-1.5 m/yr) of Lake Ontario. Participants will visit sites that represent the young, mature, and old stages of bluff retreat, examining erosional and depositional features.

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A-3: Relative Timing of Intrusion, Anatexis, and Deformation in the Port Leyden Area
(Robert Darting, SUNY at Cortland and Frank Florence, Jefferson County Community College)
Participants will visit a unique nelsonite dike, which demonstrates that anorthositic magmatism occurred in this area, and will examine the metasedimentary host rocks for evidence of contact heating and metamorphism associated with anorthosite intrusion.

A-4: Environmental Indicators and Sedimentology - Seneca Lake, New York (John D. Halfman and Dr. Donald Woodrow, Hobart & William Smith Colleges)
Participants in this trip will carry out the procedures used to examine major environmental indicators for Seneca Lake. These data, and subbottom profiles of lake sediments, will serve as the basis for a discussion of the environmental status of the lake and of sedimentary processes active in large lakes such as Seneca Lake.

A-5: Cambro-Ordovician Carbonate Facies of the Mohawk-Hudson Valleys
(Gerald Friedman, Northeastern Science Foundation)
After examining modern non-marine limestones, participants will study facies of Cambrian-Ordovician age, which span a spectrum of paleoenvironments from peritidal (near-tidal), including microbial reef mounds, to basinal.

A-6: Underground Mine Tour, Balmat Zinc Mine
(J.T. Johnson, St. Joe Zinc Mine)

Participants will have the opportunity to study the structure and petrology of Grenville-age metasediments in the Northwest Adirondack Lowlands from a subsurface perspective.

A-7: Morning Workshop on Holocene Climate Change

(Amy Leventer, Colgate University, Eugene Domack, Hamilton College, Hank Mullins, Syracuse University, Geoffrey Seltzer, Syracuse University, and William Patterson, Syracuse University) and Afternoon Field Trip at Green Lakes State Park (Martin Hilfinger, Syracuse University)

In the morning, participants will attend a workshop on Holocene climate change with a western hemisphere perspective. In the afternoon, participants will visit Green Lake, a density-stratified lake with permanently anoxic bottom waters.

A-8: Hydrogeology, Glacial Geology, and Mass Movement History of the Tully Valley - Part I

(Bill Kappel, USGS, Don Pair, University of Dayton, Dawit Negussey, Syracuse University, Robert Fakundiny, NYS Geologist, and Carlton Brett, University of Rochester)

This trip is the first part of a 2-day trip that will continue as trip B-4 on Sunday. Participants will experience a very comprehensive study of the geology of the Tully area.

Workshops

W-1: The Underlying Influence of Geology on Human Events

(Barbara Tewksbury, Hamilton College)

This all-day workshop will examine the influence of geology on human events in Egypt, South Africa, the Middle East, and NYS.

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W-2: Exploring Oceanography Resources on CD-ROM and the World Wide Web

(Cynthia Domack, Hamilton College, and Jill Singer, SUNY College at Buffalo)

This afternoon workshop for college faculty and secondary school Earth Science teachers will be structured as a round table discussion of oceanographic resources available on CD-ROM and the World Wide Web.

Sunday Trips - September 28

B-1: Stratigraphic Incompleteness: Milankovitch in the Manlius at the Margin

(Peter Goodwin and E.J. Anderson, Temple University)

Participants will study the stratigraphic incompleteness of Manlius sections near the western margin of the Helderberg Basin.

B-2: Herkimer Diamond Mine

(Hugh Humphreys)T

This half day trip is designed for anyone interested in exploring for Herkimer diamonds, the famous doubly-terminated quartz crystals found in central New York.

B-3: Eurypterids and Associated Fauna at Litchfield, a Classic Locality in Herkimer County

(Victor Tollerton, Jr.)

Participants on this half day field trip will visit a classic eurypterid locality and will have the opportunity to study one eurypterid community.

B-4: Hydrogeology, Glacial Geology, and Mass Movement History of the Tully Valley - Part II

(Bill Kappel, USGS, Don Pair, University of Dayton, Dawit Negussey, Syracuse University, Robert

Fakundiny, NYS Geologist, and Carlton Brett, University of Rochester)
This trip will continue examination of the geology of the Tully Valley

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September 2 "*Cristobalite in Adirondack Garnet: A Remarkable Case of Mineral Formation and Preservation*". Dr. Robert Darling of SUNY Cortland at Cornell University, 1120 Snee Hall at 4:30 pm.

September 9 "*Glacial-Interglacial Variations in Carbon Cycling in the Coastal Upwelling Zone of Northwest Africa*". Dr. Robert M. Moss of the Paleontological Research Institute at Cornell University, 1120 Snee Hall at 4:30 p.m.

September 27 *The Great Extinctions: Comparing Mechanisms*. Dr. Cathryn Newton of Syracuse University at the 69th Annual NYSGA Meeting. Hamilton College, Bundy Dining Hall. Dinner starts at 7:00 p.m

October 9 CNYAPG October Meeting with Dr. Carlton Brett of the university of Rochester.

.If you have events that you would like to include in the CNYAPG calendar, please contact Bill Gabriel of O'Brien & Gere Engineers at (315) 437-6100.

CNYAPG NEWSLETTER - SEPTEMBER 1997

September Meeting

The Thursday, September 11 CNYAPG meeting will be held at the Glen Loch. A cash bar will open at 5:30 p.m. followed by dinner at 6:30. Our guest Mr. Melton, will speak at 7:30. Dinner is \$13 (if reserved 48 hr in advance) or \$15 at the door. Make your reservations today by calling O'Brien & Gere Engineers at (315) 437-6100 ext. 2656. See you there!

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BIOEVENTS IN MARINE SEQUENCES OF THE MIDDLE DEVONIAN APPALACHIAN BASIN

Presented by Dr. Carlton E. Brett University of Rochester

The Middle Devonian Hamilton Group is composed of widespread, time-stratigraphic, discontinuity- bounded depositional cycles. Recurrent lithofacies and biofacies units correlate predictably with given parts of cycles. Transgressive facies are marked by widespread, thin (0.5 to 3 m), winnowed, shelly sandstones or skeletal wacke- to grainstones. Bases are typically heavily burrowed with a distinctive firm ground ichnofacies. Condensed intervals of maximum sediment starvation may have thin (centimeters) lags of phosphatic, concretionary, or pyritic diaclasts, bones and conodonts as well as corroded carbonate skeletal debris. These intervals are typified by sharp diastemic contacts between the transgressive facies and overlying maximum highstand shales. Early highstand deposits are characterized by an alternation of discrete storm beds with mudstones which may yield spectacular fossil assemblages. Regressive taphofacies display greater evidence of sediment-shell disturbance by bioturbation and repeated storms. Most of the typical "Hamilton fauna" appears abruptly in the second major sub-sequence (4th order cycle) of the Hamilton Group. The Hamilton fauna was partitioned into distinctive biofacies which were remarkably stable in terms of taxonomic composition, guild structure and relative abundance. These biofacies tracked favored environments and recur through ten or more basinwide cycles during some 6-7 my. Very few species became extinct, immigrated, or underwent significant morphological change. Instead, both the initiation and termination of the Hamilton fauna correspond with major deepening events (Marcellus and Genesee transgressions) of combined eustatic/tectonic origin. This observation suggests that the major transgressions may have been associated with widespread environmental restructuring. Dr. Brett is the department chair for the Earth and Environmental Sciences Department at the University of Rochester, where he has been a professor for the last 19 years. Among the many honors he has received for his work are the Edward Peck Curtis Award for outstanding undergraduate teaching, and the Charles Schubert Award for the outstanding paleontologist under age 40. His publications include 105 refereed papers and chapters, 32 guidebook articles, 30 miscellaneous publications and a co-edited book. Please join us in welcoming Dr. Brett to the Glen Loch on Thursday, October 9, 1997.

PRESIDENT'S MESSAGE

By Meg Harris

OCTOBER 1997

At our September meeting, we were treated to a wonderfully entertaining presentation on practical and realistic emergency response to hazardous spills. Buzz Melton dramatically demonstrated many of the common misconceptions about the danger of hazardous materials and the effect they might have on personnel responding to an accident. Since the talk, we have received several inquiries about how to bring his hazmat workshop to

local businesses.

It was, however, a shame that we did not have a bigger turnout for such a nationally respected speaker. Those of us who were there were very grateful we had attended. In the next couple months we will have two more distinguished speakers with national reputations in their fields. Don't miss the opportunity to meet them and listen to them discuss their latest research.

To encourage more participation in our meetings, we have chosen to return the advance notice for reservations to 24 hrs. Please note the new phone number at O'Brien and Gere. Remember you can come unannounced, without reservations- it will just cost you a little more!

In addition, the board voted to offer students a special discounted rate of \$10 with reservations, \$13 without. In keeping with our mission statement we can "strengthen and advance the geological sciences" by including students and those new to the field, introducing them to professionals in the private sector and exposing them to "an open forum for the exchange of ideas".

Their experience will be greatly enhanced by the opportunity to

interact with our membership. Attend meetings. Introduce yourself to visiting students and new members. Share your experiences in the job market and the workplace.

This month we have the first article contributed by our "Catskill correspondent", Dr. Robert Titus of Hartwick College. Dr. Titus presented some of his popular geologic compositions at one of our spring meetings and has agreed to share more of his writing with us in the future. His vivid descriptions shift our imaginations into high gear and ancient geologic events seem to come to life.

The same techniques might be applied to the scenarios that our guest speaker uncovers in the geologic record. Picture the Devonian seas of Central New York with their ebbing and flowing tides, migrating shorelines, violent storms and abundant life all overshadowed by the growing Acadian Mountains to the east. Carlton Brett will describe the fine detail he has come to read in the rock record, the events they suggest and the implications for the study of evolution and tectonism.

As a final note, Dave Palmerton has agreed to chair a committee which will decide on this year's short course topic. If you're interested, please call Dave at 446-9120.

DON'T FORGET TO CHECK OUT CNYAPG ON THE WEB AT:
dreamscape.com/cnyapg

GEOLOGIC NEWS OF INTEREST

Compiled by
Chris Gachowski and Nancy Gensky

NYS COUNCIL OF PROFESSIONAL GEOLOGISTS SYMPOSIUM

On November 5, 1997, the Council will be sponsoring an informational symposium on the process of licensing geologists in NYS. Tentative speakers include:

Bill Kelly, President
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TBA, Group Lobbyist
Karen Moran, NYS Society of Engineers

The meeting will be held at the embassy Suites Hotel from 3:00 to 9:00 p.m. with dinner included. For more information, contact Gerry Gould at 437-1142.

OLDEST FOSSILS IN THE EASTERN UNITED STATES

Dr. Yngvar Isachsen of the New York Geological Survey discovered the oldest plant fossils in New York near Balmat in the northwestern Adirondacks. The fossils, stromatolites, were buried nearly 15 miles deep and survived the near-melting of surrounding rock during the Pre-Cambrian.

Dr. Ed Landing, New York State Paleontologist, discovered snails, clams, starfish, sponges, and other marine fossils from the Cambrian in Columbia County, New York. These fossils, about 505 million years old, are so well preserved that individual cells can be seen on some snail fossils.

(From New York State Museum, Fall '97)

PROGRAMS AT THE NEW YORK STATE MUSEUM

If you have never been to the New York State Museum in Albany --GO!! Here's a snapshot of some of there fall programs in addition to the great exhibits:

OCTOBER 4, 8 a.m. to 4:30 p.m.

(\$35 per person)

Tunneling Through the Appalachians

Dr. Yngvar Isachsen will conduct this field trip to explore mountain building processes. The trip will traverse the Berkshire Hills from the Taconic Parkway near Hillsdale to Great Barrington, Massachusetts.

OCTOBER 5 at 2 p.m.

Footsteps Through the Adirondacks: Lecture and Book signing with Nina Webb

Ms Webb's book, Footsteps Through the Adirondacks... The Verplanck Colvin Story, is a biography of Colvin, who played a major role in the creation of the Adirondack Park. Colvin was the surveyor and superintendent of the Adirondack Survey from 1872 to 1900 and was also a wilderness advocate and ecologist.

OCTOBER 18 at 2 p.m.

History of the Cohoes Mastodon

George Hamell, Museum Educator, will conduct this program which will consist of a slide show and a tour of the Ice Age Landscape Exhibit. Information on the Mastodon find, the geologic history of Cohoes, and North American mastodons in general will be provided.

A MORNING TO REMEMBER

BY ROBERT TITUS

Esopus and Woodland Creeks form a nearly perfect circle where they flow around Panther Mountain in the central Catskills. This has led geologists at the New York State Museum to speculate that an asteroid may once have made an impact here. That's difficult to prove, but fun to imagine.

Syracuse, Aug. 15, 382,439,953 BC, the predawn hours --

There is, of course, no Syracuse at this time, but the site is here, a part of the shallow Catskill Sea. It's the end of a moonless night and it's still dark out, but there is a growing light and it's not the approaching sun. Over the past several weeks there has been a slow moving pinpoint of light in the nighttime sky. It is an asteroid, about a half mile across. It's moving in from the south and, as it enters the thin upper atmosphere, it is starting to glow quite brightly. Its speed is about 20 miles per second, but it is still so far away that it seems to hang in the sky. As it comes closer, however, its apparent motion speeds up. Now as it enters the denser parts of the Earth's atmosphere, friction heats it into a great flare. The whole southeastern sky lights up, silhouetting the black horizon below.

This is the critical moment; if the asteroid is small enough and its angle of approach low enough, then it will bounce off the atmosphere and skip harmlessly back into space. If not . . . The flare's flight path doesn't skip, it plummets silently and disappears behind the horizon.

Moments pass in what seems to be an endless pause, and then comes a great and instantaneous shock of light. It flickers for a few seconds and then the whole southeastern horizon glows red. The color brightens to an orange, then a yellow and finally a brilliant radiance of white. An enormous gassy fireball rises rapidly above the horizon; its image reflects upon the still sea. The fireball is followed by a rising mass of black smoke. The dark cloud rises quickly and it gradually assumes a funnel shape.

Incredibly, this entire scene has been played out during nearly a minute of complete silence, but that ends abruptly. The nearby sea floor begins to hiss and then roar, the ocean boils. Powerful surface earthquake waves are passing. They move very much like the waves of an ocean, but these are radiating through the very ocean bottom itself, and it's that which, in turn, affects the sea surface.

In another minute the great shock wave of the impact blast itself hits Syracuse. For several minutes the sea floor rocks with the combined effect of the earthquake and the atmospheric shock waves. Then, several long minutes after the impact, the actual sound of the asteroid's impact catches up with the chaos. Only the word "unimaginable" does justice to the power that this sound signals.

Meanwhile, the great rising fireball has blown a hole in the stratosphere and it continues to rise. It's a hundred miles high now and the trailing plume of dust below is catching the high sunlight of the still approaching dawn. The whole thing has become an awe-inspiring pillar of white, starkly outlined by the surrounding nighttime dark. The pillar is a chimney with walls of dust; its flue is a vacuum which is drawing a vast draft of air upward. Back at Syracuse things had quieted momentarily, but now a new breeze has started and it's being sucked toward the chimney. It quickly speeds up to gale force and then to hurricane speeds. All this air is drawn up the chimney and vented out into space.

Next comes a hailstorm of dust and rocks. This is the debris that the impact blasted out of the earth and threw tens of thousands of feet up. Now it's all falling back again. The first rocks plop loudly into the surrounding sea. Then the higher-flying rocks start returning as an incredibly dense shower of meteors. Hundreds of them cascade out of the darkness and they light up the entire sky. The sea hisses and foams as they fall into it.

In the east the sun is about to rise, but it's a futile effort; sunlight won't fall again upon Syracuse for months. A great stratospheric shroud of black has been expanding ominously from the southeast. Along its front an enormous and continuous rage of dry lightning forms an expanding plexus of sparkles that illuminate the wrecked landscape below. Gradually, a moonless, starless black engulfs the area.

But if there is nothing to see, there is still plenty to hear and feel. The winds still howl and more rocks continue to fall out of the sky. And the temperature has been rising alarmingly over the past hour; it is already more than 100 degrees and getting hotter. Once again light penetrates the dusty gloom, but only in the form of burning plant debris falling slowly out of the sooty black sky. To the east, closer to the impact, the Devonian Gilboa forests have been ignited and their burning embers have been lofted into the sky. It is a hellish sight.

The author writes about Catskill geology for Kaatskill Life magazine and The Woodstock Times.

EMPLOYMENT OPPORTUNITY FOR STRUCTURAL GEOLOGISTS

Hartwick College is seeking an individual to teach one section of structural geology and accompanying laboratory section for Spring Term 1998. Course enrollments will be approximately ten geology majors. Scheduling is flexible. Please send resume and names of three references to Robert Titus, Chair, Department of Geological and Environmental Sciences, Hartwick College, Oneonta, NY 13820. Review of applications will begin immediately and continue until the position is filled. An Equal Opportunity Employer.

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October 7 Dr. Andrew Simon of the USGS at Cornell University, 1120 Snee Hall at 4:30 pm. Title TBA. Using Remote Sensing to Understand Antarctic Ice Streams: Past, Present, and Future.

October 15 Dr. Robert Bindschadler of NASA at Cornell University, 1120 Snee Hall at 4:30 p.m.

October 20-21 New York State 4th Annual Recycling Conference and Vendor Exhibition, sponsored by the New York State Association for Reduction, Refuse and Recycling. Sheraton Four Points Hotel, Liverpool, NY

October 20-23 GSA Annual Meeting, Salt Palace Convention Center, Salt Lake City, Utah.

October 28 Dr. Maria Zuber of the Department of Earth and Planetary Science, MIT, at Cornell University, 1120 Snee Hall at 4:30 pm. Title TBA.

November 13 CNYAPG October Meeting with Dr. Scott Bair of Ohio State University.

The Thursday, October 9 CNYAPG meeting will be held at the Glen Loch. A cash bar will open at 5:30 p.m. followed by dinner at 6:30. Our guest Dr. Brett, will speak at 7:30. Dinner is \$13 (if reserved 24 hr in advance) or \$15 at the door. Make your reservations today by calling O'Brien & Gere Engineers at (315) 437-6100 ext. 2656. See you there!

If you have events that you would like to include in the CNYAPG calendar, please contact Bill Gabriel of O'Brien & Gere Engineers at (315) 437-6100. CNYAPG NEWSLETTER - OCTOBER 1997

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CONTAMINATION OF WELLS G & H: The Science Behind the Tragedy at Woburn, Massachusetts Presented by Dr. Scott Bair, Ohio State University

In 1982, Anne Anderson et al. filed suit against W.R. Grace et al. for allegedly contaminating two municipal water supply wells in Woburn, Massachusetts, and causing the deaths of five children and one adult from leukemia contracted by ingestion of toxic compounds dissolved in the well water. The ensuing legal battle is the subject of the award-winning book "A Civil Action" by Jonathan Harr, which has been on the New York Times Best Sellers List for 65 weeks. The book traces the legal drama between eight Woburn families and three local companies through the efforts of their attorneys and the federal judge. As described in the book, during the trial it becomes apparent that the jury's decision hangs on the expert testimony of the geologists and hydrogeologists hired by each side.

The presentation uses core, sediment, and peat samples from the Woburn site, newspaper articles from the Boston Globe and Woburn Daily Times Chronicle, recent and historic photographs, exhibits presented at the trial, and scientific evidence to show what scientific concepts and principles the jury had to comprehend in order to make an informed decision. Much of the scientific evidence is reformulated and presented using EXCEL spreadsheets and results from a ground water flow model developed by the USGS and modified by graduate students at Ohio State to facilitate pathline and travel time analysis. The trial and its aftermath are used to demonstrate why the homily "Without Theory, There Is No Practice" rings true for professional geologists and private residents in these litigious times rife with environmental abuses and pro-active citizens.

A sneak peek of some of the materials to be presented can be seen on the world wide web on a homepage developed for a new undergraduate course at Ohio State titled "Science in the Courtroom" at <http://www.geology.ohio-state.edu/courtroom>.

Dr. Bair has been a member of the faculty in the Department of Geologic Sciences at Ohio State University since 1985. He received his B.A. degree in geology from the College of Wooster and his M.S. and Ph.D. degrees from Pennsylvania State University. (Although he and Don Siegel both went to Penn State, Scott is much younger!) Prior to returning to academia, he worked for six years at Stone & Webster Engineering Corp.

He is an associate editor of the journal Ground Water, serves on the Ohio Hazardous Waste Facilities Board and the Ohio Geology Advisory Council, and holds a WAE appointment with the USGS. Please join us in welcoming Dr. Bair to the Glen Loch on Thursday, November 13, 1997.

President's Message by Meg Harris

I have sadly accepted the fact that the field trip season is very quickly coming to a close. I think it was when I was standing with my class at the brink of Chittenango Falls with driving wind and sleet pelting us in the face. There are only a very few who will voluntarily participate in field work in this kind of weather. Those are the ones who will end up majoring in Geology. Geologists are often those who were hooked on the field experience, rain or shine, and if we're lucky, we now get paid to do it on occasion.

There were great opportunities for all of us to get back into the field this fall. Even the weather was spectacular for the NYSGA! I saw many old friends during the two day Tully Valley extravaganza and there seemed to be an expert to answer any question imaginable.

For those of you that participated in the volunteer field work organized by Bill Kappel in the summer of 1993, things have changed dramatically. The mudslide's features have been softened and springs have sprung up and shifted about below the scarp, which no longer looks quite so imposing. The mud boils have continued to pop up here and there..... But the view from the top of Bear Mountain remains the same, and at its most spectacular with the fall foliage. The rocks seem to remain unchanged as well. I am reminded of all the different temporal planes we operate on when doing geology. We sometimes watch processes change the landscape in a matter of days, months and years. Other changes proceed at a glacial pace in periods of hundreds and thousands of years. The big picture continues to be drawn over millions and billions of years.

Getting out in the field is always inspiring. It provides food for thought and reconnects us with the object of our fascination. It also develops a camaraderie among those that participate, a shared adventure. We all have our stories to tell! They tend to get taller every time they are retold!

We would like to organize at least one field trip for the group this spring. We need your input. Do you have a special spot to share with the group? Is there a place you have always wanted to see? Please communicate your ideas to the board. Let's get out together as a group this Spring and breath a little fresh air into our program.

CNYAPG WEB PAGE SPANS THE ATLANTIC OCEAN

by Gerry Gould

The CNYAPG World Wide Web page seems to be gaining in popularity. We recently received an inquiry about New York State geology from the United Kingdom. A fellow British geologist was doing research on the internet and was having no luck finding information about remote imaging of New York City. He found our site and asked for assistance. We provided him with some names and phone numbers and he is now continuing his project.

Be sure to check out our web page at <http://www.dreamscape.com/cnyapg>. You can find a membership application, the meeting schedule, and links to other web sites of geologic interest. Please give us suggestions and comments so that we can continue to improve our web site.

GEOLOGIC NEWS OF INTEREST

Compiled by
Nancy Gensky

MEMBERSHIP RENEWAL TIME IS HERE

by Gerry Gould

CNYAPG members, it's time to renew your memberships. Membership renewals are still a low \$10 per year.

As you may recall, all CNYAPG memberships expire on December 31st. All current members should be receiving renewal forms with this newsletter. The forms will contain the information we currently have on file for you and your membership expiration date. Please make necessary additions or changes to the forms and return them with your dues payable to CNYAPG.

Those of you that previously paid for mult-year memberships will also receive a renewal form. Please check the expiration date and make any additions and corrections to your personal information that are necessary. If the information is correct and your dues are paid, you need not return the form.

If you do not receive a form or know of a potential new member that needs a membership application form, you may download it from our World Wide Web site at www.dreamscape.com/cnyapg or call Gerry Gould at 437-1142 or fax a request to 437-1282.

PENN DIXIE QUARRY SITE: A PALEONTOLOGICAL AND OUTDOOR EDUCATION CENTER

The Penn Dixie Site is an abandoned shale quarry, located southwest of Buffalo in the town of Hamburg, New York. An important and fossiliferous section in the Middle Devonian Hamilton Group is exposed in this quarry.

The geologic importance of these exposures is expressed in these excerpts from a letter written by Dr. Carlton Brett, University of Rochester, in 1990. "... Many beds are shown here particularly well because of the low angle at which the quarry has been beveled. ...weathered exposures at the north end of the old quarry have revealed an abundance of fossil crinoids which are not found commonly in the upper Wanakah Shale at other localities. The section of grey Windom Shale on the opposite side of the road is arguably the best, and most complete outcrop of this unit in the state. It is also still highly fossiliferous and contains some fossils which cannot be found at any other localities for example, some pyritized sponges and also blastoids which are yet undescribed. The rim of the quarry on the south side is one of the best exposures of a fossil bone bed in the state. This stratum, the North Evans Limestone,... is a particularly interesting stratum from a variety of standpoints. ... The unit also contains some of the only well preserved fossil fish remains found in western New York. In the northeast corner of the quarry is a very important limestone ledge, the Tichenor Limestone which show evidence of having been a marine erosion Surface during the Devonian Period.

In short, there are a number of very important geological features that are particularly well displayed in the old Penn Dixie Quarries. This is an invaluable teaching and reference location for professional geologists. Many students have learned their paleontology at this locality already.

It would be a great loss to the geology of western New York if this site were destroyed. I would argue, in fact, that this is one of the 5 or 6 most important geological sites in the Niagara Frontier area and its loss would mean considerable setback in terms of study of Devonian geology in eastern North America. It should be noted that the northwestern region of New York State, in particular, is world-renowned as a reference section for the Devonian strata. Penn Dixie is one of the classic sections that people from Europe, the Soviet Union, Australia, and others have come to visit in the recent past..."

Two articles that include descriptions of the geology of the Penn Dixie Quarry appear in New York State Geological Association field guidebooks: 1974, Trip G, Biostratigraphy and Paleontology of the Windom Shale Member (Moscow Formation) in Erie County, New York by Carlton E. Brett; and 1982 Trip A1, Upper Moscow-Genesee Stratigraphic Relationships in Western New York: Evidence for Erosive Beveling in the Late Devonian by Carlton E. Brett and Gordon C. Baird.

In 1996, the town of Hamburg purchased the 56-acre quarry property and deeded 32.5 acres of the property to the Hamburg Natural History Society. Later in 1996, volunteers cleaned rubbish from the quarry. Future plans include the construction of a nature trail, pond improvements, the installation of telescope pads for astronomy programs, and construction of a building from education programs and classes. In addition, volunteer field trip leaders were trained and now offer guided field trips for students in elementary through high school levels as well as amateur geologists.

You can become a member of the Hamburg Natural History Society to help sustain and further develop the Penn Dixie Site. Membership dues are: \$10, individual; \$15, family; and \$100, corporate. Send inquires to Hamburg Natural History Society, Jerold Bastedo, President, P.O. Box 277, Hamburg, New York 14075.

FOSSIL FIGHT

One of the largest Tyrannosaurus rex fossils has been discovered on a Montana cattle ranch. University of Notre Dame paleontologist Keith Rigby discovered the fossil and is in the process of identifying it. There is a possibility that the fossil is not a T-Rex, but rather a completely new variety of dinosaur. Now the question is who owns the land where the fossil was found. (Taken from The Post Standard, September 17, 1997)

NEW MILLENNIUM ROCK PARK

A Rock Park will be created to show the geological variety of New York State, using large rock specimens. This park will be located immediately east of the New York State Museum in Albany, New York. The general concept of the park includes approximately 50 rock monoliths with appropriate descriptions on weather proof markers and a corresponding pamphlet. The pamphlet will provide a discussion of both the geologic and economic significance of the rock and mineral products of the state. The monoliths will be oriented in a manner corresponding to the geologic map of the state. To date, the New York Geological Survey has access to approximately 25 monoliths. The survey is looking for suitable large specimens from quarries, mines, road construction sites, etc. Their goal is to show representative rock types, minerals, fossils, textures, and structures. Rock type varieties will come from four broad regions: sedimentary rocks from areas west of the Taconics, metamorphic sequences across the Taconics, high grade rocks from the Adirondacks, and a variety of types from southeastern New York. The survey would prefer "thin" monoliths up to 6 to 8 feet tall. Any suggestions, please reach Yngvar Isachsen at the survey via phone (518) 474-5819, fax (518) 486-3696, and e-mail yisachse@museum.nysed.gov. (Taken from the New York State Geological Survey What's New Web Page).

GEOLOGY OF NEW YORK PUBLICATION

The New York State publication "Geology of New York: A Simplified Account" will be revised during fiscal year 1997-1998. The planned revisions include numerous stereo pair illustrations and a stereo viewer. Subjects of the stereo-pairs will range from crystals and fossils, to outcrops, to landscapes, to aerial photographs. Any suggestions for items that would best be viewed in stereo can be e-mailed to yisachse@museum.nysed.gov. (Taken from the New York State Geological Survey What's New Web Page).

GEOLOGY WEB SITES OF INTEREST

National Ground Water Association

<http://www.h2o-ngwa.org>

National Environmental Information Service (searchable CFR 40) <http://www.neis.com>

EPA Region 5 News <http://www.epa.gov/Region5/epanews.html>

EPA Envirofacts http://www.epa.gov/enviro/html/ef_home.html

New York State Museum <http://www.nysm.nysed.gov>

The Geological Society of America
<http://www.geosociety.org>

CNYAPG CALENDAR

November 4 Dr. Ann Meltzer, Lehigh University, "Walk up a naked mountain - the Nanga Tarbot experiment", 4:30 p.m. in 1120 Snee Hall, Cornell University.

November 5 Symposium on the professional licensing of geologists in New York State, sponsored by NYDCPG and CNYAPG, Registration /Sign In at 2:30 p.m., Embassy Suites Hotel, Syracuse New York.

November 11 Dr. Bruce Watson, RPI, "Fluids as agents of change in the crust and upper mantle", 4:30 p.m. in Snee Hall, Cornell University .

November 14 Dr. Scott Bair, Ohio State University, "Contamination of Wells G & H: The Science Behind the Tragedy at Woburn, Massachusetts, 113 Heroy Hall, Syracuse University, time TBA.

March 19-21, 1998 Northeastern GSA Section Meeting, Holiday Inn by the Bay, Portland, Maine, Call for Papers, Abstract Deadline: November 14, 1997, Submit Abstracts to: Marc C. Loiselle, Maine Geological Survey, 22 State House Station, Augusta, ME 04333-0022, (207) 287-2801

The Thursday, November 13 CNYAPG meeting will be held at the Glen Loch. A cash bar will open at 5:30 p.m. followed by dinner at 6:30. Our guest, Dr. Bair, will speak at 7:30. Dinner is \$13 (if reserved 24 hr in advance) or \$15 at the door. Make your reservations today by calling O'Brien & Gere Engineers at (315) 437-6100 ext. 2656. See you there!

If you have events that you would like to include in the CNYAPG calendar, please contact Bill Gabriel of O'Brien & Gere Engineers at (315) 437-6100.

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TROPICAL GLACIERS AND CLIMATE CHANGE

Dr. Geoffrey O. Seltzer, Ph.D.

Syracuse University

Most people think of the tropics as a place to escape to for warmth and sun, especially during the cold and dark winters of central New York. However, mountains that exceed 20,000 feet in the Andes of Peru and Bolivia are topped by glacier and show clear evidence of extensive glaciation. The record of glacial advance and retreat in these mountains can be used to address important issues of climate change. Also, one of the great lakes of the world, Lake Titicaca, is located on the border between Peru and Bolivia at about 13,000 feet above sea level. The sedimentological record contained within this lake and other lakes in the region contain important clues to environmental and hydrological change in the Andes, which can be linked to larger atmospheric dynamics. Come and learn more about the Andes, what it is like to do field research in a remote alpine location, and what some of the important problems are in understanding climatic and environmental change.

Dr. Seltzer has been a member of the faculty in the Department of Earth Sciences at Syracuse University since 1994. He received his B.A. degree in geology from Carleton College and his M.S. and Ph.D. degrees from the University of Minnesota. He is a frequent reviewer for several journals including Science, Geology, the Journal of Quaternary Science and the Journal of Glaciology. Dr. Seltzer has received numerous research and travel grants for his work on climate change, and has published more than 20 papers on his research. Please join us in welcoming Dr. Seltzer to the Carousel Center Skydeck on Thursday, December 4, 1997.

NYSDEC NEEDS VOLUNTEERS

The NYSDEC is looking for people who want to take an active role in reducing the release of chemicals to the environment. NYSDEC's Comparative Risk Project seeks to identify and compare the damage being done by released chemicals and to develop strategies to reduce the damage through pollution prevention.

Volunteers will review and comment on NYSDEC's comparative risk reports. Some volunteers may be asked to participate in focus groups. No special training is needed. For more information, call the NYSDEC Pollution Prevention Unit at (518) 457-2553.

UPDATE ON THE PENN DIXIE QUARRY

The Hamburg Natural History Society, Inc. is holding a capital fund drive to raise money to construct the outdoor education center, parking areas, handicap accessible nature trails, astronomy pad, etc for the Penn Dixie Quarry Site. Although the fund drive kick-off meeting was held prior to the distribution of this newsletter (November 18, 1997), donations will always be appreciated. Please contact Jerry Bastedo at (716) 627-4560 for additional information or write to the Hamburg Natural History Society, P.O. Box 772, Hamburg, New York 14075.

The Hamburg Natural History Society is scheduling field trips for schools and groups for the 1998 field season to collect fossils at the Penn Dixie site. If you would like to schedule a school group, please contact Peg Hermann at (716) 627 -6336. All other groups should call (716) 627 -4560. Society Members are free, non-member adults are \$3, and children are \$2. Would CNYAPG members be interested in a spring field trip to the Penn Dixie site?

LICENSING SYMPOSIUM: A GREAT SUCCESS!

Geologists from all over the state gathered in Syracuse on November 5th at a symposium on licensing of geologists in New York. The symposium was hosted by the New York State Council of Professional Geologists (NYSCPG), who sponsored a similar event two years ago when efforts to create a state licensing program first got underway. In the two years that have passed, the Council has made great strides toward achieving its goal, which was demonstrated by the success of the November symposium. Several speakers addressed the gathering, including:

William Kelly, NYSCPG President, who gave an update on the status of many of the Council's recent activities including fundraising, assembly bill status, the hiring of a lobbying firm, and other issues; Robert Mahoney, NYSCPG Vice President, who discussed proposed changes to the Assembly Bill No. A6822, which was submitted in March and is expected to see action in the 1998 legislative session; Karen Moran, P.E., Past President of the New York State Society of Professional Engineers (NYSSPE), with whom NYSCPG has worked closely in developing the licensing bill. Ms. Moran gave an update on the NYSSPE's perspective, and offered encouraging words regarding the potential for support from her organization;

Donald A. Clary, President, Minerva Group, Albany, New York. Mr. Clary's firm will serve as NYSCPG's lobbyist as the bill moves through the legislative process. His experiences with other licensed professions provided valuable insight into the critical elements of the process. His presentation made it clear the NYSCPG will be well represented in Albany.

John Privatera, Esq., attorney with McNamee, Lochner, Titus & Williams, Albany, NY. Mr. Privatera directs the environmental department of his firm, which will work with the Minerva group in representing NYSCPG from a legal standpoint. His long history of working with geologists and engineers on environmental projects gives him a unique point of view on the importance of licensing of geologists. Representative Steven Englebright, Dem. 4th District (Long Island); Assemblyman Englebright, a geology professor himself, is the sponsor of A6822. He currently serves on the Higher Education, Energy, and Environmental Conservation Committees, among others, and is Vice-chair of the Legislative

Commission on Toxic Substances and Hazardous Wastes. Mr. Englebright spoke of the importance of the profession of geology and the viability of this licensing bill. He also provided an excellent presentation on the integration of science and public policy involved in the Jamaica Bay development over the last few decades.

The symposium served as a valuable kickoff for the Council's next level of activity as it seeks to achieve licensing for geologists in New York. The large number of attendees was a testament to the legitimacy of the Council's efforts, and demonstrated the keen interest that geologists statewide have in licensing. With continued support from all geologists, both individually and as members of other geo-related organizations, New York State should be the next in a long list of states to license geologists.

SILENCE OF THE LIMBS

by Robert Titus,
Hartwick College

It's November and the hiking season is pretty much over. There are still a few relatively mild days, but there are so many fewer reasons to get out now. The foliage, with its green, is gone and the landscape is, for the most part, just a dull gray. Darkness comes so early now. Later the snow may draw some of us out on skis or snow shoes, but that is yet to come. For the time being the scenery is uninspiring.

But I have found that there is one outdoors experience which is pretty much confined to this time of year, and it is something that does sometimes draw me out for one last end of the season Catskill hike. It's not something that I can go and see, nor something that I can hear or feel. Instead it is the very silence of the woods at this time of year.

Each November brings a few days when the skies are a uniform gray, and the gloomy weather patterns seem to settle into complete doldrums. Pick one of those days and hike high up into the Catskills, or your own local hills, so that you are far away from any road noise. There are usually no planes above our mountains, but if so just wait until they have passed by. Pick a good spot and sit and listen. Not a breath of air stirs, and even if it did a little, there are no leaves to rustle at this time of the year. Once in a while a twig or limb will fall, but these events are scarce and momentary. The forest becomes so completely silent that it is almost unnerving.

In this season of the year there are few animals stirring. The insects are seasonal and this year's generation has all died; the next generation sleeps in its egg cases, silently awaiting the spring thaws. The song birds have departed, and most of the ground animals have settled into some burrow for the winter. In short it is mighty quiet up in the mountains at this time of year.

To a paleontologist there is a special experience here. Silence is unusual in our world, but that is only our world that I am talking about. Today we expect the woods to be noisy with insects, birds and furry animals, but that has not always been the case. Long ago these noise-making creatures did not exist. I am thinking of the Gilboa Forest which long ago presided over our Catskill landscape.

The Gilboa Forest was a very different sort of woods. There were no furry animals, neither were there birds. There were insects, but they were so primitive that they had not yet evolved the ability to make noise. Noise making is something we take for granted, and probably regard mostly as a nuisance. But we should not forget that it is a relatively complex form of animal behavior and that was something far beyond the abilities of Gilboa's primitive creatures.

Neither were the trees of Gilboa very noisy. They lacked true leaves and so it is not likely that they would have been able to make much of a rustle. Even on a windy day, the forest of Gilboa must have been a remarkably quiet place. All this silence ended, maybe 300 million years ago, when more advanced insects appeared and began their songs. Eventually birds and other animals followed suit and the world's forests

and jungles became noisy.

So that is what draws me into the mountain at this time of year. It's a chance to go and experience a form of nature that has been gone for all those 300 million years. I like the western slopes of Hunter Mountain. These face the interior of the Catskills and are shielded from the cacophony of the Hudson Valley. Try it, it's this year's one last good excuse for a hike into the mountains.

=====
Adapted from an article published in the Woodstock Times.

CNYAPG CALENDAR

December 4

Dr. Geoffrey O. Seltzer, Syracuse University, "Tropical Glaciers and Climate Changes. CNYAPG/ASCE/NYSSPE Joint Meeting, Carousel Skydeck. See below.

The Thursday, December 4 meeting will be held at the Carousel Skydeck. A cash bar will open at 5:30 p.m. followed by dinner at 6:30. Our guest, Dr. Seltzer, will speak at 7:30. Dinner is \$25 or \$15 for students.

Make your reservations today by calling O'Brien & Gere Engineers at (315) 437-6100 ext. 2656. See you there!

March 19-21, 1998

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ONONDAGA COUNTY RESOURCE RECOVERY FACILITY PROCESS AND TECHNOLOGY

Presented by

Amy Prejean

Environmental Compliance Engineer

Ogden Martin Systems of Onondaga, L.P.

The Onondaga County Resource Recovery Facility (OCRRF) is a 990 ton per day (TPD) Waste-to-Energy Facility. The facility consists of three independent 330 TPD units. In each of the three boilers, the combustion of refuse by the Martin Stoker System converts the chemical energy in the refuse to thermal energy in the furnace. Each boiler is composed of furnace water walls forming an enclosed area for combustion of refuse and a flow path for the hot flue gases. Water filled tubes line the furnace walls and are located in the path of the flue gases in the economizer, convection and superheater sections of the boiler. The water-filled tubes provide surface area for heat transfer from the hot flue gases to the water inside the tubes. In order to utilize this heat energy for maximum facility efficiency, the heat from flue gases is extracted at various points in the facility's process including the following: 1) boiler feedwater is heated in the economizer; 2) water is heated in the convection section and the furnace water wall tubes for production of saturated steam; and 3) saturated steam is superheated in the superheater section of the boiler to make dry "superheated" steam. The dry superheated steam is supplied to the facility's steam turbine generator, where it is converted into electricity.

The OCRRF employs state-of-the-art air pollution control (APC) technology for municipal waste combustors that meets the Maximum Available Control Technology (MACT) standards for existing municipal waste combustors contained in the most recent federal Municipal Waste Combustor Guidelines (40 CFR 60 Subpart Cb). The OCRRF APC equipment includes a selective non-catalytic reduction system (SNCR) for control of Nitrogen Oxide gases (Nox), a spray dryer absorber or "scrubber" for reduction of acid gases, carbon injection for reduction of mercury and dioxins/furans, and a fabric filter or "baghouse" for removal of particulate matter from the flue gases.

The effectiveness of the APC equipment is continuously monitored by the Facility's Continuous Emissions Monitoring System (CEMS). The CEMS and the Data Acquisition System (DAS) continuously measure and record concentrations of SO₂, CO, Nox, CO₂, NH₃ and opacity for each boiler. Sample probes are located at the economizer outlet before

the flue gas enters the scrubber and baghouse and at the induced draft fan inlet (after the baghouse and scrubber) prior to discharge from the stack. Boiler roof and baghouse inlet temperatures are also continuously measured and monitored in order to insure compliance with facility permit limits.

The talk will conclude with an open question and discussion period.

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PRESIDENT'S MESSAGE By Meg Harris

Our holiday season got off to a festive start at the Carousel Skydeck where we enjoyed the food and a fascinating talk by Geoff Seltzer of Syracuse University. Geoff sparked our interest with breath-taking slides of his field work on the snow covered peaks of the Andes.

As I shared with you last month, students from the OCC Geology Club hosted a gathering spotlighting three CNYAPG members to discuss career opportunities in Geology. Several exciting ideas materialized from this get-together.

Many students expressed an interest in visiting the professionals on site or job shadowing. There was also much enthusiasm expressed about the possibility of student internship positions within local companies.

Several members of the CNYAPG have expressed interest in starting a listing of those members who would be willing to host a student for a day or an afternoon, to allow them to get a first hand look at what we do to earn a living. If you were to indicate your interest, local colleges would offer your name to students interested in contacting you to arrange for a visit.

I would greatly appreciate hearing from any individual or company who would be willing to take on a student as an intern in any capacity, for any length of time.

We would like to hear from anyone with their input on this, suggestions for formalizing the process a bit, especially ideas on how to make it work.

Let me know your thoughts.

Drop a quick note....

harrism@sunyocc.edu

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GEOLOGIC NEWS OF INTEREST Compiled by Nancy Gensky

VOLCANIC ERUPTIONS AND GLOBAL WARMING

Massive volcanoes exploded in the Caribbean 55 million years ago and triggered dramatic and rapid climate changes ever recorded. Evidence of volcanic eruptions was found by drilling 3,000 feet deep into the sea floor. Cores of ocean floor sediments revealed layers of blue, green, and red volcanic ash surrounded by normal gray sediments. Other studies have shown that the Earth warmed rapidly 55 million years ago, but scientists did not know why. This new research, reported in the November issue of Geology shows that the eruptions occurred just before the warming began. The volcanoes caused the warm top layer of the ocean to flip-flop with the bottom cold layer. That led to releases of methane gas from the sediments into the water. The combination of the methane and the warmer water killed half of the deep ocean sea life. When the methane was subsequently released from the water into the atmosphere, global warming occurred. This research is being conducted by the

University of North Carolina at Chapel Hill. The sediment cores were retrieved using the Ocean Drilling Programs 470-foot long JOIDES resolution, the largest scientific drilling ship in the world. (USA Today, November 6, 1997)

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CNYAPG MEMBERSHIP RENEWAL TIME IS HERE by Gerry Gould

CNYAPG members it is time to renew your memberships. Membership renewals are still a low \$20 per year.

As you may recall, all CNYAPG memberships expire on December 31st. All current members should have received renewal forms with their newsletter. The forms contained the information we currently have on file for you and your membership expiration date. Please make necessary additions or changes to the forms and return them ASAP with your \$20 dues payable to CNYAPG.

Those of you that previously paid for multi-year memberships also received a renewal form. Please check the expiration date and make any additions and corrections to your personal information that are necessary. If all information is current, and your dues are paid you need not return the form.

If you have not received a form, or know of a potential new member that needs a membership application form, you may download it from our World Wide Web site at www.dreamscape.com/cnyapg or call me at 437-1142 or fax a request to 437-1282. Please give us suggestions and comments so that we can continue to improve our web site.

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THE COLONEL'S TOMB by Robert Titus, Hartwick College

Prattsville, along the banks of the Schoharie River, is steeped in Catskill history. It's emblematic of the most progressive aspects of the area's history, and at the same time, it represents many of the mistakes people made as our region developed. Zadock Pratt was the towering, overwhelming personality in the town's development. Even today his influences permeate the village.

Pratt was a founder of the Catskill tanning industry. From 1833 to 1846 his Prattsville tanneries turned out shoe leather for the New York City market. His tanneries, however, were dependent upon the bark of the hemlock tree, and when they were all cut down, the industry closed. We frown upon the wanton destruction of the Catskill hemlocks that characterized the 19th century, but our collective wisdom is based upon a history of trial and error. It was men such as Pratt who provided the errors.

But Pratt is also remembered for progressive attitudes toward urban planning. His Prattsville was a pioneering model in that field. Pratt laid out the streets, built the Greek Revival homes and planted the 1,000 trees that lined the village streets. Pratt founded churches and the town's academy as well. Prattsville today is still truly Pratt's town.

Zadock Pratt was a great man, but I suspect that history would have mostly forgotten him except for his one singular act of vanity. Pratt, the Rameses II of the Schoharie, is remembered for Pratt Rock, his would-be tomb. Pratt Rock consists of a series of stone carvings on a glacially plucked cliff along Rt. 23, just east of town and overlooking the old Pratt farm. The site is now a town park and open to visitors. You can hike the winding path up the steep slope toward the main carvings. If you tire along the way you can sit upon stone seats thoughtfully carved into the mountain. The main level of carvings displays images and symbols of his life. There are carvings

of the hemlock tree, a horse which hauled the bark to the tanneries, a strong arm to do the work and other emblems of the great man's life. There is a bust of Pratt himself and a poignant carving of his only son who died in the Civil War. Then there is the Pratt burial chamber itself.

Unlike the pharaoh, Pratt was never buried in the grotto carved out for him. One story is that the chamber was unsuitable for burial as it leaked water when it rained. The chamber is still there, and when I looked it over, I found that there may be some truth to that tale, along with a good geological story about Pratt Rock.

Pratt Rock is carved into sedimentary strata from the old Catskill delta. Deposited nearly 400 million years ago, the strata lie near what was once the coastline of the old Catskill Sea. Rivers flowed across this location and poured their waters into the old ocean.

There is a lot of history here. I had little trouble finding bits and pieces of the old Gilboa forest, and I could picture its foliage along the old stream banks. But the most interesting horizons I found were those at the burial chamber itself. The ceiling of the chamber is made up of inclined strata. This horizon of rock formed on the sloping floor of an old stream channel. The beds slope down to the right, which was once one side of a river, and farther along the outcrop they rise up again on the other shore. When I looked at the chamber ceiling I found a horizon rich in a hash of broken plant remains. This stratum is likely very porous and it just might be that this accounts for the leakage that caused the burial project to be abandoned. The Pharaohs of arid Egypt faced no such problem.

If so, this is one of the many ironies of geology. The great Zadock Pratt is buried in a nearby graveyard, with all the common folk of old Prattsville, because about 370 million years ago some small river made a wrong turn. It's not Pratt buried in Pratt's tomb, but the sands of an ancient river!

(Adapted from an article first published in the Woodstock Times.)

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CNYAPG Calendar

January 8, 1998 ONONDAGA COUNTY RESOURCE RECOVERY FACILITY PROCESS AND TECHNOLOGY, Presented by Amy Prejean, Environmental Compliance Engineer, Ogden Martin Systems of Onondaga, L.P.

March 19-21, 1998 Northeastern GSA Section Meeting, Holiday Inn by the Bay, Portland, Maine.

If you have events that you would like to include in the CNYAPG calendar, please contact Bill Gabriel of O'Brien & Gere Engineers at (315) 437-6100.

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BELOW THE UNIVERSITY HILL

Presented by

JAMES STEWART

John P. Stopen Engineering Partnership

In contrast to the deep soft soils of the Syracuse Lakefront area, the University Hill area is underlain by shallow soils and dense glacial till over bedrock. Nevertheless, subsurface conditions around the University have posed challenges for building construction. Mr. Stewart will present several brief case histories from a geotechnical engineer's perspective.

Come join us for an interesting evening on Thursday, February 12 as Mr. Stewart blends geology with engineering. What is common knowledge to one profession is frequently not considered by another. The effects of something which most would consider insignificant, such as rain water run-off from roofs, can significantly impact building foundations, even those on bedrock. This will be a most informative evening as the geological sciences and engineering disciplines join together to meet the challenges of building construction on the University Hill.

The evening will conclude with an open question and discussion period.

Don't forget! Thursday, February 12, at the Glen Loch Restaurant. The cash bar will open at 5:30 pm followed by dinner at 6:30 pm. Our guest Mr. Stewart will present Below the University Hill at 7:30 pm.

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PRESIDENT'S MESSAGE

By Meg Harris

Although I missed our January meeting, I was thrilled to hear the positive response to both the field trip and evening presentation led by Amy Prejean of the OCRRA Waste to Energy Plant on Rock Cut Road. Having visited there with my students in the past, I can highly recommend Amy's tour. There is the possibility that we could sponsor another field trip later in the spring for those of you that missed the tour.

It is quite ironic to think that we have a unique state-of-the-art resource recovery operation in the same county as "the most polluted lake in the country". A lot of what we have or don't have is determined by the successful education of the public on environmental issues. Where people understand the need for environmental action and understand the technology involved, things get done. The OCRRA plant is a good example of how continuing public education is necessary for a company to coexist comfortably with its neighbors.

I would like to follow up on my message for last month in which I asked for volunteers to host college students on a visit to your job site. If you have not emailed me with your intentions to help out, we will have a sign-up sheet at the table Thursday night if you would like to get involved.

In addition the Geology Club has asked me to invite another group from the CNYAPG to be our guests for lunch. If you can get away from the office between 11:00 and 12:30 and would like to join us please let us know.

Finally I'm pleased to announce that our Vice President, Chris Gachowski gave birth to a little baby girl, December 29. Her name is Zoe Elizabeth. Our heartiest congratulations to Chris and her family.

I would like to thank Roy Wagner for taking over the job of newspaper editor and encourage you all to support Roy with your ideas and contributions.

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GEOLOGIC NEWS OF INTEREST

Compiled by Roy Wagner

PAST SPEAKER RECEIVES NATIONAL AWARD

Barbra Tewksbury, one of our past speakers, was recently selected by the Carnegie Foundation for the Advancement of Teaching to receive the New York Professor of the Year award. Ms. Tewksbury is a Professor of Geology at Hamilton College where she has taught since 1978.

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CNYAPG MEMBERSHIP RENEWAL TIME IS HERE

by Gerry Gould

As you may recall, all CNYAPG memberships expire on December 31st. Membership renewals are still a low \$20 per year. All current members should have received renewal forms containing the information we currently have on file for you and your membership expiration date. Please make necessary additions or changes to the forms and return them with your \$20 dues payable to CNYAPG.

FEBRUARY 1998

If you have not received a form, you may download it from our World Wide Web site at www.dreamscape.com/cnyapg or call me at 437-1142 or fax a request to 437-1282.

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NYSCPG UPDATE

The New York State Council of Professional Geologists (NYSCPG) held a symposium on licensing of geologists in New York on November 5, 1997. The symposium served as a valuable kickoff for the Council's next level of activity as it seeks to achieve licensing for geologists in New York. The large number of attendees was a testament to the legitimacy of the Council's efforts, and demonstrated the keen interest that geologists statewide have in licensing. A

group-wide discussion followed the speakers, with numerous important issues and questions being discussed by all. With continued support from all geologists, both individually and as members of other geo-related organizations, New York State should be the next in a long list of states to license geologists.

1998 will be an important year for the NYSCPG, and the time is now to begin to make your voice heard in Albany. The pieces are now beginning to fall into place: 1) NYSCPG has draft legislation in the Assembly (A.6822); 2) NYSCPG has Assemblyman Stephan Englebright, a geologist from the 4th Assembly District as its legislative sponsor; and 3) NYSCPG has hired Don Clarey and John Privitera, lobbyist and attorney, respectively, in Albany, to provide expert legal and political council.

The prime ingredient in this process however is YOU, the professional geologists of New York State. The time is now for you, the members of the NYSCPG and CNYAPG to let your local members of the Assembly and State Senate know that you are informed, involved and in favor of attaining licensing for geologists in New York.

To move this important legislation ahead in 1998 the NYSCPG will need to mobilize its members and focus its attention on the legislature in Albany at critical junctures along the way. NYSCPG will be notified by Mr. Clarey at key times when we need to apply that attention, such as when the bill arrives in committee. When the time comes, we will all need to be prepared. It will be up to each one of us to make a call and write a letter.

Start by becoming a member of NYSCPG. Contact Jerry Bastedo at Ecology & Environment, Inc. (716) 684-8060 or jcb01@ene.com.

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THE BLUE'S ON A RAINY NIGHT
by Robert Titus, Hartwick College

"Carved in stone" is a common enough cliché. Its meaning is plain enough: any concept etched in stone is permanent, it will never go away or be altered. There is an important implication in the term; something carved in stone must be of some real importance. Otherwise who would bother?

To we geologists, things carved in stone are much more commonplace. Lot's of things are carved in stone. Some of the most mundane events have, by happenstance, been recorded not by a skilled engraver, but by the everyday events of nature. If you know what to look for, sometimes the rocks light up with unexpected etchings.

You have, no doubt, commonly walked the sidewalks on a rainy night. To the young and in love it can be a great pleasure; to most of the rest of us it's just cold and wet. But, in the Catskills, a dark, rainy night can bring a journey into the past. You see, most Catskill villages still have a lot of old bluestone sidewalks, and each old slab can be a time machine.

Bluestone has always been quarried in the Catskills. This durable and attractive stone holds up very well to the traffic of feet. It was deposited nearly 400 million years ago mostly along the coastline of the Devonian Catskill Sea. Its sands once traveled down the rivers of the Catskill Delta and came to be deposited as flat sheets on the shallow sea floors or within the river channels themselves. With time came hardening and lithification. With a lot more time came quarry men to chisel out these stones and cut them into sidewalk slabs. Now they line our streets, but they often still retain vestiges of their venerable past.

Go out, find some bluestone walks and really take a look at them. Most regional sidewalks are now of concrete, but there still are some old bluestone slabs. Look at the sidewalks along the back streets of most upstate towns. Earlville is an especially good example. Look also at the stones leading to people's front doors. Many are featureless, but many others display sedimentary structures which take us back to moments of time in the Devonian. Look for two of these structures. The first is the most obvious; these are the ripple marks. Devonian age currents passed across these

Devonian sands and sculpted them into the delicate ripples. Often they are current ripples, steeper on the side toward the way the current was flowing. It is a most remarkable experience to visualize these briefest and most ephemeral events of so long ago. They should not exist. How could such delicate structures survive long enough to turn into stone? And yet, there they are. Were these currents of any importance? Not at all; they were just the most everyday of events and yet they are "carved in stone."

The other structure is the flow lineation. Again as currents sweep across sea floors or stream bottoms they sculpt the sand. This time the resulting features are virtually invisible. The grains are lined up into a subtle lineation which only appears millions of years later when the stone cutter splits the rock. The resulting fracture has a faint lineation to it, again oriented with the ancient flow.

Both of these features are quite clear in broad daylight and not much harder to see at night, under street lights. But on a rainy night, when the street lights are reflected off the wet sidewalks, these features light up. They are almost electric. It's something to look for, not just in the Catskills, but anywhere there are bluestones, which is all of eastern North America.

So you don't have to be young and in love to enjoy a walk on a dark rainy night. Ripple marks and flow lineations are nice too, although they do come in a distant second place.

(Adapted from an article first published in the Woodstock Times.)

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CNYAPG Calendar

February 9, 1998 (LATHAM, NY)

February 11, 1998 (ROCHESTER, NY)

Carmo Environmental Systems presents a One-Day Seminar featuring Geosynthetics and Bioengineering; Design and Construction of Wetlands, Lakes and Waterways. For information call (516) 794-7904 or email : josephcarmo @compuserve.com The cost is \$85.00.

February 21, 1998 Annual Meeting NYSCPG in Albany, New York.

March 12, 1998 CNYAPG @ Glen Loch Restaurant

March 19-21,1998 Northeastern GSA Section Meeting, Holiday Inn by the Bay, Portland, Maine

March 22-26, 1998 EEGS (Environmental and Engineering Geophysical Society) in cooperation with NGWA presents the Symposium on the Application of Geophysics to Environmental and Engineering Problems at the Palmer House Hilton, Chicago, Illinois*Contact Jayne Sturges, SAGEEP (303) 771-2000 or Kathy Butcher, NGWA (303) 422-2685

April 9, 1998 CNYAPG @ Glen Loch,Dr. Don Woodrow, Hobart-William Smith College

April 28, 1998 ASCE / BAPG Technical Presentation and Discussion, Land Application of Biosolids / Bioremediation of Petroleum Hydrocarbons, Rochester Institute of Technology

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CNYAPG Newsletter April 1998

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[DID A RAIN OF COMETS AND ASTEROIDS NURTURE LIFE ON THE PRIMITIVE EARTH?](#) Presented by DR. JEFFREY A. SILFER Senior Project Scientist Blasland, Bouck and Lee

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DID A RAIN OF COMETS AND ASTEROIDS NURTURE LIFE ON THE PRIMITIVE EARTH?

Presented by
DR. JEFFREY A. SILFER
Senior Project Scientist
Blasland, Bouck and Lee

A significant fraction of the prebiotic organic matter present on the early Earth may have been introduced by carbonaceous asteroids and comets during the period of heavy bombardment of the inner solar system. If, as the Oparin-Haldane hypothesis asserts, life arose as a natural consequence of chemical evolution in the primordial oceans and atmosphere, then organic molecules delivered during late-stage accretion may have profoundly influenced the development of living systems. The distribution and stereochemistry of organic compounds in carbonaceous meteorites, which are thought to be derived from asteroidal parent bodies, may therefore provide insight into the primitive Earth's organic inventory at this critical juncture.

Berzelius, the prominent 19th Century Swiss chemist, first characterized organic matter in a carbonaceous meteorite in 1834. In the century and a half following this work, investigations of the organic component in carbonaceous meteorites have progressed from rather primitive evaluations of bulk properties to the meticulous examination of individual organic compound classes at the molecular level. Three decades of research on the Murchison meteorite, a CM chondrite that fell near Murchison, Australia in 1969, have been particularly lucrative and have resulted in a clearer understanding of the origin of organic matter in carbonaceous meteorites.

Of particular significance in this regard is the presence of a diverse suite of amino acids in Murchison stones. The occurrence of amino acids, the building blocks of proteins in terrestrial biological systems, in carbonaceous chondrites is provocative and underscores their fundamental significance to an understanding of chemical evolution and the origin of life. The relative abundance, distribution, and stable carbon and nitrogen isotope compositions of the amino acid constituents of the Murchison meteorite have confirmed an extraterrestrial origin for these compounds. In addition, the stable carbon and nitrogen isotope compositions of individual amino acid stereoisomers in Murchison extracts strongly suggest that nonracemic amino acids are indigenous rather than a consequence of terrestrial contamination. Although controversial, it has been suggested that the flux of extraterrestrial materials during late-stage accretion may have been a significant source of optically active compounds for the development of homochiral amino acid polymers (primitive "protein precursors") during the prebiological stage of evolution.

Don't forget! Thursday, April 9, at the Glen Loch Restaurant. The evening will conclude with an open question and discussion period.

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PRESIDENT'S MESSAGE

By Meg Harris

This past month we were treated to an exuberant presentation of a very unconventional outlook on the state of our environment. Jay Lehr presented a scenario far different from the doom and gloom reports we so often hear from "environmental" groups. He suggested that as scientists we have the training to analyze data collected to evaluate the state of the Earth's health. Armed with an unbiased picture of the planet we should help present the state of the environment as it truly is.

Many among the audience disputed some of the conclusions drawn by our speaker. I would encourage them to look at the available data and how it is presented and draw their own conclusions. As a teacher, I was quite impressed with Lehr's ability to keep the group's attention by expressing a viewpoint that was so far removed from the conventional position taken by most professed liberals. I have ordered the book he mentioned, *Facts Not Fear, A Parent's Guide to Teaching Children About the Environment* by Sanera and Shaw. I am looking forward to seeing what it has to say and sharing it with my grade school teaching friends. I wish all of our members had been able to enjoy this presentation. I am looking forward to sharing opinions with those that did. Let me know your thoughts.

Thanks this month to Dave Palmerton, Sara McCullough and Bill Gabriel for taking the time to visit OCC and talk with the Geology Club about their jobs.

Plans for our short course continue to progress. The date is now set for Friday, May 15th. Our regular meeting will be held that evening (Friday) with a talk given by one of our presentors. New directories will be passed out and ballots for the election of next year's officers will be collected. Hope to see you all there!

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GEOLOGIC NEWS OF INTEREST

Compiled by Roy Wagner

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CNYAPG ENVIRONMENTAL & GEOLOGIC SCIENCES AWARD

by Vita DeMarchi

MOST Science Fair Senior Division Winner:

CNYAPG bestowed Mr. John Sullivan of Liverpool High School (10th grade) CNYAPG's Special Award for demonstrating excellence in the area of Environmental and Geologic Sciences. Mr. Sullivan's project entitled, *Mt. Rainier: Volcanic Hazards Study*, was definitely not the erupting volcano model. The project combined initial research into the types of environmental hazards produced when a volcano becomes active, primarily lahars and ash fall out. Mr Sullivan calculated the gradient of several potential lahar flow paths. He concluded that the steep gradients and deep channels would be the primary flow path for lahars. Areas where potential human impact from lahars and ash fall out were identified, and John explained the importance of this research area to develop escape routes and engineer flow diversion techniques.

The project presentation was multi-media, including: poster board illustrations clearly defining the project research and calculations; maps and diagrams illustrating potential impact areas; and a computer slide show that included a simulated eruption and lahar flow (complete with the unfortunate house being covered by mud and ash). What impressed the judges most was John's depth of subject understanding and the ability to communicate his knowledge. Good job John, keep up the good work. John received a \$50.00 U.S. Savings Bond and a piece of amethyst mounted on marble to commemorate his achievement.

The CNYAPG judges were also asked to bestow the Women in Geosciences Award, which went to Ms. Barbara Schrom of Liverpool High School (10th grade) for her project entitled, *Recombination of Molecular Hydrogen on Dust Grain Surfaces in Interstellar Space*. Ms. Schrom is just beginning what sounds like a long-time research project. Support for project work is provided by Professors Gianfranco Vidali and Valerio Pirronello at Syracuse University.

MOST Science Fair

Junior Division - May 17:

Judges are needed for both general judges and to be on CNYAPG's Special Awards committee for the Junior Division. The competition will be held on May 17, 1998 at Syracuse University. To be a judge all you need to do is complete an application and send it to the MOST by mid-April. Judge application forms will be available at the April CNYAPG meeting or contact Bob Wellar at the MOST (315-425-5144). Contact Vita DeMarchi (315-484-7874) to participate in the Special Awards committee. CNYAPG needs to have at least two groups of two people (the more people, the less time it will take to cover all the students).

1998 CNYAPG SEMINAR

Don't forget to set aside Friday, May 15th for the annual CNYAPG Seminar. This year's topic will be on natural attenuation. A special flyer with more information will be sent as the plans are finalized. The May CNYAPG meeting will be held Friday evening at the seminar location. Be sure to make a note of the meeting change from Thursday to Friday.

MINERAL SALE

Stewart's Minerals is going out of business. After 26 years in the mineral trade, inventory is being sold at 50% off. A variety of inventory remains: large and small minerals, jewelry and fossils. To schedule an appointment call, fax, or e-mail:

Bob and Pam Stewart

112 Haverhill Drive

Dewitt, NY 13214

(315) 446-6623

(315) 446 2620 Fax

e-mail: bstewart@mph.net

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BOYHOOD ROCK

by Robert Titus

Hartwick College

Every rock has a story within it that can be read if you just know how to. As geologists, we know that this is so. Like so many of us I learned, long ago, how to read these tales of the distant past. So it was no surprise that, upon visiting "Boyhood Rock," I found a story worth repeating. This is certainly one of the Catskills best known rocks. It's at Woodchuck Lodge, John Burroughs' hideaway home at Roxbury, in the western Catskills. Burroughs was the beloved turn of the century nature writer. His boulder is on his old family farm. He spent many an hour sitting upon it, gazing at its magnificent view and pondering the natural history all around him. Best known for his writing about birds, Burroughs, especially late in life, was an avid amateur geologist, and he understood at least part of the story of Boyhood rock. He knew, for example, that the boulder was a glacial erratic. There is a photo of him, proudly pointing out to Thomas Edison the nearby glacial striations.

Boyhood rock is from the Oneonta Formation which makes up the local bedrock of the upper Pepacton Valley. The Oneonta sandstones are, for the most part, river deposits of the old Catskill Delta. The fossil delta is very well known within the geological community; it was an enormous complex of streams that originated in the Acadian Mountains in what is now New England. From there these rivers flowed westward down into the Catskill Sea of today's New York State.

There was a problem, however, that bothered me for a while. I was puzzled by the many small

holes that littered the boulder's surface. At first I guessed that these were fossil animal burrows. Could these be the burrows of Burroughs rock? Alas the gods of nature writing would not be that kind to me. No, they just did not look right for burrows. Eventually, I found an especially well-preserved one and quickly recognized it as the cast of a fossil tree root. They were fossils of the Gilboa trees from one of the world's oldest fossil forests. These were tropical plants, and so Boyhood Rock, a product of the ice age, must have had an older, equatorial ancestry.

The solution of one problem often leads to another. Gilboa tree roots are common in the Catskills, but it was the first time I had ever seen them in a river sandstone. How could trees have been growing in the channel of a fossil river? A possible answer is that this stretch of the old channel had once been a great bend in the river. During an especially bad flood, the river carved a new route and the old bend was abandoned, leaving a large, oxbow lake. The oxbow gradually filled with sediment, and then trees began to grow, their roots penetrating the old river sands. That's what we see today.

But there was another mystery that bothered me a lot. There are three boulders here, all of which match each other in terms of lithology and all have fossil tree roots. This can't be a coincidence as the odds are too great; the three rocks must once have been joined. My guess is that there once was a much larger Boyhood rock, transported not beneath a glacier but within it. As the ice melted this boulder was lowered toward the ground. Stresses generated at this time caused the original rock to break up into the three pieces, each of which "landed" near each other and remain as we see them today.

And so it was that Boyhood rock gave up its geological secrets. There is a great deal of satisfaction that comes from cracking a scientific problem, even if it is a problem of absolutely no practical significance.

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Adapted from an article in the Woodstock Times.

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CNYAPG Calendar

April 9, 1998 CNYAPG @ Glen Loch Restaurant

April 9 & 10, 1998 New York State Wetlands Forum Inc. Applications of Wetland Science in New York State, Annual Meeting, Albany, NY Contact: Sally Daly (518) 456-5170

April 9, 1998 Christian France-Lanord - Tectonics of the Precordilleran Terranes, Western Argentina

April 16, 1998 Susan McGeary, University of Delaware - Title TBA

April 28, 1998 ASCE / BAPG 1998 Environmental Seminar Technical Presentation and Discussion, Land Application of Biosolids / Bioremediation of Petroleum Hydrocarbons, Rochester Institute of Technology (see enclosed registration form)

May 15, 1998 (FRIDAY) CNYAPG @ Location and speaker to be announced
Final Meeting of CNYAPG until September.

May 15, 1998 CNYAPG 1998 Seminar - Topic on Natural Attenuation

May 17, 1998 MOST Science Fair, Junior Division @ Syracuse University

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