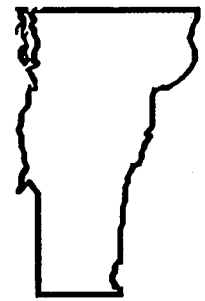
THE GREEN MOUNTAIN GEOLOGIST



QUARTERLY NEWSLETTER OF THE VERMONT GEOLOGICAL SOCIETY

FALL 1999 VOLUME 26 NUMBERS 3 & 4

The Vermont Geological Society's Annual Meeting and Election of New Officers
October 19, 1999, 6 PM at Arvads in Waterbury

New England Intercollegiate Geological Conference (NEIGC)
October 1–3, 1999

Symposium on Surficial Mapping
September 30, 1999
Burlington

Earth Science Week
October 10–16, 1999

See inside for details

THE GREEN MOUNTAIN GEOLOGIST
VERMONT GEOLOGICAL SOCIETY
DEPARTMENT OF GEOLOGY
UNIVERSITY OF VERMONT
BURLINGTON, VERMONT 05405-0122

The *GREEN MOUNTAIN GEOLOGIST* is published quarterly by the Vermont Geological Society, a non-profit educational corporation.

ADDRESS CHANGE?
Please send it to the Treasurer at the above address.
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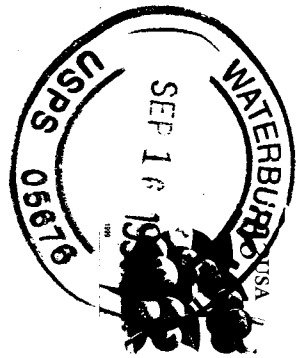

PRESIDENT'S LETTER

Greetings:

Our annual meeting and election of new officers is scheduled for 6 pm on October 19, 1999 at Arvads in Waterbury. Nominations are: President-Shelly Snyder, Vice-president-open, Treasurer-Kristen Underwood, Secretary-Jeff Hoffer. Please join us on the 19th and help support your society. There are numerous events coming your way this fall. Earth Science Week and NEIGC are two major events in which many of our members participate. Notices and schedules for these programs are included in this month's newsletter. We will not have a separate fall field trip this year because both NEIGC and Geologist-in-the-Parks offer ample opportunities for field trips.

Many of our members have volunteered to help with activities during Earth Science Week. If you want to volunteer, please contact me. The current list of events for the week is:

Celebrate Earth Science Week
October 10-16, 1999

Events coming your way during the week are: "Geologist-in- the- Parks" on Sunday October 10th. Contact Marjorie Gale, Vermont Geological Survey, 103 South Main St., Laundry Building, Waterbury, VT 05671-0301. 802-241-3608. Email marjieg@dec.anr.state.vt.us. Geologists will kick-off Vermont's Earth Science Week celebration at these sites:

1. The summit of Owl's Head in Groton State Forest, noon until 4 p.m.. Peter Gale, from Stone Environmental, will have maps and booklets about the geology of the forest area.

2. Redstone Quarry, Hoover St., South Burlington, noon until 4 p.m.. Shelly Snyder, geologist and educator from Mt. Abraham Union High School will be at the quarry to lead tours and discuss local geology.

3. Jon Kim, a geologist with the Vermont Geological Survey, will lead a hike: "The Geology of Mt. Elmore State Park" at 10 a.m. on Sunday. The hike is limited to 15 participants. Please call (802) 241-3469 to reserve a spot.

4. Emerald Lake State Park, East Dorset, VT, time TBA. Helen Mango, a geologist and educator from Castleton State College, will be at the park to discuss local geology.

Vermont Earth Science- Up, Down, and All Around
Contact Christine Massey, Perkins Museum, Geology Department, University of Vermont, Burlington, VT 05405-0122. 802- 656-1344 or 656-8694. Email: cmassey@zoo.uvm.edu

The Perkins Geology Museum and the Vermont Geological Society are sponsoring a poster contest for Vermont students in grades K-2, 3-5, 6-8, & 9-12. The focus is on local geology, processes and understanding what we see around us. Posters must be received by the museum on or before October 19, 1999. There will be a $30 cash prize for each grade group.

Speaker's bureau to visit Vermont classrooms. Contact Kristen Underwood, Griffin International, Williston, VT. 802- 865-4288. E-mail griffint@together.net with ES Week in heading.

Earth Scientists in Vermont have volunteered to visit classrooms as speakers, field trip leaders, hands-on activity leaders, or to help understand local geology. Some topics of expertise are GIS application and natural resources, hazardous waste site clean-up, Vermont geology, minerals, and industrial archaeology. We will try to match your request with a volunteer based on availability.

Saturday, October 16, 1999 Earth Science Week Drop-In Family Mineral workshops
Host: Omya/Pluess-Staufer employees
Contact: Alice Blount
Telephone: (802) 459-3428 (ext. 267)
E-mail: alice.blount@omya.com
Location: Fox Room, Rutland Public Library Time: 1-4 pm
Information: This workshop is fun hands-on activity . We will do simple mineral tests and learn about minerals we use everyday.

For information about Earth Science Week contact:

Contact Marjorie Gale at 802-241-3608. Email marjieg@dec.anr.state.vt.us.
Local events are posted on the web site at http://www.anr.state.vt.us/geology/vgshmpg.htm.

Perkins Museum, Geology Department, University of Vermont, Burlington, VT 05405. Contact Christine Massey at 656-1344. Email: cmassey@zoo.uvm.edu

The American Geological Institute, a not-for-profit federation of 32 professional organizations in the Earth Sciences, has a list of Earth Science Week ideas and activities. They may be contacted at AGI, 4220 King Street, Alexandria, VA 22302 or by visiting the web site at www.earthsciweek.org.

This a joint project of the Vermont Geological Society, the Vermont Geological Survey at the Department of Environmental Conservation, the Perkins Museum at the University of Vermont and the American Geological Institute. Numerous other individuals, organizations and businesses will also sponsor activities during the week.

Marjorie Gale,Vermont Geological Survey

STATE GEOLOGIST'S REPORT

The following is a brief report—look for more details in the winter GMG.

The push to finish the bedrock map compilation begins this fall. The publications process starts with scientific review of the compiled map scheduled to kick off in the winter of 2000. Surficial geologic maps are being digitized for Montpelier, Barre West and St. Johnsbury to be delivered September 30, 1999. Summer of 1999 surficial mapping is underway in the Burlington, Colchester and Newbury quadrangles. An opportunity for a hazard mapping program that would combine both landslides and the erosion hazard from the shifting position of streams is an outgrowth of the recent landslide in Jeffersonville. The Vermont Survey continues to be very active in fluvial geomorphology questions. Recent contract work focuses on stream studies toward a stable channel design for the Granville area. The State Geologist attended a glacial geomorphology training in Alaska organized by the Midwestern State Geologists and the USGS. (They will be approaching Congress soon for an appropriation to do surficial geologic mapping in four Midwestern states). Truly a spectacular trip with hopes of a follow up slide presentation to explain glacial geomorphology and its meaning for Vermont. Looking forward to the Surfical Geologic Mapping Symposium at NEIGC cosponsored by the Vermont Survey, USGS, and UVM on September 30, 1999.

Laurence R. Becker, State Geologist
Vermont Geological Survey
103 South Main Street
Waterbury, Vermont 05671-0301

VERMONT GEOLOGICAL SOCIETY TREASURER'S REPORT

April 1, 1999

Dear President and Board:

The financial condition of the Society remains strong. Please see the attached financial reports as of April 1, 1999. A summary of these reports follows:

Checking Balance @ 4/01/1999	$1,234.51
Excess of Expenses over Income 4/01/98 to 4/01/99	$(2,427.17)

Current dues payments are in the possession of Steve Wright. They have not been processed and are not included in the numbers presented above. The dollar amount of the payments received is not currently known to me.

All major bills known to me have been paid and are included in the above numbers.

Because I will be taking a Federal job out of Vermont , I have notified Stephen Wright that I will be resigning as Treasurer as soon as the bank can process the change of signature card which I have sent to Steve for execution.

It has been a pleasure to serve you as Treasurer and I wish you and all the members of the VGS all the best in your future endeavors.

Sincerely yours,
Allan W. Carpenter

ONE YEAR VGS INCOME STATEMENT
April 1, 1998 to April 1, 1999

Income:	
Dues-member	$1,545.00
Dues - Student	40.00
Interest	17.80
Stud Res Grant	50.00
Other income	5.00
Total Income $ 1,657.08	
Expenses:	
Earth Day Prizes	150.00
Meetings	243.00
Postage	288.36
Publication - GMG	808.00
Research Grants	2,200.00
Scholar Grants	275.00
Supplies	28.00
Travel	91.89
Total Expenses	$ 4,084.25
Excess of Expenses overIncome	$(2,427.17)

NEIGC FIELD TRIPS: OCTOBER 1–3, 1999

Sponsored by the UVM Geology Department
NEIGC Web site: http://kilburn.keene.edu/NEIGC/1999/

Program:
The organization of this year's field conference is similar to those in the past. Please register for those field trips you would like to attend on the attached form. Field Guides will be distributed to Friday's field trip leaders. The Welcoming Party and On-Site Registration will be at the Ramada Inn (see map) from 7:00 to 9:30 PM on Friday. Following Saturday's field trips, the NEIGC banquet will begin at 7 PM, also at the Ramada Inn. Please remember to bring a lunch as most trips will not make lunch stops near to stores.

FRIDAY FIELD TRIPS

TRIP A-1:
SURFICIAL GEOLOGY OF THE EASTERN HALF OF THE ST. JOHNSBURY 7.5 X 15 MINUTE QUADRANGLE, NORTHEASTERN VERMONT

Leaders: George Springston and George M. Haselton

On this trip we will examine the surficial deposits in parts of St. Johnsbury and Danville, Vermont. We will visit a section of interbedded till and lacustrine material and discuss the possible correlation of these features with the Littleton-Bethlehem readvance. The lithologic composition of the basal till and reconnaissance till fabrics will be discussed. We will also visit one or more ice-contact deposits in the uplands of Danville. In an active sand and gravel pit in the Passumpsic valley we will examine what is currently a superb exposure of esker and outwash deposits overlain by lacustrine material. Finally, a stop will be made to examine multiple striation directions on bedrock.

Meet at Danville Village Green at 9 am. Bring lunch.

Contact: George Springston, 81 East Hill Road, Plainfield, VT 05667; 802-454-1220; georges@together.net

TRIP A-2:
SLOPE STABILITY AND LATE PLEISTOCENE/HOLOCENE HISTORY, NORTHWESTERN VERMONT

Leaders: Paul Bierman, Stephen Wright, and Kyle Nichols

This field trip features stops at recent landslides that offer superb exposures of the surficial materials that failed and provide evidence of the mechanisms of failure. We will begin at Town Line Brook in Winooski, a stream along which landslides have occurred repeatedly over the last 10 years. We will then travel east making one or more stops in Richmond and Bolton that emphasize the glacial history of the region. Our next stop is along the Miller Brook Valley in Stowe to see an active alluvial fan and a stream cut through the materials that feed it. We will then head into Smugglers Notch to look at a debris flow and from there down to Jeffersonville to view the spectacular exposure created by three large landslides that occurred early this summer. We will then return to Burlington.

Meet at the Champlain Mill parking lot (in downtown Winooski on the north side of the big bridge on Rtes. 2 and 7 connecting Burlington and Winooski) at 8:30 AM. Please bring a lunch.

Contact: Paul Bierman, Department of Geology, University of Vermont, Burlington, VT 05405, 802-656-4411, pbierman@zoo.uvm.edu

TRIP A-3:
LITHOTECTONIC PACKAGES AND TECTONIC BOUNDARIES ACROSS THE LAMOILLE RIVER TRANSECT IN NORTHERN VERMONT

Leaders: Barry Doolan, Peter Thompson and Thelma Thompson

Lithotectonic packages have been identified within the Camels Hump Group across the northern Green Mountain anticlinorium, separated by regionally extensive thrust faults: Brome-Underhill fault, Honey Hollow fault, Prospect Rock fault, and Johnson talc mine fault. Stops will be made from west to east along the Lamoille River valley to compare stratigraphy and structural style from one package to the next, and to demonstrate the timing of these faults relative to foliation, metamorphism and folding. Some stops will revisit exposures that were featured on Albee's 1972 NEIGC trip. the "Foot Brook syncline" is reinterpreted as a fault slice of Ottauquechee and Stowe correlatives thrust over Hazens Notch and Fayston rift-drift clastics, all deformed by Taconian and Acadian folds. The trip will end near the starting point of Trip B-3, which will continue the transect eastwards.

Contact: Barry Doolan, Department of Geology, University of Vermont, Burlington VT 05401: PHONE 802-656-0248; FAX 802-656-0045; bdoolan@zoo.uvm.edu

Departure Time and Location: 9:00 AM Jana's Cupboard, intersection of Route 15 and 108 in Jeffersonville, Vermont. Bring Lunch.

TRIP A-4:
MINERALOGY, PETROLOGY, AND HEALTH ISSUES AT THE ULTRAMAFIC COMPLEX, BELVIDERE MT., VERMONT, USA

Trip Leaders: Mark Van Baalen and Carl A. Francis, Harvard University, and Brooke T. Mossman, University of Vermont.

The Belvidere Mt. ultramafic complex is part of the discontinuous belt of Appalachian serpentinites emplaced during the Taconic orogeny. Serpentinization at Belvidere Mt. involved hydration of the original peridotite and dunite. Understanding of the serpentinization process has increased greatly in recent years, but some aspects remain controversial.

Belvidere Mt. has been quarried for chrysotile asbestos during most of the 20th Century; active mining operations ceased in 1993. Public health concerns about the health effects of asbestos have generally failed to consider the different mineralogical and biomedical properties of asbestiform minerals. This in turn has led to unwarranted fears of exposure to minute amounts of chrysotile asbestos.

The purpose of this trip is to examine serpentine textures that shed light on the serpentinization process itself, to observe the numerous accessory minerals associated with the serpentinite, and to discuss current understanding of the health effects of mineral dusts in occupational and non-occupational settings.

Contact: Mark Van Baalen, Department of Geology, Harvard University, Cambridge, MA; MVB@HARVARDA.HARVARD.EDU

Meeting Time and Place: Uncle Bill's Diner, Eden, VT, at 8:30 a.m. The diner is on State Route 100, just 2 miles south of its intersection with Route 118 in Eden.

TRIP A-5:
NATURE OF THE ALBEE-AMMONOOSUC CONTACT, MOORE RESERVOIR AREA, N.H.-VT.: THE PIERMONT-FRONTENAC ALLOCHTHON--EMBATTLED BUT THRIVING!

Leader: Robert H. Moench

This trip is focused on Foster Hill, about 6 miles west of Littleton, N.H., which is the type area of the Foster Hill detachment (FHF) at the sole of the allochthon. M.P. Billings and D.W. Rankin have mapped an unproven depositional contact between their Ordovician Albee Formation and the overlying Ammonoosuc Volcanics. Ever since my earliest work there (about 1983) I have interpreted this same contact as a premetamorphic fault, but I gained a thorough understanding of relationships there only after I mapped Foster Hill at 1:6,000, in 1997. This new map documents the Foster Hill fault and, shows an isoclinally folded sequence of Ammonoosuc and underlying slaty laminated flysch to the east, and a mainly homoclinal sequence of subdivided "Albee" to the west, mapped as the Silurian Perry Mountain, Smalls Falls, and Madrid Formations and the Lower Devonian Ironbound Mountain Formation. The homocline is unsystematically folded within about 300 ft. of the FHF, which is best seen where the Perry Mountain (quartzite and slate) is sharply truncated against the Ammonoosuc (calcitic greenstone).

We will spend about 3.5 hours on Foster Hill; other stops provide regional context, on the lower east side of Gardner Mountain (type area of "Albee"), N.H., and in Vermont.

Contact: Bob Moench, moenchssrh@igc.org

MEETING PLACE: I-93, Exit 44 rest area, near Moore Dam. Follow signs from exit ramps to rest area, which is on rte. 135/18 about 0.1 mile south of I-93.
TIME--8:30 a.m.; we will depart at 8:40. Friday, October 1. I will be available for a premeeting trip on the 30th.
QUADRANGLE MAPS (7.5'): Stops are on Lower Waterford and Miles Pond; Littleton and Concord also useful.

TRIP A-6:
FAULTS AND FLUIDS IN THE VERMONT FORELAND AND HINTERLAND IN WESTERN VERMONT

Leaders: Rolfe Stanley, Tracy Rushmer, Caleb Holyoke, Andrea Lini

This trip will begin to the west in the Ordovician sequence on South Hero Island (Lessor's Quarry and "The Beam") in the unmetamorphosed, but cleaved rocks of the Vermont Foreland and end along the western front of the hinterland at Hinesburg (Hinesburg Thrust) and Lincoln, Vermont (Cobb Hill thrust fault, and South Lincoln thrust fault) where Middle Proterozoic rocks of the Lincoln Massif are displaced westward over the late Proterozoic to Lower Ordovician rocks along ductile/synmetamorphic Taconian faults. Discussion will focus on structural analysis, fluid interaction, isotopic studies, and systems feedback processes in fault evolution. We will not visit the Champlain thrust fault at Lone Rocks Point (see Trip C-5).

Departure time 9 AM at the Apple Store just west of the South Hero Post Office in the village of South Hero, Vermont.

Contact: Rolfe Stanley, Department of Geology, University of Vermont, Burlington, Vermont 05405; rstanley@together.net

TRIP A-7:
GEOLOGIC FIELD TRIP SITES FOR TEACHERS IN NORTHWESTERN VERMONT

Leaders: Christine Massey (UVM Perkins Geology Museum) and Shelley Snyder (Mt.
Abraham Union High School)

The areas around Burlington, Vermont provide a wealth of accessible geologic information for interpretation by school teachers and students. On this trip, teachers will learn about the geological history of Vermont through visits and hands-on exploration of four local sites. All of the sites are accessible to the general public (with prior permission) and are suitable for visits by groups of students. We will share our techniques for exploring these sites with young earth scientists.

Our trip begins at Redstone Quarry Natural Area (Burlington) in an ancient shoreline environment which we now view as the Monkton Quartzite. We will visit the famous Champlain Thrust Fault at Lone Rock Point (Burlington) and examine marine off-shore environments of the Iberville Shale and Dunham Dolostone formations. The islands of South Hero and Isle La Motte provide two quarries for viewing some of the life forms preserved in the limestones of the ancient Iapetus Ocean. The Glen's Falls Limestone at Lessor's Quarry (South Hero) shows bryozoa, brachiopods and other fossils, while the Crown Point Limestone at the Fisk Quarry Preserve (Isle La Motte) preserves an ancient reef ecosystem which contains such fossils as stromatoporoids, bryozoa, algae, gastropods, cephalopods, and others.

Meeting time and place: Begin at the UVM Perkins Museum in Burlington (off Colchester Avenue, next to Fleming Museum) at 8:30 am for an introduction to educational opportunities at the Perkins Museum and overview of teacher trip. Depart 8:45 am. Bring a lunch. None of our stops have public facilities.

Contact: Christine Massey, UVM Perkins Museum, Department of Geology, University of Vermont, Burlington, VT 05405-0122. Phone: (802) 656-1344, Fax: (802) 656-0045, e-mail: cmassey@zoo.uvm.edu

SATURDAY FIELD TRIPS
TRIP B-1:
DEGLACIATION HISTORY OF THE STEVENS BRANCH VALLEY: WILLIAMSTOWN TO BARRE, VERMONT

Leader: Stephen Wright

This trip begins at the outlet of Glacial Lake Winooski, the last stop on Larsen's 1987 NEIGC field trip, and follows the Williamstown Esker to north of Barre where it is completely buried by lacustrine sediments. Good exposures in pits, stream sections, and one recent landslide allow deduction of deglaciation processes in both ice-contact and lacustrine environments. We will finish at an exposure of deformed, preglacial lacustrine sediments, a prelude to the theme of Fred Larsen's Sunday field trip.

Meeting Place and Time: 8:30 AM at the Berlin Corners "Park and Ride," Exit 7 on I-89

Contact: Stephen Wright, Department of Geology, University of Vermont, Burlington, VT 05405; swright@zoo.uvm.edu, 802-656-4479
All stops lie within the Barre West and Brookfield 7.5-minute Quadrangles.

TRIP B-2:
FIRE AND ICE AND ICE... AND FIRE? THE ORIGIN AND FATE OF THE SANDSTONE PAVEMENT PINE BARRENS IN NORTHEASTERN NEW YORK

Leaders: David A. Franzi and Kenneth B. Adams, Plattsburgh State University

The Altona Flat Rock sandstone pavement jack pine barrens is an island ecosystem amidst the larger matrix of northern hardwood and mixed hardwood-conifer forests in the upper Little Chazy River watershed. The New York Natural Heritage Program describes sandstone pavement
barrens as open-canopy woodlands on very shallow soils over nearly level sandstone bedrock. The Altona Flat Rock is part of a discontinuous belt of sandstone pavements in northeastern New York that were created by catastrophic floods from the drainage of glacial Lake Iroquois and younger post-Iroquois proglacial lakes in the St. Lawrence Lowland. The boreal jack pine dominates the Altona site, near the southern limit of its natural range, because of its adaptations to fire and its ability to survive in a droughty, nutrient-deficient, high-stress environment. Jack pine requires periodic crown fires for successful regeneration to occur. A fire releases seed from serotinous cones stored in the jack pine canopy, prepares a nutrient-rich ash seedbed, and reduces competition for the young seedlings. The sandstone pavement jack pine barrens in northeastern New York are marginal communities in delicate equilibrium with existing hydrogeological and climatological conditions. The extensive ice storm that affected much of northern New York and New England in January 1998 severely impacted large portions of the pine barrens, leaving the future of this fragile ecosystem uncertain. In 1998, Miner Institute contracted a logging company to complete a restoration cutting on approximately 60 ha of pine barrens heavily damaged by the ice storm. The objectives were to reduce the hazardous fuel loadings (reduce the risk of uncontrollable wildfires) and try to initiate regeneration of jack pine without fire. Restoration cutting on an additional 160 ha is presently occurring. On this field trip we examine the deglacial events leading to the formation of the sandstone pavements by following the path of glacial meltwater from the Gulf at Covey Hill, P.Q. to Altona Flat Rock. We will also address the linkages between the hydrogeology and ecosystem-level processes in the pine barrens and discuss the disturbance impact of the 1998 ice storm. The trip will feature several sites in the southeastern portion of Altona Flat Rock where Plattsburgh State University and the W.H. Miner Institute jointlysponsor an Ecosystem Studies Field Laboratory for undergraduate education and research.

Meet on the Vermont side of the Grand Isle–Plattsburgh Ferry at 8:20 AM.

Contact Person: David Franzi, Center for Earth and Environmental Science, Plattsburg State University, Plattsburg NY 12901 Tel. 518-564-2028; FAX 518-564-7827; email: david.franzi@plattsburgh.edu

TRIP B-3:
LAMOILLE RIVER VALLEY BEDROCK TRANSECT #2

Leaders: Jonathan Kim, Marjorie Gale, Jo Laird, and Rolfe Stanley

The eastern Taconide Zone in northern Vermont consists of polydeformed Pre-Silurian metasedimentary and meta-igneous rocks of the Hazens Notch (including Belvidere Mt. Complex), Ottauquechee, Stowe, and Moretown fms. (from west to east). In conventional tectonic interpretations, these lithotectonic units straddle the Vermont extension of the Baie-Verte/Brompton Line which separates rifted margin rocks from more easterly-situated oceanic rocks of the Taconian accretionary

wedge. The tectonic stratigraphy in this area is a result of the dissection of older Taconian Lithotectonic Packages (LPs) by younger steeply-dipping Acadian thrust faults; many lithologies are common to multiple lithotectonic packages.

This trip will start at Belvidere Mountain, traverse the northern Vermont Ottauquechee-Stowe-Moretown Belt north of the Lamoille River and end at Mt. Elmore at the northern end of the Worcester Range. Structural geology, petrology, and igneous geochemistry will be integrated with detailed mapping recently completed for the new Vermont State Bedrock Geologic Map. This trip is a complement to Lamoille Valley Transect #1.

Meet at the McDonalds in Morrisville which is at the intersection of Routes 15 and 100. We will depart from this location at 8:30 AM (we will also return here). There are two Motels near this intersection which are the Sunset Motor Inn (1-800-544-2347, 802-888-4956) and the Plaza Hotel (1-800-334-2879, 802-888-7761) if anyone wants to stay nearby.

Contact: Jonathan Kim, jonk@dec.anr.state.vt.us, 802-241-3469 or Marjorie Gale, marjieg@dec.anr.state.vt.us, 802-241-3608, Vermont Geological Survey 103 South Main St., Laundry Building ,Waterbury, VT 05671-0301

7.5′ Quadrangles: Hazens Notch, Eden, Lowell, Albany, and Morrisville.

TRIP B-4:
EVIDENCE FOR MOVEMENT OF THE MONROE FAULT DURING INTRUSION OF THE VICTORY PLUTON, NORTHEASTERN VERMONT

Leader: Kimberly Hannula

The Victory Pluton is one of several Acadian plutons that appear to crosscut and post-date all Acadian deformation in northeastern Vermont. Microstructural and metamorphic evidence within the Victory Pluton's aureole, however, suggests that the Monroe Fault, which separates rocks of the Connecticut Valley Trough from those of the Bronson Hill Belt, was still active during intrusion of the Victory Pluton. This field trip will visit several sites within the aureole of the Victory Pluton, and will examine evidence for deformation and for metamorphic pressure increases during contact metamorphism. Sites will include the contact zone of the Victory Pluton west of the Monroe Fault, pulled apart and partially replaced andalusite near the Monroe Fault, the Monroe Fault itself in the garnet zone of the Victory Pluton, and cordierite reaction textures east of the Monroe Fault.

Contact: Kim Hannula, Geology Department, Middlebury College, Middlebury, VT 05753; PHONE 802.443.5652; hannula@middlebury.edu

Departure time and location: 9:30 am, North Concord General Store, on U.S. Rt. 2 east of St. Johnsbury.

TRIP B-5:
A FIELD DISCUSSION OF THE PINNACLE FORMATION, A LATE PRECAMBRIAN RIFT VALLEY FILL, AND THE DEVELOPMENT OF THE IAPETUS BASIN.

Leaders: Lars Cherichetti & Alexis Richardson

The stratigraphy of the ancient margin of North America includes from rift-related volcanic rocks and early clastic sediments (Tibbit Hill and Pinnacle Formations), which predate the fully developed Cambro-Ordovician passive margin platform

sequence bordering the ancient Iapetus Ocean. Rift-related clastic rocks in ancient orogens such as the Appalachians provide the best evidence for reconstructing the depositional environments existing during continental breakup. Such analyses are best determined in major reentrants such as the Québec reentrant because of the preservation of original deposition features and the ability to correlate stratigraphic units along strike without major truncations by faulting. The Pinnacle Formation of Vermont and Québec extends for a distance of over 200 km and is rivaled in the Appalachians only by the Ocoee Belt within the Tennessee reentrant of the southern Appalachians. This field trip will investigate the stratigraphy of the Pinnacle Formation in northwestern Vermont, and discus associated depositional environment interpretations, as well as implications for tectonic-scale Iapetus Basin development. If you enjoy stratigraphy, structural geology, rapid depositional environments, tectonics and cows you will enjoy this field trip.

Contact Person, Lars Cherichetti, alexlars@gateway.net

Meeting time and Place: Votey Lot, next to the Perkins Geology Building, UVM Campus at 8:30 am. Bring a lunch.

SUNDAY FIELD TRIPS

TRIP C-1:
GLACIAL HISTORY OF THE MONTPELIER, VERMONT, 7.5-MINUTE QUADRANGLE

Leader: Frederick D. Larsen, Norwich University.

This 3/4-day trip is a continuation of Trip B-1 by Stephen Wright. Until recently in the Montpelier quadrangle we have been dealing with a deglacial sequence of Late Wisconsinan glacial till, late-glacial Lake Winooski, draining of the lake and postglacial sedimentation. Recent discoveries of good exposures in deformed preglacial varves, a possible two-till site (?) and a mystery site with a package of compact deformed varves over till are high lighted, and extend our knowledge back before the last glacial advance.

Meet at Montpelier High School, just off Memorial Drive 0.75 mi northeast of Exit 8, Interstate I-89, 8:00 AM, Sunday, October 3, 1999. Exposures may be wet. Bring lunch and drink, we will eat in the pit.

Contact: Fred Larsen, Department of Geology, Norwich University, Northfield, VT 05663, 802-485-2336.

TRIP C-2
PINE STREET CANAL SUPERFUND SITE: HYDROGEOLOGY AND ITS EFFECTS UPON THE EXTENT OF MANUFACTURED COAL GAS CONTAMINATION

Leader: Don Maynard

The field trip will include a description of the glacial geology, the hydrogeology, and the historical uses and modifications to the Site. The contaminant release and transport mechanisms, the extent of contamination, and proposed remedial actions will be discussed. A site walkover will include observations of the contaminant source area, the historical barge canal, emergent wetlands, and Lake Champlain. The Site is heavily vegetated, and views may be limited if the leaves have not fallen.

Meet at 9 AM in Burlington at the gate to a vacant lot on the west side of Pine Street between the Burlington Electric and Light Department and the Maltex Building (across the street from the large blue Whiting Company facility). This location is south of the intersection with Howard Street, and north of the intersection with Lakeside Avenue.

Contact: Don Maynard, The Johnson Company, Montpelier, VT, 802-229-4600, DMM@jcomail.com

TRIP C-3 (REPEAT OF A-3):
LITHOTECTONIC PACKAGES AND TECTONIC BOUNDARIES ACROSS THE LAMOILLE RIVER TRANSECT IN NORTHERN VERMONT

See Description, Meeting Place, and Time for Trip A-3.

TRIP C-4:
THE NEW ENGLAND - QUÉBEC IGNEOUS PROVINCE IN WESTERN VERMONT

Leaders: J. Gregory McHone and Nancy W. McHone

The central Lake Champlain Valley south of Burlington, Vermont contains a spectacular assortment of Mesozoic intrusions of the New England-Québec igneous province. The lake shore has particularly good exposures of dike rocks and structures that have attracted study since the mid-19th century. We will examine monchiquite and camptonite (lamprophyre) dikes, and several bostonite (trachyte) dikes that show interesting intrusive features. Outcrops near the top of Barber Hill, a small plutonic complex in Charlotte, display varieties of syenite that may be derived from bostonite magmas, and which may be crosscut by lamprophyres.

We will start at Shelburne Shipyard near the northern end of Shelburne Point at 9 a.m. on Sunday, October 3. Stops will include the shipyard monchiquite, shoreline bostonites at Shelburne Farms and Charlotte town beach, Barber Hill syenite, bostonite and lamprophyre dikes along Route 7, and camptonite at Redstone Quarry. At all stops, we will discuss the petrology of the rocks and their intrusive structures, which can be related to crustal tectonics as well as magma mechanics.

Contact: J. Gregory McHone Graduate Liberal Studies Program, Wesleyan University, Middletown, CT 06459; Phone (860) 685-3339 Fax: (860) 685-2901 Email: jmchone@wesleyan.edu

TRIP C-5:
THE CHAMPLAIN THRUST FAULT AT LONE ROCK POINT

Leader: Rolfe Stanley

We will study fault characteristics exposed along 1 mile (1.6 km) traverse where wave erosion of the weaker Middle Ordovician shale of the lower plate has exposed the fault zone in all its glory. See fault mullions along the base of the Lower Cambrian Dunham Dolostone, fault breccia, slivers of Lower Ordovican limestone, lower plate duplexes and multiple generations of folds. Discussion will focus on fault fabrics and regional significance of the Champlain thrust fault. Read Stanley, R. S., 1987, The Champlain thrust, Lone Rock Point, Burlington, Vermont: Geological Society of America, Centennial Field Guide for the Northeast Section, p. 67-72 for further instructions and a discussion of the outcrop.

Meeting Place: Votey Parking lot, Perkins Geology Hall, University of Vermont. 9:15 AM. We will consolidate participants into vans and drive to the Lone Rock Point. Trip duration will be less than 4 hours. Christine Massey will be joining us as a K-12 teacher Guide

Contact: Rolfe Stanley, Department of Geology, University of Vermont, Burlington, Vermont 05405; rstanley@together.net

NEIGC 1999/BURLINGTON
October 1-3, 1999
REGISTRATION FORM

NAME _____

ADDRESS _____

_____

_____

E-MAIL _____

FIELD TRIP CHOICE	1ST	2ND	3RD
FRIDAY, OCT 1			
SATURDAY, OCT 2			
SUNDAY, OCT 3			

1. NEIGC FEES:	Pre-registration (Received by 9/26)	On-site
Registration	$10	$15
Guidebook	___copies @ $18	$18
Banquet (Saturday Evening)	___tickets @$20	$20

Circle Choice: (1) Chicken Marsala; (2) Roasted Vegetables Primavera; (3) Top Sirloin Forestier

TOTAL NEIGC FEES _____

2. Pre-Meeting SYMPOSIUM ON SURFICIAL GEOLOGIC MAPPING
(SEE NEIGC WEBSITE) Thursday, September 30th, Ramada Inn, Burlington

	Pre-registration (Received by 9/26)	On-site
Professionals	$10	$15
Students	$5	$5

TOTAL SYMPOSIUM FEES _____

Make Check for sum of NEIGC and Symposium Fees Payable to UVM–NEIGC99

Mail to: Jack Drake
Department of Geology
University of Vermont
Burlington, VT 05405

For further information about conference
(1) Consult the NEIGC Website:
http://neigc.org/NEIGC/1999/
or (2) Barry Doolan at University of VT
802 656-0248; 802 656-0045 (FAX)
bdoolan@zoo.uvm.edu

UNIVERSITY OF VERMONT GEOLOGY SEMINAR SERIES

All seminars at 4:15 PM in Room 200 Perkins Geology Building. Refreshments served prior to the lecture. Contact Andrea Lini for additional information: alini@zoo.uvm.edu, 802-656-0245.

Monday September 13: Bob Tracy, Virginia Tech, "Some New Perspectives on Paleozoic Tectonics of Southern and Southwestern New England Based on Recent Metamorphic Studies."

Monday September 27: Mary Roden-Tice, Plattsburgh State University, "Evidence for Differential Unroofing in the Adirondack Mountains, New York, Determined by Apatite Fission-Track Thermochronology"

Monday October 11: Dr. Dorothy Stout, Cypress College, Traversing the Collision Zone between the Asian and Indian Plates: Tibet and the Himals." Also, Dorothy will present two short films following her talk Monday, Oct. 11 at 5:30 PM in Perkins 300 entitled "Geology Goes Hollywood" (22 min) and "Why They Get It Wrong" (15 min) about how the general public perceives geology through the movies.

Monday October 18: Mark Abbot, University of Massachusetts, " Holocene Paleohydrology of Andean Lakes."

Monday November 8: Beverly Wemple, University of Vermont, "Investigations of Runoff Production and Erosion on Forest Lands."

Monday November 22: David Westerman, Norwich University, "Tectonic History of the Nested Christmas-Tree Laccolith Complex of Elba Island, Italy."

Monday December 6: Kirsten Menking, Vassar College, "Paleoclimatology descends into hell: Battling the muck in the Estancia Basin."