

THE GREEN MOUNTAIN GEOLOGIST



QUARTERLY NEWSLETTER OF THE VERMONT GEOLOGICAL SOCIETY

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*The Vermont Geological Society's
Fall Field Trip & Annual Meeting*

Glacial Geology of Northern Vermont: Waterville, Belvidere, and Eden

October 14, 2006

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FALL FIELD TRIP DESCRIPTION AND ROAD LOG

Saturday, October 14, 2006

Title: Glacial Geology of Northern Vermont: Waterville, Belvidere, and Eden

Time: 9:30 AM – 5:00 PM

Meeting Point: Meet at 9:30 AM at the Grand Union parking lot, Main Street (Route 15), Johnson, Vermont

Leader: Stephen Wright, Department of Geology, University of Vermont

Field Trip Description: The objective of this year's fall field trip is to introduce participants to several key elements of northern Vermont's glacial geology. In particular, we will look at several localities that shed light on changes that were taking place as the ice sheet thinned and its flow direction changed from flowing southeastward across the mountains to southward, parallel to the mountain range. All of the field stops occur along the upper reaches of two tributaries to the Lamoille River: the North Branch and the Gihon River. Field stops will include the spectacular bedrock channels with 5-meter-diameter potholes occurring on the eastern side of Shattuck Mountain, a variety of high-elevation ice-contact sediments deposited in and around Belvidere Bog, the outlet to the western arm of Glacial Lake Memphremagog just below the Belvidere asbestos mine, large-scale fluvial landforms produced downstream from that outlet, and a visit to Ritterbush Pond to investigate both its glacial and Holocene history. I will present maps showing reconstructions of the retreating Laurentide Ice Sheet to explain the hydrologic setting within the ice sheet and environments in which ice-contact and lacustrine sediments were deposited.

Food: Please bring along a lunch, as we will be far from any source of food during most of the trip. Food is available from several restaurants in Johnson including the Edelweiss Bakery on the west end of the village, the Bad Girls Café in the center of the village, and the Plum and Main Restaurant, also in the middle of the village. All are a short walk from the Grand Union parking lot.

Hikes: This field trip includes several short hikes. To reach Stop 1, the Shattuck Mountain Channels, we will hike less than 1 km with a modest elevation gain, but the hike does involve some bushwhacking and some short, but steep slopes. Stop 5 (Ritterbush Pond) is reached via a ~1.5 km hike along an almost level woods road. Once there we will also hike up to Big Muddy Pond (an additional 15-minute hike). Hiking boots or sturdy sneakers should be adequate foot wear.

Detailed Road Log (distance in miles):

0	START—Grand Union Parking Lot on Rt 15. Go left (west).
1.7	Jct Hogback Rd with Rt 15: Turn right. Road follows north side of Lamoille River Valley.
6.2	Jct Hogback Rd with Rt 109: Turn right (north) on 109. Pass through village of Waterville.
10.4	Jct Rt 109 and Smithville Rd: Turn left.
11.3	Jct Smithville Rd with Shipman Rd: Turn left.
11.4	Shipman Rd takes sharp right turn. Continue along single lane road.

11.8	Continue past several camps to clearing. Park here. STOP 1—Shattuck Mountain Channels and Potholes
13.2	Return to jct with Rt 109: Turn left (north) here.
14.3	Glacial Lake Mansfield Delta terrace (246 m).
20.4	Jct Bog Rd, Rt 109, and Rt 118: Turn right on Bog Rd.
21.3	Parking area on south side of road just past bridge over stream (N. Branch of Lamoille River). STOP 2—Small Gravel Pit: Glaciolacustrine/Ice Contact Sediments
22.2	Return to Jct with Bog Rd/Rt 109/Rt 118. Go north on Rt 118.
25.2	Pull off along side of Rt 118. STOP 3—Esker and Kettle
28.2	Return to Jct of 118 and 109. Continue East on 118.
30.1	Turn left into Long Trail Parking Lot. STOP 4—Striations depicting two different directions of ice flow
30.9	Jct with Rt 118 and Crooks Rd: Turn right (south) on Crooks Rd.
32.3	Jct with Crooks Rd and Baker Rd: Turn right (west) on Baker Rd.
32.9	Babcock Preserve Parking Lot: Parking here is limited to ~5 cars. Vehicles not fitting in this lot may park along the side of the road before entering the Babcock Preserve. STOP 5—Ritterbush Pond: Ice-Contact Deposits, Glacial Lake Winooski Delta, and Holocene History
33.5	Return to Jct of Baker Rd with Crooks Rd: Turn right on Crooks Rd.
34.6	Jct of Crooks Rd with Knowles Flat Rd: Turn right (south) on Knowles Flat Rd.
35.2	Jct with White Rd on right: Bear left continuing on Knowles Flat Rd.
36.3	Jct Rt 100 and Knowles Flat Rd: Turn right (south) on Rt 100 STOP 6—Dark Branch, White Branch, and Gihon river valley history. If time permits, we will drive north to the Belvidere Asbestos mine, which is also the outlet of the Western Arm of Glacial Lake Memphremagog.
39.6	Jct Rt 100 and Rt 100C in North Hyde Park: Turn right on 100C.
44.2	Jct Rt 100C and Rt 15 in Johnson Village: Turn right (west).
44.4	END—Grand Union Parking Lot on Rt. 15.

ANNUAL MEETING AND ELECTION OF OFFICERS

The VGS Annual Meeting will take place immediately following the field trip. The exact location of this meeting will be decided during the field trip, but it will be at either the Bad Girls Café or the Plum and Main Restaurant. If you are unable to attend the field trip and Annual Meeting, please send the enclosed absentee ballot by October 12, 2006 to David West, Dept. of Geology, Middlebury College, Middlebury, VT 05753. The ballot lists the names of the incumbent officers and three new nominees for Board of Directors.

PRESIDENT'S LETTER

Dear Fellow VGS Members,

Fall is upon us and outcrops are beginning to emerge from the foliage. This means the fall field trip is here! Stephen Wright will lead us on a trip this year – please see the details in this newsletter and make every effort to leave those daily responsibilities behind for a day of field wanderings.

Our Society is financially sound. We are saving some money by moving the GMG to a pdf format as much as possible, and our student research fund awaits applicants. Three new candidates are up for election to the Board of Directors this year, Les Kanat, Jon Kim, and John Van Hoesen. Thanks to the three of you.

Earth Science Week is October 8-14, and the theme this year is “Be a Citizen Scientist!” According to the AGI, “*What does it mean to be a citizen scientist? It means getting involved! Real people collecting data, observing, and testing. You don't have to have a Ph.D. or even formal education in Earth science to be a citizen scientist, only an interest and desire to learn. A citizen scientist is YOU involved in real science and research!*” I urge our members to think of one small thing (at least!) that they can do to address the statements above, whether it be directed to K-12 kids or local policy makers or your neighbors! We need more, much more, public awareness of our field, the kind of scientific exploration we conduct, and the kind of information we provide to the public. Talk to some people and then let them promote us.

Have a great fall, and I look forward to seeing you at the field trip!
Rick Dunn, President

SUMMER MEETING MINUTES

Saturday, June 24, 2006

The Executive Committee Meeting was held over lunch during the Summer Field Trip in Highgate Center, Vermont. Once again, there was no quorum as the two of us were the only members of the Executive Committee in attendance. Steve presented the Treasurer's and Advancement of Science Committee reports, indicating that the Society is financially sound, that one student research grant was awarded in the round that concluded in the spring, and that the Society can continue to support the research grant program at the same financial level for the next several rounds. Membership in the Society has been very stable with approximately 100 individual and family memberships and about 10 institutional memberships. We agreed on the need to stimulate student membership. Fifty percent of members have elected to receive the *Green Mountain Geologist* electronically as a pdf file and that we should continue to promote this option in order to save more Society funds for research grants. Rick noted that no one had volunteered to be the next VGS Lecturer, but we both felt this is a program worthy of continuance. Finally, we discussed the need for three new candidates for Board of Directors in the upcoming election. Following the meeting, Steve asked Les Kanat and Jon Kim if they would both consider standing for election to the Board of Directors and both agreed. A third candidate would be identified later.

Respectfully submitted,
Rick Dunn and Steve Howe

TREASURER'S REPORT

The financial condition of the Society continues to be strong. As of September 1, 2006, the checking account balance was \$4,910.46. To my knowledge, there are no outstanding bills. A financial statement for the period 10/1/05-9/1/06 is indicated below. The Green Mountain Geologist was printed this year at no cost to the Society due to the generosity of the Department of Geology of Middlebury College.

The following members have been approved for membership in the Society since the last report: Paul Madden, Enosburg Falls, Vermont; Maartjee L. Melchior, Bristol, Vermont; and Tom Rigley, Springfield, Vermont.

The 2007 membership renewal and directory information form will be mailed out to all members by December 31, 2006. The deadline for renewal will be January 31, 2007.

Respectfully submitted,
Stephen S. Howe, Treasurer

Income and Expenses 10/1/05-9/1/06

INCOME

Total Dues		\$1,658.00
Member	\$1,320.00	
Family	\$240.00	
Student	\$8.00	
Institution	\$90.00	
Student Research Grant Contributions		\$490.00
<i>Vermont Geology Sales</i>		\$165.00
TOTAL INCOME		\$2,313.00

EXPENSES

<i>Green Mountain Geologist Printing</i>		\$0.00
Postage		\$165.61
Office Supplies, telephone call		\$10.03
Post Office Box Rental (to 8/1/07)		\$50.00
Winter Meeting Refreshments		\$68.71
Spring Meeting Refreshments		\$74.50
Awards		\$1,746.00
Research Grants	\$1,446.00	
Spring Meeting Student Talks	\$300.00	
TOTAL EXPENSES		\$2,114.85
TOTAL INCOME – TOTAL EXPENSES		\$198.15

ADVANCEMENT OF SCIENCE COMMITTEE REPORT

The Committee will recommend several dates in early March 2007 for the Society's next Winter Meeting. Members are encouraged to contact me with any suggestions they may have for a theme for the meeting.

Respectfully submitted,
Stephen S. Howe, Chair

STATE GEOLOGIST'S REPORT

Isle La Motte

The dedication at the Goodsell Ridge Fossil Preserve brought an unexpected pleasure. I had the good fortune to stand with Dr. Charles Ratté, the former Vermont State Geologist from 1975 to 1991, while helping to cut the ceremonial ribbon. Chuck during his tenure suggested to the Fitch family that the fossil reef be preserved for educational purposes and it was a proud day to see him help launch the new enterprise. Thanks to Charlotte Mehrtens, Linda Fitch, the LaBombards, Lake Champlain Land Trust, and the Isle la Motte Preservation Trust for the dedication ceremony and all their hard work to bring this project to fruition.

Geology Mapping and Arsenic

Geologic mapping by Marjorie Gale and Jon Kim is complete north of Waterbury to understand the geologic context for the occurrence of high levels of arsenic in several homes. As part of a larger mapping project, Middlebury College is cooperating by collecting water well samples and analyzing data. The Department of Environmental Conservation lab is involved in water quality analyses as well.

Smugglers' Notch Slides

Stowe Mountain Rescue identified recent slide blocks in Easy Gully. A meeting was held at Smugglers' Notch with Commissioner Jonathan Wood of Forest, Parks and Recreation; Larry Becker, Vermont State Geologist; Chris Benda, AOT Geotechnical Engineer; Gary Moran, AOT Regional Office; George Springston, Geologist, Norwich University; and Neil Van Dyke of Stowe Rescue. It was agreed that this is a continuous slide process happening throughout the Notch and that the boulder(s) in question are now in the middle of the process of breaking off and moving to the toe of the slope, but when they will next move is not known. At first discussion, the danger at present did not seem out of line with other settings that pose a risk of blocks moving to the toe of slope and toward Vermont Route 108. Neil Van Dyke, however, believes that one boulder is unusually placed compared to all others he has seen in his 30-year career in the Notch. Signage to indicate the hazard for people accessing trails near Route 108 and for the road approaches to the highway were discussed as mitigation measures. Norwich University, in partnership with the Vermont Geological Survey, will write up the geology, and recommendations will be made after the details are considered. For management planning, the Survey will propose to Forest, Parks, and Recreation a study to indicate higher risk areas in the Notch. Confusion between a debris slide visit of July 5th and the boulder/large rock event first reported on August 14th was cleared up. These are two different events. The previous event was of a smaller scale.

Brandon Groundwater

Following a presentation by Dave DeSimone and by the State Geologist to the Brandon Fire District, Planning Commission, and Town Manager of draft groundwater resource and recharge area maps based on Dave's surficial mapping and existing bedrock geology, the Fire District met to consider issues raised by the maps. The study identified potential sand and gravel aquifers in the McConnell Road area and pointed to the need to know more about the Neshobe's surface water contribution to the existing aquifer that serves the Town wells. The Fire District also wants to know the extent of the existing aquifer and its long-term sustainable yield. A replacement aquifer should have the following characteristics: not hydraulically connected to the existing tapped aquifer; within a reasonable distance of the current distribution line; possessing sufficient yield and quality for public water supply use; protected by low permeability surficial deposits; free of existing high-risk land-use activities; and unappealing for future land development.

Respectively submitted,
Laurence R. Becker, State Geologist

ANNOUNCEMENT

*OMYA Middlebury Quarry Open House
East Middlebury, Vermont, October 14, 2006*

OMYA is once again holding its annual open house at its Middlebury Quarry to commemorate Earth Science Week. This large quarry produces white, high-calcium marble that is processed into fillers and extenders for the paper, plastic, and paint industries. It has also produced some very attractive salmon-colored calcite. This will be a family event that will include quarry tours, viewing quarrying equipment close-up, earth science activities, and refreshments. The event is free and will be held from 10:00 AM to 4:00 PM, with the last tour at 3:00 PM.

The road to the quarry is off the east side of US Route 7, 2.5 miles south of the *Middlebury Inn* (traveling southbound) and 1 mile north of the turnoff to the junction of Routes 125 and 116 (traveling northbound). The quarry road is between *Standard Register* and *Foster Motors*, and the green street sign is labeled *1975 Private Road*. Continue straight on this road at the first stop sign. The second stop sign is at the quarry. Please park where instructed. For further information, call Alice Blount at (802) 770-7267 during business hours or visit the website at www.omya-na.com

VERMONT GEOLOGICAL SOCIETY CALENDAR

9/29-10/1/06	NEIGC Annual Meeting, Rangely, ME
9/30/06	Student Research Grant Program Applications due
10/6-8/06	NYSGA Annual Meeting, Buffalo, NY
10/8-15/06	Earth Science Week, Theme: "Be a Citizen Scientist!"
10/14/06	VGS Fall Field Trip and Annual Meeting
10/22-25/06	GSA Annual Meeting and Exhibition, Philadelphia, PA
10/30-11/4/06	AEG Annual Meeting, Boston, MA
3/11-14/07	GSA Meeting, Northeastern Section, Durham, NH

The GREEN MOUNTAIN GEOLOGIST is published quarterly
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Executive Committee

President	Richard Dunn	802-485-2304	rdunn@norwich.edu
Vice President	George Springston	802-485-2734	gsprings@norwich.edu
Secretary	David West	802-443-3476	dwest@middlebury.edu
Treasurer	Stephen Howe	518-442-5053	showe@albany.edu
Board	Ray Coish	802-443-5423	coish@middlebury.edu
of	Tim Grover	802-468-1289	grovert@castleton.edu
Directors	Helen Mango	802-453-1478	mangoh@castleton.edu

Committees

Advancement of Science	Stephen Howe
Education	Christine Massey
Membership	Stephen Wright
Public Issues	Laurence Becker
Publishing	Kathleen Howe, Stephen Howe, and David West

ABSENTEE BALLOT 2006

Vermont Geological Society

Please enter your name and address here:

Officers

President	Richard Dunn	_____
Vice-President	George Springston	_____
Secretary	David West	_____
Treasurer	Stephen Howe	_____

Board of Directors

Les Kanat	_____
Jon Kim	_____
John Van Hoesen	_____

If you will not be attending the annual meeting, please complete the absentee ballot and return it to David West, Dept. of Geology, Middlebury College, Middlebury, VT 05753 no later than October 12, 2006.

Returning Permanent Committee Chairs:

Advancement of Science: Stephen Howe
Education Committee: Christine Massey
Membership: Stephen Wright
Public Issues: Laurence Becker
Publications: David West

Vermont Geological Society
P.O. Box 1224
Saint Albans, VT 05478-1224

ADDRESS CHANGE?

Please send it to the Treasurer at the above address

Vermont Geological Society
Fall Field Trip
October 14, 2006, 9:30 AM
Grand Union Parking Lot
Main Street (Route 15)
Johnson, Vermont